IFZ FINTECH STUDY 2021

An Overview of Swiss FinTech

Editors Prof. Dr. Thomas Ankenbrand, Denis Bieri, Moreno Frigg, Marc Grau, Damian Lötscher

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Preface

In recent years, the Swiss FinTech industry has evolved from a niche market into a relevant provider of innovative solutions for the financial industry. This development has been documented in the past five editions of the IFZ Fin-Tech Study. At the end of the year 2020, a total of 405 Swiss FinTech companies were incorporated in Switzerland, representing an increase of 23 companies or, in relative terms, six percent compared to the year 2019. In comparison to the beginning of the observation period in 2015, the growth even exceeds 150 percent. However, the year 2020 also saw the first signs of a slowdown in growth. This is not only reflected in the lowest annual growth rate in terms of the number of companies in the Swiss FinTech sector since 2015, but also in the declining median capitalisation and stagnating median number of employees at Swiss FinTech companies. This again is in line with the general conditions for FinTech companies in Switzerland, which, according to the analysis of global FinTech hubs in this study, have tended towards a deterioration in recent years compared to other locations. Switzerland is therefore well advised to closely monitor developments in the FinTech sector and, if necessary, take appropriate measures to maintain or, in the best case, even strengthen its established position as one of the globally leading environments for innovation in the financial sector. This is of key importance not only for the resident FinTech sector, but also for the Swiss financial industry as a whole.

This study aims to track the developments, be they political, economic, social or technological, in the Swiss FinTech ecosystem, as well as to identify the trends related to the business models and challenges of the resident companies. The insights gained can in turn be used by various stakeholders, such as policymakers, the financial industry, and company founders, as a basis for decision-making to ensure that Swiss FinTech solutions continue to develop successfully in the future.

The study is structured as follows: In Chapter 1, an overview of the methodological approach of this study is given. Chapter 2 provides an assessment of selected cities with regard to their performance as FinTech hubs, followed by a PEST analysis of current developments in the sector. While Chapter 3 describes the business models of globally leading FinTech companies including an analysis with regard to their valuations, Chapter 4 shifts the focus to Switzerland and not only covers the current developments in the FinTech industry from a macro perspective, but also provides an in-depth analysis of the business models of Swiss FinTech companies and their perceived challenges from a micro perspective. The subsequent Chapter 5 describes the impact of FinTech on traditional financial institutions in Switzerland, while Chapter 6 deals with Open Banking, one of the currently highly debated topics covering the trend towards open financial ecosystems. Chapter 7 concludes the findings of the study and Chapter 8 lists the factsheets of Swiss FinTech companies which participated in this year's survey.

At this point we would like to thank all the companies and bank CIOs for partaking in our survey, as well as all the authors for their valuable contributions. A very special thanks goes to *Finnova, Inventx, SIX, Swiss Bankers Prepaid Services*, and *Swisscom*, the sponsors of this study, for their financial and content-related support.

Prof. Dr. Thomas Ankenbrand
Head Competence Center Investments

Denis Bieri
Senior Research Associate

Moreno Frigg
Research Associate

Marc Grau
Research Associate

Damian Lötscher
Research Associate

1.   Definition & Framework of the FinTech Ecosystem

By Thomas Ankenbrand & Denis Bieri, Institute of Financial Services Zug IFZ

This chapter presents the definitions and methodological framework used in this study. To ensure the highest possible degree of comparability, the general approach is based on the previous editions of the IFZ FinTech Study and is therefore not explained in full detail in the following.[1]

In comparison to last year's study, this year's definition of the term *FinTech* is slightly adjusted in order to emphasise the crucial role of technology for the industry. The definition used in this study reads as follows:

> FinTech is defined as technology-based solutions for innovative products, services, and processes in the financial industry, improving, complementing, and/or disrupting existing offerings. Hence, FinTech companies are firms whose main activities, core competencies, and/or strategic focus lie in developing those solutions.

The absence of a globally accepted definition of FinTech has led to each publication in the field interpreting the term differently. The present study defines the term *FinTech* relatively broadly as tech-driven innovative solutions targeting the financial services industry, with, for example, no restriction on the year of foundation of a company. The sector thus not only includes start-up companies but also incumbents. However, two restrictions imposed in this study are, first, the exclusion of InsurTech companies and, second, the requirement that a FinTech company was legally incorporated in Switzerland as of the end of 2020.[2]

Based on the different product areas in the financial industry which are targeted by FinTech companies, as well as the type of technology applied to provide the respective solution, the FinTech sector can be classified using the FinTech Grid framework shown in Figure 1.1. On the horizontal axis, the four product areas *Payment* (e.g. mobile payment solutions), *Deposit & Lending* (e.g. crowdfunding platforms), *Investment Management* (e.g. robo-advisors), and *Banking Infrastructure* (e.g. exchanges for cryptographic assets) are shown. The vertical axis lists four different technology categories, i.e. *Process Digitisation / Automatisation / Robotics*, *Analytics / Big Data / Artificial Intelligence*, *Distributed Ledger Technology*, and *Quantum Computing*, which FinTech companies apply in order to provide their solutions. The order from the first to the last technological vertical follows the degree of innovation associated with each category.

For structuring the FinTech ecosystem, this study draws, analogous to previous editions, on the PEST framework. PEST is an acronym for the four underlying dimensions encompassed by the framework, namely the political/legal, economic, social, and technological environments. After an assessment of selected cities in terms of their performance as FinTech hubs, Chapter 2 is structured according to the four PEST dimensions and aims to highlight selected relevant developments in the FinTech ecosystem.

The analysis of the FinTech industry, or more precisely the business models of Swiss FinTech companies, in Chapter 4 requires an additional framework.

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[1]Further information on the methodological approaches can be found in previous editions of the IFZ FinTech Study.

[2]Further information on the narrowing of the definition and corresponding justifications can be found in previous editions of the IFZ FinTech Study.
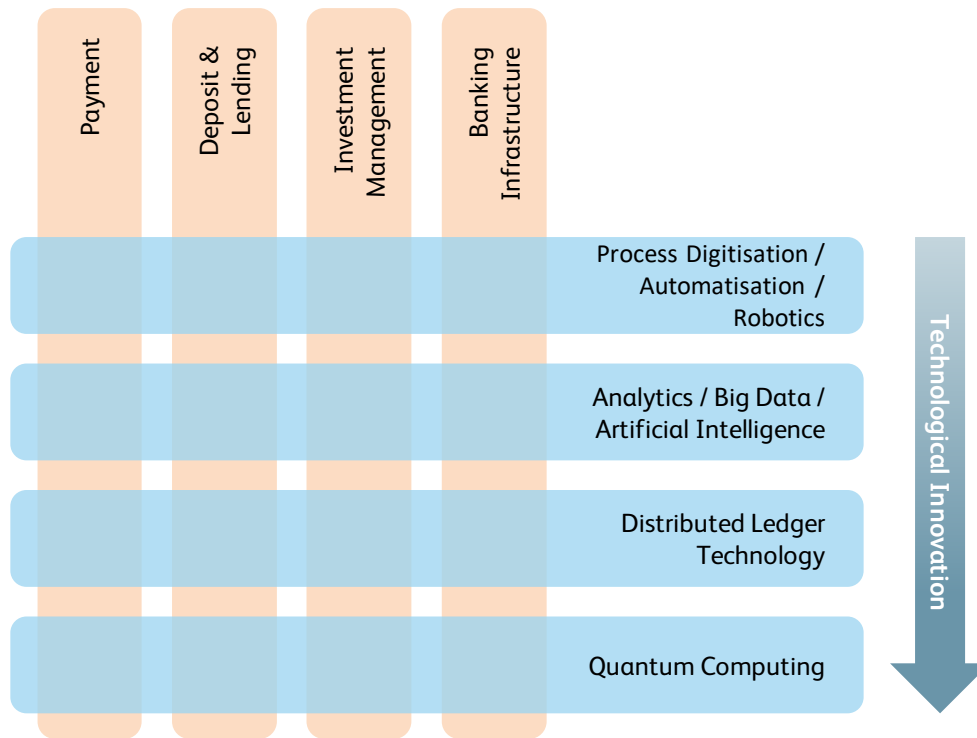
Figure 1.1: FinTech Grid

As in the previous studies, the Business Model Canvas by Osterwalder and Pigneur (2010) is used for this purpose. This framework offers the advantage of a structured approach in assessing a company's business model with the evaluation of nine different building blocks. These include *Key Partners*, *Key Resources*, *Key Activities*, *Value Propositions*, *Customer Relationships*, *Channels*, *Customer Segments*, *Revenue Streams*, and *Cost Structure*. In this study, *Customer Relationships* and *Channels* are treated as a single block due to their similar meaning, and *Cost Structure* is neglected for reasons of confidentiality. The Business Model Canvas does not only serve as a basis for the evaluation of the business models in the Swiss FinTech sector, but also as a structuring framework for the factsheets of Swiss FinTech companies participating in this year's survey in Chapter 8.

The assessment of current challenges in the Swiss FinTech sector is based on the survey on the access to finance of enterprises prepared for the *European Commission* by Doove, Gibcus, Kwaak, Smit, and Span (2014), which includes six challenges related to competition, availability of skilled staff or experienced managers, costs of production or labour, access to financing, finding customers, and regulation. In addition, this study's questionnaire includes the challenges related to the expansion into international markets, and, for reasons of topicality, the challenges arising from the Covid-19 pandemic.

2. The FinTech Environment

This chapter gives an overview on the current state of and developments in the FinTech sector. While Section 2.1 evaluates 35 international centres with regard to their performance as FinTech hubs, Section 2.2 to Section 2.5 assess the FinTech ecosystem based on the four PEST dimensions. Note that the main focus in these sections is on the Swiss FinTech sector, although global statements and assessments are also made where relevant.

2.1. FinTech Hub Ranking

By Thomas Ankenbrand & Denis Bieri, Institute of Financial Services Zug IFZ

Various factors are important for the emergence and continued growth of a vibrant FinTech industry. Although some drivers of FinTech formation have already been highlighted in various studies, these publications usually analyse a given point in time, without taking temporal dynamics into account. To provide a basis for comparison between different centres, the subsequent FinTech hub ranking, published for the fifth time, aims to assess the quality of different factors of selected international cities in terms of their attractiveness for FinTech companies, as well as to identify certain trends and shifts over time. This is relevant not only for the FinTech sector itself, but also for policymakers that want to understand the drivers of FinTech hub formation in order to improve the conditions for the industry.

Analogous to previous editions, this year's study evaluates in-scope cities against various publicly available indicators, which are classified based on the four PEST dimensions related to the political/legal, economic, social, and technological environment of a FinTech ecosystem. Compared to the previous year, the number of selected cities increases to 35 due to the inclusion of Vilnius (Lithuania). There are also certain changes in terms of the indicators considered. While in the last edition of the FinTech hub ranking the number of indica-

tors amounted to 69, this year a total of 74 indicators are taken into account, of which ten are at a city and 64 at a country level.[1] The indicators newly included in this year's hub ranking are two indicators regarding the extent of financial and investment restrictions to address potential structural conservation of an economy, the total computer software spending as a percentage of GDP, a ranking of the extent to which information and communication technologies enable new organisational models (e.g. remote working) in companies, and a ranking concerning a city's "smartness", measured by the degree to which it provides beneficial technology applications to its residents. In addition, the indicator measuring the quality of a country's labour force is replaced by a similar indicator, i.e. global talent competitiveness, on a city level.

The city rankings on a PEST dimension level as well as the final hub ranking are derived by performing the following four steps:

1. Each of the 74 performance indicators are categorised into one of the four PEST dimensions according to their affiliation.

2. For each indicator, an individual ranking of all the 35 in-scope cities is derived, resulting in 35 individual scores ranging from 1, the city with the worst performance, and 35, the city with the best performance. Missing values are replaced by the average rank of all available indicators of the corresponding city in the respective PEST dimension.

3. For each of the four PEST dimensions, a sub-ranking score is calculated by averaging the affiliated indicator rankings.

4. The overall hub ranking score is derived by aggregating the PEST dimension sub-ranking scores from step three for every in-scope city.

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[1]The considered indicators, their sources, and their affiliation to one of the four PEST dimensions are listed in the Appendix.
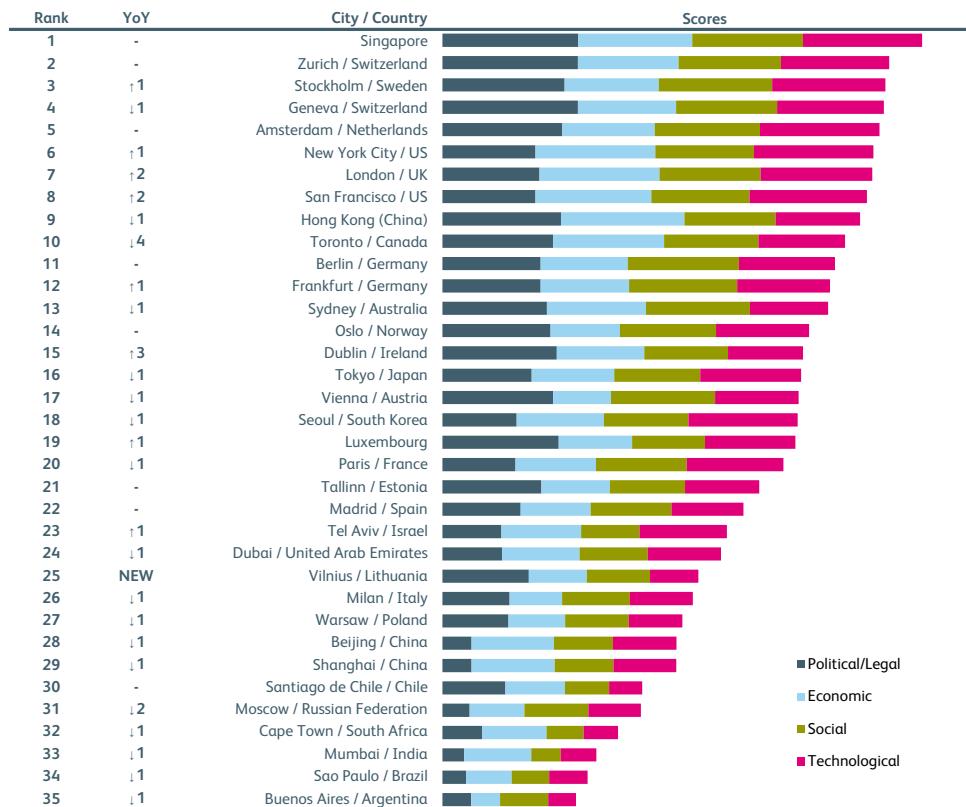
Figure 2.1: FinTech hub ranking

The results of this year's FinTech hub ranking can be found in Figure 2.1, along with the year-over-year changes in positions, and the scores in the four PEST dimensions for each in-scope city. It shows that the composition of the top three has changed for the first time since the first publication of the ranking in the year 2017. While Singapore and Zurich once again claim the top two ranks, the third place is now occupied by Stockholm, replacing Geneva.[2] While Amsterdam maintains its fifth place, there are shifts in the remaining top ten positions. Rank losses are recorded for Hong Kong, which loses one rank and is now in ninth place, and Toronto, which is ranked tenth, four ranks lower than last year and thus reports the largest drop among all in-scope cities. In contrast, New York City, London and San Francisco in positions six to eight improve by one and two ranks, respectively, year-over-year.

Overall, it is important to note that while Singapore takes the lead with a significant margin, the score distances of the remaining top-ranked cities are relatively low, indicating that these cities offer general conditions for the FinTech industry of similar quality. Shifts between these cities thus need to be interpreted with caution.

Figure 2.2 illustrates the changes over time in the ranking scores of the top ten cities, relative to Zurich. It shows how the quality of the environmental factors of the various cities has changed over time in comparison to Zurich, whose performance is therefore by definition characterised by a vertical (magenta) line. The figure reveals that Geneva developed similar to Zurich over time, which is little surprising given that the majority of the indicators considered in the FinTech hub ranking are measured on a country level. Furthermore, it shows that Singapore has a significant lead over the other cities

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[2]Although Zug is the second largest cluster for FinTech companies in Switzerland according to the analyses in Chapter 4, the city is not included in the ranking due to a lack of data at the city level.

and over time exhibits a stable performance compared to Zurich. As for the other cities in the top ten, with the exception of Toronto, Zurich seems to have lost ground in the last two years. In the case of Geneva, which performs similar to Zurich, this has already led to being overtaken by Stockholm. If this trend persists in the coming years, Swiss cities risk losing further positions in the FinTech hub ranking.
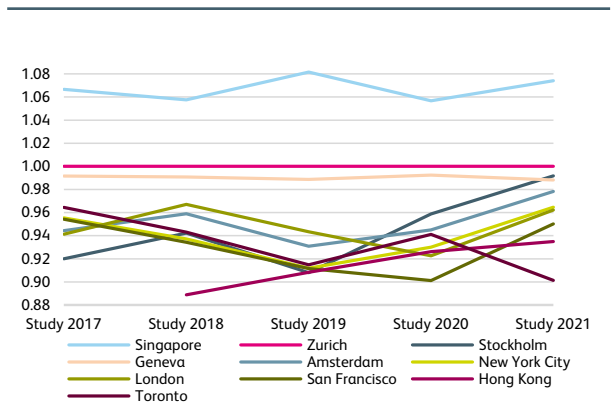

Figure 2.2: Top ten cities total ranking scores relative to Zurich

A breakdown of the declining relative quality of Swiss cities compared to most other cities in the top ten into the four PEST dimensions is provided in Figure 2.3. The figure shows the average ranking score of the two Swiss cities relative to the average score of the other top ten FinTech hubs this year. The significant relative deterioration of the two Swiss cities in the overall FinTech hub ranking is due to a performance decline in the political/legal, economic, and social dimensions. A relative improvement over the previous year's ranking can only be observed in the technological dimension. Over the entire observation period, starting in 2017, it can be seen that the political/legal and technological environment has improved relative to the non-Swiss cities in this year's top ten. With regard to the economic environment, a constant decline can be observed. A downturn is also evident for the social environment in the last two years, with an improved relative performance still observed for the years 2018 and 2019.

While the hub ranking assesses the quality of surrounding conditions for the FinTech industry for selected

cities, it does not make any statement about the size or output of the industries examined. The next paragraphs therefore test the hypothesis of whether better general conditions also tend to be associated with a larger FinTech industry. To measure the output performance of each in-scope country[3], the number of resident FinTech companies per capita, the number of employees in the FinTech sector per capita, and the total financing of FinTech companies per capita are used.[4] The methodology applied to calculate the output scores follows the approach used to compute the FinTech hub ranking. First, each of the three output variables is ranked from 1, the worst-performing country, to 31, the best-performing country. The final output scores are then derived by adding up the ranks of the three output variables per country. The resulting final output score per country is therefore bound between 3, in the case where a country performs worst on each output variable, and 93, in the case where a country performs best on each output variable.
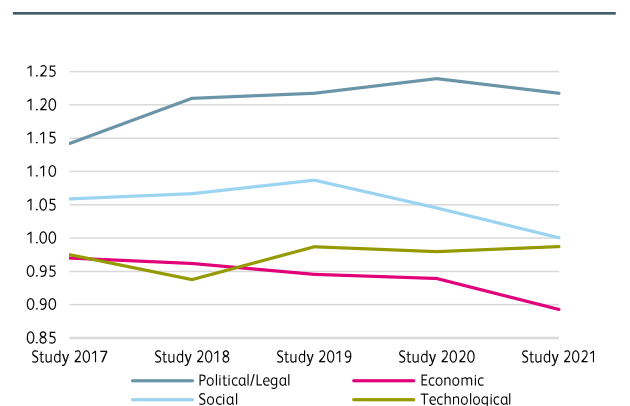

Figure 2.3: Average PEST dimension scores of CH cities relative to dimension scores of remaining this year's top ten cities

In line with the input analysis, Singapore also holds the first place in the output ranking, followed by the equally ranked Estonia and Hong Kong in second place. Other countries in the top ten are, in ascending order, Luxembourg (4th), the United Kingdom (5th), Switzerland (6th), Ireland (7th), Israel (8th), Sweden (8th), and

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[3]Due to the availability of the necessary data, the output performance was calculated on a country level rather than on a city level.
[4]The respective data is sourced from (Crunchbase, 2020).

the U.S. (8th). Of these countries, Hong Kong (improved by 4 ranks) and Sweden (improved by 3 ranks) register the greatest gain in the output ranking year-over-year, while Luxembourg and the United Kingdom record the greatest deterioration, each losing two positions. Switzerland advances by two ranks compared with the previous year.

A comparison of the input[5] and output scores of the in-scope countries is given in Figure 2.4. It reveals that, as hypothesised, there is a positive linear relationship between a country's input and output scores, suggesting that countries with more favourable general conditions tend to have relatively larger FinTech hubs. The figure also includes two regression lines and equations[6] in order to quantify the average linear relationship between the two variables. The first regression estimates a relationship between the countries' in- and output scores of this year's analysis (2021), while the second regression includes the input scores of the previous year (2020) in order to highlight potential lead-lag effects between the quality of general conditions and the relative size of a FinTech hub. While both regression equations reveal positive slope parameters significantly dif-

ferent from zero at the five percent confidence level, indicating that there is a statistically significant positive linear relationship between a country's input and output performance, the size of the coefficient is larger for the second regression evaluating lead-lag effects. This implies that, on average, the quality of surrounding factors of a FinTech ecosystem is positively related to the relative size of the sector. This relationship is stronger when a time lag between the input and output scores is taken into account, which could indicate that a Fin-Tech sector only emerges or grows when the prevailing local conditions are good. However, the R-squared, a measure of the respective model's explanation of the variance in the output score, is slightly lower (50.3 %) than in the regression that includes both input and output scores from this year's analysis (54.9 %). Figure 2.4 also shows that Switzerland's input and output scores are relatively close to the regression lines, implying that the relative size of the Swiss FinTech hub is in proportion to the quality of the local ecosystem's general conditions.

A breakdown of the most highly correlated[7] individual indicators of the input ranking with the output rank-

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[5]For countries in the FinTech hub ranking with more than one city, i.e. China, Germany, Switzerland, and the U.S., the average of the respective cities were used as a proxy for the country score.
[6]Due to lack of significance and an only marginal effect on the R-squared, a statistical measure of how close the data are to the fitted regression line, intercepts in the regression equations are neglected.

[7]When the term correlation is used in this chapter, it always refers to the Pearson correlation. For more information on the method, see Kirch (2008).
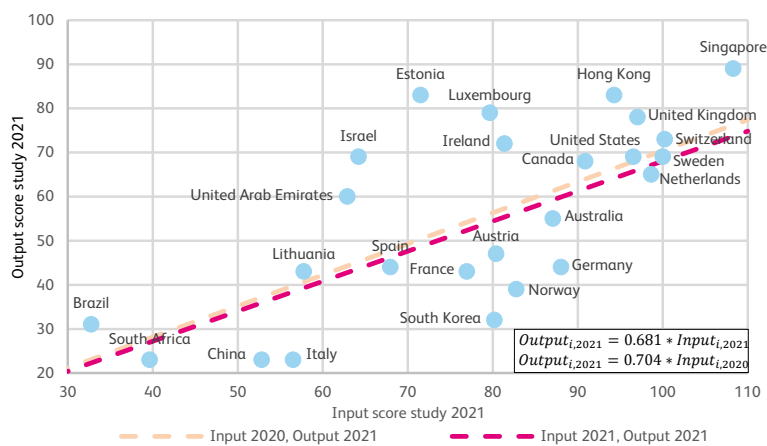

$$Output_{i,2021} = 0.681 * Input_{i,2021}$$
$$Output_{i,2021} = 0.704 * Input_{i,2020}$$

Figure 2.4: Comparison of in- and output-scores of in-scope countries

ing is listed in Table 2.1.[8] Such an analysis may help to identify individual drivers of FinTech hub formation. This, in turn, is important for e.g. policy makers or associations working to improve the general conditions for FinTech companies in order to promote the corresponding sector. It should be noted, however, that correlation is a statistical measure of the linear association of two variables, in the present case the rankings of individual input indicators and the output ranking, which does not necessarily imply causality. Therefore, the analysis should be used as a starting point to identify potential key drivers for the emergence and growth of a local FinTech sector, rather than a direct basis for decision-making. The table shows that the top ten correlated indicators are distributed across all dimensions of the PEST framework. With four of its indicators, the political/legal dimension covers the largest number, followed by the technological dimension (3 indicators), the economic dimension (2 indicators), and the social dimension (1 indicator). With a coefficient of 0.926, venture capital activity[9], with Singapore as the top ranked country, constitutes the indicator with the highest rank correlation with the output ranking. The second indicator from the economic dimension is joint venture activ-

ity on position three, with a coefficient of 0.806 and Canada as the leading country. The second highest correlating indicator (0.815) is affiliated to the political/legal environment and captures the ease of paying taxes for companies, with Hong Kong as the leading country. Hong Kong also leads with regard to two more indicators in Table 2.1 from the political/legal dimension, i.e. the regulatory quality (0.748) and the absence of financial restrictions, measuring the efficiency of the financial sector (0.727). In regard to the latter, Hong Kong shares the leading position with Australia and Switzerland. The last indicator from the political/legal dimension among the top ten correlating indicators is the extent of corruption perceived in a country (0.698). Here, Singapore and Switzerland perform best, i.e. reveal the lowest level of perceived corruption. In terms of the social dimension, the only indicator in the top ten is the level of talent competitiveness, for which Switzerland is in the lead, in fourth position (0.750). Finally, the three indicators assigned to the technological dimension are the extent to which ICTs enable new organisational models such as virtual teams and remote working (0.742), the degree of research collaboration between universities and the industry (0.696), and the extent of app downloads in a country (0.680). While the U.S. holds the top position for the first indicator of the technological dimension, Israel ranks first for the latter two.

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[8]In this case, the indicators from the 2021 FinTech hub ranking are considered. An analysis taking into account the indicators from the 2020 ranking leads to similar results due to their autocorrelative behavior.

[9]See Section 2.3 for an analysis of the venture capital activity in the global and Swiss FinTech sector.

Table 2.1: Correlations between the output scores and individual input indicators

Indicator	Correlation	Leading Country/Countries	PEST Dimension
Venture Capital Deals	0.926	Singapore	Economic
Ease of Paying Taxes	0.815	Hong Kong	Political/Legal
Joint Venture Deals	0.806	Canada	Economic
Talent Competitiveness	0.750	Switzerland	Social
Regulatory Quality	0.748	Hong Kong	Political/Legal
ICT Organisational Models	0.742	U.S.	Technological
Financial Restrictions	0.727	Australia, Hong Kong, Switzerland	Political/Legal
Corruption Perception	0.698	Singapore, Switzerland	Political/Legal
University-Industry Research Collaboration	0.696	Israel	Technological
Mobile App Creation	0.680	Israel	Technological

In summary, there have been significant changes in the FinTech hub ranking, which measures the quality of the surrounding conditions for FinTech companies in a city. Most noticeable is the replacement of Geneva in third place by Stockholm, as well as the improvement of U.S. and UK cities and the deterioration of Toronto. Overall, the relative performance of Swiss cities compared to the other top ten cities has tended to deteriorate in recent years, especially in the social and economic dimensions. A comparison of the input performance with the output of the FinTech sectors of the selected countries has shown that there is a clear positive linear relationship. Good framework conditions therefore seem to be associated with the emergence of a relatively sizable FinTech sector. Further analysis has also shown that although input indicators from all PEST dimensions correlate significantly with the relative size of the selected FinTech hubs, the political/legal, economic, and technological ecosystem appears to be particularly important.

2.2. Political & Legal Environment

By Daniel Haeberli, Benedikt Maurenbrecher & Alexander Wherlock, Attorneys-at-Law, Homburger AG

FinTech companies, which are domiciled in Switzerland or approach Swiss-based clients, need to carefully analyse financial market regulation, in order to determine whether their activities trigger regulatory requirements. Switzerland's[10] regulatory[11] framework governing activities of FinTech companies consists of various federal laws and implementing ordinances. This subchapter outlines the key elements of the relevant Swiss financial market law.

- The *first part* provides an overview of the Financial Services Act (Section 2.2.1.1) and the Financial Institutions Act (Section 2.2.1.2), governing the provision of financial services, offering finan-

cial instruments and the respective licensing requirements in Switzerland

- The *second part* then discusses Switzerland's FinTech specific regulation (Section 2.2.2.1) as well as select federal laws, which may apply to FinTech related activities (Section 2.2.2.2).

- Finally, the *third part* highlights certain aspects of the current framework applicable to Distributed Ledger Technology ("DLT") (Section 2.2.3.1) and summarises the cornerstones of the Swiss DLT law, which will enter into force in the course of 2021 (Section 2.2.3.2).

2.2.1 Swiss Financial Market Architecture – FinSA and FinIA

On 1 January 2020 the Financial Services Act ("FinSA") and the Financial Institutions Act ("FinIA") entered into force.

FinSA primarily sets-outs requirements applicable to the provision of financial services and the offering of financial instruments in Switzerland. FinIA provides for a comprehensive supervisory licensing regime applicable to portfolio managers, trustees, managers of collective investment schemes, fund management companies and securities firms.

FinSA and FinIA impact both "traditional" financial service providers and FinTech companies. For FinTech companies, in particular the following elements may be of importance.

- The provision of portfolio management or investment advice may trigger requirements to comply with rules of conduct (Section 2.2.1.1.2.2) or organisational rules (Section 2.2.1.1.2.3), even if such services are provided into Switzerland on a strict cross-border basis, and portfolio management activities may trigger licensing requirements (Section 2.2.1.2);

- companies trying to obtain funding in Switzerland may need to ensure compliance with the new prospectus regime (Section 2.2.1.1.2.6).

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[10]This chapter does not discuss any regulatory frameworks of jurisdictions other than Switzerland.

[11]This chapter focuses on regulatory aspects. There are other legal aspects which may be relevant for FinTech companies and FinTech related activities such as questions concerning tax law, contract law, intellectual property or data protection. Such legal aspects are not covered herein.

2.2.1.1   Financial Services Act (FinSA)

With regard to FinSA, FinTech companies need to assess in a first step whether their activities are within the scope of application of FinSA (Section 2.2.1.1.1). If this is the case, a series of requirements may apply, in particular with regard to client segmentation, rules of conduct, organisational requirements and prospectuses (Section 2.2.1.1.2). Non-compliance with FinSA requirements may lead to criminal sanctions and fines.[12] Furthermore, if the relevant individual or legal entity is subject to prudential supervision in Switzerland, non-compliance may also have regulatory consequences.

2.2.1.1.1   Scope of Application

FinSA covers financial service providers, client advisers and manufacturers, and providers of financial instruments.[13]

Individuals as well as legal entities qualify as a *Financial Service Provider* and are subject to FinSA, if they provide Financial Services (see definition below) on a commercial basis in Switzerland or to Swiss-based clients.[14] Consequently, a FinTech company must in particular assess the following:

1. are Financial Instruments (see definition below) involved and do the activities constitute Financial Services?

2. are such Financial Services provided on a *commercial basis?*

3. are such Financial Services provided in *Switzerland* or *to Swiss-based clients?*

When assessing whether a specific activity qualifies as a Financial Service under FinSA, in particular the following definitions are of importance:

- *Financial Instruments* under the FinSA are equity and debt securities, including bonds, units in collective investment schemes, structured products, derivatives and certain types of deposits ("Financial Instruments").[15]

- *Financial Services* under the FinSA are the following activities: (1) acquisition or disposal of Financial Instruments, (2) receipt and transmission of orders in relation to Financial Instruments, (3) management of Financial Instruments (portfolio management), (4) provision of personal recommendations on transactions with Financial Instruments (investment advice), and (5) granting of loans to finance transactions with Financial Instruments ("Financial Services").[16]

The mere offering of Financial Instruments does, in principle, not qualify as a Financial Service. However, there is currently only limited guidance with regard to the question under which circumstances a specific activity would be considered as a mere offer and hence not a Financial Service.

A commercial activity is an independent economic activity pursued on a permanent and for-profit basis. Financial Services are presumed to be provided on such commercial basis if the relevant Financial Service Provider (i) either provides Financial Services to more than 20 clients or (ii) promotes the provision of Financial Services in advertisements, prospectuses, circulars or electronic media (irrespective of whether such Financial Service Provider services 20 or less clients).

Financial Services are deemed to be provided in *Switzerland* in particular if the Financial Service Provider is either (i) domiciled in Switzerland or registered in the Swiss commercial register; (ii) domiciled abroad but maintains at least a factual branch or representative office in Switzerland; or (iii) domiciled abroad but sends client advisers to Switzerland, which then address clients in Switzerland (e.g. during road shows).

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[12]Articles 89 et seqq. FinSA.
[13]Article 2 para. 1 FinSA.
[14]Article 3 let. d FinSA.

[15]Article 3 let. a FinSA.
[16]Article 3 let. c FinSA. Note: Article 3 para. 3 FinSO exempts from the definition of Financial Services the provision of advice regarding the structuring or raising of capital as well as the provision of advice in the context of mergers and acquisitions or the acquisition or sale of participations and the services related to such advice.

In any case it must be noted that for the purposes of FinSA, having a physical presence in Switzerland is not required - FINSA will also be applicable in constellations in which Financial Services are rendered to *Swiss-based clients*, i.e. on a strict cross-border basis.

The latter, in particular, has an impact on FinTech companies domiciled abroad, which to date engage in activities in the Swiss market without maintaining a physical presence in Switzerland. For example, such a foreign FinTech company providing online services relating to portfolio management or investment advice to Swiss-based clients may be subject to requirements under FinSA. In this context, it must be noted that the requirements under the FinSA largely mirror requirements set out in corresponding regulation of the European Union ("EU")[17], but that there are nonetheless notable differences and therefore a FinTech company compliant with EU rules is not automatically compliant with Swiss rules.

However, there are certain exemptions under FinSA, specifically applicable to Financial Service Providers domiciled outside of Switzerland. Pursuant to a reverse-solicitation exemption, the FinSA does for example not apply to:

- Financial Services provided by a foreign Financial Service Provider as part of a previously existing client relationship (e.g. an existing portfolio management or investment advisory agreement) that was entered into at the express initiative of a Swiss-based client; and

- Financial Services provided by a foreign Financial Services Provider that have been expressly requested by a Swiss-based client on such client's own initiative.[18]

2.2.1.1.2   Key Elements

Key elements set out under FinSA concern client segmentation (Section 2.2.1.1.2.1), rules of conduct (Section 2.2.1.1.2.2), organisation (Section 2.2.1.1.2.3),

client advisers (Section 2.2.1.1.2.4), the ombudsman scheme (Section 2.2.1.1.2.5) and prospectuses (Section 2.2.1.1.2.6).

Most requirements set-out under FinSA are subject to a two-year phase-in period and must therefore be adhered to by the latest from 1 January 2022.

2.2.1.1.2.1   Client Segmentation – Retail / Professional / Institutional

If a FinTech company qualifies as a Financial Service Provider, it needs to allocate each of its clients – as part of the onboarding process – to one of the following client segments: retail, professional or institutional:[19]

1. *Retail Clients*, also referred to as private clients, are all clients that do not qualify as Professional Clients (as defined below).

2. *Professional Clients* are: (a) financial intermediaries as defined in the Swiss Banking Act, the Swiss Financial Institutions Act and the Swiss Collective Investment Schemes Act; (b) insurance companies as defined in the Swiss Insurance Supervision Act; (c) foreign clients subject to prudential supervision equivalent to the financial intermediaries and insurance companies within the meaning of let. (a) and let. (b); (d) central banks; (e) public entities with professional treasury operations; (f) occupational pension schemes, and other institutions whose purpose is to serve occupational pensions, with professional treasury operations; (g) companies with professional treasury operations; (h) large companies (companies which exceed two of the following parameters: (1) balance sheet total of CHF 20 million, (2) turnover of CHF 40 million and (3) equity of CHF 2 million); and (i) private investment structures with professional treasury operations created for high-net-worth Retail Clients.

3. *Institutional Clients* are Professional Clients as defined in 2. (a)-(d) above, as well as national and

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[17]MiFID II, Prospectus Directive, PRIIPs.
[18]Article 2 para. 2 FinSo.

[19]Article 4 FinSA.

supranational public entities with professional treasury operations.

Depending on the client segment, different duties and hence different levels of "client protection" will apply. Consequently, in order to limit the impacts of FinSA, a FinTech company may opt to restrict its activities to Professional Clients and / or Institutional Clients.

Some clients can declare that they waive certain client protection provisions (so-called "opting out") and some other clients can declare that they want to benefit from a higher level of protection (so-called "opting in").[20]

Any such declaration to "opt-out" or "opt-in" must be in writing (e.g. a physical letter) or in another manner verifiable by text (e.g. an email or WhatsApp message).[21]

The client segmentation requirement under FinSA is subject to a two-year phase-in period. It will therefore apply as of 1 January 2022 only.[22]

2.2.1.1.2.2   Rules of Conduct

The FinSA sets out rules of conduct, which namely cover A) information duties, B) suitability and appropriateness checks, C) documentation and accountability duties as well as D) duties regarding transparency and due care.

A) *Information Duties* The information duties aim at providing clients a comprehensive and transparent overview of the services and products offered by the Financial Service Provider. There are general and specific duties and information may be provided either in writing or electronically, e.g. via a website. If provided electronically, it must be ensured, however, that clients may at all times access, download and save such information to a durable medium (e.g. a hard disk).[23]

Depending on the respective client segmentation, different information duties will apply. In constellations in which Financial Services are provided to Retail Clients, the information duties apply to the full extent. Professional Clients, on the other hand, may waive general information duties.[24] Where Financial Services are provided to Institutional Clients, the information duties under FinSA are not applicable.[25]

B) *Suitability and Appropriateness* If a FinTech company provides portfolio management services or renders investment advice, it must meet the appropriateness or suitability test requirements set out under FinSA, also if such services are (in whole or in part) provided through an automated or semi-automated "robo-advice" system.

- Suitability: When providing portfolio management services or rendering investment advice under consideration of the client's entire portfolio (so-called "Portfolio-Related Investment Advice"), a Financial Service Provider must enquire about the relevant client's financial situation and investment objectives as well as its knowledge and experience.[26]

- Appropriateness: When rendering investment advice for individual transactions without taking into account the client's entire portfolio (so-called "Transaction-Related Investment Advice"), a Financial Service Provider must obtain information on the client's knowledge and experience and must ensure, before recommending a Financial Instrument, that the recommendation is appropriate for such client.[27]

- If a Financial Service Provider is only involved in the mere execution or transmission of a client order, the Financial Service Provider is not required to conduct such suit-

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[20] Article 5 FinSA.
[21] Article 5 para. 8 FinSA.
[22] Article 103 para. 1 FinSO.
[23] Article 9 para. 3 FinSA and article 12 FinSO.

[24] Article 20 para. 2 FinSA.
[25] Article 20 para. 1 FinSA.
[26] Article 12 FinSA.
[27] Article 11 FinSA.

ability or appropriateness checks.[28] Nevertheless, prior to providing mere execution or transmission services, the client needs to be informed that no appropriateness or suitability checks will be performed.[29]

If Retail Clients are involved, these duties apply to the full extent. With regard to Professional Clients, certain alleviations are set out under FinSA: a Financial Service Provider may, unless there are indications to the contrary, in particular, assume that Professional Clients have sufficient knowledge and experience as well as the capacity to bear the risks underlying the Financial Service in question when conducting the suitability and appropriateness checks.[30] For Institutional Clients, FinSA provides for a blanket non-application of the information duties.[31]

C) *Documentation and Accountability Duties* FinSA namely requires Financial Service Providers to record and document (i) the information collected from the client and the services provided in Switzerland or to clients in Switzerland as well as (ii) the results of suitability and appropriateness checks.[32] Generally, Financial Service Providers are free how they organise such documentation and purely digital solutions are possible.[33] In any case, however, a Financial Service Provider must be in a position to render account to a client within, as a rule, ten business days after a client requested to obtain his files. Furthermore, the relevant records and documents must be stored for at least ten years.[34]

If Retail Clients are involved, the duties concerning documentation and accountability apply to the full extent. Professional Clients may waive

such duties to a certain extent.[35] For Institutional Clients, the FinSA provides for a blanket non-application of the information duties.[36]

D) *Transparency and Due Care* Financial Service Providers must uphold the principles of good faith and equal treatment. They must implement systems and procedures that are appropriate with regard to their size, complexity and business activities and ensure the protection of clients' interests and the equal treatment of their clients. In particular, they must ensure (i) that client orders are registered and allocated promptly and correctly, (ii) that comparable orders are executed in the order in which they were received, unless this is not in the client's interest or not possible due to the nature of the client's order or the market conditions, (iii) that in case orders are pooled, the interests of the clients involved are safeguarded and (iv) that Retail Clients are informed of any material difficulties which could affect the correct execution of their orders.[37]

Furthermore, FinSA requires that client orders are executed in the best interest of the client. Financial Service Providers must ensure the best execution of client orders in terms of cost (taking into account, *inter alia*, any inducements provided by third parties), timing and quality. In order to satisfy this requirement, Financial Service Providers must define and annually review the criteria necessary for the selection of the execution venue (in particular, the price, costs, efficiency and probability of the execution and settlement) and implement appropriate internal directives.[38]

If Retail Clients or Professional Clients are involved, the duties concerning transparency and due care apply to the full extent. For Institutional Clients, FinSA provides for a blanket non-application of the information duties.[39]

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[28] Article 13 para. 1 FinSA.
[29] Article 13 para. 2 FinSA.
[30] Article 13 para. 3 FinSA.
[31] Article 20 para. 1 FinSA.
[32] Article 15 para. 1 FinSA; Dispatch FinSA | FinIA, 8959. Cf. article 25 paras. 5 et seqq. MiFID II.
[33] Dispatch FinSA | FinIA, 8959 et seq; Pre-consultation report FinSO, 27.
[34] Article 18 FinSO; Dispatch FinSA | FinIA, 8959 et seq.

[35] Article 20 para. 2 FinSA.
[36] Article 20 para. 1 FinSA.
[37] Article 17 FinSA and article 20 FinSO.
[38] Article 18 FinSA and article 21 FinSO.
[39] Article 20 para. 1 FinSA.

2.2.1.1.2.3   Organisation

Financial Service Providers must ensure that they fulfil their duties under FinSA through internal regulations and an appropriate organisation of operations. They must namely (i) define internal rules that are appropriate with respect to their size, complexity and legal form, as well as in relation the Financial Services they offer and the risks associated therewith; and (ii) select their employees carefully and ensure that they receive training in the rules of conduct as well as in the skills they need to carry out their specific tasks.[40] Furthermore, FinSA provides for organisational requirements with regard to outsourcing,[41] conflicts of interest,[42] payments from third parties ("inducements" or "kick-backs")[43], and employee transactions[44].

To date, there remains significant legal uncertainty concerning the question whether the organisational requirements set out under FinSA only apply to Swiss Financial Service Providers or to Financial Service Providers domiciled outside of Switzerland as well.

The organisational requirements are subject to a two-year phase-in period and therefore apply as of 1 January 2022 only.[45]

2.2.1.1.2.4   Client Advisers

Under FinSA, "Client Advisers" and "Financial Service Providers" must be strictly kept apart: Client Advisers are *natural persons* (i.e. not legal entities) that render Financial Services either on behalf of a Financial Service Provider or in their own capacity as a Financial Service Provider.

With regard to Client Adviser, the following aspects must be kept in mind:

- *Knowledge and Expertise of Client Advisers:* If a FinTech company qualifies as a Financial Service

Provider, its Client Advisers will need to possess the required knowledge with regard to the Swiss rules of conduct (see Section 2.2.1.1.2.2 above) and a level of expertise appropriate for their activities. This requirement is subject to a two-year phase-in period and will therefore apply as of 1 January 2022 only.[46] If a foreign Financial Services Provider acts on a strict cross-border basis, such Swiss requirements regarding knowledge and expertise are, in our view, only applicable to Client Advisers that actually render Financial Services to Swiss-based clients. Nonetheless, most foreign Financial Service Providers will likely need to establish a "Swiss Desk", i.e. designate specific employees / Client Advisers that are familiar with the Swiss rules of conduct and meet all requirements set out under FinSA.[47]

- *Client Adviser Register:* The following Client Advisers are required to be registered in the so-called Client Adviser Register (Beraterregister) in order to be allowed to carry out their activity in Switzerland: (i) Client Advisers of Swiss Financial Service Providers, which are not subject to prudential supervision (i.e. independent client advisers) and (ii) Client Advisers of foreign Financial Service Providers, which are either not subject to prudential supervision abroad or which provide Financial Services to Swiss-based Retail Clients.

Persons having only very limited contact with clients or potential investors do not qualify as Client Advisers and are thus not subject to the requirements regarding knowledge and expertise as well as the Client Adviser Register. The same applies to employees of a Financial Service Providers that merely support the provision of Financial Services. Examples of such supporting activities include, *inter alia*, the dispatch of product documentation following the expression of interest by a client, the arrangement of meetings with his Client Ad-

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[40] Article 21 et seq. FinSA and art. 23 FinSO.
[41] Article 23 et seq. FinSA.
[42] Article 25 FinSA.
[43] Article 26 FinSA.
[44] Article 27 FinSA.
[45] Article 106 para. 1 FinSO.

[46] Article 104 FinSO.
[47] Client Advisers of foreign Financial Service Providers that are subject to prudential supervision abroad are exempted from this registration requirement to the extent that their activities in Switzerland are directed exclusively at Institutional Clients and / or Professional Clients (Article 31 FinSO).

viser or the support of technical procedures with respect to electronic customer portals or websites of a Financial Service Provider.

In July 2020, *FINMA* authorised the first registration bodies tasked with the management and maintenance of the Client Adviser Register.[48]

2.2.1.1.2.5   Ombudsman Scheme

Financial Service Providers are required to accede to the Swiss ombudsman scheme.[49] This requirement is subject to a phase-in period of six months,[50] which commenced with the recognition by the Federal *Department of Finance* of the approved ombudsmen.[51, 52]

2.2.1.1.2.6   Prospectus Requirements

FinSA sets-out a comprehensive prospectus regime, which *inter alia* provides for an ex-ante approval requirement for prospectuses if Financial Instruments are publicly offered or admitted to trading in Switzerland. To date BX Swiss AG and SIX Exchange Regulation AG have been approved by *FINMA* as Reviewing Bodies' under *FINMA*, tasked with the review and approval of prospectuses.

In principle, the requirement to publish an approved prospectus applies to all public offerings in or into Switzerland and to all securities that are to be admitted to trading on a trading venue (see Section 2.2.2.2.2 below) in Switzerland. However, FinSA contains a series of exemptions and there is for example no requirement to prepare a prospectus if the public offering is addressed exclusively at Professional Investors or if it is directed at fewer than 500 investors.

Under FinSA, an offer is any invitation to purchase a Financial Instrument, if such invitation contains sufficient information on the terms and conditions of the offer and the Financial Instrument itself.[53] Therefore,

FinTech companies providing information relating to Financial Instruments on an internet-based platform must in particular take into account the following:

- The publication of information relating to Financial Instruments on a platform alone should not per se be regarded as an offer but the manner in which access to the platform is structured will be decisive.

- If information on the Financial Instrument can only be accessed by the interested client / investor on an internet-based platform via a search entry (e.g. when searching for ISIN / Valor or product name), no offer from the FinTech company operating this internet-based platform (reverse solicitation) will be deemed to have been made. The result of the search should not have any other legal consequences than an (oral or written) information on a financial instrument at the request of an interested investor.

- Also, if the client / investor must first log in with his password on an internet-based platform, it can be assumed that no offer will be made by the FinTech company operating this internet-based platform.

- However, it must be noted that in both scenarios mentioned above, a reverse solicitation constellation will only be at hand if no advertising by the "provider" or one of its representatives in relation to the specific Financial Instrument preceded the actions of the investor.[54]

2.2.1.2   Financial Institutions Act (FinIA)

FinIA sets out a comprehensive licensing regime for financial institutions. *Financial Institutions* within the meaning of FinIA are: (1) portfolio managers; (2) trustees; (3) managers of collective assets; (4) fund management companies and (5) securities firms (formerly securities dealers).

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[48]See FINMA (n.d.-a).
[49]Article 77 FinSA.
[50]Article 95 para. 3 FinSA.
[51]See Federal Department of Finance (2021).
[52]Article 108 FinSO.
[53]Article 3 let. g FinSA.

[54]Article 3 para. 6 let. a FinSO.

Instead of a sectorial approach, FinIA provides for a "pyramid approach", implementing a rather light touch regulation for portfolio managers and trustees and increasingly stricter regimes for managers of collective assets, fund management companies and securities firms.

FinIA defines common core requirements that must be met by all Financial Institutions. All Financial Institutions regulated under FinIA must for example implement an appropriate organisation (risk management, effective internal control system, etc.) and must be effectively managed in Switzerland. Furthermore, both the Financial Institution itself as well as the persons in charge of their administration and management must meet the regulatory fit and proper test and must therefore have a good reputation and ensure proper business conduct.

For FinTech companies, the key aspects of FinIA are the following:

- *Portfolio managers* (e.g. independent external asset managers) are subject to prudential supervision. Such supervision will be conducted by an independent supervisory organisation (Aufsichtsorganisation) that itself will be licensed by *FINMA* for this purpose. In July 2020 *FINMA* authorised the first supervisory organisations for portfolio managers.[55]

- *Securities firms* require a license from *FINMA* and are subject to supervision as well as a series of specific regulations. A FinTech company will qualify as a securities firm within the meaning of FinIA if it engages, on a commercial basis, in either (a) dealing in securities in its own name but on its clients' account, or (b) short-term transactions in securities on its own account and either thereby potentially affects systemic stability or acts as a participant on a trading venue, or (c) market making activities by engaging in short-term transactions in securities while setting public bid and ask prices (permanently or on re-

quest).[56] Depending on the relevant business model and activities, FinTech companies may in particular qualify as own-account dealers.

As far as regulatory licensing requirements are concerned, the Swiss regime is largely based on the so-called principle of territoriality (*Territorialitätsprinzip*). Therefore, as long as a FinTech company is domiciled abroad and provides Financial Services into Switzerland on a strict cross-border basis, i.e. without establishing a physical presence in Switzerland, such activities (with a few exceptions) will not trigger Swiss regulatory licensing requirements under FinIA. Such activities may, however, be subject to the requirements under FinSA (see Section 2.2.1.1 above).

2.2.2 Other Key Regulation

This subchapter summarises key elements of the Swiss FinTech Specific Regulation (Section 2.2.2.1) and provides an overview on select Swiss federal laws (Section 2.2.2.2), which may – besides FinSA and FinIA (see Section 2.2.1 above) – be applicable to FinTech related activities.

2.2.2.1 FinTech Specific Regulation

The Swiss FinTech specific regulation comprises three "pillars": the so-called FinTech license (Section 2.2.2.1.1), a regulatory innovation area ("sandbox") (Section 2.2.2.1.2) and the settlement account exemption (Section 2.2.2.1.3).

2.2.2.1.1 FinTech License

Since 1 January 2019 the Swiss Banking Act ("BA") provides for two licensing categories (i) the regular banking license and (ii) the FinTech license pursuant to Article 1b BA, (also referred to as "banking license light").

Before the FinTech license was introduced, only formally licensed banks were permitted to (i) accept deposits from the public on a professional basis or to (ii) recommend themselves for such deposit taking activities. Given that generally all repayment-liabilities vis-

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[55]See FINMA (n.d.-b).

[56]Article 41 FinIA.

à-vis clients qualify as *deposits* and since accepting deposits from more than 20 persons will qualify as acting on a *professional basis* (see Section 2.2.2.2.1 below), certain business models of FinTech companies would have required a regular banking license under the BA.

With the FinTech license, companies not engaging in the classic banking business (interest rate differential business; *Zinsdifferenzgeschäft*), e.g. by using short-term deposits for long-term lending or investment activities, now have a viable alternative. The FinTech license is attractive for companies that are mainly active in the financial sector but which (i) may limit their operations to accepting deposits of less than CHF 100 million and which (ii) do not invest the accepted funds nor pay interest thereon. Hence, the license may for example be attractive for companies offering payment services or platform funding services.

However, there are a number of aspects that have to be taken into account when considering applying for a FinTech license. In order to obtain the license from *FINMA*, the company must go through a rather lengthy (depending in particular on the complexity of the business model and the quality of the license application) approval process , which is, however, less burdensome than the licensing process[57] for a regular banking license. In this process, the company will namely be required to evidence that it meets requirements regarding (i) organisation and financial and regulatory audits, (ii) corporate governance (the board of directors must for example consist of at least three persons) and (iii) capital (e.g. minimum capital of 3 % of the deposits accepted from the public, i.e. up to CHF 3 million, but at least CHF 300,000).

Furthermore, once the FinTech license has been granted by FINMA, any deposits held by the company must be either (i) segregated from the assets of the company or (ii) recorded in the company's books in such a manner that they can be shown separately from the company's own funds at any time (if the company opts for the latter option, a more comprehensive audit is required).[58]

If the maximum deposit threshold of CHF 100 million is exceeded, the company must notify *FINMA* within 10 days and must submit a regular bank license application within 90 days.[59]

Finally, holders of a FinTech license are required to comprehensively inform their clients about the risks of their business model, their services and the technologies used. Furthermore, the company's clients must be informed that their deposits with the company are not protected by the Swiss deposit insurance regime. Solely mentioning this information in general terms and conditions is insufficient and if the information is made available electronically, it must be ensured that clients may at any time view, download and save such information. Also, the information must be made available *prior* to entering into the agreement with the client and the client must have had enough time to understand the information prior to concluding the contract.[60]

2.2.2.1.2   "Sandbox"

The "sandbox" exemption allows engaging in activities which under former regulation would have triggered bank licensing requirements. Companies accepting deposits from the public are deemed *not* to be acting on a commercial basis, provided

(i) the deposits accepted do not exceed the threshold of CHF 1 million;

(ii) the company does not engage in the interest rate difference business (*Zinsdifferenzgeschäft*); and

(iii) the clients are informed prior to depositing the funds that the company accepting the funds is not supervised by *FINMA* and that the funds are not protected by the Swiss deposit insurance regime.

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[57] See the *FINMA* guidelines for FinTech license applications (FINMA, 2018) (version of 3 December 2018), which are available in German, French as well as English.

[58] Article 14f BO.
[59] Article 1b para. 6 BA.
[60] Article 7a BO.

Under the current regulation, it is allowed to invest the deposits accepted, provided that the threshold of CHF 1 million is not exceeded and that the company does not engage in the interest rate difference business.

If the deposit threshold of CHF 1 million is exceeded, the company must notify *FINMA* within 10 days and must – in each case depending on the respective activities – either submit a regular bank license application or a FinTech-license application within 30 days.

During the interim period between the filing of the license application and *FINMA*'s decision on the request, the other conditions still need to be met, i.e. no interest may be paid on such deposits and the information duties vis-à-vis depositors must be satisfied. Also, *FINMA* may on a case by case basis decide that no further deposits may be accepted until the end of the license application process.[61]

If the company decides to inform its customers about the lack of *FINMA* supervision and the lack of deposit insurance protection via its website, certain requirements must be met. First, the information must be displayed separately from other information. Therefore, solely mentioning it in general terms and conditions is insufficient. Second, this information must be displayed in text and in reproducible form. Third, the company's customers need to expressly confirm that they took note of the information.

The "sandbox" exemption is designed to create a regulatory safe harbour, where FinTech companies, in particular, are able to test their business ideas and provide certain financial services without becoming a regulated entity under Swiss banking regulation. However, it must be noted that companies engaging in activities within the "sandbox" are still likely to be subject to anti-money laundering regulation (see Section 2.2.2.2.4 below) and may therefore nonetheless need to adhere to certain regulatory requirements under Swiss law. Therefore, the "sandbox" should not be misunderstood as a "regulation free" area.

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[61] Article 6 para. 4 BO.

2.2.2.1.3   Settlement Accounts Exemption

Funds held in customer accounts of securities firms, precious metal dealers, portfolio managers or similar companies which exclusively serve the purpose of settling customer transactions do not qualify as deposits within the meaning of the BA and therefore do not trigger bank licensing requirements, provided the funds are not interest-bearing and are forwarded within 60 days. The exemption, in particular, facilitates the operation of funding platforms.

2.2.2.2   Select Federal Laws

The Swiss regulatory framework relevant for FinTech companies is, apart from the FinSA (see Section 3.1.1.1 above) and FinIA (see Section 3.1.1.2 above), in particular shaped by the following federal laws and their implementing ordinances:

- the *Banking Act* ("BA"), which regulates banking activities / deposit taking as well as the supervision of banks and of holders of FinTech licenses (see Section 3.1.2.1.1 above);

- the *Financial Market Infrastructure Act* ("FMIA"), which governs the organisation and operation of financial market infrastructures (inter alia, trading venues and payment systems) and the conduct of financial market participants in securities and derivatives trading;

- the *Anti-Money Laundering Act* ("AMLA"), which regulates the prevention of money laundering and terrorist financing and the due diligence in financial relationships and transactions;

- the *Consumer Credit Act* ("CCA"), which governs consumer credits, i.e. loans granted on a professional basis to individuals for purposes other than business or commercial activities; and

- the *Collective Investment Schemes Act* ("CISA"), which governs in particular the approval requirement for foreign and Swiss collective investment schemes.

The following subsections provide a high-level overview of this regulatory framework applicable to banks (Section 2.2.2.2.1), trading facilities (Section 2.2.2.2.2), payment systems (Section 2.2.2.2.3), anti-money laundering (Section 2.2.2.2.4), consumer credits (Section 2.2.2.2.5) and collective investment schemes (Section 2.2.2.2.6).

2.2.2.2.1 Banks

In Switzerland, only licensed banks and holders of FinTech licenses (see Section 2.2.2.1.1 above) are permitted to accept deposits from the public on a professional basis or to recommend themselves for such deposit taking activities.[62] Furthermore, only licensed banks (not holders of a FinTech license) may use or refer to the term "bank" or "banker" in their company name, their company purpose or in advertisement documentation.[63] Any unauthorised acceptance of deposits or advertising of such services may be subject to criminal sanctions.[64]

Generally, a company is considered to be a bank,[65]:

(i) if it is mainly active in the financial sector; and

(ii) if it accepts deposits from the public in an amount higher than CHF 100 million on a professional basis or recommends itself publicly fir such deposit taking activities;[66] or accepts deposits from the public in an amount of *up* to CHF 100 million on a professional basis or recommends itself publicly for this purpose and reinvests these deposits or pays interest thereon.[67]

A company is considered to be *active in the financial sector* if it renders or procures financial services, in particular, by engaging in the deposit taking or lending business, securities trading, investment or portfolio management for itself or for third parties.[68] Deposit taking is generally deemed to be performed on a professional basis (see "sandbox" exemption; Section 3.1.2.1.2 above), if an individual or legal entity (a) continuously accepts more than 20 deposits from the public or (b) recommends itself publicly for such deposit taking activities (regardless of whether the company actually continuously holds more than 20 deposits from the public or not).[69]

Generally, all repayment-*liabilities* via-à-vis clients qualify as deposits within the meaning of the BA.[70] There are, however, a number of exemptions. Amongst others, the following liabilities are exempt, i.e. do not qualify as deposits:[71]

- funds provided in consideration of a contract providing for the transfer of property or the rendering of a service (e.g. prepayments that form part of the consideration for a purchase agreement are exempt, but granting a loan with a duty to repay is not exempt);

- funds which are transferred as a security;

- credit balances on client accounts of securities dealers, precious metal dealers, portfolio managers or similar companies which solely serve the purpose of the settlement of client transactions, provided no interest is paid on these funds and provided they are forwarded within 60 days;

- funds that to a small extent are transferred to a payment instrument or a payment system and that are exclusively used for future purchases of goods or services, provided no interest is paid on these funds;

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[62] Article 1a and 1b BA.

[63] Article 1 para. 4 BA.

[64] Article 46 and 49 BA; Article 44 FINMASA.

[65] Companies are also considered to be banks if they refinance themselves significantly with loans from several banks that do not own any qualified / significant shareholdings in them in order to finance any number of persons or companies with which they do not form an economic unit of their own and in any manner possible; see article 1a let. c BA.

[66] Article 1a let. a BA.

[67] Article 1a let. b BA.

[68] Article 4 para. 1 let. a BO. Furthermore, holding companies owning predominantly participations in companies active in the financial sector are themselves considered active in the financial sector; article 4 para. 1 let. b BO. Finally, significant group companies (Wesentliche Gruppengesellschaften) as defined in article 3a BO are deemed to be active in the financial sector too; article 4 para. 1 let. c BO.

[69] Article 6 para. 1 BO.

[70] Article 5 para. 1 BO; FINMA-Circular 2008/3, para. 10.

[71] Article 5 para. 3 BO.

- bonds and other debt instruments that are standardised and issued *en masse* or uncertificated rights with the same function (book-entry securities) if, at the time of the offer, investors are informed in a certain form[72] about (1) the name, registered office and the purpose of the issuer as set out in a brief description, (2) the interest rate, issue price, subscription period, payment date, maturity and redemption terms, (3) the most recent annual financial statements and consolidated financial statements together with the audit report and, if more than six months have passed since the balance sheet date, the interim financial statements, if any, of the issuer and the guarantor, (4) the collateral provided and (5) the representation of bondholders, insofar as this is included in the investment conditions.

Furthermore, the following deposits are *not* considered to be deposits *from the public:*[73]

- deposits from domestic and foreign banks or other companies under state oversight;

- deposits from shareholders owning qualified shareholdings (more than 10 % of the share capital or the votes) in the debtor and any parties affiliated or related with such shareholders;

- deposits from institutional investors with professional treasury departments.

Activities of FinTech companies may involve accepting deposits from the public (e.g. if a FinTech company accepts funds from investors and subsequently transfers funds to its clients). In order to reduce the risk that such activities qualify as regulated deposit taking under the BA, the following should be considered:

- FinTech companies may decide to refrain from accepting any funds in the first place.

- If deposits are involved, the FinTech company may want to stay within the scope of appli-

cation of the "sandbox" exemption (see Section 2.2.2.1.2 above) or it may want to avoid accepting more than 20 deposits from the public and refrain from recommending itself publicly for this purpose.[74]

- If deposits are involved, the FinTech company can try to ensure that only exempt liabilities are in fact involved. This would, for example, be the case if credit balances on client accounts solely serve the purpose of the settlement of client transactions and if no interest is paid on these funds.[75]

- FinTech companies can also decide to issue bonds or other debt instruments and, at the time of the offer, to inform investors in compliance with article 5 para. 3 let. b BO as well as article 64 para. 3 FinSA (see above).

- Finally, FinTech companies can consider obtaining a FinTech license (see Section 2.2.2.1.1 above), which allows them to accept deposits from the public up to CHF 100 million.

2.2.2.2.2   Trading Facilities

Trading venues, i.e. stock exchanges and multilateral trading facilities, are regulated financial market infrastructures under FMIA.[76] They require a license from *FINMA*[77] and are subject to a series of specific regulations.

- A stock exchange is an institution for multilateral securities trading *where securities are listed* and whose purpose is the simultaneous exchange of bids between several participants and the conclusion of contracts based on non-discretionary rules.[78]

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[72]See article 64 para. 3 FinSA. E.g. electronically via the issuer's website.
[73]Article 5 para. 2 BO.
[74]Whether for example the mere publication of credit requests via crowdlending platforms constitutes a public recommendation to accept deposits is still open. To our knowledge, *FINMA* does not seem to be interpreting the law this way.
[75]Article 5 para. 3 let. c BO; See also the *FINMA* Fact sheet Crowdfunding (2020).
[76]Article 2 let. a sec. 1 and 2 FMIA.
[77]Article 4 para. 1 FMIA.
[78]Article 26 let. b FMIA.

- A multilateral trading facility is an institution for multilateral securities trading whose purpose is the simultaneous exchange of bids between several participants and the conclusion of contracts based on non-discretionary rules *without listing securities*.[79]

Hence, the key difference between the two types of trading venues is that at a stock exchange *listed* securities are being traded whereas at a multilateral trading facility *unlisted* securities are being traded.

Under Swiss law, "securities" (*Effekten*) are instruments, which are:

(i) standardised;

(ii) suitable for mass trading and;

(iii) either certificated securities (*Wertpapiere*), uncertificated securities (*Wertrechte*), derivatives[80] or intermediated securities (*Bucheffekten*).[81]

Typical examples of securities include not only shares, bonds, notes and other debt instruments, but may for example also include participations and / or sub-participations in a loan if such participations and / or sub-participations are standardised and suitable for mass trading.

An instrument is deemed to be standardised and suitable for mass trading if it is (a) either publicly offered and has the same structure (interest, maturity) and denomination (amount) or (b) if it is placed with more than 20 investors and has not been specifically created for a particular counterparty / investor.[82] It is important to note that not only listed instruments but also unlisted instruments qualify as securities.

Even if no securities are traded, an institution or trading platform can still qualify as a so-called organised trad-

ing facility ("OTF"). OTFs[83] within the meaning of FMIA are establishments for:

- multilateral trading in securities or other financial instruments whose purpose is the exchange of bids and the conclusion of contracts based on discretionary rules;

- multilateral trading in financial instruments other than securities whose purpose is the exchange of bids and the conclusion of contracts based on non-discretionary rules;[84] and

- bilateral trading in securities or other financial instruments whose purpose is the exchange of bids.

FinTech companies operating a platform that allows for trading of shares, standardised debt instruments or other financial instruments, including securities issued in the form of tokens (see Section 2.2.3.1 below), might qualify as regulated trading venues. Should a particular business model include such activities, the main question will oftentimes be whether the relevant FinTech company qualifies as an MTF (if securities are involved) or as an OTF, and hence requires a license as a bank, securities firm or trading venue.[85]

2.2.2.2.3 Payment Systems

Payment systems are regulated financial market infrastructures under FMIA.[86] A payment system is "an entity that clears and settles payment obligations based on uniform rules and procedures".[87]

Specific duties of payment systems (e.g. regarding settlement and liquidity) have been set out in the implementing ordinance of the FMIA.[88] A payment system (see with regard to the "Libra"[89] project Section 2.2.3.1

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[79] Article 26 let. c FMIA.

[80] Derivatives are "financial contracts whose value depends on one or several underlying assets and which are not cash transactions". See article 2 let. c FMIA and article 2 paras. 2 to 4 of the Financial Market Infrastructure Ordinance ("FMIO").

[81] Article 2 let. b FMIA and article 3 let. b FinSA.

[82] See article 2 para. 1 FMIO.

[83] Article 42 FMIA.

[84] The term "non-discretionary rules" means that the operator of the trading facility has no discretion as to how interests may interact. Hence, the operator of the trading facility does not have discretion over how a transaction is to be executed.

[85] Article 43 para. 1 et seq. FMIA.

[86] Article 2 let. a sec. 6 FMIA.

[87] Article 81 FMIA.

[88] Article 82 FMIA i.c.w. article 66 et seqq. FMIO.

[89] In December 2020, the *Facebook*-backed *Libra Association* announced that it is renaming itself to "Diem".

below) requires a license from *FINMA*[90] if (a) this is necessary for the proper functioning of the financial market or the protection of financial market participants and (b) if the payment system is not operated by a bank.

Operating a payment system may involve deposit taking. However, there is a "safe harbour rule"[91] which may be applicable to FinTech companies in this context. Funds that to a small extent are transferred into a payment instrument or a payment system and that are exclusively being used for future purchases of goods or services may not qualify as deposits, provided no interest is paid thereon. The following requirements must be met:[92]

  (i) the funds may only be used for future purchases of goods or services;

  (ii) the maximum account balance per customer may not exceed CHF 3,000 at any time; and

  (iii) no interest may be paid thereon.

If these requirements are met, the liabilities involved do not qualify as deposits and hence no banking license is required.

2.2.2.2.4   Anti-Money Laundering

Ensuring compliance with anti-money laundering regulation, i.e. the Anti-Money Laundering Act ("AMLA") and implementing regulations, often constitutes one of the key regulatory challenges for FinTech companies, both from an organisational and financial perspective. Swiss anti-money laundering regulation is based on three key elements:

- supervision of financial intermediaries either directly by *FINMA* or by self-regulatory organisations, which are themselves *FINMA*-supervised;

- due diligence, reporting, identification and record-keeping requirements applying to all financial intermediaries; and

- sanctions in case of non-compliance.

Article 305[bis] of the Swiss Criminal Code ("SCC") contains the criminal provision that prohibits all forms of money laundering. It stipulates that "any person that carries out an act that is aimed at preventing the identification of the origin, the tracing or the forfeiture of assets which he knows or must assume originate from a felony or aggravated tax misdemeanour is liable to a custodial sentence not exceeding three years or to a monetary penalty".

Financial intermediaries are divided into two groups:

- Financial intermediaries belonging to the *"banking sector"* if they are subject to comprehensive, prudential regulation under special legislation covering the whole range of their activities. Under these specific laws, a financial intermediary is supervised in its activities by the appropriate regulatory authority designated in each of these laws. Such financial intermediaries are for example banks, holders of a FinTech license, portfolio managers, trustees, securities firms, insurance companies or certain payment systems.[93]

- Financial intermediaries belonging to the *"non-banking sector"* if they "on a professional basis accept or hold on deposit assets belonging to third parties or assist in the investment or transfer of such assets".[94] According to a non-exhaustive list, this definition covers, in particular, persons who: (i) carry out credit transactions (in particular in relation to consumer loans or mortgages, factoring, commercial financing or financial leasing), (ii) provide services related to payment transactions, in particular by carrying out electronic transfers on behalf of other persons, or who issue or manage means of payment such as credit

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[90] Article 4 para. 2 FMIA.
[91] Article 5 para. 3 let. e BO.
[92] FINMA-Circular 2008/3, para. 18.1.

[93] Article 2 para. 2 AMLA.
[94] Article 2 para. 3 AMLA.

cards, (iii) trade for their own account or for the account of others in banknotes and coins, money market instruments, foreign exchange, precious metals, commodities and securities (stocks and shares and value rights) as well as their derivatives, (iv) manage assets, (v) make investments as investment advisers or (vi) hold securities on deposit or manage securities.[95] Before engaging in business activities, such financial intermediaries must join a self-regulatory organisation recognised by *FINMA*.[96]

Many activities typically conducted by FinTech companies, as for example business models involving holding or depositing assets on behalf of clients, are subject to the anti-money laundering regulation. In principle, there are four approaches for FinTech companies to ensure compliance with anti-money laundering regulations:

  (i) they can completely refrain from financial intermediation activities;

 (ii) they can cooperate with a regulated financial intermediary, such as a bank, as far as financial intermediation activities are required;

(iii) they can join a self-regulatory organisation and comply with anti-money laundering regulations; or

(iv) if they are financial intermediaries belonging to the *"non-banking sector"*,[97] they can structure their business model in such way that they provide their services only to financial intermediaries belonging to the *"banking sector"*[98] or to foreign financial intermediaries that are subject to equivalent supervision.

Apart from a limited number of exceptions,[99] all *professional* financial intermediaries are subject to the AMLA and the requirements set-out thereunder. A financial intermediary is generally deemed to engaging in financial intermediation on a professional basis if:[100]

 • its activity generates a gross revenue of more than CHF 50,000 per calendar year;

 • it enters into business relationships with more than 20 contracting parties per calendar year that are not limited to a one-time activity or if it maintains at least 20 such relationships per calendar year;

 • it has unlimited power to dispose over assets belonging to others exceeding CHF 5 million at any point in time; or

 • it executes transactions of a total volume exceeding CHF 2 million per calendar year.

The financial intermediaries' duties are set out under AMLA[101] and the implementing ordinances and regulations.[102] Key duties are the:

 • duty to personally identify the client, i.e. the contracting party;

 • duty to identify the beneficial owner / economic beneficiary of the assets;

 • duty to re-identify the beneficial owner / economic beneficiary of the assets in certain circumstances;

 • specific clarification / verification duties amongst others with regard to transactions or business relationships with heightened risks;

 • duties relating to documentation of transactions and verifications as well as relating to record keeping;

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[95] The Anti-Money Laundering Ordinance ("AMLO") and FINMA-Circular 2011/1 set out further details as to when the professional practice of financial intermediation is subject to supervision.
[96] Article 14 para. 1 AMLA.
[97] Article 2 para. 3 AMLA.
[98] Article 2 para. 2 AMLA.
[99] Article 2 para. 4 AMLA.

[100] Article 7 para. 1 AMLO.
[101] See article 3 et seqq. AMLA.
[102] The agreement relating to the Swiss banks' code of conduct with regard to the exercise of due diligence (VSB 16) is of particular importance. It contains a detailed set of rules in connection with the identification of clients and beneficial owners.

- duty to implement organisational measures, e.g. regarding training of employees and controls;

- duty to report cases of suspicions of money laundering to the Money Laundering Reporting Office Switzerland ("MROS").

Under certain circumstances and provided that specific requirements are met reduced duties may apply.

2.2.2.2.5   Consumer Credits

The Consumer Credit Act ("CCA") applies to consumer credits, i.e. loans granted to individuals on a professional basis for purposes other than business or commercial activities. Further, loans granted on a non-professional basis are subject to the CCA, provided they are granted in cooperation with a crowdlending broker (*Schwarmkredit-Vermittler*), e.g. an operator of a crowdlending platform.[103]

Therefore, FinTech companies may be subject to the regulations relating to consumer credits. The following duties / rights under the CCA may be of particular importance:

- duty to obtain a license in order to be allowed to grant or broker loans to consumers on a professional basis;[104]

- restrictions relating to the advertisement for consumer credits;[105]

- requirements regarding the form and content of consumer credit agreements;[106]

- duty not to exceed the maximum effective annual interest rate set by the *Swiss Federal Council*;[107]

- duty to check the consumer's creditworthiness[108] as well as the right to access the information

made available by the Credit Information Office (*Informationsstelle für Konsumkredit*).[109]

2.2.2.2.6   Collective Investment Schemes

Collective investment schemes are "funds raised from investors for the purpose of collective investment, and which are managed for the account of such investors".[110] Generally, collective investment schemes regulation must be considered whenever a particular business model of a FinTech company entails the pooling of funds or risks in connection with an investment.

An entity or a financial product qualifies as a collective investment scheme if the following criteria are met: (1) funds (2) that are raised from (more than one) investors (3) for the purpose of being collectively managed (4) for the account of such investors, (5) whereby the investors' investment needs are met on an equal basis.

The licensing requirements as well as the supervision of fund management companies and managers of collective assets is governed by FinIA. Furthermore, the rules regarding the acquisition or disposal of units in collective investment schemes as well as the offering of such financial instruments will, subject to phase-in periods, be governed by FinSA. It must be noted, however, that units in collective investment schemes are the only Financial Instrument covered by the FinSA that will be subject to additional product-specific supervisory rules under CISA.

2.2.3   DLT and Blockchain – Current and Future Swiss Regulatory Framework

Recently, Switzerland saw remarkable developments towards a "next phase" of Distributed Ledger Technology ("DLT") and blockchain related business activities:

- In August 2018, *FINMA* granted the first asset manager of collective investment schemes license to a company focusing on investment management in the area of crypto-assets (*Crypto Fund AG*);

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[103] Article 2 let b. CCA.
[104] Article 39 CCA.
[105] Article 36 et seqq. CCA.
[106] Article 9 et seqq. CCA.
[107] Article 14 CCA.
[108] Article 22 CCA, article 28 et seqq. CCA.

[109] Article 23 et seqq. CCA.
[110] Article 7 CISA.

- In November 2018, the world's first exchange traded product for investments in crypto-assets was launched on the *Swiss stock exchange SIX* (by *Amun AG*);

- In August 2019, *FINMA* granted banking as well as securities dealer licenses to two companies focusing on products and services relating to digital assets (*Sygnum Bank AG* and *SEBA Bank AG*);

- Finally, *SIX Digital Exchange AG* ("SDX"), a subsidiary of the *Swiss stock exchange SIX*, is continuing to build a fully regulated trading, settlement and custody infrastructure for digital assets and other market participants like *daura AG* are very active in the field of tokenisation of traditional financial instruments such as shares. In this context, it must also be noted that in October 2019, the *Swiss stock exchange SIX* announced a cooperation with the *Swiss National Bank*, which aims at exploring technological options to make *digital central bank money* available for the trading and settlement of tokenised assets. The underlying Distributed Ledger Technology will be provided by *SDX*.[111]

The attitude of Switzerland's federal government, the *Federal Council*, and *FINMA* towards developments such as DLT and blockchain remains positive. This holds true even though uncertainties persist in relation to projects such as the global currency Libra.[112, 113]

In December 2018, the *Federal Council* published a detailed report covering the legal framework for DLT and blockchain in Switzerland. The report concluded that the existing Swiss legal framework is, in principle, "fit" for technical developments such as DLT and blockchain. Nonetheless, a need for selective improvements was identified.

Only a few months later, the *Federal Council* had an initial draft law prepared, which then went through a comprehensive public consultation process. Based on

feedback received, the *Federal Council* published the finalised draft law concerning DLT and blockchain ("DLT Draft Law") on 27 November 2019.

In September 2020, the DLT Draft Law was approved by the Swiss Parliament and partly entered into force on 1 February 2021.

This subchapter first discusses select aspects of the current Swiss regulatory framework applicable to DLT and blockchain (Section 2.2.3.1). Then the cornerstones of the DLT Law are summarised (Section 2.2.3.2).

2.2.3.1   Current Regulatory Framework

A key element of the current Swiss regulatory framework applicable to DLT and blockchain is the categorisation of tokens introduced by *FINMA* in its "ICO Guidelines" of 16 February 2018.[114] *FINMA* distinguish the following categories of tokens:

- *Payment tokens* (according to *FINMA*, synonymous with "pure" cryptocurrencies), are tokens which are intended to be used, now or in the future, as a means of payment for acquiring goods or services or as a means of money or value transfer. Such cryptocurrencies do not give rise to any claims towards an issuer or a third party. Consequently, according to the prevailing view, these tokens are "purely factual intangible assets". Examples of such cryptocurrencies are bitcoin (including numerous "altcoins" built upon the basic technical framework used for bitcoin) or Ether.

- *Utility tokens* are tokens that are intended to provide access digitally to an application or service by means of a DLT-based infrastructure.

- *Asset tokens* represent assets such as a debt or equity claim against the issuer. Asset tokens promise, for example, a share in future company earnings or future capital flows. In terms of their economic function, such tokens are, therefore,

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[111]See SIX Media Release of 8 October 2019 (SIX, 2019).
[112]See the Libra White Paper (Libra, 2019).
[113]See NZZ of 27 December 2019 (NZZ, 2019).

[114]See Guidelines for enquiries regarding the regulatory framework for initial coin offerings (ICO's), published 16 February 2018 (FINMA, 2018b).

may qualify as equities, bonds or derivatives. Tokens which enable physical assets to be traded on a DLT-infrastructure also fall into this category according to *FINMA*.

FINMA points out that tokens may fall into more than one of these three basic categories: such *hybrid* tokens are, for example, asset tokens or utility tokens, which at the same time qualify as payment tokens.

On 11 September 2019, *FINMA* published a supplement to its "ICO Guidelines", which focused exclusively on "stable coins" ("Stable Coins Guidelines").[115] The Stable Coins Guidelines were published against the background of a request of the Libra Association, i.e. the not-for-profit entity domiciled in Switzerland, which fosters the development of the planned global currency Libra.[116] The *Libra Association* had asked *FINMA* for an assessment of how the Libra project, in particular the issuance of the Libra "stable coin", would likely be treated under Swiss financial market laws. *FINMA* took this opportunity to not only provide its initial views on Libra, but to publish the comprehensive Stable Coins Guidelines, which indicate how *FINMA* will assess projects involving tokens linked to an underlying asset.

FINMA pointed out that it will continue to apply a "substance over form" approach as a general principle, also with regard to "stable coins", just as it did and still does with regard to any other kind of token. *FINMA* furthermore mentioned that the design and the technical details of "stable coins" vary substantially. Nonetheless, according to *FINMA*, "stable coins" may on a high-level be categorised based on (i) the type of "underlying" or asset underlying the coin and (ii) the rights which holders of such coins have:

- *Currency backed coins:* If a stable coin is backed by currencies and the holders of such a coin have a right towards the issuer to redeem the coin at a fixed price (e.g. 1 coin for 1 CHF), such issuer may be deemed to accept deposits from the public and hence the licensing requirements under

the BA might be triggered (see Section 2.2.2.2.1 above). If a coin is backed by a basket of currencies and if the holders of such coin have a right towards the issuer to redeem the coin at the current value of such a basket (net asset value), such coin may qualify as a unit in a collective investment scheme and hence trigger licensing requirements under the CISA (see Section 2.2.2.2.6 above). Also, such currency backed stable coins might constitute a payment system (see Section 2.2.2.2.3 above).

- *Commodities backed coins:* If a stable coin is backed by commodities, the regulatory consequences depend on the type of commodity and whether the holders of such a coin have only (i) a contractual claim against an issuer or whether they have (ii) a right in rem with regard to the underlying commodity. In the latter case, financial market regulation does generally not apply and the stable coin does, in particular, not qualify as a security, if certain requirements are met. If the coin only grants a contractual claim, however, this likely triggers requirements under the BA (if the commodities are precious metals) or the coin may qualify as a security or a derivative (if the commodities are other commodities than precious metals). Furthermore, such commodity backed stable coins may possibly also constitute units in collective investment schemes.

- *Real estate backed coins:* If a stable coin is backed by real estate, such coin will likely be qualified as a unit in a collective investment scheme, hence triggering a licensing requirement under CISA (see Section 2.2.2.2.5 above).

- *Securities backed coins:* If a stable coin is backed by a single security (e.g. shares of a particular company), the coin as such will likely qualify as a security, and may, depending on the specifics of the individual case, constitute a derivative or even a structured product. If the coin is backed by a basket of securities, however, it will in most cases constitute a unit in a collective investment

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[115]See FINMA media release of 11 September 2019 (FINMA, 2019).
[116]See the Libra White Paper (Libra, 2019).

scheme within the meaning of CISA (see Section 2.2.2.2.6 above).

It must be noted that these *FINMA* guidelines are of an indicative nature only and not legally binding. In any case, however, the specifics of each "stable coin" project will need to be assessed based on the relevant details of the envisaged design of the token and the legal relationships between the parties involved.

With the regard to the questions, whether a particular token (or coin) is a Financial Instrument (see Section 2.2.1.1.1 above) for the purposes of the FinSA, the following must be noted:

- Whether a token is a Financial Instrument or not depends on its economic function and, derived from this, what rights are represented by or linked to such particular token. Consequently, it must be assessed on a case-by-case basis whether a token qualifies a Financial Instrument or not.

- *Asset tokens, hybrid tokens and stable coins* granting their holders for example participation and voting rights in a corporation or rights to the repayment of debt are likely Financial Instrument for the purposes of the FinSA.

- *Payment tokens* are to date not treated as securities by *FINMA* and are generally[117] not deemed to be Financial Instruments within the meaning of FinSA

- *Utility tokens* are currently also not treated as securities by *FINMA,* provided (i) their sole purpose is to confer digital access rights to an application or service and (ii) the tokens can actually already be used in this manner when they are issued. Such "pure" utility tokens, which neither partially nor exclusively functions as an investment in economic terms, are also no Financial Instruments for the purposes of the FinSA.

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[117]Payment tokens may constitute deposits (Einlagen) and could therefore potentially be in scope of article 3 let. a ciph. 6 FinSA: "Financial Instruments are (…) deposits whose redemption value or interest is risk- or price-dependent, (…)".

2.2.3.2   DLT Law

The cornerstones of the DLT Law of 25 September 2020 are the introduction (i) of so-called Uncertificated Register Securities (*Registerwertrechte*) (Section 2.2.3.2.1), (ii) of a new license category for operators of DLT trading venues (*DLT Handelsplattformen*) (Section 2.2.3.2.2) and (iii) of rules governing the segregation of crypto-assets and data in insolvency proceedings (Section 2.2.3.2.3).

The DLT Law was approved by Swiss Parliament in September 2020 and partly entered into force on 1 February 2021. Whilst the provisions allowing for a creation of Uncertificated Register Securities are already in force (see Section 2.2.3.2.1), the additional aspects of the DLT-Law will likely become effective as of 1 August 2021.

2.2.3.2.1   Uncertificated Register Securities

The DLT Law has introduced a new concept of so-called "Uncertificated Register Securities" (*Registerwertrechte*), which aims at increasing legal certainty in connection with the "tokenisation" of rights and financial instruments. Based on the DLT Law, Swiss law now provides for the possibility of an electronic registration of rights and claims that has the same functionality and entails the same protection as a negotiable security.

Legal positions admissible as underlying rights of such Uncertificated Register Securities include rights against issuers, such as contractual claims or membership rights (e.g. shares in a corporation). Consequently, asset tokens, utility tokens, hybrid tokens as well as "stable coins" (see Section 2.2.3.2 above) may be issued in the form of Uncertificated Register Securities. Payment tokens, i.e. cryptocurrencies can, however, not be issued in the form of Uncertificated Securities since they do not give rise to any claims, which could serve as an underlying right.

In order to create Uncertificated Register Securities the involved parties (e.g. the issuer of an instrument as debtor and the holders of the instrument as cred-

itors) must enter into a registration agreement (*Registrierungsvereinbarung*). Based on this agreement the relevant right (i) is entered into the so-called "Register of Uncertificated Securities" (*Wertrechteregister*) and (ii) may exclusively be asserted based on and transferred via this register.

The register must meet certain minimum requirements in order to qualify as a Register of Uncertificated Securities within the meaning of the DLT Law:

  (i) the register must, by means of technical procedures, grant the creditors, but not the debtor, actual power of disposal (*Verfügungsmacht*) over their rights;

  (ii) the register's integrity must be ensured by implementing the appropriate technical and organisational protective measures that prevent unauthorised changes to the register (e.g. joint administration by several independent parties);

  (iii) the content of the registered rights, the functioning of the register itself and the registration agreement must be recorded either directly in the register itself or in accompanying data linked to the register;

  (iv) creditors must be able to view the information and data which concerns themselves and they must be able to verify, without third-party support or intervention, the integrity of the content of the register concerning themselves.

In its dispatch of the DLT Law, the *Federal Council* mentions certain existing DLT-systems that are currently deemed suitable to fulfil the statutory minimum requirements. Both permissionless (e.g. Ethereum) as well as permissioned (e.g. Corda, Hyperledger Fabric) systems are mentioned in this (non-exhaustive) list.

The DLT Law also allows to bridge the new framework with the "traditional" book-entry securities (*Bucheffekten*) concept. In particular, it will be possible to register Uncertificated Register Securities with a "traditional" custodian (e.g. *a bank*) and to subsequently book them

into a "traditional" securities account. Hence, Uncertificated Register Securities could easily be transferred to the "old world" of book-entry securities, if desired.

2.2.3.2.2   DLT Trading Venues

Under current Swiss law, there are three categories of trading facilities: stock exchanges, multilateral trading facilities and organised trading facilities (see Section 2.2.2.2.2 above). Due to certain reasons, these categories are deemed unsuitable for trading involving crypto-assets, e.g. because retail clients to date do not have direct access to stock exchanges or multilateral trading facilities. Instead, these trading venues are currently only open to holders of a securities firm license and certain other regulated participants.[118]

Under the DLT Law, a new license category for (centralised) financial market infrastructures will be introduced, likely as early as 1 August 2021. These so-called "DLT Trading Venues" (*DLT-Handelssysteme*) may offer services in the areas of trading, clearing, settlement and custody of DLT-based assets not only to regulated financial market participants but also to unregulated corporates as well as individuals, potentially including retail clients.

A license as a DLT Trading Venue can be obtained by trading venues that allow for the simultaneous exchange of offers between several participants and the conclusion of contracts based on non-discretionary rules and, in addition, provide for: (1) the admission of unregulated corporates or individuals; (2) the custody of DLT Securities based on uniform rules and procedures; or (3) the clearing and settlement of trades in DLT Securities based on uniform rules and procedures.

"DLT Securities" (DLT-Effekten) are securities that are suitable for mass trading and either have the form of (i) Uncertificated Register Securities (*Registerwertrechte*) or the form of (ii) other uncertificated securities (*Wertrechte*) held in distributed electronic registers and which, by means of technical procedures, grant the

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[118]Article 34 para. 2 FMIA.

creditors, but not the debtor, the actual power of disposal over the uncertificated securities.

Payment tokens as well as (mere) utility tokens that do not serve an investment purpose will not constitute DLT Securities since they do not qualify as securities in the first place. However, a DLT Trading Venue may also permit the trading of payment and utility tokens that do not qualify as DLT Securities.

The licensing requirements for DLT Trading Venues are largely modelled after the existing requirements for traditional trading venues (i.e. stock exchanges and multilateral trading facilities). However, they are modified by adding specific rules with respect to, for example, the admission of participants and the admission of DLT Securities. Furthermore, the Federal Council may establish, or delegate authority to *FINMA* to establish, additional requirements for certain types of DLT Trading Venues, e.g. for DLT Trading Venues that will admit retail investors as participants and will likely require higher standards of customer protection. However, the DLT Law also gives discretion to the Federal Council to grant relief, or delegate authority to *FINMA* to grant relief, from certain requirements applicable to DLT Trading Venues that are considered "small" in terms of number of participants or trading and custody volume, respectively.

Excursus: Introduction of an e-ID in Switzerland

Recent developments relating to the potential introduction of an e-ID under the Federal Act on Electronic Identification Services (e-ID Act), as suggested by the Swiss Federal Council and the Swiss Parliament, may be of relevance for FinTech companies, in particular for such companies active in the Open Banking business (see Chapter 6 for more information on Open Banking).

A purchase of goods over the internet or the use of online services, in particular in the financial services sector, typically requires the completion of an online identification procedure. There are various ways in which this identification procedure can be structured, which often involve the individual entering a user name and corresponding password. Such online identification processes and their underlying identification methods are currently not regulated by law in Switzerland. The Federal Council and Parliament have therefore drawn up legislation introducing a federally recognised electronic identity, the e-ID, aimed at increasing the security and reliability of such online identification procedures.

The e-ID Act will introduce a regulated identification procedure which can then be implemented for the purchase of online services by financial market participants. The e-ID will, in particular, allow the respective user to open a bank account based on the e-ID. Any person wanting to obtain an e-ID will have to apply to one of the federally approved e-ID providers. Prior to issuing the e-ID, the respective provider will have to forward the application to the Swiss government, which will check the applicant's identity and grant the provider permission to issue the e-ID. The e-ID providers will be responsible for the operation and maintenance of the e-ID's technical aspects and be subject to governmental supervision. Providers may be companies, cantons or communes.

The opponents of the e-ID Act have successfully called a referendum and the legislation will be put to the public vote on March 7, 2021, to determine whether it will be enacted.

2.2.3.2.3   Insolvency

Crypto-assets (*kryptobasierte Vermögenswerte*) such as cryptocurrencies and tokenised financial instruments are often stored with third-party custodians, such as exchanges or wallets providers.

Under current law it is unclear whether crypto-assets held by a custodian on behalf of a client will be segregated in the bankruptcy of the custodian, especially if the creditor or investor does not hold (any) private key(s). The DLT Law will therefore introduce a new segregation regime that will allow the segregation of crypto-assets for the benefit of the relevant creditors or investors in the bankruptcy of the custodian, if certain requirements are met, including, in particular, the following:

- First, the relevant custodian must have an obligation vis-à-vis the relevant creditor or investor to keep the crypto-assets available for him at all times. This means that the custodian may, for example, not use such crypto-assets for proprietary business or own-account transactions.

- Second, the crypto-assets will only be segregated if they can be either (i) unambiguously allocated to the individual creditor or investor (however, there will be no need that such allocation occurs directly on the relevant DLT-system itself) or (ii) allocated to a group of investors or creditors and it is evident what share of the joint holdings belongs to a given creditor or investor. The latter option will allow a pooling of crypto-assets held for several creditors or investors.

In addition, the access to data in insolvency in general will be regulated under the DLT Law. Under current Swiss law it is not clear whether digital data stored by a third-party custodian (e.g. a cloud provider) can be segregated from the bankruptcy estate of such custodian. The DLT Law will introduce a right to request segregation of digital data regardless of whether such data has any (market) value or not (e.g. a holiday picture) in the bankruptcy proceedings of a custodian. The person requesting such segregation must show that is

has a specific entitlement to the data for which the segregation is being requested (e.g. a statutory or contractual claim). Furthermore, the person requesting segregation may be required pay a fee in advance, which will then be used to cover the costs of the data retrieval and segregation.

2.3.   Economic Environment

By Thomas Ankenbrand & Marc Grau, Institute of Financial Services Zug IFZ

The number of venture capital (VC) deals has the highest correlation to the output score in the FinTech hub analysis in Section 2.1. Accordingly, fundraising opportunities presumably play a crucial role for the development of a FinTech hub. This section therefore takes a closer look at the funding situation in the FinTech sector both globally and in Switzerland. In addition to covering different sources of fundraising, acquisitions and initial public offerings (IPOs) are explored in detail.
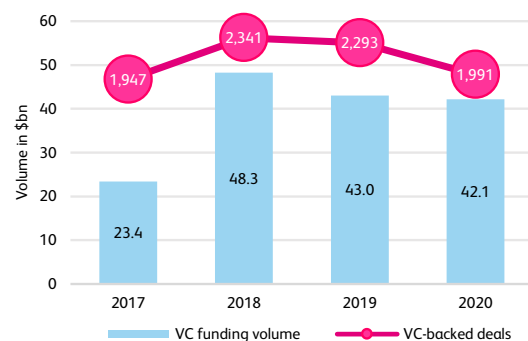
Figure 2.5: Global venture capital investments in FinTech (source: CB Insights (2020c))

Globally, overall venture capital deal activity, as measured by the number of completed deals, has recovered in Q4 2020. However, the lower deal activity from Q1 to Q3 still lead to an overall decrease of roughly 13 percent in 2020 compared to the previous year. Investment volumes of VC-backed FinTech financing remained steady throughout the year 2020, resulting in an average quarterly investment volume only slightly lower than in 2019. A year-over-year overview of global

VC activity in the FinTech industry is shown in Figure 2.5. Globally, FinTech companies raised a total of USD 42.1 billion in 1,991 financing rounds in 2020 (CB Insights, 2020c).

Despite the absence of an upward trend in FinTech VC investments, individual investments have reached record sizes. Investment rounds of more than USD 100 million in deal size passed record marks in terms of carried out rounds in 2020. In the last quarter of 2020 alone, 30 such mega-deals were recorded, thereby surpassing every other quarter of the previous years in terms of total rounds. All the mega-deals combined account for 54 percent of total funding for FinTech companies in 2020. The average deal size in 2020 amounts to USD 21 million, exceeding year 2018 even when including *Ant Financial*'s financing round of USD 14 billion (CB Insights, 2020c). The reduction in deal activity by 302 deals could be interpreted as an increasingly concise investor focus on more mature and later-stage FinTech companies. *Klarna* and *Affirm* serve as prominent examples with amounts of USD 650 million and USD 500 million, respectively, raised in September 2020 (CB Insights, 2020b). This trend towards larger financing rounds is reflected in the distribution of investments with respect to the deal stage. Most funding still takes place in seed or angel rounds (36 %). However, a comparison to 2019 indicates a decrease of five per-

centage points in seed investments compared to total investments. In 2020, with 39 percent, a bigger share of investments than ever was made in series B and later stage rounds (CB Insights, 2020c).

Differentiating between continents reveals increases in both FinTech-related funding and deal activity in Europe and South America, while North America only records increased funding. North America (51 %) still accounts for most total funding activity, followed by Asia (24 %) and Europe (19 %). South America, Australia, and Africa collectively cover six percent of the total VC volume raised by FinTech companies globally in 2020 (CB Insights, 2020c).

Similar trends can be observed when taking a closer look at the Swiss FinTech sector, though not as pronounced as in other regions. Figure 2.6 provides an overview of funding rounds (left-hand graph) and volumes of venture capital (right-hand graph) invested in Swiss FinTech companies. Both analyses are segmented according to the respective deal stage. For certain financing rounds, the investment volumes are not disclosed, which explains why the summed volumes are not exactly congruent to the number of deals. As observed globally, the number of deals in Switzerland

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[119]All later stage funding rounds are summarised under series B funding. Investment volumes have been converted to CHF using yearly average exchange rates.
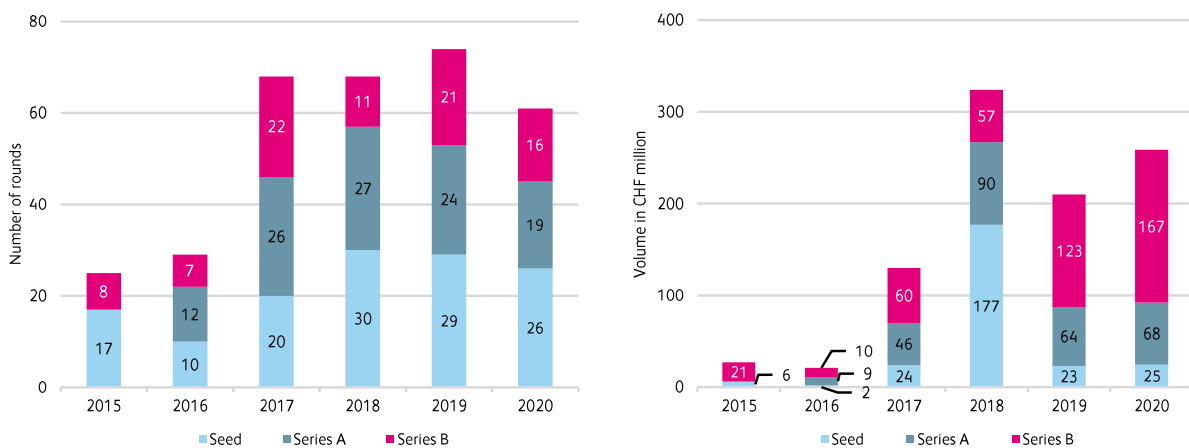
Figure 2.6: Venture capital invested in Swiss FinTech companies (source: own data)[119]

decreased slightly in 2020 compared to the previous three years. 61 deals were conducted in total, with deals distributed across all stages. Despite the fact that fewer deals were conducted, all disclosed funding rounds combined sum up to a total amount of invested capital of approximately CHF 260 million. This results in an overall increase in invested venture capital of 24 percent compared to the year 2019, while the number of rounds declined by 18 percent. These observations in Switzerland roughly reflect the global trends of bigger average investment rounds. Investors increasingly tend towards financing more mature companies, which usually already have a working product on the market, but need to expand and scale their business. Whereas 26 percent of all deals can be assigned to series B or later stages, 64 percent of the investment volume was raised by series B or later stage rounds. Series A rounds make up 31 percent of all deals and account for 26 percent of the investment volume. Despite 43 percent of all deals being carried out as seed rounds, the share of seed funding volumes amounts to only nine percent of total investments, which is the lowest share since the start of the observed period.
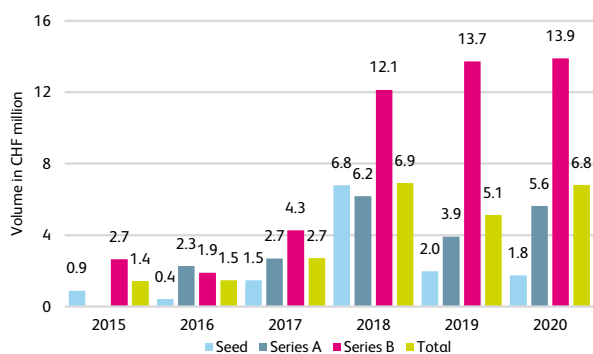
Figure 2.7: Average deal size of Swiss FinTech venture capital investments (source: own data)

Figure 2.7 shows the average deal size per investment stage and in total by year, derived for all disclosed financing rounds.[120] In 2020, each funding round raised around CHF 6.8 million on average, which results in an increase of 33 percent compared to 2019. Larger aver-

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[120]Funding volumes are available for 38 of 61 rounds in 2020.

age funding rounds can again mostly be explained by the trend away from seed funding and towards later stage investments. Especially during the last three years, series B and later stage rounds have usually been at least double the size of other rounds.

General venture capital activities in Switzerland tend to develop in a similar direction. In total, more than CHF 2 billion were raised in the Swiss start-up scene in 2020, which results in a slight decrease of seven percent compared to 2019. In contrast to the FinTech sector, the number of deals increased by 14.3 percent. Overall venture capital activities in Switzerland had a stronger focus on early stage rounds, exemplified by a rise of 43 percent in invested volumes compared to the previous year, which does not reflect the development in the FinTech sector (startupticker.ch, 2021).

From a European perspective, general venture capital activities were stable. The total deal volume exceeded the one in 2019 by EUR 5.5 billion, with a total amount of EUR 42.8 billion in 2020. Especially large deals with over EUR 25 million in volume drove the growth in deal value. 62 percent of invested capital in 2020 can be allocated to such deals, which typically flow into later stage rounds. Nonetheless, early stage funding received a record EUR 3.1 billion in Europe in 2020 (PitchBook, 2021). Compared to FinTech funding volumes in Europe of EUR 6.9 billion, as reported by CB Insights (2020c), 16 percent of total funding in Europe went into the FinTech sector.

In Switzerland, the largest venture capital investment in the sample was carried out by a group of investors to fund *Bitcoin Suisse* in a series B round. The aggregate investment lead to a total funding of CHF 45 million, thereby driving the company's estimated valuation up to CHF 302.5 million (startupticker.ch, 2020a). Another large investment was raised by *Numbrs Personal Finance* with a volume of CHF 27.5 million (finews.ch, 2021). *SEBA*, a FINMA licensed Swiss bank with a focus on digital assets, concluded its series B capital increase at the end of the year (SEBA, 2020). The round yielded capital worth more than CHF 20 million (theblockcrypto.com, 2020). *Metaco*, focusing on the

custody of digital assets, achieved an investment volume of CHF 18.4 million (startupticker.ch, 2020e) and last but not least, *NetGuardians*, a provider of analytical software for fraud detection, raised CHF 17 million in December, which is more than double the investment volume reached in each of their previous two rounds (startupticker.ch, 2020g).
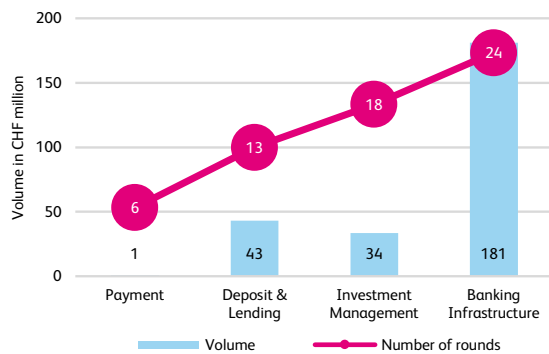
Figure 2.8: Number of VC rounds and funding volumes according to product areas in 2020 (source: own data)

Segmenting funding rounds and volumes into the product and technology areas as defined in the FinTech Grid introduced in Chapter 1, Figure 2.8 reveals a strong tendency towards FinTech companies active in the area of *Banking Infrastructure*. Despite fewer deals being conducted, FinTech companies providing services in the area of *Deposit & Lending* were able to attract more capital than FinTech companies classified into *Investment Management*. FinTech companies active in the *Payment* area did not receive much publicly disclosed funding in 2020. Put in relation to the total sample[121], funding volumes by *Banking Infrastructure* FinTech companies are even more accentuated. Whereas 32 percent of the total sample are active in this area, they were able to attract 70 percent of the total funding volume. Despite making up 39 percent of the sample, FinTech companies in *Investment Management* only attracted 13 percent of funding volumes.

In Switzerland there are various possibilities to receive venture capital funding. The venture funding map of

the FundTech *Leva* provides an overview of the Swiss landscape. As of September 2020, 123 venture capital investors and business angels run offices in Switzerland (considering only the most active investors and excluding family offices and investor clubs). With a large share of them being early stage investors, only a few lead further advanced investment series (fintechnews.ch, 2020a). In addition, corporate venture capitalists provide significant contributions to the Swiss FinTech sector. In 2020, *UBS* launched its fund UBS Next, which should further promote *UBS*' engagement in FinTech and broader tech ecosystems. The fund aims to invest CHF 200 million, not restricted by a specific geographically focus (UBS, 2020). Other funds such as the SIX FinTech Ventures fund focus mainly on start-ups relevant for the Swiss financial centre. The *SIX* corporate venture capital arm has already invested in nine different start-ups and aims to place funds of CHF 50 million in total (SIX, 2021). Swisscom Ventures is a more established venture arm, which focuses on the digital transformation. Conclusively, 58 investments have already been processed by Swisscom Ventures with half of the funded companies headquartered in Switzerland (Swisscom, 2021). More recently, TX Ventures, the corporate venture capital division of the *TX Group*, one of the largest media groups in Switzerland, started to invest more heavily in consumer-centric FinTech companies (fintechnews.ch, 2021).

Globally, acquisition activities in the FinTech sector continue the overall strong growth trend, which slowed slightly in 2019. Figure 2.9 shows global FinTech acquisitions starting from 2005 sourced from the database *Crunchbase*, as of December 31, 2020.[122] Most deals are still conducted in North America and Europe, which also both show strong growth rates. A prominent example in the U.S. is the acquisition of *Credit Karma* by *Intuit*, which is one of the largest transactions in the category of privately-held FinTech companies (techcrunch.com, 2020). However, Asia is increasingly

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[121]For a more detailed overview on Swiss FinTech companies, see Chapter 4.

[122]Please note that whenever external data sources are accessed in the present study, a bias of the data cannot be completely ruled out. This may be due, for example, to the fact that certain sources have a specific thematic or geographical focus or are potentially subject to a home bias.
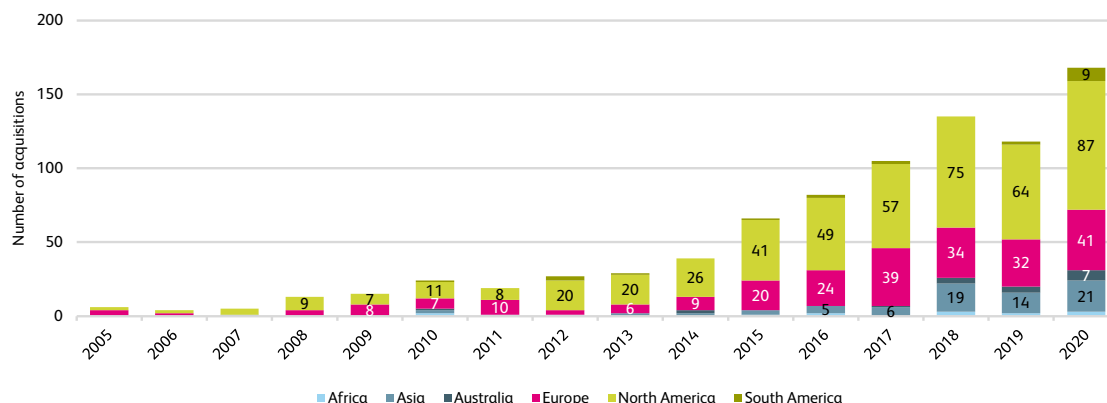
Figure 2.9: Number of FinTech acquisitions by continent, 2005 - 2020 (source: Crunchbase (2020))

developing its venture ecosystems, reflected in the consistent number of acquisitions over the past few years. In South America, a surge of acquisitions occurred in 2020 (Crunchbase, 2020).

In Switzerland, a major exit is in progress and expected to close in April 2021. The private equity company *Warburg Pincus* has agreed to sell its stake of 45 percent in the digital banking FinTech *Avaloq*, acquired in 2017, to *NEC Corporation*, a Japanese IT group. In addition, *NEC Corporation* is to acquire all other outstanding shares held by *Avaloq*'s founders and employees, valuing *Avaloq* at CHF 2.05 billion. Operations will still remain in Switzerland and the company will continue as an independent entity (Avaloq, 2020). Overshadowed by this large transaction, several other acquisition activities materialised throughout the year. In March, *InCube Group*, which provides AI-powered solutions for wealth management and insurance, was acquired by *Finantix* to further strengthen its platform with AI, robotics, and cognitive technologies (Finantix, 2020). In the field of corporate lending platforms, further consolidation lead to the acquisition of *Advanon* by *Creditgate24* (CreditGate24, 2020). Furthermore, *Yokoy* extended its services in the field of expense management by acquiring *Flowexpense* (Yokoy, 2020). The last recorded acquisition in this study's sample took place in December 2020: *Evolute*, a cloud-based soft-

ware provider for CRM and portfolio management systems, was acquired by *Etops* to form a broader offer for wealth management in the software ecosystem (Etops, 2020).

IPOs occur less frequently than acquisitions, as shown in Figure 2.10. Most of the IPOs in the FinTech sector are still carried out in North America, where the number of IPOs quadrupled compared to 2019 and are back to the level of previous years. In Asia, the amount of IPOs remains stable, further establishing the area's relevance with regard to FinTech (Crunchbase, 2020). Furthermore, it is also where one of the most prominent FinTech IPOs globally was planned to take place in 2020. While in 2018, the largest funding deal in FinTech history took place with *Ant Financial*, a similarly extraordinary IPO by the company was prevented from taking place in November 2020. An intervention by regulatory agencies lead to a postponement for an indefinite amount of time until regulatory requirements are met (Yang & Ng, 2020). In Switzerland, no IPOs in the FinTech sector took place in 2020.

Companies have various ways to access capital, either via a public or a private channel. When accessing capital from the broad public, an IPO at a security exchange is a typical process. However, IPOs take a considerable amount of time to complete. Alternatives exist
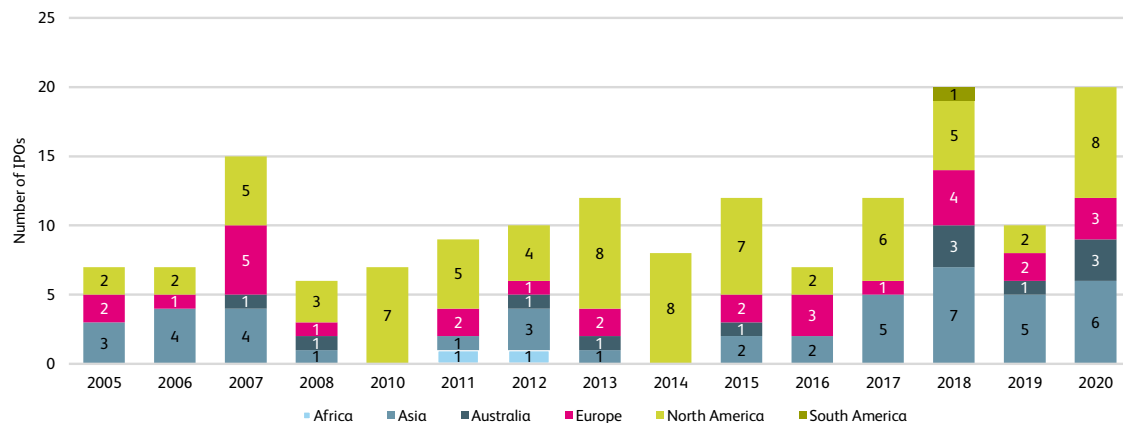
Figure 2.10: Number of FinTech IPOs by continent, 2005 - 2020 (source: Crunchbase (2020))

in order to speed things up when going public. Special purpose acquisition companies (SPACs) are specifically constructed to take companies public in a shorter amount of time. SPACs are generally described as shell or blank check companies with no operating business and minimal amounts of necessary assets. The goal is to construct a vehicle that can be used to launch an IPO in order to raise capital for further investments. Once the company is listed at an exchange, the SPAC founders, called sponsors, try to identify a company to acquire with the raised capital. As the target company is usually identified after the IPO, the investors' trust is typically relying solely on the sponsors' ability to identify promising companies (Hale, 2007).[123] Going public via a SPAC has not been a widespread phenomenon in recent years. In existence since the 1990s, SPACs have mostly been an exception. However, in the early 2000s, SPACs experienced increased growth peaking in 2007 with USD 12 billion deal value. The global financial crisis put an end to SPACs in general for a short time. Since 2010, SPAC deals have regained modest popularity and have recorded average deal values of USD 11.4 billion from 2017 to 2019 (Kolchin, 2020). However, 2020 was a successful year for SPACs. By the end of 2020, USD 80 billion in deal value was processed with an average IPO size of USD 337 million (Nasdaq, 2020). With re-

gard to the FinTech sector, SPACs exclusively focusing on FinTech companies, which either performed a transaction or were actively looking for a deal in 2020, are worth up to USD 7.7 billion (Sokolin, 2021). The Covid-19 pandemic lead to uncertainty for a multitude of private companies. The quick access to public markets via a SPAC proved to be a secure route to take. Nonetheless, the question remains whether SPACs are a valid option besides classical IPOs or if they solely represent a fast track for going public when markets are in turmoil (Pitchbook, 2020).

New ventures not only rely on classical venture investments as in the past years. Entrepreneurs have started to embrace the possibility of token sales based on the Distributed Ledger Technology (DLT). Through the tokenisation of stakes in the company or other types of claims, FinTech start-ups are able to raise funds from a broader public instead of traditional intermediaries like venture capitalists and investment banks (Chen, 2018). Figure 2.11 shows the global development of token sales across all sectors. After a sudden surge in token sales through the years 2017 and 2018, the figures in recent years show that the market is cooling off. Even though the number of carried out token sales only decreased by a quarter, 82 percent less funding volume went into token sales in 2020 compared to the previous year (ICO Drops, 2020a; CoinSchedule, 2019).

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[123]For more information on the structure of SPACs, see Layne and Lenahan (2018).

This probably indicates that token sales are currently viewed as less attractive than traditional fundraising, where funding volumes remained stable. The largest recorded token sale was the initial exchange offering of *NuCypher* on *Coinlist*, which raised a total of USD 126 million (ICO Drops, 2020b).
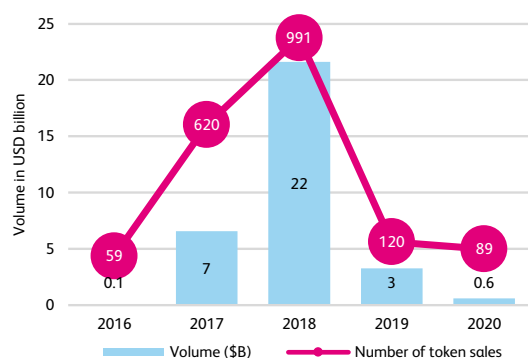
Figure 2.11: Token sales global across all sectors (sources: CoinSchedule (2019), ICO Drops (2020a))

Developments in Switzerland reflect those of the global market, as presented in Figure 2.12. Only one token sale in the FinTech sector was carried out in 2020, which yielded funds of roughly CHF 650,000. Clearly, 2020 was the year with the lowest funds raised since the emergence of this alternative way of financing in the years 2017 and 2018. This single token sale was private and carried out by the platform *Fyooz*, which uses Distributed Ledger Technology to make social and moral values tradable and investable. All tokens allocated to the private sale of *Fyooz* were sold divided into two instalments (startupticker.ch, 2020b).

In summary, funds raised via venture capital investments remain at a consistent level and show resilience despite markets being in turmoil. Trends towards larger investments in later stage rounds and acquisition activities, strongly marked by the sale of *Avaloq*, indicate the growing maturity of the Swiss funding ecosystem. In recent years, SPACs have gained popularity as an alternative form of raising capital from the public. However, as of the end of 2020, Swiss companies remained unaffected by this trend. Token sales, which enjoyed increased popularity in recent years, continue to decline
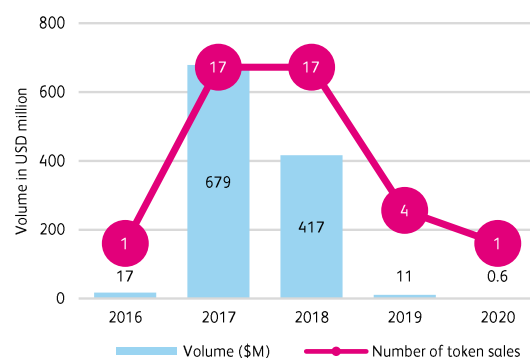
Figure 2.12: Token sales in the Swiss FinTech sector (source: own data)

both globally and in the Swiss FinTech sector. It remains to be seen whether token sales can further be established as an alternative to financing by traditional intermediaries.

2.4.   Social Environment

By Thomas Ankenbrand & Marc Grau, Institute of Financial Services Zug IFZ

The following two sections provide an overview on the social environment FinTech companies find themselves in. Section 2.4.1 introduces various programmes from incubators and accelerators as well as challenges and awards in the FinTech sector. In Section 2.4.2, associations with relations to the FinTech sector are briefly summarised.

2.4.1   Incubators, Accelerators, Challenges & Awards

Incubators and accelerators offer valuable support to FinTech companies by providing funds, expertise, and access to a professional network. In addition, several challenges and awards are held throughout the year in Switzerland, which aim to support and further encourage the creation and development of new ventures and companies. This section provides an overview on the evolving landscape of support structures, programmes, events, and participating companies.

Typically, incubators and accelerators are differentiated as they support new ventures in different stages. However, a few of them cover all stages. *F10 Fintech Incubator & Accelerator* remains one of the largest providers fostering innovation in the fields of FinTech, RegTech, InsurTech, and DeepTech with offices in Switzerland, Singapore, and Spain. In Spain, *F10* operates hubs in Barcelona and Madrid as well as two satellite offices in Bilbao and Valencia. The offers provided span over three different programmes, which support start-ups in all stages. The goal of the "ideation" programme is to turn ideas into prototypes. Starting with the prototype in the second programme "incubation", the venture is supported in order to gain traction and turn prototypes into valid, scalable products. The last programme, "acceleration", helps in scaling the business and providing a platform for further growth by connecting the founders with investors, experts, and potential clients (F10, 2021). In addition, *F10* newly established the *F10 Investment AG*, which provides funding to a selection of high-potential start-ups graduating from the *F10* incubation programme (F10, 2020). Furthermore, a co-working space and FinTech sandbox, allowing access to APIs, are provided to the participating FinTech companies. 30 start-ups are part of the current batch in *F10*'s programmes with 24 being in an incubation phase and six companies in the acceleration phase. There are Swiss companies in both programmes. *Apiax*, a RegTech company for financial institutions, is the only Swiss start-up in the acceleration programme. *Aisot, Avoodoo, Forto, Meloncast, Riskwolf, Stableton*, and *Lyyna* are Swiss-based start-ups currently in the incubation programme. In total, *F10* already has more than 90 alumni companies (F10, 2020). To spur innovation and generate ideas prior to incubations, hackathons enjoy increasing popularity. In these contests, competitors have a limited amount of time in which they are asked to develop a software prototype to solve given problems. *F10* regularly organises a FinTech hackathon in Zurich. Three challenges were presented and the 13 teams had a ten day time frame to develop possible solutions (fintechnews.ch, 2020c).

CV Labs, active in Zug with additional offices in Vaduz and Dubai, provide services in the area of Distributed Ledger Technology (DLT). They offer two primary services, an incubation programme and a co-working space, for start-ups in the field of DLT. The incubator offers a twelve week programme which connects the start-ups to experts and provides infrastructure. Office space is available for supported start-ups. In addition to its primary services, *CV Labs* hosts different networking opportunities and advisory services (CV Labs, 2021). *CV Labs* is part of *CV VC*, which invests in a selection of the supported and other start-ups. The investment spectrum spans across start-ups using DLT with activities in several areas, not restricted merely to financial services (CV VC, 2020).

Fongit is an innovation incubator with a technology focus based in Geneva. So far, *Fongit* has supported 87 start-ups on their journey, whereof 16 have already graduated from the programme. Swiss FinTech companies such as *InvestGlass, TokenEstate, Quantreex, Taurus Group, Impaakt*, and *Telexoo* used *Fongit*'s services (Fongit, 2021).

Generali Switzerland has run a FinTech innovation lab called the innovation garage in recent years. Start-ups like *Billte* and *Adjoint* profited from their services. At the end of 2019, the innovation garage spun off *Generali* into an independent company named *House of InsurTech Switzerland (HITS)*. Benefiting from existing and new partnerships (e.g. with *F10*), *HITS* aspires to become a leading InsurTech hub (Generali, 2019).

Kickstart is a yearly run innovation ecosystem concentrating on tech companies including FinTech. The targeted start-ups are already mature and ready to collaborate with corporations. Start-ups receive access to experts, corporations, potential funding by connected parties, infrastructure, and have the opportunity to participate in various events. Besides the acceleration programme, *Kickstart* hosts special events such as the Kickstart academy, snackathons, or market entry bootcamps. As of the end of 2020, 190 start-ups had participated in the programme, with ten of them being active in the financial services sector (Kickstart, 2021). *Yova*, for example, participated in the *F10* programme in 2019 (Fuchs, 2019) and further participated in the *Kickstart* programme in 2020. Other participants are

decentriq, focused on confidential computing, *tilbago*, specialising in debt collection, and *Ratyng*, which provides a solution that digitises the SME loan process for banks (Kickstart, 2020).

Various flagship programmes for start-ups are offered by *Venturelab*, who seeks to support Swiss entrepreneurial talent. *Venturelab* hosts a series of events, such as training events or roadshows, and offers programmes like the Venture Kick, a three stage funding programme launched in 2007 which already records more than 560 participants, to accelerate the growth of start-ups. Swiss FinTech companies like *WealthArc*, *CashSentinel*, *vestr*, and *Apiax* have received funds through *Venture Kick* (Venturelab, 2021). *Venture Kick* received a boost itself by merging with the *Volkswirtschaftsstiftung*, a federal programme providing interest-free loans to start-ups. This merger will further enable *Venture Kick* to increase the number of start-ups receiving support (startupticker.ch, 2020k).

Bluelion, a non-profit incubator based in Zurich, recently launched the ten-week accelerator programme *LikeMinded* in 2020. Amongst its first participants is the FinTech company *findependent*, which offers an easy-to-use investment app (Bluelion, 2020).

In the French-speaking part of Switzerland, *Scale Up Vaud* provides acceleration programmes. In 2020, the FinTech company *Edgelab*, which supports private banks in their investment processes, partook in said programme (startupticker.ch, 2020f).

Boldbrain, an accelerator programme based in the Italian-speaking part of Switzerland, hosts an annual start-up challenge. Out of 147 participants 20 start-ups were offered to participate in a three-month coaching programme. The two FinTech companies *Excede* and *Trading Stratagem* were among the winners (Boldbrain, 2020).

digitalswitzerland, which recently merged with *ICTswitzerland* (digitalswitzerland, 2020), has also started to offer opportunities to access the Swiss ecosystem for start-ups from abroad. The aim is to boost and support possible market entries in

Switzerland for 50 international, later-stage start-ups providing technological solutions (startupticker.ch, 2020d). For the entry of Swiss companies into foreign markets such as the U.S., *swissnex Boston* and *swissnex New York* offer a virtual start-up bootcamp in collaboration with *Innosuisse*. Twelve Swiss start-ups supported by *Innosuisse* have participated, with the FinTech company *Cybera Global*, a platform seeking to prevent cybercrime and online fraud, being amongst them (startupticker.ch, 2020h).

Innosuisse, the Swiss federal innovation agency, started a two year scale-up coaching programme designed for Swiss start-ups. Its main goals are to provide support in implementing a growth strategy, find funding opportunities, and strengthen networks. In the first run, 16 companies were selected, with *Aximetria*, a Swiss cryptocurrency account, as the only start-up with a focus on financial services (Innosuisse, 2020).

Not directly focusing on FinTech is the acceleration programme *Tech4Trust*, which focuses on the field of digital trust and cybersecurity. In the second edition of their programme in 2020, 22 Swiss companies were selected. Among them, *WECAN Group* and *decentriq* specifically provide services in the financial industry (startupticker.ch, 2020j). Furthermore, *Tech4Trust* awarded four companies for their outstanding progress, with *decentriq* being among them (EPFL Innovation Park, 2020).

Besides encouraging and supporting FinTech ventures through incubator and accelerator programmes with active interaction between supporters and founders, many awards are organised and challenges held in order to incentivise current and future founders. Most of these challenges and awards are associated with a prize, whether that be cash, infrastructure, or advisory services and, just as importantly, media presence and reputation. Some challenges in Switzerland target start-ups in general, rather than limit themselves to FinTech companies. One of these contests is the Swiss Innovation Challenge. The competition spans over eight months, during which the participants are coached ac-

tively. At the end, the winner is awarded with a prize of CHF 20,000 in cash, while the second and third places receive CHF 5,000 each. However, unlike in previous years, no FinTech made it into the group of finalists in 2020 (Swiss Innovation Challenge, 2021).

Hosted by *Venturelab* is the TOP 100 Swiss Startup Award, where a hand-picked selection of 100 start-ups pitch in front of investors, executives, and journalists, who then rank all the nominees. In 2020, ten FinTech companies pitched as part of the top 100, with *Crypto Finance* evaluated as the most promising at rank 16, followed by *Loanboox* at rank 23 and *Neon Switzerland* at rank 33, completing the top three FinTech companies in this ranking (startup.ch, 2020).

The purpose of the Swiss FinTech Awards is to promote outstanding FinTech companies and FinTech influencers. Companies are separated into early stage and growth stage companies. In the field of early stage start-ups, *Legartis*, which helps companies improve its legal processes, emerged as the winner. *Instimatch global* won the prize for growth stage companies. They digitise the money market with a special focus on institutional customers (FuW, 2020).

In the Financial NewTech Challenge, organised by *Capgemini* and *Efma*, the two Swiss FinTech companies *Futurae* and *InvestGlass* were able to secure global awards. The challenge aims to recognise the most innovative financial NewTechs and identify the most inspiring collaborative projects between NewTechs and financial institutions (fintechnews.ch, 2020b).

The 4YFN Barcelona Awards is a start-up competition focused on accelerating business development and the investment of new technologies. With *PXL Vision* and *Exeon Analytics* two Swiss start-ups were selected to

present. *PXL Vision* provides leading solutions for the automation and enhancement of online identity verification and customer onboarding, which can for example be used to facilitate KYC processes for financial institutions. *Exeon Analytics* fights advanced cyberattacks using big data analytics (startupticker.ch, 2020i).
At the WealthBriefing Swiss Awards, the cloud-based, API-driven holistic financial services provider *ONE PM* won two awards in the categories "Best Innovative FinTech Solution" and "Best Data Provider" (ONE PM, 2020). On the European stage, *swissQuant* was awarded "Best Portfolio Management" (swissQuant, 2020).

In a joint project with *Credit Suisse*, the FinTech company *Apiax* won in the category "Best Private Bank for Use of RegTech Globally" at the PWM Wealth Tech Awards (startupticker.ch, 2020c).

2.4.2 Associations

Within industries, associations are important because they serve as a platform for the exchange of information, alignment of interests between market participants, and representation to external stakeholders, such as policymakers. Another goal of associations, which, by Swiss law, pursue a non-commercial purpose[124], is education and creating a connection between the public and the corresponding industry. Parallel to the steady growth of the Swiss FinTech industry over the past years, the landscape of associations in the ecosystem has also evolved. An overview of selected associations relevant to the Swiss FinTech industry is listed in Table 2.2, including their founding years, websites, and brief descriptions of their purposes.

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[124]Article 60, Swiss Civil Code.

Table 2.2: Overview of selected associations representing or promoting FinTech companies in Switzerland

Year	Association	Description
1912	**Swiss Bankers Association** swissbanking.org	The *Swiss Bankers Association* was founded in 1912 in Basel and is the leading professional organisation of the Swiss financial centre. The association aims to maintain and promote the best possible framework conditions for the Swiss financial centre both at home and abroad. As it considers FinTech as one of the most disruptive factors for the business models of banks, it has intensively devoted itself to this topic for some time.
2013	**Bitcoin Association Switzerland** bitcoinassociation.ch	The *Bitcoin Association Switzerland*, located in Zurich, aims to promote digital currencies, especially Bitcoin, by organising regular events, resolving open legal questions, and educating the public on the matter. It is composed of an active community of supporters and corporate members. The association organises regular meetups in various locations in Switzerland.
2014	**Swiss ICT Investor Club (SICTIC)** sictic.ch	The *Swiss ICT Investor Club (SICTIC)* is a non-profit association aimed at connecting early stage tech start-ups, including those in the FinTech sector, with its network of smart money investors. The process of the deal- as well as the match-making is organised by SICTIC. The association, however, does not invest or hold equity in any of the pitching start-ups.
2014	**SWISS FINTECH** swissfintech.org	*SWISS FINTECH* is a non-profit organisation, founded under the name *Swiss Finance Startups*, run and organised by the ventures involved. The association wants to foster the common Swiss FinTech start-up spirit, create synergies, join forces, and drive innovation, inspiration, and change in Switzerland.
2015	**Swiss Finance + Technology Association (SFTA)** swissfinte.ch	The *Swiss Finance + Technology Association (SFTA)* is a neutral, inclusive, and non-profit association with over 250 members and subscribers. The association enhances the positioning of Switzerland as a leading international FinTech hub by organising high-quality events, connecting the various stakeholders, conducting research, creating publications, leveraging the knowledge base of their members, and advocating for improved regulations and policies.
2015	**digitalswitzerland** digitalswitzerland.com	*digitalswitzerland* is a cross-industry association with the purpose of making Switzerland a leading hub for innovation and technology. The multi-stakeholder initiative was created from the shared vision of its over 220 members to strengthen Switzerland's position. By engaging government, business, academia, and the public, the association seeks to create a platform to lead Switzerland forward. In 2020, *digitalswitzerland* merged with *ICTswitzerland*, with the association retaining its name.
2015	**Swiss Crowdfunding Association** swisscrowdfundingassociation.ch	The *Swiss Crowdfunding Association* consists of more than 20 platforms of the types crowddonation, crowdlending, crowdinvesting, and real estate crowdfunding in Switzerland. It aims to promote crowdfunding in Switzerland, to disseminate best practices among the actors, to do research in this field, and to spread information to media and politics.
2016	**Swiss FinTech Innovations** swissfintechinnovations.ch	*Swiss FinTech Innovations* is an association of financial institutions in Switzerland. Its goal is to make Switzerland a leading FinTech hub worldwide. The association focuses on partnerships and cooperation with various stakeholders from the FinTech industry. In addition, it aims to create new ideas and to work on the regulatory framework, as well as bring FinTech start-ups and established companies to work in collaboration.

Year	Association	Description
2016	**Swiss Startup Association** swissstartupassociation.com	The *Swiss Startup Association* seeks to create the best possible environment for the development of both entrepreneurs and start-ups in Switzerland by representing the interests of its members vis-à-vis politics, business and the public.
2017	**Crypto Valley Association** cryptovalley.swiss	The *Crypto Valley Association* is an independent, government-supported association established to take full advantage of Switzerland's strengths to build the world's leading blockchain and cryptographic technologies ecosystem. The association supports and connects start-ups and established enterprises.
2017	**Multichain Asset Managers Association (MAMA)** mama.global	The *Multichain Asset Managers Association (MAMA)* is a global community of organisations working to transform asset management through blockchain technology. The association works with regulators, carries out projects, organises events, and shares insights in order to bring about an appropriate regulatory and supervisory regime for on-chain asset management.
2017	**CryptoPolis Association** cryptopolis.swiss	The *CryptoPolis Association* is an ecosystem centered in and around the Swiss city of Chiasso with active connections to international centres of blockchain and FinTech innovation in the world. Its mission is to develop the best ecosystem for blockchain, cryptographic technologies, and FinTech in the south of Europe.
2017	**International RegTech Association (IRTA)** regtechassociation.org	The *International RegTech Association (IRTA)* is an international non-profit association for regulatory technology with a chapter in Switzerland founded in 2017. The IRTA is destined to ease and accelerate the evolution of the RegTech industry by bringing together people, tools, and policies. In particular, the association aims to facilitate integration, collaboration, and innovation of all stakeholders in the financial industry.
2018	**Capital Markets and Technology Association (CMTA)** cmta.ch	The *Capital Markets and Technology Association (CMTA)* is a Geneva-based association established by *Lenz & Staehlin*, *Swissquote*, and *Temenos* for creating standards around facilitating the use of Distributed Ledger Technology in the field of capital markets. In particular, the association aims to create standards for issuing, distributing, and trading tokenised securities.
2018	**Swiss Marketplace Lending Association (SMLA)** lendingassociation.ch	The *Swiss Marketplace Lending Association (SMLA)* is an association based in Rotkreuz which brings together different stakeholders of the crowdfunding industry. Its goals are to increase the transparency and to raise awareness for the asset class of marketplace lending for professional and private investors, and to foster the cooperation within the sector.
2019	**Geneva Fintech Association (GFA)** genevafin.tech	The *Geneva Fintech Association (GFA)* is a non-profit association based in Geneva, which aims to promote the development of new technologies, with a special focus on crowdfunding and Distributed Ledger Technology. It advocates and supports education about new technologies and seeks to bring together stakeholders from the FinTech ecosystem.
2019	**Swiss Blockchain Federation** blockchainfederation.ch	The *Swiss Blockchain Federation* is an association based in Bern which promotes the attractiveness of Switzerland as a business place for blockchain-based activities. The association also aims to encourage the development of a secure and competitive legal framework, whilst connecting the blockchain sector with the political, economic, academic, and public field.

2.5.   Technological Environment

Last year's study concluded that the importance of "Tech" over "Fin" continues to grow. The increased tendency to apply IT-typical revenue models in the Swiss FinTech industry supports this statement. Computer-based systems are the basis of such revenue models. Some of these systems have the potential to solve current and future challenges in the financial industry. Therefore, the focus of this year's study lies on three innovative computer technologies and their potential use cases in finance as well as their current state of development.

The first part provides an overview of privacy-enhancing technologies that address security and privacy challenges in the financial industry (Section 2.5.1). The second part discusses Distributed Ledger Technology (DLT) that could play a role as an intermediary in efficient marketplaces that enable integrated and seamless data exchange and collaboration with built-in data security standards (Section 2.5.2). The third part provides an overview of the potential of quantum computing, which applies the theories of quantum mechanics to solve, for example, complex computational or optimisation problems (Section 2.5.3). In contrast to last year's study, which also discussed quantum computing, this part provides a comprehensive overview of the current state of the technology and highlights potential use cases in finance in detail.

2.5.1   Privacy-Enhancing Technologies

By Thomas Ankenbrand, Denis Bieri & Damian Lötscher, Institute of Financial Services Zug IFZ;
Aetienne Sardon, Christian Schüpbach & Dominic Vincenz, Swisscom AG

With the digitisation of many areas of life, more and more data is being collected. Companies can use this information to optimise their business, for example by creating a more accurate picture of customers or the economic environment in general. Since the quality and opportunities for new insights often increase with the amount of data available, data sharing between companies in particular holds great potential. However, financial institutions are partially legally constrained and have also expressed concerns about data sharing in the past, making it difficult to realise its full potential. In particular, information about the financial situation of an individual is considered very sensitive and is protected by Swiss (e.g. data protection law and bank client confidentiality) and international laws (e.g. GDPR in the EU).

Privacy-enhancing technologies are part of data protection (data security) and can solve this conflict of objectives. In general, data security involves protecting data in all its forms and states, i.e. in the rest state, during transfer, and in use. There are proven protection concepts for the former two states. For example, data is encrypted so that even if it is stolen, the information cannot be accessed. There are also encryption methods that protect data in transit so that only authorised parties can see the information as it moves between servers and applications. Protecting data in use is more challenging, especially when computations are performed. This is because applications can often only process data in plain text, i.e. unencrypted. Privacy-enhancing technologies offer a potential solution for protecting data even when it is processed or used for analytics, leading to unlocking the potential of sharing data while maintaining privacy. In particular, privacy-enhancing technology methods allow to use sensitive data for evaluations and calculations without having to disclose them to third parties (Burke, Brian, n.d.). An overview of the corresponding approaches can be found in Figure 2.13, all of which aim to increase privacy. Since all of these approaches differ in their design and operation, they are suitable for different use cases. In the following, a brief introduction to each technology is given and possible illustrative use cases in the financial services industry are discussed.

2.5.1.1   Trusted Execution Environment

A Trusted Execution Environment (TEE) is a trusted, isolated, and tamper-proof hardware environment within a computer system. In it, data can be processed securely, isolated from the rest of the system (Sabt, Achemlal, & Bouabdallah, 2015). Because the environment is independent, it can also be thought of as a se-
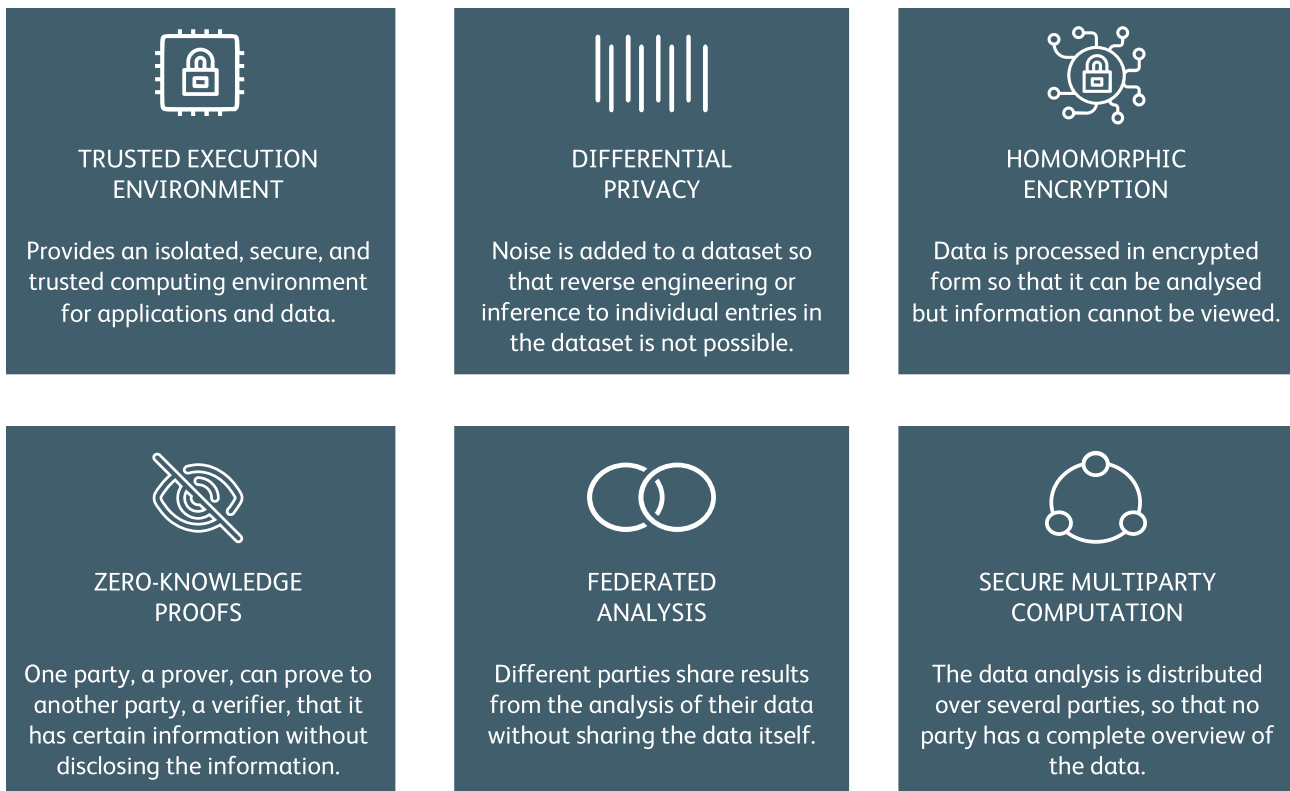
Figure 2.13: Overview of selected privacy-enhancing technologies (source: Blake, McWaters, and Galaski (2019))

cure enclave, where "secure" includes both confidentiality (no one has access to the data) and integrity (no one can manipulate the code or data) (Prado, 2020). While data is securely encrypted at rest and in transit, it is processed unencrypted but protected and isolated in a TEE during computation (Tung, Treat, & Chatelain, 2019). Hence, TEE is suitable for applications where encrypted or anonymised processing is generally not possible. When data is protected by performing computations in a hardware-based TEE, it is also referred to as "Confidential Computing" (The Confidential Computing Consortium, 2020).

Advantages of a cloud environment, such as scalability and cost benefits, can be exploited, with data protected not only during storage and communication, but also during computation. Banking-as-a-Service (BaaS) solutions serve as a possible application for this, where in the conventional case the cloud provider has unen-

crypted customer data. If, in contrast, TEEs are used by providers to process sensitive data, this could further increase the security level of the corresponding services.

2.5.1.2 Differential Privacy

Differential Privacy is used in data analytics and guarantees that the individual information of a data point cannot be inferred from the results of a data analysis. This is achieved by adding "noise" to the data prior to analysis to slightly alter the original dataset. Alternatively, new, artificially generated data entries can be added (synthetic data). This makes it impossible to draw conclusions about individual user information from a manipulated dataset containing user data. For the analysis to produce accurate and meaningful results, it is important to ensure that the manipulation does not alter the original data's statistical properties (Tung et al., 2019).

One possible use case for Differential Privacy could be personal finance management (PFM) systems, which have gained prominence as a part of e-banking. For a PFM tool to become a smart advisor, it needs automated analytics across a holistic database of a wide range of customers to provide sophisticated and tailored recommendations. For example, based on insights about other bank customers, the PFM tool could make statements such as "You spend more/less than the average person in your demographic group on health insurance." Such statements could also be made by the PFM tool for spending in other areas such as mobility, taxes, savings, vacations, and housing. However, this requires spending habits to be shared anonymously and indirectly with other users, ideally also from other banks. If the pool is small enough and the data on the output behavior of certain individuals is known, the output behavior of other users can be inferred. In this case, Differential Privacy could help by adding noise, e.g. artificially created data points that share the basic statistical properties of the original sample, to the process of inference so that the privacy of individual customer data is not violated.

2.5.1.3   Homomorphic Encryption

Homomorphic Encryption enables the analysis of encrypted data without the need for prior decryption. The result of the analysis or the output of data processing also remains encrypted. This way, sensitive data is protected in all states, i.e. at rest, during transmission, and in use, and only remains accessible to the data owner in its encrypted form, but not to the processor (Tung et al., 2019). Homomorphic Encryption takes advantage of special encryption schemes that allow to perform calculations on encrypted data without having to decrypt the data first. For example, this allows the addition of two encrypted numbers so that the decrypted output is the same as if two decrypted numbers were added.

The quality and effectiveness of risk management activities often depend on the ability to aggregate fragmented data. For example, cross-organisational risk assessments make it necessary to join separate data sources from different institutions. With Homomorphic

Encryption, this could be done without disclosing individual risk metrics and data.[125] This allows larger pools of data to be created which in turn could improve the quality of risk management. For example, this could also allow to forecast the probability of occurrence of rare operational risks, such as a bank robbery, based on data from one's own institution, but also to use data and insights from third-party institutions for a more accurate estimate. Another application example for Homomorphic Encryption is a recommendation system for financial products. One possible implementation of such a system is shown by Bertolace and Hänggi (2020). Using Homomorphic Encryption algorithms, the proposed proof-of-concept shows that banks' client data can be kept fully confidential from the external data processor, i.e. the provider of the recommendation algorithm. In addition, the authors show that computing large amounts of encrypted data is, however, very computationally intensive.

2.5.1.4   Zero-Knowledge Proof

Zero-Knowledge Proofs originate from the field of cryptography and allow one party (the "prover") to convince another party (the "verifier") of an assertion without the latter learning anything other than that the assertion is true. In this process, the two parties communicate directly with each other. Because no sensitive information is revealed and no third party is involved, privacy is guaranteed (Morais, Wijk, & Koens, 2018). For example, zero-knowledge proofs allow an individual to demonstrate that he or she has sufficient income to purchase a financial product or service without disclosing the exact amount of money involved.

Use cases for Zero-Knowledge Proofs exist when there is something to "prove" but no details about the information are to be revealed. For example, when rating creditworthiness for a mortgage loan, the applying party must disclose sensitive information about their financial circumstances. In such a case, Zero-Knowledge Proofs could allow a financial institution to check the

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[125]For example, the scheme of Paillier (1999) can be used for this purpose. It is an additive homomorphic cryptosystem and states that given only the public key and the encryption of m_1 and m_2, one can compute the encryption of $m_1 + m_2$.

applicant's creditworthiness without having to access the exact figures regarding his or her financial situation. This, in turn, could lead to increased privacy for the customer and thus provides added value, especially in the quotation process.[126] The general scheme of Zero-Knowledge Proofs can be transferred to a variety of other use cases. *ING Bank*, for example, is actively researching corresponding use cases with regard to customer data queries (e.g. age verification), signatures, and anti-money laundering (Morais et al., 2018).

2.5.1.5 Federated Analysis

Federated Analysis or Federated Learning includes concepts in which machine learning models (including models based on deep learning and neural networks) are trained on a user's device and only relevant model outputs are shared, rather than the data itself. A potential use case for Federated Analysis in the financial services industry could be fraud detection. For example, a machine learning model for fraud detection could be copied from a third-party machine to a bank's machine. This model can in turn be improved by the bank by training it with local data (e.g. credit card fraud data). The parameters of models trained locally by different banks, without publishing the underlying data, can be sent back to the third-party provider, which aggregates the model parameters, e.g. by averaging weights. This consolidated global model can in turn be sent back to the banks, starting the process all over again. Federated Analysis, in the given example, therefore allows multiple banks to build a common, robust machine learning model without sharing the data itself, ensuring privacy and data security (Blake et al., 2019).

2.5.1.6 Secure Multiparty Computation (SMC)

Secure Multiparty Computation (SMC) is another mechanism that allows multiple parties to take advantage of combining their data to produce useful insight. SMC allows multiple parties to perform joint calculations while keeping each party's actual source data sep-

arate. No intermediate information is stored throughout the computation and only the final result is revealed to all parties. In contrast, Federated Analysis (see Section 2.5.1.5), is a machine learning scheme where model parameters are iteratively improved by multiple parties.

An illustrative example of a use case and the associated potential of SMC is described in the excursus on the next page. In this example, three people want to know what their average income is without disclosing their exact salaries. The excursus shows how SMC could be a possible solution to this privacy problem.

2.5.1.7 Summary

The introductory overview of selected concepts from the field of privacy-enhancing technologies has shown that the conflict between maintaining data privacy, not only for data in rest or transmission, but also for data in use, and harnessing the potential of data collaboration between different parties can potentially be resolved. The illustrative examples show that certain use cases for privacy-enhancing technologies are also conceivable in the financial services industry. In addition to the concepts described, there are also alternative approaches to establishing data collaboration, such as Distributed Ledger Technology, a topic that is addressed in the next section.

2.5.2 Data Collaboration and Distributed Ledger Technology

By Thomas Ankenbrand, Denis Bieri & Damian Lötscher, Institute of Financial Services Zug IFZ;
Aetienne Sardon, Christian Schüpbach & Dominic Vincenz, Swisscom AG

In addition to the growing awareness for the value of data among financial industry players, consumers are also increasingly aware of the value of their personal information and are demanding control over its use and, at best, compensation. A need is emerging for efficient marketplaces that enable integrated and seamless data exchange (HSLU, 2020). Where appropriate and possible, technology is taking on the intermediary role.

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[126]Note that this could be accomplished also by using digital signatures, in which the bank of the account holder digitally signs a statement confirming, for example, that the account holder has more than CHF X on his bank account.

Example of Privacy-Enhancing Technologies: Average Income

The advantage of privacy-enhancing technologies can be illustrated with the example of Loris, Samantha, and Aline, who want to know what their average income is without openly communicating their individual salaries. To do this, they could use the concept of Secure Multiparty Computation (SMC) and proceed as follows: First, each person divides his/her income into three randomly sized parts. For example, Loris divides his income of CHF 50k into CHF 20k, CHF 5k, and CHF 25k. He reveals one part each to Samantha (CHF 5k) and Aline (CHF 25k) and keeps the rest (CHF 20k) secret. Samantha and Aline also divide their salaries into three randomly sized parts (see Table 2.3). They too reveal one share to each person and keep one part secret. Now Loris, Samantha, and Aline each have one part kept secret (green fields) and two parts which they have shared with one other person (blue fields). Each of the three persons now add up their shares. Samantha, for example, adds CHF 5k (Lori's part), CHF 10k (her own secret part), and CHF 15k (Aline's part), resulting in CHF 30k. They then all reveal their results and sum them up (130+30+110=270). The sum divided by three (270/3=90) reveals the average salary of CHF 90k without the individual incomes being disclosed to each other.

Table 2.3: Income of Loris, Samantha, and Aline, randomly divided parts and their sum, each in CHF thousand

	Total income	Randomly divided parts		
		Loris	Samantha	Aline
Loris	50 →	20	5	25
Samantha	100 →	10	10	80
Aline	120 →	100	15	5
		↓	↓	↓
Sum		130	30	110
Average income		(130+30+110)/3=90		

Distributed Ledger Technology (DLT), or blockchain, represents a technology that may be used to orchestrate and manage data exchanges. The decentralised nature of public DLT-networks implies accessibility for all market participants, thus enabling data exchange and interaction between autonomous parties without relying on an intermediary. With Decentralised Finance (DeFi), a movement has already established itself in the financial services industry that makes use of the characteristics of public blockchain infrastructures. The products and services offered are typically based on smart contracts and all corresponding data is stored in a decentralised manner. As DeFi products and services are powered by smart contracts, this enables processes to be carried out autonomously when certain conditions are met. However, this requires data sources, so-called "oracles", that can reliably feed a smart contract and trigger its conditional execution. An example of such an oracle that delivers data and information from off-blockchain sources to on-blockchain smart contracts is *Chainlink*. In terms of DeFi, such an oracles-based data collaboration can serve as a data source for smart contracts representing financial products and monetary instruments, especially when executed based on market data such as foreign exchange rates, interest rates, and asset prices. In general, the most widespread DeFi so-

lutions are found in the areas of trading, peer-to-peer payments and lending, insurance, and stablecoin issuance (Bitcoin Suisse, 2020), and are open to all market players on a non-discriminatory basis.

However, blockchain networks, depending on their technological design, may be subject to various scalability, security, and potential privacy issues, such as the linkability of transactions through inherent transparency properties or cryptographic key management. This can compromise anonymity, confidentiality, and privacy in the network, preventing performant and protected data collaboration between multiple parties. In this regard, novel solutions are required that combine the features of public blockchain protocols with concepts from privacy-enhancing technologies. One example of such a platform is Enigma[127], a project initiated in 2015 by the *Massachusetts Institute of Technology (MIT)*. Enigma is a blockchain-based peer-to-peer network that allows different parties to store data and perform computations together while keeping the data completely private (Zyskind, 2015). The platform, among other things, uses technologies from the field of secure multiparty computation (Bernabe, Canovas, Hernandez-Ramos, Moreno, & Skarmeta, 2019).

Private or consortial blockchain solutions are also conceivable as part of the infrastructure of a data platform. Compared to public blockchain protocols, these are only accessible to authorised parties and therefore have a lower degree of decentralisation. An example could be a blockchain-based data marketplace where only authorised banks are granted access, but no third parties. On such a shared platform, each bank could keep its own data encrypted and share it with other network participants as the situation requires. Compared to traditional database solutions, which can also serve as a basis for such an application, Distributed Ledger Technology comes with certain characteristics that could be exploited for increased efficiency. For example, a blockchain-based Know-Your-Customer (KYC) solution would not only eliminate the duplication of effort in performing KYC checks and reduce compliance

errors by automatisation, but also provide the ability to distribute updates to customer data in near real-time to all banks participating in the system in encrypted form. In addition, the solution would provide a historical record of all documents shared and log compliance activities performed for each customer (Deloitte, n.d.). One infrastructure that enables the creation of consortial blockchain applications is *Microsoft*'s Confidential Consortium Framework (CCF)[128], which uses Trusted Execution Environment (TEE) concepts, among others, to provide complete confidentiality, high scalability, and governance features (Russinovich et al., 2019).

2.5.3   Quantum Computing

By Thomas Ankenbrand, Denis Bieri & Damian Lötscher, Institute of Financial Services Zug IFZ;
Esther Hänggi, Lucerne School of Computer Science and Information Technology; Stefan Stettler, Inventx AG

Moore's Law states that the number of transistors in a microprocessor doubles approximately every two years. For decades, it has correctly predicted the increasing speed of computers and the constant reduction in the size of the chips that drive them. This growth slows down for physical reasons, which is compensated for by parallelisation in cloud infrastructures, for example. Nevertheless, some problems still require too much computing time to be solvable in practice. Quantum computers could provide a solution in some of these cases. In contrast to classical computers, quantum computers are built from components exhibiting quantum-physical properties such as entanglement and superposition. The manipulation of quantum information enables new approaches to complex problems which can reduce the computing resources required to solve previously unsolvable problems to a manageable level. In finance, the resulting speed-up could for example be used to identify arbitrage opportunities faster than competitors or to simulate complex price equilibria. The use of quantum technology

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[127]For more information on Project Enigma, see https://www.enigma.co/.

[128]For more information on the Confidential Consortium Framework, see https://www.microsoft.com/en-us/research/project/confidential-consortium-framework/.

could therefore represent a competitive advantage, especially for first movers.

However, some development work is still needed to exploit the power of quantum computing. Schulte and Lee (2019) compare the current state of research on building a large-scale quantum computer with the development of the filament for the light bulb; the theoretical understanding of the concept exists, but there are difficulties in finding the materials that can best deliver the technology. This should however not obscure the fact that over the past few years, significant theoretical and technological progress has been made to unlock the potential of quantum computing.

2.5.3.1   Current State of Quantum Computing

Quantum algorithms, corresponding software programs and hardware are an active area of research. In 2019, more than 100 academic groups and government-affiliate laboratories worldwide were researching how to design, build, and control quantum systems (Horowitz & Grumbling, 2019). But to create a large-scale quantum computer which can run arbitrary quantum algorithms requires both quantum and "classical" hardware and software to control, programme, and read out qubits[129].

Woerner and Egger (2019) state that more qubits are needed and the errors of actual hardware need to be reduced in order for quantum computing to find a broader usage. In addition, improvements in (quantum) algorithms can reduce the hardware requirements and thus enable a broader application. Schulte and Lee (2019) write that there is a race going on between algorithm research and hardware development and it could be a challenge to build the hardware that could support ambitious algorithms. At the same time, the theoretical speed-up predicted for these algorithms is also a reminder of what the technology is

developed for. This implies that experimental breakthroughs are necessary before a universal quantum processor is capable of surpassing present-day supercomputers. However, it is possible that noisy quantum computers will find promising applications before general-purpose fault-tolerant quantum computing is achieved. Such small-scale noisy quantum computers are already available to the public (see Section 2.5.3.2), which allows the producing companies to learn what type of quantum computers future clients might need. At the same time, independent software developers can learn how to write appropriate algorithms, in turn, contributing again to the development of quantum computers (Lichfield, 2020).

Another factor that needs to be mentioned when discussing quantum computer development is the availability of open source software projects that lower the barrier to learn about quantum computing and thus accelerate its use. Fingerhuth, Babej, and Wittek (2018) note that understanding, creating, and executing complicated mathematical models on quantum computer hardware has become easier with the development of open source software projects. Chow and Gambetta (2020) state that the next ten years will be the decade of quantum systems, and the emergence of a real hardware ecosystem.

2.5.3.2   Cloud-based Quantum Computing

There is a range of open source software and quantum computer platforms publicly accessible over the cloud. A corresponding review is provided in Fingerhuth et al. (2018). To run an algorithm on a real quantum computer requires the usage of a software with a quantum computer back end. In addition, a full-stack library allowing for the compilation/embedding, simulation, and execution of quantum instructions on a quantum computer is needed to implement a specific use case.

Figure 2.14 shows the software platforms as of the end of January 2021, using a similar representation as LaRose (2019). The nodes in light blue show software platforms that can be installed on the user's personal computer. White nodes show simulators run lo-

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[129]Unlike classical computers, quantum computers are not based on bits but on qubits. A qubit can not only represent the state 0 or 1, but can assume any state between 0 and 1. Furthermore, the qubits of a quantum computer can be interconnected to each other in a quantum mechanical way, the so-called "entanglement". This enables more efficient algorithms, which in turn means that certain computing problems can be solved faster.
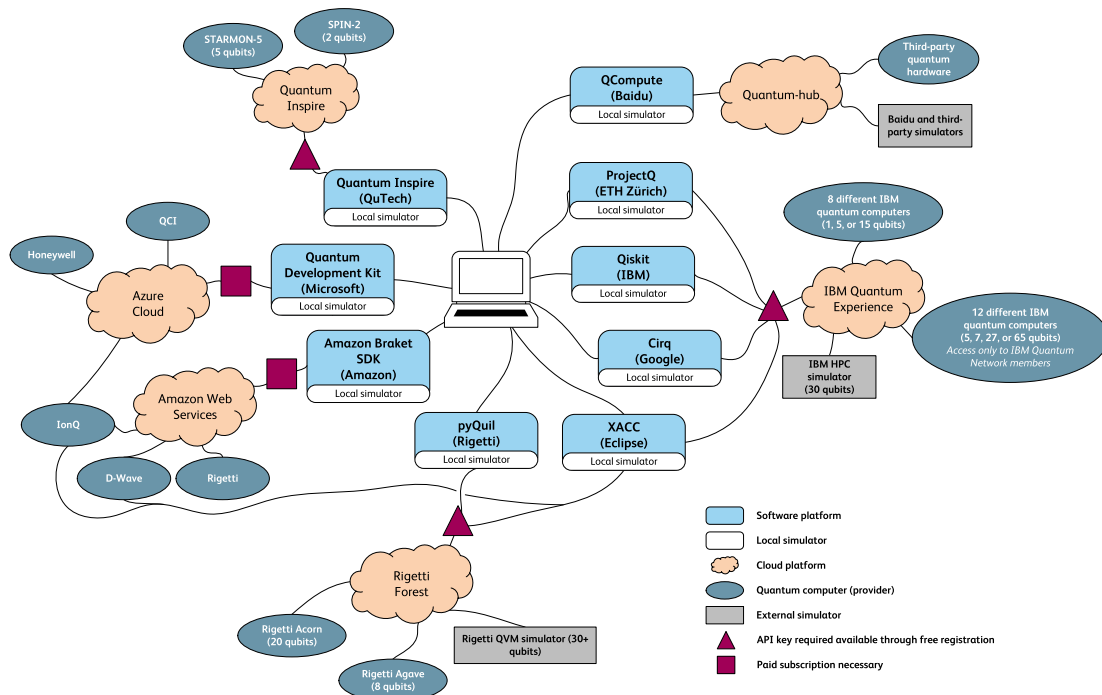
Figure 2.14: A schematic diagram showing the paths to connecting a personal computer to a quantum computer. The diagram follows the representation of LaRose (2019).

cally, i.e. on the user's local device. In this case, the number of qubits that can be simulated is dependant on the performance of the user's local computer. The quantum computing company resources are shown in clouds. The pink triangles and squares represent the requirements to get access to the corresponding resource. The quantum simulators and usable quantum computers provided are shown in grey and dark blue, respectively. For example, to connect to *IBM*'s cloud and use one of their quantum computers, one needs to download and install the quantum programming software QISKit[130] locally, register on *IBM*'s website to get an API key, and then request access to the quantum device.

The number of qubits of the quantum computers are written in brackets, where the corresponding information is publicly available. It is worth emphasising that

the size (in qubits) is not the only relevant figure describing the performance of a quantum computer. Additional aspects, such as the quality, i.e. errors in the computation, are equally important. The quantum volume is a metric which tries to take these different aspects into account.

2.5.3.3 Applications in Finance

There are already multiple publications that suggest potential applications of quantum computing in the financial industry. Orús, Mugel, and Lizaso (2019) discuss the following three main fields of application, which are discussed in more details in the subsequent sections:

- Optimisation

- Machine learning

- Monte Carlo methods

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[130]Qiskit is an open source software development kit for working with quantum computers at the level of pulses, circuits, and application modules. For further information, see https://qiskit.org/.

Figure 2.15: Examples of specific problems arising in the financial services focus area grouped in three classes (source: Egger et al. (2020))

In a recent paper, Egger et al. (2020) employ the same categorisation, but use the more general term of "simulation" rather than "Monte Carlo". In their paper, they also provide examples for concrete use cases which are summarised in Figure 2.15. Orús et al. (2019) point to numerous other potential future fields of application related to quantum computing, such as quantum simulation, quantum money, and quantum cryptography.

Economic research offers other use cases that have hardly been discussed yet. In particular, the empirical proof of theoretical findings in economics is partially limited due to computational power and, for example, restricts the inclusion of a high number of data points.

2.5.3.3.1 Optimisation

Optimisation presents a variety of computationally intensive challenges in finance. In broad terms, the goal of maximisation or minimisation is to select the best element from a set of available choices or to find the optimum of a mathematical function.

An example for an optimisation approach in the field of finance is the Modern Portfolio Theory (MPT) by Markowitz (1952). To achieve the model's goal of forming an efficient market portfolio, a large number of potential assets can theoretically be considered. However, the calculation of an efficient portfolio in an asset universe including a huge number of assets is limited by

today's computing power. In theory, quantum-based approaches could be used to challenge the efficiency of classically computed market portfolios by including a significantly higher number of potential assets. In the short term, first movers with access to quantum computers with sufficient power are expected to benefit most from improved asset allocation. A possible implementation path of a quantum-based portfolio optimisation is described on *IBM*'s Qiskit platform, along with another use case, i.e. mimicking index portfolios.[131]

A further potential use case of quantum computing that is described in Egger et al. (2020) is pricing in issuance auctions, where bids are placed on combinations of discrete heterogeneous items. Determining the winners that achieve the maximum profit for the seller is a difficult optimisation problem. It is a relevant problem in, for example, truckload transport, bus lines, industrial procurement, airport slots, and radio frequency auctions.

2.5.3.3.2 Machine Learning

In general, machine learning is a branch of artificial intelligence that uses statistical models to analyse and draw inferences from patterns in data. In finance, machine learning can help to, for example, reduce operating costs, increase revenue through improved pro-

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[131]For further information, see https://qiskit.org/documentation/ tutorials/finance/02_portfolio_diversification.html.

ductivity, and enhance user experience. Furthermore, machine learning helps to prevent financial institutions from being misused for money laundering activities, to detect fraudulent activities, or to provide increased support for or take over tasks from employees.

Corresponding concepts are already in use today, for example, to create credit rating models to assess the creditworthiness of a debtor, which is a core business of retail and corporate banking. Using quantum computers, some specific machine learning algorithms can be designed more efficiently. According to Egger et al. (2020), another potential use case lies in financial forecasting. Quantum computers applying machine learning concepts could enable faster and more accurate forecasts of price movements. If other market participants are not able to do so, this would be particularly advantageous for first movers for arbitrage transactions. This advantage, however, could diminish with an increasing number of market participants following the same approach.

2.5.3.3.3   Monte Carlo Methods

A Monte Carlo simulation is a model for calculating the probability of different outcomes based on repeated random sampling. There is a direct link to many current financial methods, including pricing and risk analysis.

Pricing bonds and derivatives by using a quantum computer instead of traditional Monte Carlo simulation could contribute to a more accurate valuation, in particular in the case of less liquid traded derivatives and bonds with complex payoff structures and contractual terms. The reason for this is that more price-driving factors could be considered compared to simulations with classical computers.

With regard to risk management, combining quantum computers with Monte Carlo simulations could help to assess the risk exposures (e.g. value-at-risk) of a composition of a broad range of assets faster, more comprehensively, and more accurately than with classical computers (Woerner & Egger, 2019).

2.5.3.4   Outlook

Orús et al. (2019) state that the race in the field of quantum computing is largely motivated by the degree of technological disruption the concept is expected to bring, resulting in a complete transformation of the financial services industry. However, the authors do not elaborate on the expected degree of disruption or impact. The high expectations might be explained by the theoretical speed-up compared to classical computers that can be quantified very precisely for some specific computational problems in finance that cannot be solved today or only with a long computing time. However, it is very difficult to estimate when the technology will be available to exploit the full potential of quantum algorithms. Kumar (2020) states that quantum computing stands at least five years away from significantly impacting the financial services landscape. Furthermore, Chow and Gambetta (2020) comment that widely adopted commercial applications may remain several years away. Also, there are no estimates as to how expensive maintaining the infrastructure and thus running a quantum computer will be.

In summary, quantum computing opens a new approach to specific problems in the financial industry. Most applications are expected in the areas of optimisation, machine learning, and Monte Carlo methods. However, breakthroughs in the development of quantum computing hardware and software are needed for widespread application in the industry. For example, more qubits are needed and the errors of current hardware needs to be reduced. The development of quantum computers is highly complex. However, with existing platforms and quantum computers accessible over cloud infrastructures, the hardware is already available to the general public. This opens up opportunities for first movers in the financial industry to learn and experiment with this emerging technology already today.

3. Global FinTech Companies

By Thomas Ankenbrand, Denis Bieri, Moreno Frigg & Marc Grau, Institute of Financial Services Zug IFZ

This chapter provides an overview of globally leading FinTech companies. In a first part (Section 3.1), the companies are analysed descriptively. In doing so, it is shown which business models are pursued and which customer segments are served by these companies. Furthermore, the analyses serves as a basis for comparison with regard to the business models of Swiss FinTech companies (see Section 4.1). In a second part (Section 3.2), the valuation approach for FinTech companies introduced in last year's edition of this study is updated and addressed in a more detailed manner.

3.1. Overview of Globally Leading FinTech Companies

The subsequent analysis of globally leading FinTech companies is based on two rankings published by *CB Insights* and *Crunchbase* in the year 2020. In the former ranking, the top 250 FinTech companies are identified from a sample of 16,000 companies. A variety of data was used to rank these companies, including self-disclosed information from the companies and metrics such as momentum in the market and a so-called Mosaic score, which is determined by an algorithm that measures a company's growth potential as well as its overall condition (CB Insights, 2020a). *Crunchbase*'s ranking, which is updated continuously, is based on an algorithm taking multiple factors into account. These factors include, among others, the number of connections a company has on the platform, how frequently the company engages with the *Crunchbase* community, funding events, press articles, and acquisitions (Crunchbase, 2016). For the present analysis the top 250 FinTech companies as of December 4, 2020, are considered.

In order to derive the final sample of globally leading FinTech companies, companies appearing in both rankings (68 companies) were removed in a first step. This low number of duplicates could partially be attributed to different factors being considered by the two rankings in identifying leading FinTech companies as well as the non-standardised definition of "FinTech". In a second step, companies whose primary business model is focused on the insurance industry (38 companies) as well as venture capital and private equity funds (5 companies) were excluded, resulting in a final sample of 389 FinTech companies. Note that this particular data sample consists of companies classified as FinTech companies by *CB Insights* and *Crunchbase* and thus does not necessarily conform to the definition of FinTech in Chapter 1.

In the following paragraphs, the final sample is analysed based on publicly available data. In order to describe the sample in detail, on the one hand each company is assigned to one of the four product areas specified in the FinTech Grid (see Chapter 1), i.e. *Payment, Deposit & Lending, Investment Management*, or *Banking Infrastructure*. On the other hand, the companies' technological focus, i.e. *Process Digitisation / Automatisation / Robotics, Analytics / Big Data / Artificial Intelligence, Distributed Ledger Technology*, or *Quantum Computing* is assessed. In addition to the classification into the defined product and technology areas, the year of inception and the customer segment targeted by the leading FinTech companies are evaluated. With regard to the latter, a distinction is made between a national and international focus and a differentiation between the customer groups targeted, i.e. businesses (B2B), private individuals (B2C), or a combination of both (B2B & B2C). Note that when serving customers internationally, it is assumed that national customers are also included.

The classification of globally leading FinTech companies according to the FinTech Grid is illustrated in Figure 3.1. Analysing the companies based on the product areas, it becomes apparent that from the total of
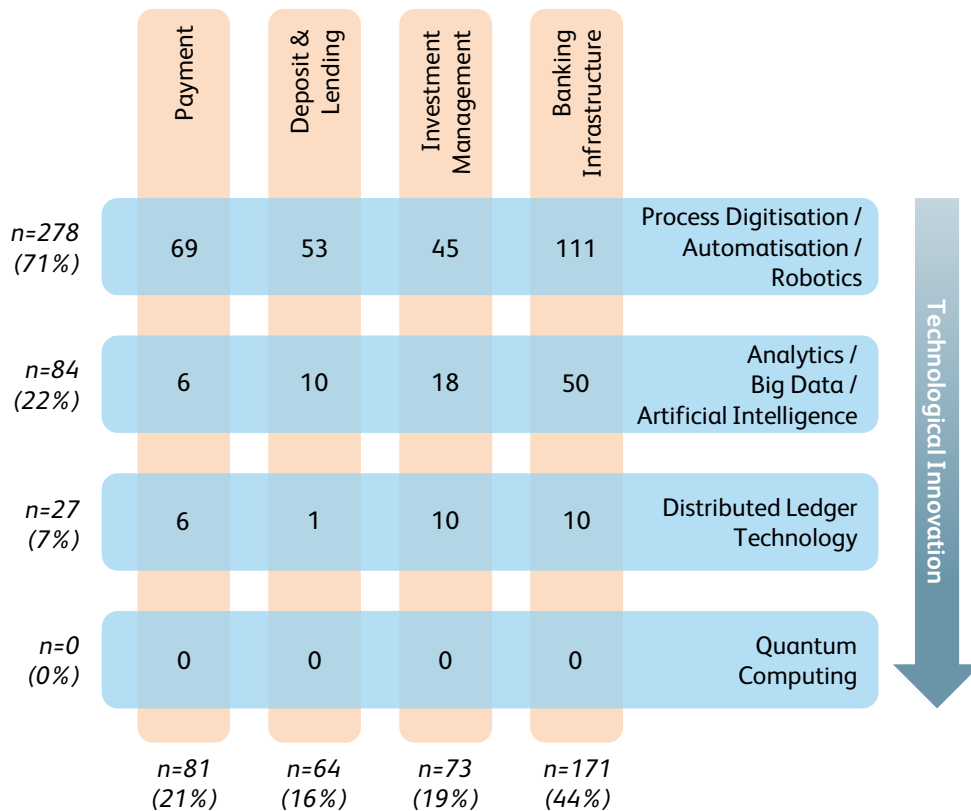
Figure 3.1: Distribution of leading FinTech companies according to the FinTech Grid (n=389)

389 companies, 44 percent (171 companies) are active in the area of *Banking Infrastructure*, followed by 21 percent (81 companies) that specialise in the *Payment* area. While 19 percent (73 companies) provide solutions related to *Investment Management*, the smallest proportion of 16 percent (64 companies) focuses on the area of *Deposit & Lending*. In terms of technological innovation, *Process Digitisation / Automatisation / Robotics* dominates with 71 percent (278 companies), while *Analytics / Big Data / Artificial Intelligence* accounts for 22 percent (84 companies) of the sample, thus representing the second most applied technology. The large proportion of companies using *Process Digitisation / Automatisation / Robotics* may be explained by the advanced development and maturity of the corresponding concepts. The relative number of companies using *Distributed Ledger Technology* amounts to seven percent (27 companies). Finally, none of the companies represented in the two rankings are specialised in

Quantum Computing. One possible explanation for the absence of companies using said concept may lie in the immaturity of the technology itself (see Section 2.5.3 for more information on quantum computing). However, as the technology evolves, there might be an increasing number of FinTech companies specialising in this field.

As shown in Figure 3.2, most of the leading FinTech companies were founded in the year 2015 (56 companies), followed by 2016 (44 companies) and 2012 (40 companies). The figure reveals that the number of foundations increased steadily over a decade from 2002 to 2012, with the exception of a stagnation in the year 2010. Furthermore, it is worth mentioning that after a peak in 2015, the number of company foundations decreased each year. This could be attributed, in part, to the manner in which the rankings are determined. As both rankings aim to list the leading FinTech
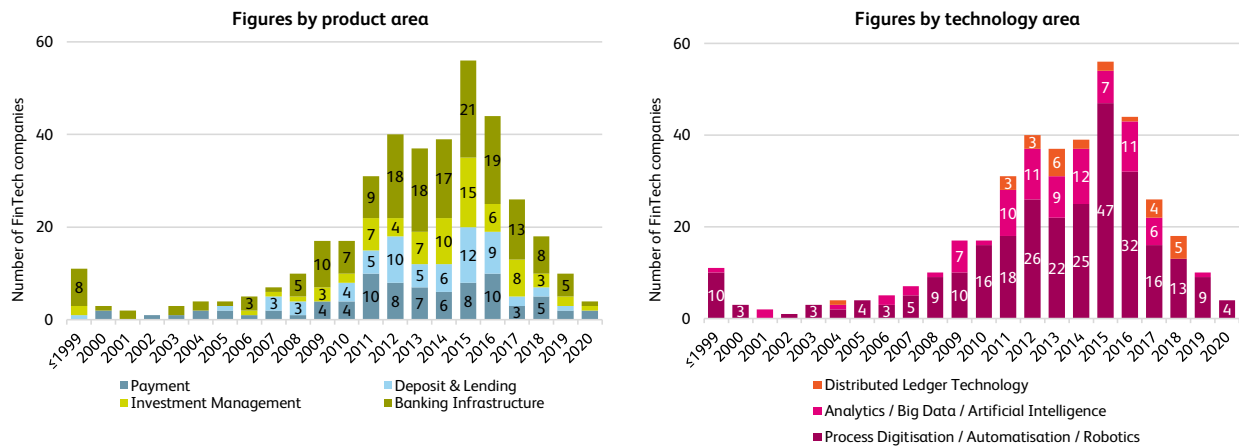
Figure 3.2: Number of leading FinTech company incorporations per year by product (left-hand graph) and technology area (right-hand graph) (n=389)

companies, it may be difficult for a recently incorporated company to be labelled as an industry leader.

Considering the number of foundations with regard to the product areas (left-hand graph in Figure 3.2), it becomes apparent that the number of incorporations of FinTech companies active in the area of *Deposit & Lending* has declined considerably in recent years. While these companies accounted for around 20 percent of FinTech companies in 2015 and 2016, the proportion fell to just slightly over ten percent in the years 2017 to 2019 and to zero percent in 2020. It remains unclear, however, if this represents an emerging trend or whether this might be attributable to the data source.

Turning to the right-hand graph in Figure 3.2, which shows the number of company foundations by year and technology area, further insights emerge. The first company in the area of *Distributed Ledger Technology* was founded in the year 2004. That said, it is noteworthy that the respective company initially focused on other technologies and only later started to apply concepts from the field of *Distributed Ledger Technology*. A second insight is given by the relative proportion of companies active in the respective technological areas over time. The share of those companies applying more advanced technologies, i.e. *Analytics / Big Data / Artifi-*

cial Intelligence and *Distributed Ledger Technology*, did not seem to increase over the last few years.

Figure 3.3 shows the geographical distribution of the FinTech companies by country of headquarters. Out of the 389 companies, the majority of companies are based in the U.S. with 208 companies (53 %). One reason for this large proportion of U.S. companies might be the origin of the rankings used. Since both providers, *Crunchbase* and *CB Insights*, are U.S.-based, the selection of leading FinTech companies might be influenced by a certain home bias. The second most represented country is the United Kingdom with 58 companies (15 %), followed by India with 33 (8 %), Germany with ten (3 %), Canada with nine (2 %), Brazil and China with eight (2 %) each, and France and Sweden with six (2 %) each. The number of Swiss companies in the sample amounts to five (1 %). When analysing the technological innovation (right-hand graph in Figure 3.3) in combination with the country of headquarters, a further finding emerges. Although both the UK and India are represented with over 30 companies each, the area of *Distributed Ledger Technology* is hardly existent in both countries. In contrast, even though companies from Switzerland represent only one percent of the total sample, three Swiss companies apply concepts from the area of *Distributed Ledger Technology*, accounting

Figures by product area

Figures by technology area
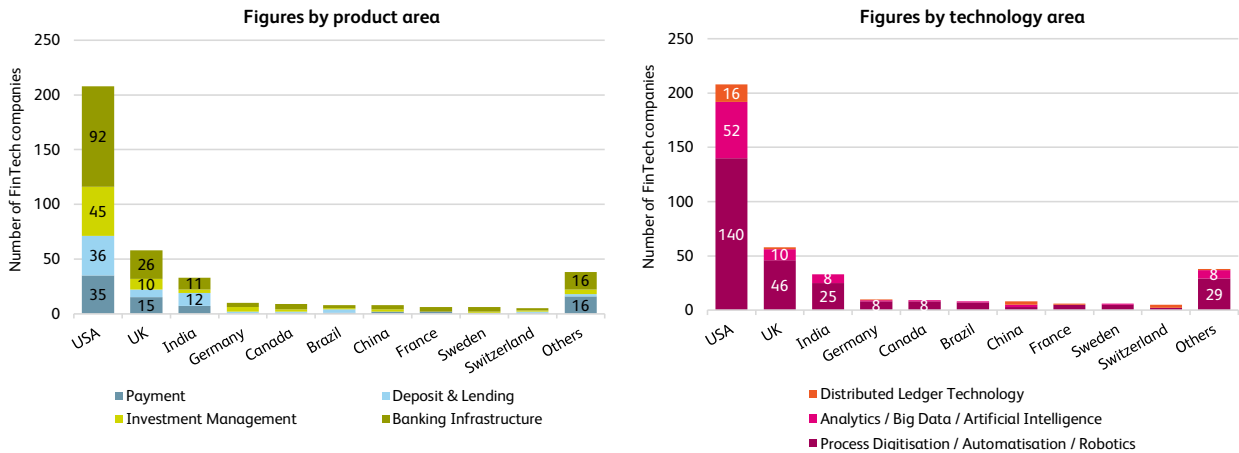
Figure 3.3: Number of leading FinTech companies by country of headquarters, and by product (left-hand graph) and technology area (right-hand graph) (n=389)

for eleven percent of all companies classified in this area of technology.

Lastly, the globally leading FinTech companies are analysed descriptively according to the targeted customer segments in combination with the respective product and technology areas (see Figure 3.4). The figure illustrates that the largest proportion (38 %) of leading FinTech companies offers their products and services in both the domestic and international market

and focus on companies as customers (B2B). At 23 percent, the second largest group serves individuals (B2C) in their home country. A third sizeable group (14 %) are FinTech companies that target the domestic B2B market. Analysing the chart in terms of national and international orientation, it becomes apparent that the majority (57 %) of companies in the sample address an international customer base, while a minority (43 %) focus exclusively on the domestic market. With regard to the customer types targeted, more than half of the

Figures by product area

Figures by technology area
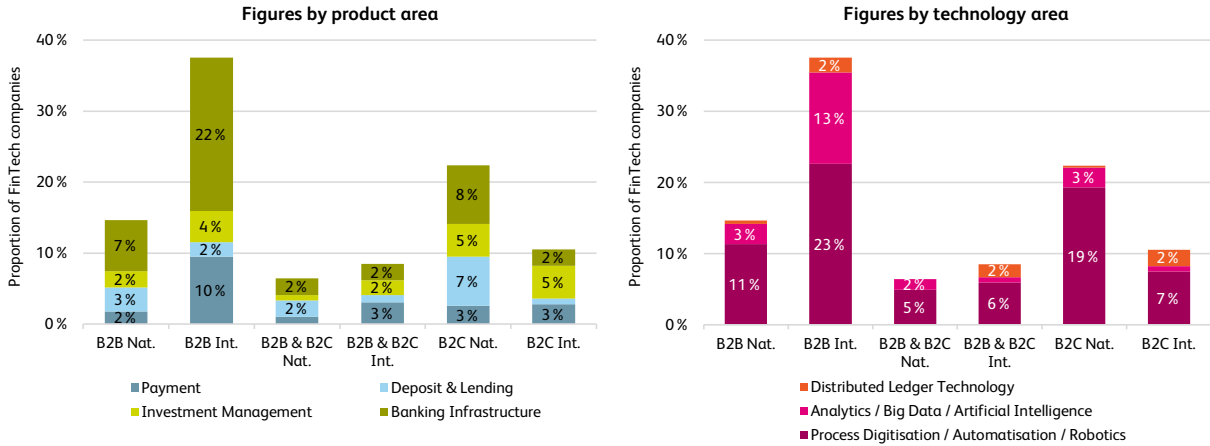
Figure 3.4: Proportion of leading FinTech companies by customer segments, and by product (left-hand graph) and technology area (n=389)

companies (52 %) offer their products and services to companies (B2B) while 33 percent serve individuals as customers. The remaining 15 percent provide their solutions to a combination of both (B2B and B2C) customer types.

Further insights are obtained by analysing the different customer segments in combination with the product areas (left-hand graph in Figure 3.4). In this context, it appears that companies in the area of *Banking Infrastructure* primarily serve businesses and operate internationally. A similar observation applies to providers in the field of *Payment*, with slightly less than half (10 out of 21 percent) addressing the same customer segment. Regarding the *Deposit & Lending* product area, the largest group targets domestic private individuals as customers. Lastly, the distribution with regard to the customer segment of companies active in *Investment Management* is fairly balanced with no large proportion concentrated in any specific customer segment.

The right-hand graph in Figure 3.4 illustrates the targeted customer segment of the leading FinTech companies in relation to the technologies applied. First, it can be seen that companies applying *Process Digitisation / Automatisation / Robotics* primarily serve business customers (B2B) internationally and private individuals (B2C) domestically. Second, leading FinTech companies specialising in *Analytics / Big Data / Artificial Intelligence* are mostly active internationally with a focus on business customers. Lastly, companies active in the area of *Distributed Ledger Technology* strongly focus on the international market, whereby both B2B and B2C customer relationships are pursued. The results of the analysis show that none of the companies applying the *Distributed Ledger Technology* are geared towards a combination of B2B and B2C customer relationships in a national context.

In summary, most globally leading FinTech companies provide products and services in the area of *Banking Infrastructure* (44 %). The proportion of other product areas varies between 16 and 21 percent. Furthermore, at 71 percent, most of the analysed companies apply *Process Digitisation / Automatisation / Robotics*, while

none of the 389 companies have a technological focus on *Quantum Computing*. In terms of the inception of the leading FinTech companies, most of them, i.e. 55 percent, were founded between the years 2012 and 2016. This compares to the 30 percent founded before 2012 and 15 percent in the year 2017 and later. When analysing the leading FinTech companies by location of their headquarters, the large proportion of U.S.-based companies become evident. The U.S. is followed by the United Kingdom and India. Finally, an analysis of the targeted customer segments shows that the majority of the companies have an international focus and serve business customers.

3.2. Valuation of Global FinTech Companies

Most FinTech companies are privately held and thus not listed on a stock exchange. Consequently, it is rather difficult to obtain a (market) valuation, or at least a valuation range that is supported by a broad range of possible investors. In addition, the sector is most likely subject to volatility, and valuations or other financial metrics may change substantially in a short amount of time. In order to address these challenges, this section aims to provide further insights into possible techniques to evaluate a company operating in the FinTech sector.

In last year's study a literature review on common approaches used to valuate companies and a first attempt to assess the values of FinTech companies was presented. Thereby, several metrics that might influence the valuation were proposed. In this year's study, the analysis regarding the valuation of FinTech companies is based on the same sample (a total of 389 companies) as in Section 3.1. Relying on desk research, multiple metrics were collected. The data includes information about a company's valuation, revenue, received funding, and number of employees as well as customers. Furthermore, the companies are grouped by categories, depending on the their business model (B2B, B2C, or both). Data was sourced from different data sources such as Crunchbase (2020),

Dealroom.co (2020), LinkedIn.com (2020), company websites, newsletters, and articles. Due to limitations in data availability, several companies were excluded from further analyses. Relevant subsets were cleaned from missing values and data dating back further than the year 2019 was neglected. Further information on each subsample is provided in the respective analysis.

Building on the approach from last year's study, the goal is to further extend the analysis by including additional factors. Furthermore, the distinction of different categories may lead to further insights. In last year's analysis, a univariate linear regression approach was applied. In particular, for companies active in the B2C business, the logarithmised[1] valuations were regressed on the logarithmised number of customers. Alternatively, for B2B companies, the logarithmised revenues were used as an explanatory variable. To concentrate and extend the findings in this study, all types of companies were included in a single analysis, whereby the model was extended with dummy variables indicating the respective business models (exclusively B2B, exclusively B2C, or both). Thus, the general impact of factors can be determined unrestricted by sub-setting the available data. Furthermore, the impact of the type of business model may potentially be assessed. In addition to the existing factors, i.e. revenue and number of customers, the number of employees and the amount of total received funding are incorporated in the model. Using a multivariate linear regression approach provides further insight on the joint behavior of variables. In order to avoid the problem of multicollinearity within the model, generalised variation inflation factors (GVIF) were derived, showing no signs of multicollinearity. Moreover, to account for potential heteroscedasticity, White's standard errors were applied (White, 1980).

Table 3.2 shows the multivariate linear regression results.[2] Contrary to last year's findings, a company's number of customers has no significant impact in this

Table 3.2: Regression table

	Dependent Variable:
	log(Valuation)
log(Number of Customers)	0.015
	(0.032)
log(Revenue)	0.307***
	(0.081)
log(Total Funding)	0.436***
	(0.118)
log(Number of Employees)	0.450***
	(0.097)
B2C only	−0.294
	(0.214)
B2B and B2C	−0.450
	(0.282)
Constant	4.111*
	(1.749)
Observations	120
R^2	0.747
Adjusted R^2	0.734
Residual Std. Error	0.974 (df = 113)
F Statistic	55.681*** (df = 6; 113)
Note:	*p<0.1; **p<0.05; ***p<0.01

analysis. This might either be attributed to changes in the underlying data or the different model specification. Furthermore, the type of business model, with B2B companies representing the baseline, has no impact on the logarithmised valuation. However, the logarithmised revenue, total funding, and number of employees are significant at the highest confidence level ($p < 0.01$). Since they stand in a log-log relationship to the dependent variable, an increase of each covariate by one percent is expected to increase the valuation by its coefficient in percent. Thus, an increase of funding by one percent would, ceteris paribus, lead to an increase in valuation, on average, by approximately 0.44 percent. An adjusted R^2 of 0.734 reveals that a large share of variance of the logarithmised valuation is explained by the model. Following these results, it can be stated that the valuation of FinTech companies in this sample is mainly related to the companies' revenues, total funding they are able to attract, and number of employees.

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[1] Logarithmised refers to the natural logarithm throughout the chapter.

[2] 120 observations are available, leading to 113 degrees of freedom. For all metrics, except dummy variables, the logarithm was taken to adjust for the large divergence in values.

In a second approach, the companies are segmented into different subgroups using the same metrics as in the multivariate regression analysis. Observations across all metrics were available for 120 FinTech companies. To create clusters, the k-means algorithm by Hartigan and Wong (1979) with euclidean distance was used. In order to reduce the impact of outliers and ensure increased suitability for the chosen methodology, all non-binary variables were logarithmised and subsequently standardised into an interval between zero and one.[3] Applying the elbow-method to evaluate the number of clusters, the analysis indicates an optimal differentiation into three segments. The resulting clusters are presented in Figure 3.5, whereby the x- and y-axis represent the first and second principal component of the underlying data matrix, which explain the majority (73 %) of the total components' variance.[4]

Looking at the descriptive statistics shown in Table 3.1, the segmentation reveals the distinct characteristics of the three groups of FinTech companies. A differentiation can be observed in the different types of business models. While the first cluster of companies (blue) serves both businesses and private customers (implied by the mean and median of the dummy variable being equal to one), the second (green) and third (pink) cluster either have B2C or B2B business models. Note that this distinction might be partially driven by biases caused by the chosen methodology. Values of financial metrics and the number of customers and employees appear rather skewed. Large differences between the mean and median suggest that a few large companies distort the distribution. Nonetheless, the first cluster clearly includes the largest FinTech companies in the sample, which is underlined by the highest values across all clusters. Potentially induced by higher funding, they have grown into large corporations in terms of revenue, the number of customers, and size of the workforce. The second and third cluster appear similar in terms of funding, revenues, and number of employees.

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[3] The k-means algorithm is not perfectly suited for data with binary variables as, per definition, these maximise the distance metric. Hence, for better comparison, all other variables are standardised into the interval between zero and one, which should preserve comparability.

[4] For more information on the methodology, see Härdle and Simar (2019).
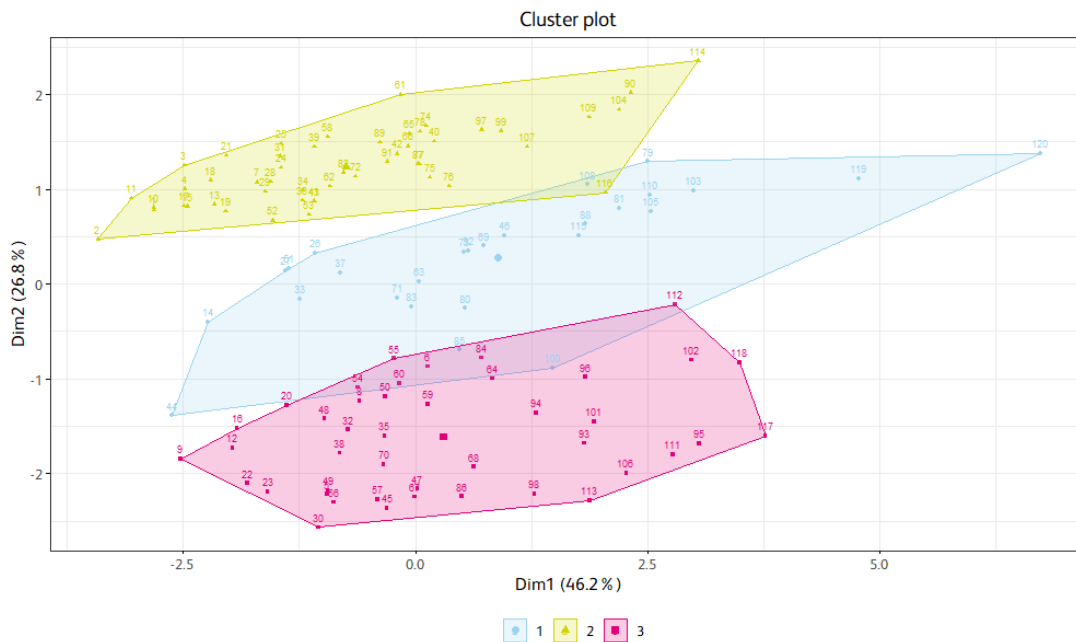
Figure 3.5: Clustering leading FinTech companies (n=120)

By virtue of their business models they differ in terms of the number of customers served, as B2C companies typically have more clients. Although they appear quite similar, companies in the third cluster have a higher valuation.

The analysis reveals that large FinTech companies belong to the first cluster, whereas emerging or smaller FinTech companies are found in either the second or third cluster, depending on the customer type targeted. However, this difference in size could also be explained by the different maturity of the companies in the clusters. Companies in the first cluster are generally more established companies (average year of foundation 2006), whereas the companies in the second and third cluster have more recently been incorporated (average year of foundation 2011 and 2014, respectively. While the metrics are consistently high in the case of the first cluster, differences in the second and third cluster can mainly be explained by the type of customer targeted and differences in the valuation.

To conclude, three variables, i.e. total funding, revenue, and number of employees, were identified as having a significant impact on the valuation of globally leading FinTech companies. Types of business models show no significant impact on valuation, but are useful in clustering FinTech companies into distinct groups and therefore allow better benchmarks for companies. The segmentation not only reveals differences between clusters with regard to customer types targeted but also with regard to the size of the companies. Further research could provide insight into developments of the companies within each cluster over time. In addition, applying other clustering methods could provide further useful insights. Besides to approaches with structured data, applications involving unstructured data are gaining traction. The following excursus provides an initial approach to the use of unstructured and semi-structured data in financial analysis.

Table 3.1: Descriptive statistics of clusters

Cluster 1

Statistic	Valuation ($)	B2B	B2C	Total Funding ($)	# Employees	# Customers	Revenue ($)
Mean	14,300,000,000	1	1	409,500,000	13,253	30,979,896	4,406,000,000
Median	1,000,000,000	1	1	242,500,000	752	2,800,000	60,230,000

Cluster 2

Statistic	Valuation ($)	B2B	B2C	Total Funding ($)	# Employees	# Customers	Revenue ($)
Mean	1,414,000,000	0	1	319,000,000	469	5,970,000	87,278,356
Median	306,200,000	0	1	134,300,000	233	550,000	19,699,230

Cluster 3

Statistic	Valuation ($)	B2B	B2C	Total Funding ($)	# Employees	# Customers	Revenue ($)
Mean	7,180,000,000	1	0	239,000,000	1652	3,738,685	356,000,000
Median	572,400,000	1	0	151,500,000	259	50,000	30,000,000

Excursus: Unstructured and Semi-Structured Data in Financial Analysis

By Janna Lipenkova & Timo Heroth, Equintel GmbH; Thomas Ankenbrand, Denis Bieri, Moreno Frigg & Marc Grau, Institute of Financial Services Zug IFZ

More than 80 percent of potentially useful business information is expected to be of an unstructured nature (Das & Kumar, 2013). This means that a large amount of data that could prove beneficial to any kind of analysis is rarely considered. In finance, a variety of unstructured data sources are accessible, including mandatory filings and disclosures, earning announcements and other press releases, investor road shows, financial press articles, analyst reports and research notes, sentiment news, and social networks, to name a few (Guo, Shi, & Tu, 2016).

In Section 3.2, the approaches for the valuation and clustering of FinTech companies rely on structured data accumulated through desk research. To extend the analysis on the valuation of FinTech companies, this excursus presents a first approach based upon unstructured data sources. In a joint effort with *Equintel*, a provider of advanced equity intelligence sourced through the application of artificial intelligence and big data methodologies[5], data has been collected, cleaned, prepared, and further analysed for a first impression of what can be expected to be drawn from unstructured data.
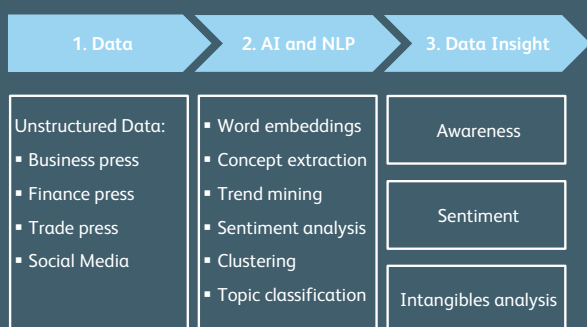
Figure 3.6: Equintel analytics workflow

Figure 3.6 provides an overview of the methodology applied. In a first step, data is gathered from different sources such as press articles or social media, which

should reflect the public image of the observed companies. Due to restrictions in data availability, only the 40 largest FinTech companies are included in the sample. After converting the collected data into the necessary format, a variety of different algorithms are applied. Within the area of artificial intelligence, natural language processing (NLP), a promising field of research utilised for text analysis, is applied. Applications for clustering and classification are used to determine groups and classify relevant data. Furthermore, trends and sentiments are analysed based on the extracted content. The resulting insights are grouped into three distinct categories. First, awareness counts the frequency of occurrence for companies based on named entity recognition. Second, on a scale from zero (very negative) to one (very positive), a sentiment score for each company is derived with the use of a neural network. Third, technology rankings are derived, where word embeddings indicate how intensively companies are associated with specific technologies. The technologies are based on the FinTech Grid defined in Chapter 1 and include *Robotics and Robotic Process Automation (RPA)*, *AI and Big Data*, *Distributed Ledger Technology (DLT)*, and *Quantum Computing*. Each of these four areas are associated with a distinct score between zero and one. The higher the score, the more a company is associated with work related to the respective technology area. Figure 3.7 presents the processed scores, which shows how unstructured data is converted into structured data suitable for further analysis.

To analyse the impact of the scores based on unstructured data sources, a multivariate linear regression is carried out in order to estimate the average effects. Similarly to the analysis in Section 3.2, heteroscedasticity-robust standard errors are used and the logarithmised valuation is defined as the dependent variable. After excluding companies with missing valuations from the sample, the dataset is further reduced to 35 observations. Due to the small sample size, the results have to be considered with caution. Furthermore, including numerous explanatory variables in the model is not feasible. Accordingly, to keep the number of variables on an acceptable level, an average technology score is calculated by taking the mean across all

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[5] For more information, see www.equintel.de.

individual technology scores for each company. Following the same justification, significant factors as derived in Section 3.2 are neglected too. Table 3.3 shows the summarised regression output.

	Frequency	Sentiment	Robotics / RPA	Big Data / AI	DLT	Quantum Computing
AliPay/AntFinancial	4786	0.77	0.48	0.41	0.45	0.16
Coinbase	3199	0.75	0.02	0.11	0.56	0.24
Robinhood	1864	0.76	0.3	0.38	0.22	0.22
N26	1318	0.78	0.22	0.26	0.05	0.22
Chime	627	0.76	0.27	0.28	0.16	0.33
Blackrock	546	0.76	0.39	0.46	0.44	0.35
Kabbage	452	0.78	0.25	0.43	0.22	0.31
StarlingBank	450	0.78	0.28	0.52	0.26	0.45
Railsbank	414	0.80	0.01	0.2	0.35	0.12
Rapyd	413	0.82	0.26	0.38	0.46	0.14
Nav	344	0.80	0.31	0.28	0.35	0.34
Ideanomics	323	0.77	0.44	0.25	0.49	0.34
Checkout.com	323	0.77	0.28	0.26	0.37	0.34
Xero	293	0.79	0.31	0.42	0.16	0.21
Huobi	280	0.80	0.15	0.12	0.67	0.25
Onfido	275	0.81	0.51	0.65	0.67	0.47
Paystack	271	0.79	0.29	0.26	0.29	0.33
Mambu	261	0.81	0.53	0.73	0.51	0.57
Kraken	258	0.77	0.18	0.16	0.67	0.43
CreditKarma	249	0.76	0.46	0.4	0.08	0.3
Intuit	242	0.77	0.37	0.38	0.28	0.31
CRED	237	0.82	0.22	0.37	0.71	0.54
FundingCircle	233	0.78	0.12	0.33	0.24	0.21
Zopa	231	0.78	0.11	0.27	0.12	0.2
PhonePe	230	0.72	0.36	0.31	0.42	0.3
Opay	228	0.81	0.56	0.44	0.4	0.43
Flywire	206	0.80	0.49	0.42	0.55	0.25
Tradeshift	201	0.80	0.44	0.39	0.64	0.34
Modulr	197	0.78	0.06	0.29	0.55	0.34
Paga	185	0.77	0.45	0.35	0.35	0.23
Crowdcube	148	0.78	0.31	0.37	0.38	0.35
ChipperCash	141	0.81	0.55	0.33	0.4	0.44
Symbiont	139	0.80	0.54	0.54	0.87	0.59
Tala	128	0.80	0.45	0.47	0.12	0.38
Sezzle	127	0.76	0.22	0.4	0.2	0.24
DLocal	123	0.77	0.26	0.28	0.27	0.15
Lanistar	122	0.67	0.17	0.23	0.49	0.21
Lunar	121	0.77	0.25	0.14	0.05	0.06
Feedzai	121	0.80	0.76	0.99	0.71	0.57
Payoneer	119	0.74	0.12	0.2	0.39	0.07

Figure 3.7: Summary of unstructured data scores

The analysis shows that being mentioned in relevant press and other sources frequently points to be positively related to a company's valuation. On average, the model suggests that the more a company is mentioned, the higher is its valuation. Thus, it seems to be beneficial for a company to invest in growth of visibility. The calculated average technology score does not seem to affect the valuation of FinTech companies significantly. Potentially, taking the average score across all technology areas reduced the impact all individual factors would have had. The limited sample size, however, renders it impossible to include such a large

set of variables. Applications on large datasets could thus lead to further conclusions on the impact of these scores. Equivalently, the score for sentiments is not significant in the model. A probable explanation might be that many FinTech companies are still privately held. Private market access is typically reserved to informed investors, which may be less likely to let their investment decisions, and hence valuations, be influenced by current sentiments. It would be interesting to test how the sentiment scores affect valuations of publicly listed companies.

Table 3.3: Regression analysis using unstructured data

	Dependent Variable:
	log(Valuation)
Frequency	0.001***
	(0.0002)
Sentiment	−15.734
	(16.956)
Average Tech Score	1.960
	(3.297)
Constant	32.166*
	(12.671)
Observations	35
R^2	0.298
Adjusted R^2	0.230
Residual Std. Error	1.743 (df = 31)
F Statistic	4.382* (df = 3; 31)
Note:	*p<0.1; **p<0.05; ***p<0.01

To sum up, the analysis of unstructured data provides further information and useful insights for the valuation of companies. Due to the large amount of available data, new scores and metrics are still developed and tested in existing applications and various settings. Further research may provide more attention to the topic and thereby further strengthen adoption in the market. Unstructured data does not necessitate the development of entirely new models, but could also provide added value to existing valuation approaches. Results in these section provide indications, but due to the small sample size should not be interpreted as generally valid.

4. Swiss FinTech Companies

In this chapter, business models (Section 4.1) and challenges (Section 4.2) in the Swiss FinTech sector are analysed, and insights into the topic of Green FinTech are given (Section 4.3). The findings are based on a survey among Swiss FinTech companies that qualify under the definition of FinTech presented in Chapter 1. The survey was conducted between December 2020 and January 2021 in accordance with the following steps: Each FinTech company was sent a company-specific factsheet structured based on the Business Model Canvas by Osterwalder and Pigneur (2010) (see Chapter 1). The factsheets sent already contained public information as well as the information from previous editions of this study. All companies were then asked to complete or correct the prepopulated factsheet. In addition, companies were asked to assess the challenges defined in Chapter 1 on a scale from one (not pressing) to ten (extremely pressing). Overall, 166 of a total of 405 Swiss FinTech companies took part in the survey, resulting in a response rate of approximately 41 percent. The factsheets of these companies are listed in Chapter 8.[1] While the general overview contains information on all Swiss FinTech companies falling under the definition in Chapter 1, the empirical analysis on the business models in the Swiss FinTech sector is based exclusively on verified information.[2]

4.1.   Overview of Swiss FinTech Companies

By Thomas Ankenbrand, Denis Bieri & Moreno Frigg, Institute of Financial Services Zug IFZ

The development of the Swiss FinTech industry in recent years is a success story that has produced a wide range of innovative products and services in the finan-

cial sector. As of the end of 2020, a total of 405 FinTech companies were registered in Switzerland, representing a six percent increase compared to the previous year and a record high since the first structured survey of the industry was conducted in 2015. As defined in Chapter 1, FinTech companies can be classified into four different areas from a product point of view, i.e. *Payment*, *Deposit & Lending*, *Investment Management*, or *Banking Infrastructure*, while from a technological perspective concepts from the fields of *Process Digitisation / Automatisation / Robotics*, *Analytics / Big Data / Artificial Intelligence*, *Distributed Ledger Technology*, or *Quantum Computing* can be applied.

The diversity of business models in the Swiss FinTech sector is reflected in Figure 4.1, which classifies companies in the FinTech Grid presented in Chapter 1 and shows the overlap between product and technology perspectives for the Swiss FinTech sector, alongside the total amount and the annual change in the number of active FinTech companies in each product and technology area. In general, the two most relevant product areas in the Swiss FinTech sector are *Investment Management* and *Banking Infrastructure* with 158 and 130 companies, respectively, which also show a year-on-year growth in the number of FinTech companies. A concrete exemplary application for the former area is robo-advisors, while the latter includes neobanks, among other solutions. The remaining two product areas, i.e. *Payment* and *Deposit & Lending* are targeted by 69 and 48 companies, respectively, and are both marked by a slight year-to-year decline. Corresponding exemplary solutions in the former area include mobile or online payment services, while crowdfunding platforms are categorised into the latter. From a technology perspective, most Swiss FinTech companies apply comparably mature concepts from the field of *Process Digitisation / Automatisation / Robotics* (189), followed by *Distributed Ledger Technology* (120). However, while the first technology category has increased

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[1] Note that not all information collected in the survey is reflected in the company factsheets in Chapter 8.

[2] The proportion of product and technology areas in the sample are similar to those of the total population. However, companies from the areas of *Deposit & Lending* and *Banking Infrastructure* as well as those applying technological concepts from the field of *Process Digitisation / Automatisation / Robotics* are slightly overrepresented.
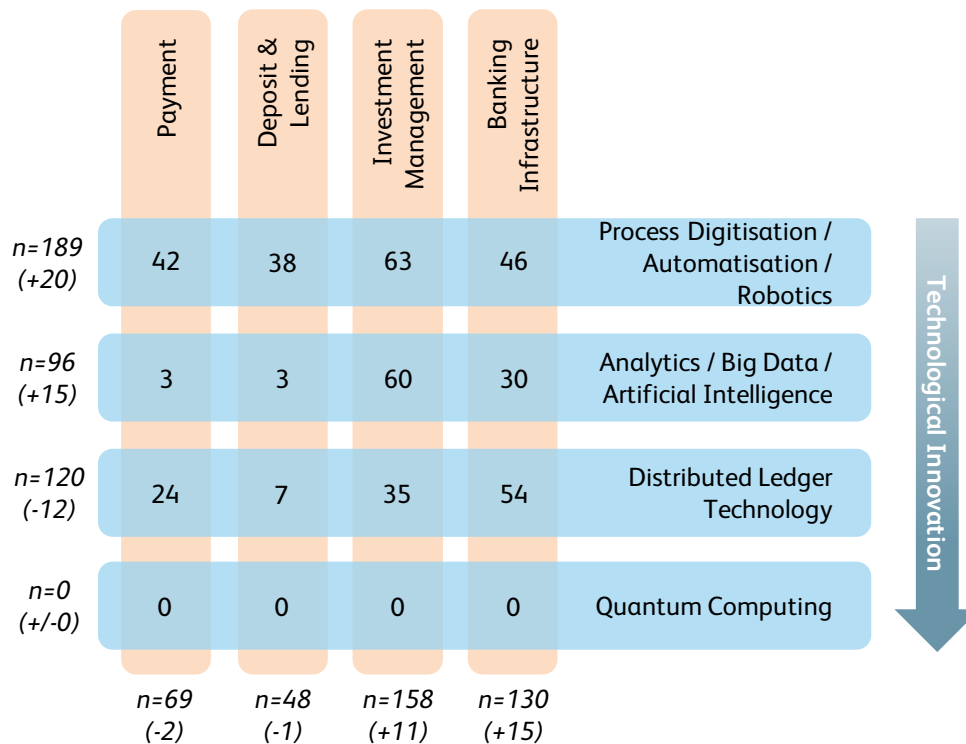
Figure 4.1: Distribution of Swiss FinTech companies according to the FinTech Grid (n=405)

its number of active FinTech companies by 20 in a year-over-year comparison, the number of DLT-based companies has declined by twelve in the year 2020. Methodological concepts from the field of *Analytics / Big Data / Artificial Intelligence*, as the third technology category, are applied by 96 Swiss FinTech companies and show the largest growth in relative terms. Quantum computing, as the most innovative but also the most immature technology, has not yet entered the Swiss FinTech sector.[3]

When looking at the intersections between product and technology areas, Figure 4.1 highlights that business models targeting the *Investment Management* business using technologies from the fields of *Process Digitisation / Automatisation / Robotics* (63 companies) and *Analytics / Big Data / Artificial Intelligence* (60 companies) are the most popular. Investment platforms

such as robo-advisors or data-driven investment strategies serve as examples of such offerings. The third most frequently applied business models focus on solutions in the field of *Banking Infrastructure* using Distributed Ledger Technology (54 companies). Examples hereof are crypto exchanges, wallet providers, and tokenisation platforms. Figure 4.1 also shows those intersections between the product and technology areas in which the fewest companies are active. Particularly striking is the low number of companies offering products and services related to *Payment* and *Deposit & Lending* using methodological concepts from the field of *Analytics / Big Data / Artificial Intelligence*, with only three providers each. With seven providers, the number of companies that link solutions in the field of *Deposit & Lending* with DLT is also comparatively low. However, the increased interest in decentralised finance (DeFi) has led to a slow but steady increase of the number companies in this intersection in the last two years. Based on the analysis in Chapter 3, the business models

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[3] Since quantum computing is currently not relevant in the Swiss FinTech sector, the technology is excluded from further analysis.
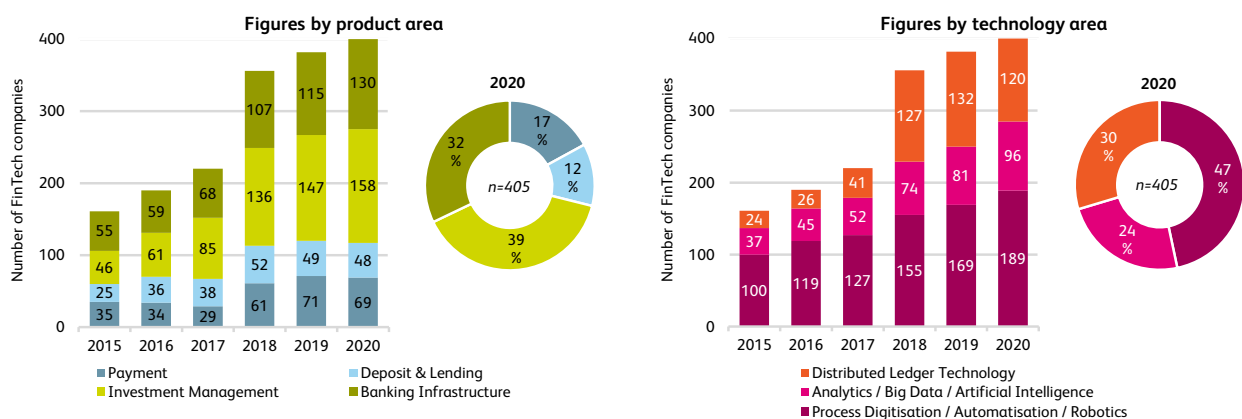
Figure 4.2: Number of FinTech companies in Switzerland by product (left-hand graph and chart) and technology area (right-hand graph and chart)

in Switzerland can also be compared with those of the leading global FinTech companies. A comparison with Figure 3.1 reveals that Swiss FinTech companies are, in relative terms, more heavily based on DLT and focus on the area of *Investment Management* more frequently than the global leaders. This is not surprising considering Switzerland's leading global role as a hotspot for DLT and a hub for investment management services.

Figure 4.2 presents the development in the number of FinTech companies since 2015, from the perspective of the product areas (left-hand graph and chart) and from the technology perspective (right-hand graph and chart). In general, the figure shows that the total number of companies in the Swiss FinTech sector has increased by more than one and a half times over the observation period, from 161 at the end of 2015 to 405 at the end of 2020. By far the largest growth was recorded in 2018. As the graph on the right-hand side of Figure 4.2 indicates, this strong increase in the year 2018 is mainly due to the emergence of DLT-based Fin-Tech companies and overlaps with the emergence of the so-called "Crypto Valley" in and around the canton of Zug. A similar effect can also be observed for other regions, such as Liechtenstein, which generally has strong ties with Switzerland. For this reason, this study also includes an excursus on FinTech-related developments in Liechtenstein on pages 78 to 79. Apart

from this one-time surge in the number of Swiss FinTech companies in 2018, annual growth in the sector has continuously been positive, albeit at a declining rate. The growth from 382 to 405 companies in 2020 represents a six percent increase, the lowest relative year-over-year growth since 2015. In addition to the absolute number of FinTech companies per year, Figure 4.2 also presents the relative proportions of the FinTech product and technology areas as of the end of 2020.[4]

A breakdown of the increase in the number of Swiss Fin-Tech companies by 23 in the year 2020 is illustrated in Figure 4.3. In general, there are three different driving factors. First, there are companies that leave the Fin-Tech sector because they are no longer active, have relocated abroad, have merged, have been acquired, or have changed their business model in such a way that it no longer falls under the definition of FinTech in Chapter 1. In 2020, a total of 62 companies exited the Swiss FinTech sector as a result.[5] The second reason for the annual change in the total number of Swiss FinTech companies is due to providers that have existed for a longer period of time but whose business models have

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[4]Note that rounding differences may occur in some of the evaluations, which is why the totals of the proportions do not necessarily add up to 100 percent in every case.

[5]Note that a certain number of FinTech companies show signs of inactivity, such as outdated website copyrights or a dormant social media presence. However, since these companies still fall under the definition of FinTech in Chapter 1, they are included in this analysis.

only met the definition of FinTech in Chapter 1 since 2020 or only started to appear publicly in said year. As a consequence, 62 new companies were added during 2020. The third reason for the change in size of the Swiss FinTech sector is the foundation of new companies, the number of which amounted to 23 in 2020.
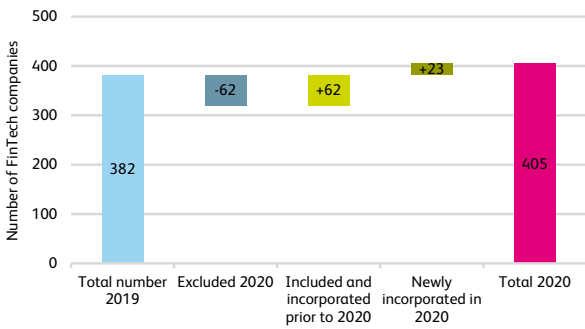
Figure 4.3: Year-to-year change in total number of Swiss FinTech companies

The temporal development of the number of FinTech company incorporations is highlighted in Figure 4.4.[6] In general, it can be observed that the industry has shown increasing growth since 2010, which culminates

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[6]The years of incorporation are retrieved from the commercial register.

in the highest number of annual company foundations of 80 in 2018. The sharp increase in 2017 and 2018 is in particular due to the establishment of DLT-related FinTech companies targeting the *Investment Management* and *Banking Infrastructure* product areas and again coincides with the emergence of the "Crypto Valley". In the last two years, the number of company foundations has decreased to 45 in 2019 and 23 in 2020. This circumstance is partly explained by the fact that some companies come to the public's attention in the course of their business activities while operating in stealth mode at their inception. These companies can therefore only be allocated to the corresponding years at a later point in time. Another reason is the decline of DLT-based companies, which accounted for about half of the incorporations in 2017 and 2018 and roughly a quarter in 2020. As a consequence, the other two technology categories were able to increase their share of company foundations in the last two years. From a product area perspective and analogous to previous years, the highest number of incorporations in the year 2020 are accounted for by *Banking Infrastructure* (+10) and *Investment Management* (+7), followed by *Payment* and *Deposit & Lending* (+3 each). The 23 newly founded companies are distributed among the cantons of Zurich (14), Zug (4), Aargau, Basel-Country, Geneva, St. Gallen, and Vaud (1 each).
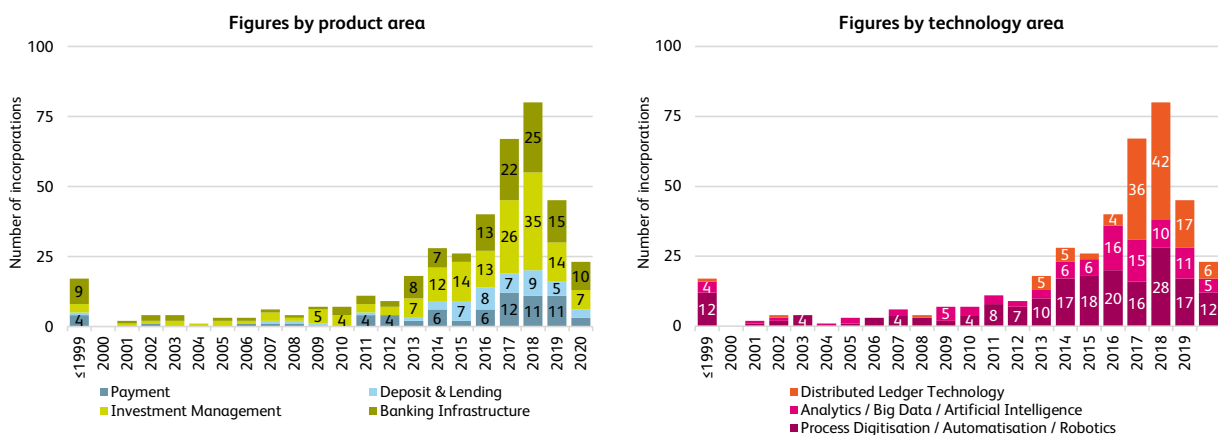
Figure 4.4: Number of FinTech company incorporations per year by product (left-hand graph) and technology area (right-hand graph) (n=405)
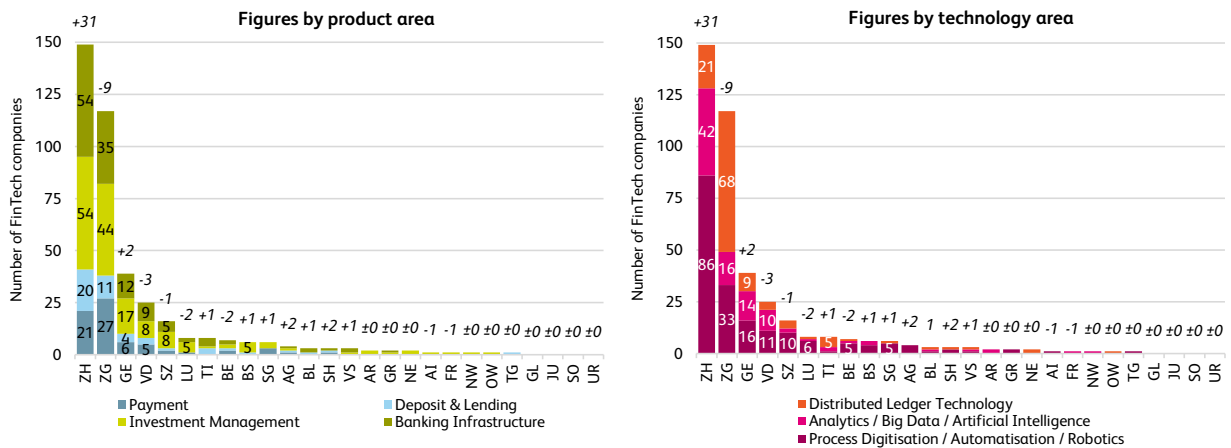
Figure 4.5: Number of FinTech companies by canton, and by product (left-hand graph) and technology area (right-hand graph) (n=405)

The overall distribution of Swiss FinTech companies among the cantons is presented in Figure 4.5 and reveals some shifts compared to the previous year.[7] With a total of 149 resident companies as of the end of 2020, Zurich assumes the leading position from Zug with 117 companies. The change in position is due to the significant increase by 31 companies in Zurich and the decrease by nine companies in Zug. The latter is mainly due to the market exits of DLT-based FinTech companies, as already shown in Figure 4.1. Zurich, on the contrary, has benefited from an increased number of FinTech companies applying technologies from the fields of *Process Digitisation / Automatisation / Robotics* and *Analytics / Big Data / Artificial Intelligence*, targeting the *Banking Infrastructure* product area. The increase by 31 companies also shows that it is not merely new incorporations that are responsible for the growth, but also relocations of companies that were previously located in different cantons. A look at the other 24 cantons reveals that Zurich and Zug have a substantial lead. In third place is Geneva with 39 companies, followed by Vaud and Schwyz with 25 and 16 companies, respectively. The remaining cantons host between eight and one FinTech companies, with the exceptions of Glarus, Jura, Solothurn, and Uri, which lack

FinTech activity. In terms of annual change, there are no significant shifts apart from those mentioned for the cantons Zurich and Zug.
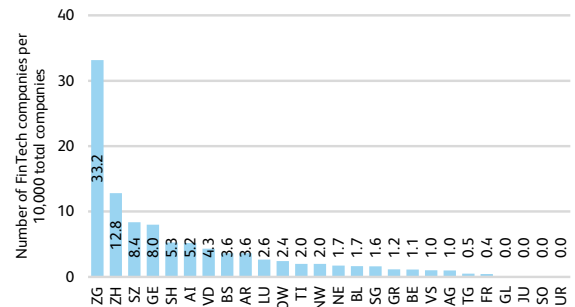
Figure 4.6: Number of FinTech companies per 10,000 total companies by canton (n=405)

A second perspective concerning the clustering of FinTech companies is given in Figure 4.6, presenting the number of FinTech companies per 10,000 total companies by canton.[8] This relative view shows that Zug has the highest density, with approximately 33 FinTech companies per 10,000 total companies. Zurich is placed on second position (12.8), followed by Schwyz (8.4) and Geneva (8.0).

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[7] Analogous to the years of incorporation, the locations of Swiss FinTech companies are sourced from the commercial register.

[8] The total number of companies per canton refers to January 1, 2021, and is sourced from the Federal Commercial Registry Office (2021).

After describing the status of the Swiss FinTech industry and its trends over the past years from a macro perspective, the following paragraphs highlight the business models pursued by the companies in more detail. The analysis is based on the Business Model Canvas by Osterwalder and Pigneur (2010) and only includes information verified by the companies that took part in this year's survey. The analysis hereby assumes two different perspectives. First, the production side of Swiss FinTech companies is evaluated, focusing on their key resources, key activities, and key partners in order to produce the value propositions. Second, the distribution side is analysed, addressing the targeted customer segments, the channels for customer interaction, and the revenue models pursued.

A FinTech company needs financial as well as human resources to create a value proposition and transform it into a certain product or service. An evaluation of the total funding and the number of employees in Swiss FinTech companies is given in Figure 4.7. In terms of total capitalisation (left-hand graph in Figure 4.7), an upward trend can be seen over the last few years. While this trend was continuous between 2016[9] and 2019, a shift is recorded from medium-sized total funding vol-

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[9] Total funding was not surveyed in the first edition of the IFZ FinTech Study.

umes towards small or large ones in 2020. However, total funding between CHF 1 million and 5 million still accounts for about half of all observations. The proportion of companies with capitalisation below CHF 1 million increased by ten percentage points in the year 2020, while the proportion of companies with a capitalisation above CHF 5 million reduced by five percentage points. The largest year-to-year increase in percentage points is observed for the lowest funding interval (+7 percentage points). It should be noted that year-to-year changes are to some extent due to the comparatively small number of observations with regard to total funding, so different samples, i.e. companies participating in the survey, in different years may result in notable shifts. The average total funding of Swiss FinTech companies in 2020 was CHF 14.8 million, while the median was CHF 1.4 million. This shows that the Swiss FinTech sector is home to some large companies in terms of total funding.

Analogous to total funding, a similar development emerges for the second key resource, the number of employees in terms of full-time equivalents working at Swiss FinTech companies (right-hand graph in Figure 4.7). While most Swiss FinTech companies employ between five and 15 full-time equivalents, there has also been a year-to-year decline of ten percentage points in this middle interval in 2020.

Figure 4.7: Proportion of FinTech companies by total funding (left-hand graph; n_{2020}=64) and employees (right-hand graph; n_{2020}=154)

The decrease was mainly in favour of larger FinTech companies with 16 to 50 employees and more than 50 employees which increased their share by six percentage points in total. However, an increase of three percentage points is also recorded for small companies with fewer than five employees. As of the end of 2020, Swiss FinTech companies employed 76 full-time equivalents on average, with the median being significantly lower at twelve. This implies that Switzerland is home to some FinTech companies with very sizable workforces.
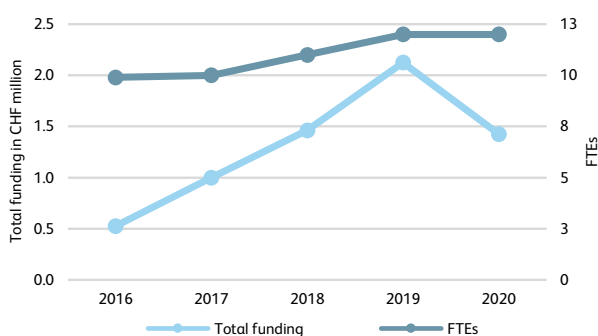
Figure 4.8: Median total funding (n_{2020}=64) and number of employees (n_{2020}=154) by year

Another perspective on the temporal development of key resources at Swiss FinTech companies is given in Figure 4.8, showing the median values for total funding and number of employees by year. It reveals that the median value for both key resources continuously increased from 2016 to 2019, indicating the growth and increasing maturity of the sector. In the last year, however, there appears to be a shift in trend. While the median value for the number of FTEs employed at Swiss FinTech companies stagnated at twelve, the total funding median value decreased from CHF 2.1 million to CHF 1.4 million. The figure thus shows that the continuous growth and increasing maturity of the Swiss FinTech sector observed in earlier years came to a halt in 2020.

While the median size of the number of employees at Swiss FinTech companies has not changed over the past year, jobs are increasingly shifting abroad. This development is reflected in Figure 4.9. In 2017, when the cor-

responding key figures were collected for the first time, the proportion of employees of Swiss FinTech companies actually located in Switzerland amounted to 72 percent. This figure has continuously declined to 63 percent in the year 2020, indicating an increased internationalisation of the workforce in the sector. Hence, as of the end of 2020, over one third of the workforce employed by Swiss FinTech companies was located abroad. By comparison, as of the end of 2019, around 84 percent of employees at Swiss banks were located in Switzerland, while only 16 percent worked abroad (Arbeitgeber Banken, 2020).
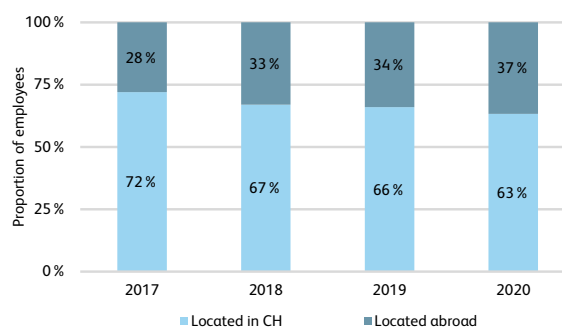
Figure 4.9: Proportion of employees of Swiss FinTech companies in Switzerland and abroad by year (n_{2020}=138)

A further relevant point with regard to human resources at Swiss FinTech companies is the degree of gender diversity. An initial analysis on the topic was presented in last year's edition of this study, where the proportion of women in the management team and in the board of directors of Swiss FinTech companies was evaluated.[10] For the year 2020, of the total of 1,094 members identified in management teams in the Swiss FinTech sector, just 102 are female, which corresponds to a share of nine percent. This proportion is even lower with regard to the boards of directors. Only 78 of the 1,134 members identified are female, corresponding to a share of seven percent.

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[10] The identification of the members of the management teams and boards of directors in the Swiss FinTech sector this year is based on the information provided by the survey participants and the entries in the commercial register.

Figure 4.10 shows that over three quarters of Swiss FinTech companies do not have female management team or board of directory members. The proportion of all-female management teams and boards of directors is significantly smaller at two and one percent, respectively. In 21 percent of management teams, female members are represented but make up no more than half. This holds true for only 17 percent of the boards of directors. Furthermore, only one Swiss FinTech company has a proportion of women between 51 and 99 percent of all management team members. This shows that the Swiss FinTech sector is strongly male-driven, which offers room for improvement from a diversity perspective. However, a comparison to last year's findings indicates that the proportion of females in leading positions at Swiss FinTech companies is trending upwards.
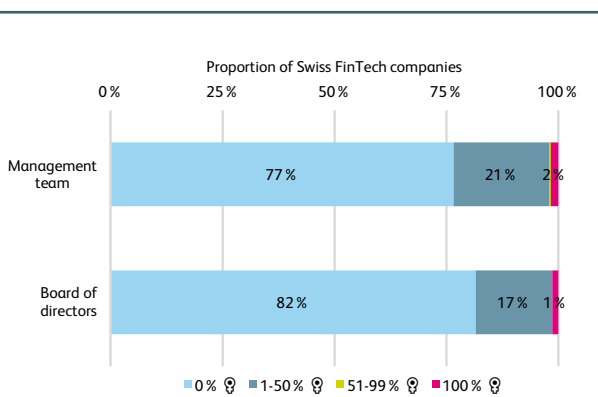
Figure 4.10: Proportion of female management team and board of directors members (n=405)

Key resources at Swiss FinTech companies can be leveraged in different ways, typically depending on the company's stage in the business life-cycle. This is underlined in Figure 4.11. It highlights the proportion of Swiss FinTech companies practising three key activities, i.e. programming and engineering, marketing and finding clients, and operative business and serving clients, by year of inception. Younger companies founded since 2016 tend to focus more frequently on activities relating to developing and marketing the solution than comparatively older companies. In contrast, companies founded in 2015 or earlier focus to a greater extent on
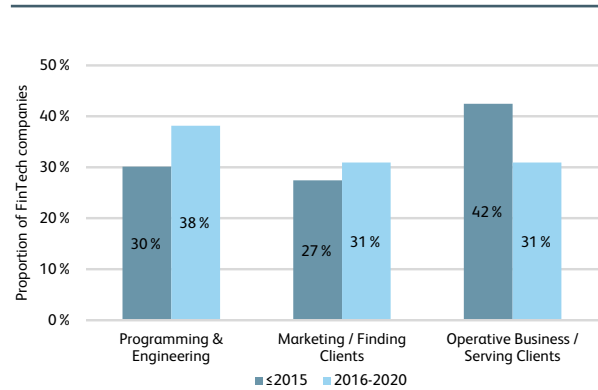
Figure 4.11: Proportion of FinTech companies by key activities, and by year of inception (n=161, multiple answers possible)

operations and serving customers. With regard to the various product and technology areas of FinTech companies, there are a few observable differences in terms of key activities, as highlighted in Figure 4.12. First, companies in the area of *Banking Infrastructure* are more involved in programming and engineering their solution. Since many of them apply technologies related to *Distributed Ledger Technology*, there is also a certain concentration of the corresponding activities in this technology category. Second, companies in the area of *Deposit & Lending* seem to be comparatively more operational and less concerned with developing their solutions. This can be partly explained by crowdfunding platforms that have been serving the market for several years now. Third, the consistently high percentages in Figure 4.12 show that all key activities are relevant among Swiss FinTech companies, regardless of the respective product and technology area.

The last element on the production side of Swiss FinTech companies are key partners. These key partners typically provide resources, such as expertise in a specific area like regulation or even access to a pool of potential customers, that FinTech companies lack on their own. Of all the Swiss FinTech companies that participated in the survey, *Swisscom* (13 mentions), *SIX* (9 mentions), and *Microsoft* (8 mentions) were most frequently named as key partners.
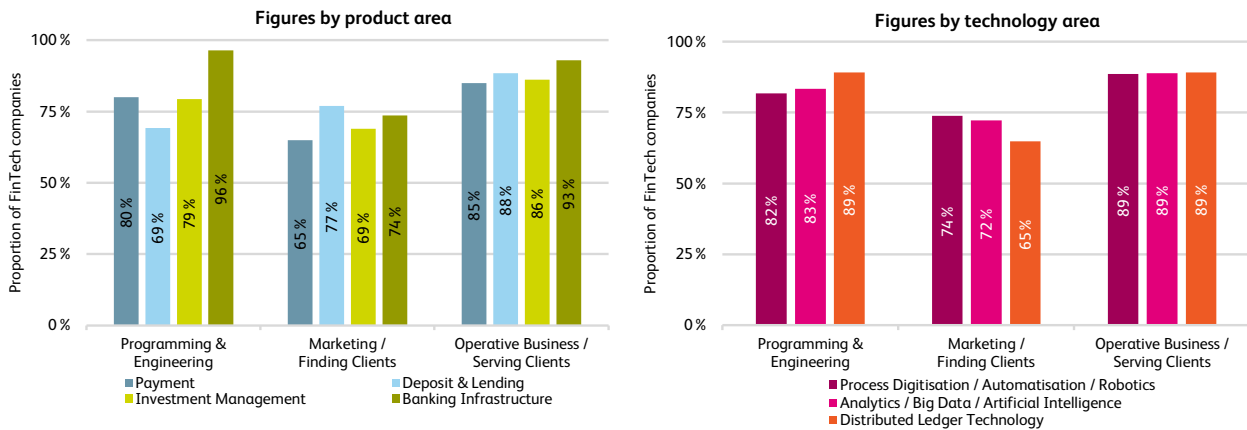
Figure 4.12: Proportion of FinTech companies by key activities, and by product (left-hand graph) and technology area (right-hand graph) (n=161, multiple answers possible)

In addition to the creation and production of the value proposition, its distribution is also of central importance for all types of companies. One element of this process includes the definition of target customers to be served by the solutions offered. Figure 4.13 shows the market strategies of Swiss FinTech companies as of the end of 2020 with regard to targeted customer types and geographical orientation. It is evident that the majority of Swiss FinTech companies target either solely businesses (B2B) or a combination of both business and private customers (B2B and B2C), and pursue an international market strategy. This holds true for all product and technology areas. Of all Swiss FinTech companies, five percent pursue a purely B2C strategy, 52 percent a purely B2B strategy and 43 percent a hybrid approach, which is similar to previous years. With regard to the geographical orientation, companies in three out of the four product areas have a predominantly international focus. An exception is the *Deposit & Lending* product area in which around half of the associated
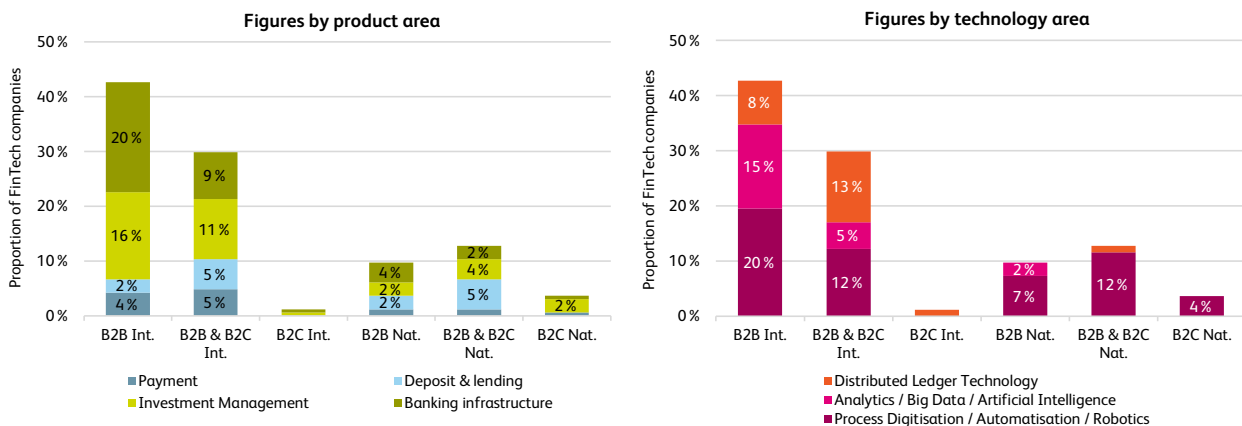
Figure 4.13: Proportion of FinTech companies by customer segments, and by product (left-hand graph) and technology area (right-hand graph) (n=164)

companies, mainly crowdfunding platforms, serve the domestic market. From a technological perspective, the nationally oriented FinTech companies predominantly apply technologies related to *Process Digitisation / Automatisation / Robotics*. The more sophisticated categories, i.e. *Analytics / Big Data / Artificial Intelligence* and *Distributed Ledger Technology*, are mainly used by companies with an international market orientation. In general, the share of internationally oriented Swiss FinTech companies amounts to 74 percent, and is therefore in line with the observations from the previous year.

The way a FinTech company interacts with its customers can differ depending on its business model and the products and/or services provided. In order to analyse the interaction, a distinction is made between a purely digital, e.g. through a web application or a website, purely personal, e.g. by phone or email, or a hybrid form of interaction. The proportion of Swiss FinTech companies by interaction channels is given in Figure 4.14.
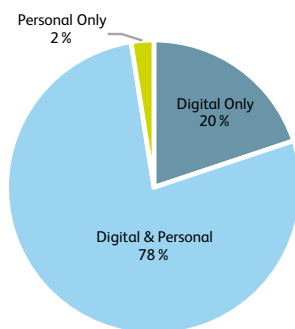
Figure 4.14: Proportion of FinTech companies by channels (n=161)

The figure indicates that over three quarters of Swiss FinTech companies pursue a hybrid interaction strategy using both digital and personal channels. 20 percent of Swiss FinTech companies follow a purely digital interaction strategy, while only two percent operate on a pure personal basis. This finding applies similarly to all product and technology areas, with the exception of companies in the *Deposit & Lending* and *Distributed Ledger*

Technology segments, which rely more frequently on purely digital channels in comparison. An evaluation of the interaction channels by targeted customer types is given in Figure 4.15. It highlights the preference of a purely digital form of interaction in the B2C business. In contrast, personal channels are of greater relevance when business customers are served. This difference might be explained by the fact that B2C models typically need to be scalable to serve a critical mass of customers. This is more easily achieved via digital interaction channels. In the B2B market, personal customer contact tends to be more important because, depending on the business model, a customer's individual needs must be addressed to provide tailor-made solutions.
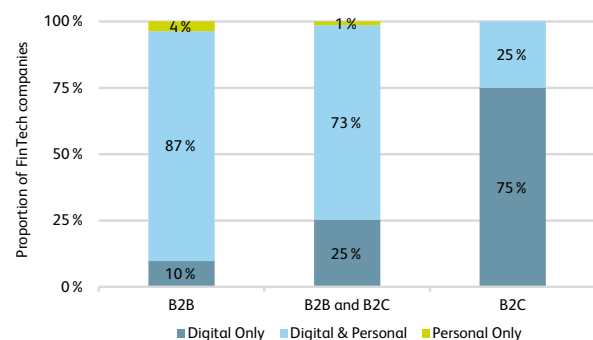
Figure 4.15: Proportion of FinTech companies by channels, and by customer type (n=161)

Besides defining the customer segments targeted and setting an interaction strategy, FinTech companies must also find ways to monetise the products and services offered. For FinTech companies, which are located at the intersection of finance and technology, there is a multitude of relevant revenue models. Depending on the business model pursued, revenue models from either the traditional financial industry or the IT industry can apply. Those from the traditional financial industry include commission, interest, or trading based models, while licence fees or Software-as-a-Service (Saas) revenue models originate from the IT sector. Further possibilities are advertising or the sale of (analysed) data. The proportions of revenue models applied in the Swiss FinTech sector by year are shown in Figure 4.16.
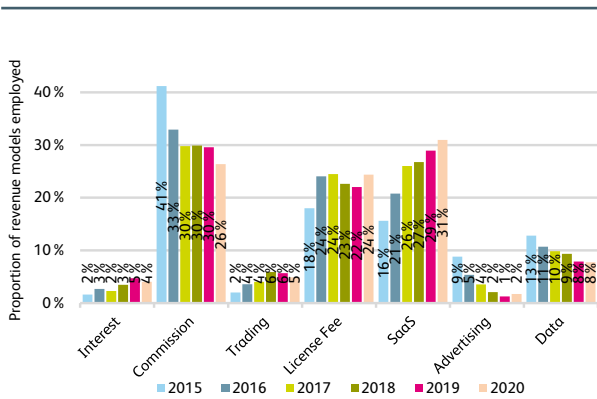
Figure 4.16: Proportion of revenue models used in the Swiss FinTech sector (n_{2020}=166, multiple answers possible)

It is evident that the technology-driven revenue models of licence fees and SaaS in particular have increased in relevance over the past years. As of the end of 2020, 55 percent of all revenue models pursued in the Swiss FinTech sector are attributable to these two income streams. At the beginning of the observation period, this share amounted to 34 percent. In contrast, commission-based business has steadily decreased, from 41 percent in 2015 to 26 percent in 2020. This shift, combined with the relatively low importance of the interest and trading businesses, suggests that FinTech companies in general are becoming less reliant on the revenue streams of established financial institutions. In terms of competition between these two types of market players, this can be interpreted in two different ways. On the one hand, the trend towards IT-driven revenue streams could mean that FinTech companies are competing less and less with established financial institutions. On the other hand, this could also be interpreted as FinTech companies increasingly covering the same business areas as established players, but monetising them differently. Nevertheless, the hypothesis that Swiss FinTech companies are increasingly specialising as providers of innovative technology solutions for the financial services industry is also in line with the high relevance of B2B business in the industry. Finally, revenue generation through advertising or the sale of (analysed) data are not priorities for Swiss FinTech companies. The latter could, however, change

in the future due to the opening of interfaces for data exchange by established financial institutions for third-party providers as part of Open Banking (see Chapter 6). From a product area perspective, companies in the fields of *Deposit & Lending* and *Payment* are mainly assigned to the commission business, while companies active in the *Banking Infrastructure* category predominantly focus on licence fees and SaaS models. From a technological point of view, the majority of the commission business is attributable to DLT-based companies and companies in the field of *Process Digitisation / Automatisation / Robotics*. FinTech solutions based on *Analytics / Big Data / Artificial Intelligence*, in contrast, predominantly generate revenue through IT- and data-driven revenue models. On average, the Swiss FinTech companies that participated in the survey employ just over two income models. Companies that generate income through commissions often also pursue licence fee and SaaS revenue models. The income of these companies is therefore not based exclusively on commissions, but also on technology-driven income streams. Furthermore, SaaS and licence fees, as the most and third most relevant revenue models in the Swiss FinTech sector as of the end of 2020, respectively, are often combined at companies with multiple sources of income.

In summary, the number of Swiss FinTech companies grew for the fifth year in a row in 2020, albeit at a slower pace. As of the end of 2020, a total of 405 FinTech companies were incorporated in Switzerland, representing a year-to-year growth of six percent. However, there are also signals pointing towards a stagnation in the sector, such as the declining median values of average total funding and the unchanged median value with regard to the average number of employees at Swiss FinTech companies. Furthermore, the analysis of human capital at Swiss FinTech companies shows that an increasing share of their employees is located abroad and that the business is strongly male-driven. The key activities of Swiss FinTech companies are in line with the business life-cycle. While young companies focus more on programming and engineering their solution, companies that have been on the market longer are more

focused on operations and serving customers. With regard to the customers targeted by Swiss FinTech companies, it can be observed that roughly three quarters have an international focus and are mainly geared towards businesses or a combination of businesses and private customers. FinTech companies' customer interactions in the B2B business mainly take place through hybrid channels, i.e. in a digital and personal manner, while companies that serve private customers more often use purely digital channels, which enables a certain scalability of the business. In terms of revenue models, a long-standing trend is continuing. Swiss FinTech companies are increasingly distancing themselves from revenue models typically applied by traditional financial institutions, especially the commission business, towards revenue generation through licence fees and Software-as-a-Service.

4.2. Sentiment Analysis of Swiss FinTech Companies

By Thomas Ankenbrand, Denis Bieri & Moreno Frigg, Institute of Financial Services Zug IFZ

In addition to information on the business model, the importance of selected challenges has also been captured in this study for the past four years. In this respect, the companies surveyed are asked to rate predefined challenges on a scale from one, not pressing, to ten, highly pressing. In addition to the challenges of the previous versions of the survey derived from the evaluation of Doove et al. (2014) among SMEs in the European Union, the impact of Covid-19 is also included in the questionnaire this year due to its topicality.

The average evaluation of the challenges across all Swiss FinTech companies that revealed information in this regard is shown in Figure 4.17, along with corresponding values for the year 2019.[11]

As in previous years, the biggest challenge for Swiss FinTech companies is finding customers (score of 6.8), fol-

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[11]Note that the challenge concerning Covid-19 was not surveyed in 2019.
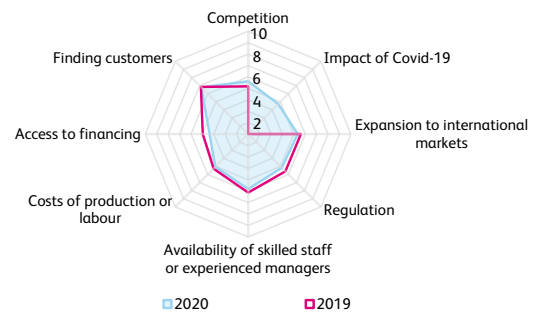
Figure 4.17: Average scores of selected challenges in the Swiss FinTech sector (n=160)

lowed by the availability of skilled staff or experienced managers (5.8), although the latter in particular has become less urgent in a year-to-year comparison. Competition (5.6), in contrast, is perceived to be stronger than in the previous year and is now considered the third most pressing challenge, up from position six in 2019. This is followed by the expansion to international markets (5.3), regulation (5.2), costs of production or labour (5.0), the impact of Covid-19 (4.7), and access to finance (4.4). All of these challenges, with the exception of the one related to Covid-19 which was surveyed for the first time this year, are perceived as less pressing compared to the year 2019.

Furthermore, the impact of the Covid-19 pandemic on the Swiss FinTech industry does not appear to be critical. This is also reflected in the comments made by certain companies participating in the survey. According to their statements, Covid-19 has not only had negative consequences but has also created opportunities such as the increased pressure on traditional financial institutions for digitalisation, which has positively affected the demand for certain FinTech products and services. The pandemic has also led to an adjustment in consumer attitudes towards banking and financial services in favour of digital FinTech solutions, according to a study by McKinsey & Company (2020). Nonetheless, not all product areas are equally affected by Covid-19, as shown in Figure 4.18.

Figures by product area

Figures by technology area

Figure 4.18: Mode values of selected challenges by product and technology area (n=160)

The figure shows the mode[12] value for each challenge by product (left-hand graph) and technology area (right-hand graph). It reveals that for the three most pressing challenges, the assessment of FinTech companies in the various product and technology areas is relatively homogeneous. From a product area perspective, the dispersion is largest for the challenge imposed by the expansion to international markets. This does not seem to be pressing at all for a significant share of companies providing products and services in the *Deposit & Lending* segment (mode value of 1), in contrast to the other areas. The explanation for this dispersion can be found in the substantial proportion of companies in the *Deposit & Lending* area that pursue a purely domestically oriented business model and hence do not strive to serve international markets. From a technological perspective, the largest heterogeneity is found with regard to regulation. FinTech companies using DLT in particular see this as a major challenge (mode value of 9). The introduction of the DLT law in Switzerland (see Section 2.2.3 for more details) could, however, improve the situation in the future, at least for certain business models in this field. Such a positive effect due to a clear regulatory framework is observed, for example, in Liechtenstein.[13] The significant share

of DLT-based Swiss FinTech companies operating in the area of *Banking Infrastructure* has led to a relatively large discrepancy being observable in this product area as well. A further difference in perception can also be observed with respect to the consequences of Covid-19. FinTech companies from the *Deposit & Lending* sector seem to perceive the pandemic as relatively more pressing than FinTech companies from other product areas. One explanation for this could be the support measures for Swiss companies introduced by the Swiss government to mitigate the consequences of the pandemic. In particular, the access to credit created to bridge Covid-19-related liquidity needs may have put FinTech companies in the relevant field, for example crowdfunding platforms for SMEs, at a competitive disadvantage.

In summary, finding customers is still the biggest challenge for Swiss FinTech companies, followed by the availability of skilled staff or experienced managers. The challenge related to competition, however, has gained the most pressure over the past year, while the importance of the other challenges has tended to decrease. It is also apparent that the challenges are perceived differently in different product and technology areas. This is particularly evident with regard to the expansion to international markets, regulation, and the impact of Covid-19.

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[12]The mode is the value that occurs most frequently in a dataset. Therefore, it does not rule out potentially significant variability within the data.

[13]See the excursus on pages 78 to 79 for an overview on the Liechtenstein FinTech sector.

4.3.   Green FinTech

By Thomas Ankenbrand & Marc Grau, Institute of Financial Services Zug IFZ

Besides digitisation, sustainable solutions are gaining in popularity. Global initiatives such as the Paris Agreement under the United Nations Framework Convention on Climate Change (FOEN, 2018) or the *United Nation*'s Sustainable Development Goals (United Nations, 2015) further support the development of this thriving topic. Investments of at least USD 3 trillion per year globally are required to reach these goals (Schmidt-Traub & Sachs, 2015), whereof substantial parts are expected to flow through private intermediaries. Thus, financial service providers play a critical role in sustainable development. When assessing financial products and investment cases, sustainable investment approaches do not only consider economic factors but also include other criteria such as the environmental and social impact or governance. Commonly summarised under ESG (environmental, social, and governance) criteria, rating providers and its users extend their solutions to offer clients a broader perspective on the effect of their financial decisions.

Puschmann, Hoffmann, and Khmarskyi (2020) still see major obstacles for private investments interested in sustainable products such as the lack of transparency in methodologies or a limited supply of sustainable financial products. However, it is not only traditional banks that have the potential to promote broader adoption of sustainable investment products. At the crossroad of technology and sustainability in finance, so-called "Green FinTech companies" are emerging. Linking digital and sustainable finance offers potential and is therefore seen as an opportunity for the Swiss financial centre to further establish itself as a leading hub for sustainable financial services (SIF, 2020). To speed up the development of a Green FinTech ecosystem in Switzerland, the Federal Council launched the Green FinTech Network in 2020 with representatives from corporations, associations, venture capitalists, academia, as well as consultants and law firms involved. The general goal is to improve the environment the companies are operating in. First results are expected in 2021 (SIF, 2020).

Various Swiss FinTech companies have already established themselves at the Green FinTech intersection. They can be divided into groups with respect to their offered services. There are companies focusing on the provision and analysis of ESG data. Other companies include ESG criteria within, for example, their investment processes. Accurate ratings and simulations to enhance portfolio reporting and decision-making processes are expected to further improve investment models and provide clients with better information. Several Swiss actors are active in this field. First is *Carbon Delta*, known for their calculation of a climate value-at-risk and scenario analysis with respect to climate change. Second, *RepRisk* is considered a pioneer in the application of machine learning tools on ESG data. As a third example, *covalence* is a provider of ESG ratings based on artificial intelligence. And last but not least is *Impaakt*, a rating provider relying on a crowd approach. These approaches have not gone unnoticed. *Carbon Delta* has been acquired by the rating provider *MSCI*, highlighting the growing importance of ESG data analytics in the global financial industry.

Moreover, Swiss Green FinTech companies provide services in the area of investment management. Prominent examples are *Yova*, a robo-advisor offering tailored investment solutions with a sustainable impact, and *3rd Eyes*, which offers a goal-based and sustainable investment suite using scenario-based asset and liability management methods. Furthermore, companies like *Greenmatch*, *Blueyellow*, and *Pexapark* focus on renewable energies and their efficient trading and structures.

Globally, the Green Digital Finance Alliance, founded in 2016 in a joint effort by *Ant Financial* and the UN Environment Programme, serves as an example for ventures which promote sustainable development with a focus on financial services. Its objectives are congruent to Green FinTech in general, namely to leverage digital technologies and innovations to enhance financing for sustainable development (GDFA, 2021).

Recently, an increasing number of FinTech companies have turned towards addressing sustainability within their offerings and processes. Similarly, Stüttgen and Mattmann (2020) identify a growing interest in sustainable investment funds. Nonetheless, the transformation is still in its early stages. As of June 30, 2020, the number of sustainable mutual funds publicly available in Switzerland increased by 31 percent compared to a reduction of two percent for common mutual funds over the previous twelve months. Investment volumes flowing into sustainable mutual funds even increased by 60 percent. Hence, both supply and demand is increasing significantly. However, compared to overall invested volumes, sustainable mutual funds only make up 5.5 percent of total investments. Thus, sustainability in financial services still only makes up for a small share of the market, but the growth rate is considerable.

The identification and rating of FinTech companies based on ESG criteria is unclear, as there currently exists no consensus on standardised approaches. In the field of sustainable investments, a variety of different ESG rating approaches are observed. Despite this heterogeneity, Stüttgen and Mattmann (2018) identify two fundamental approaches to sustainable investing. They distinguish between sustainable investing approaches following an economic concept or an ethical-ecological concept. Approaches based on the economic concept start from the premise that the consideration of ethical, ecological, and social criteria has a significant influence on the success in assessing the value of the underlying investment object. On the one hand, taking ESG risks into account is expected to fur-

ther improve the risk profile. On the other hand, early and consideration of ecological trends helps to identify companies with a competitive advantage, which should subsequently lead to a sustainable increase of their values. In ethical-ecological concepts, economic factors of ESG criteria are of subordinate interest, although not completely disregarded. Such concepts typically rely on normative value judgements. Hence, there exist ethically justified expectations on how a company should operate with respect to societal and environmental aspects. Investment strategies are oriented accordingly. These value judgements thus potentially influence the public opinion and form the notions of consumers and investors, which should subsequently be adapted by the companies. In practice, the majority of sustainable investors orientate themselves mostly after the economic concept. Value-based ethical-ecological concepts remain the exception.

In summary, activities in the field of Green FinTech companies is comparable to the overall trend in sustainable finance or sustainable investments. Media coverage is increasing and several supporting organisations have already been founded. However, the development is still at an early stage. Nevertheless, there are already some Swiss FinTech companies actively engaged in promoting sustainable finance products and services, which reveals a similar development as seen by the low but rapidly increasing investment volumes in sustainable investment vehicles. Based on the trends observed, it is expected that the relevance of Green FinTech in Switzerland will continue to increase in the future.

Excursus: Liechtenstein FinTech Companies

Liechtenstein has established a good reputation among FinTech companies. Particularly with regard to Distributed Ledger Technology, Liechtenstein has established a strong market position due to its progressive legal framework. The central element in this context is the Blockchain Act, the draft of which was published back in 2018 (PwC, 2018). It is a collection of new rules and amendments to existing laws that enable the tokenisation of rights and assets. The act defines the term *token* as a new construct to enable the transformation of assets or other rights into blockchain-based systems while ensuring legal certainty, thus opening up the full application potential of token economies (Impuls Liechtenstein, n.d.). The law also creates a legal framework for the supervision, custody, and trading of digital tokens and coins in the principality. It came into force on January 1, 2020, with the first year being a transition year for companies wishing to register and become subject to the new law. One Swiss FinTech company that has already received the approval to operate as a custodian bank and exchange service provider in Liechtenstein is *Smart Valor* (Finews, 2021).

The significant role of Distributed Ledger Technology in the Liechtenstein FinTech sector is also reflected in Figure 4.19. Of the total of 26 companies, 19 provide their solutions based on DLT, representing 73 percent, while only five apply technologies related to *Process Digitisation / Automatisation / Robotics* (19 %), and two related to *Analytics / Big Data / Artificial Intelligence* (8 %).[14] From a product area perspective, twelve companies in the Liechtenstein FinTech sector provide solutions in the area of *Banking Infrastructure* (58 %), followed by six in *Investment Management* (23 %), three in *Payment* (12 %), and two in *Deposit & Lending* (8 %). This results in a significant cluster of companies focused on innovative solutions for banking infrastructure based on DLT. Examples of such solutions include exchanges

for cryptographic assets, wallet providers, and tokenisation platforms.
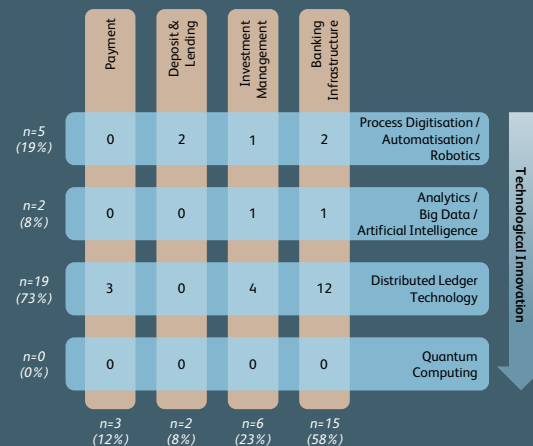
Figure 4.19: Distribution of Liechtenstein FinTech companies according to the FinTech Grid (n=26)

Figure 4.20 highlights the strong link between the Liechtenstein FinTech sector and the emergence of DLT. As shown in the right-hand graph, the majority of incorporations took place between the years 2017 and 2019, and are mainly attributed to DLT-based FinTech companies, while older companies tend to offer solutions based on technological concepts related to *Analytics / Big Data / Artificial Intelligence*, as well as *Process Digitisation / Automatisation / Robotics*. For the year 2020, only one incorporation took place. As already mentioned in the analysis of Swiss FinTech companies, this could be due to the fact that newly founded companies often do not appear publicly in the first few months and develop their services and products in the background.

When looking at the customer segments of Liechtenstein FinTech companies, presented in Figure 4.21, it becomes apparent that most companies have an international orientation. This is little surprising, given the

[14]Note that the findings in this excursus are based on desk research and not on the survey conducted among Swiss FinTech companies.

small domestic market with a population of slightly less than 40,000 people and a total of a little over 4,500 resident companies (Principality of Liechtenstein, n.d.). With regard to the customer type, all companies target either just businesses (B2B), or businesses and private individuals (B2B and B2C). The latter is particularly true for companies applying DLT. This can be partly explained by the fact that public DLT designs are basically open to everyone. From a product area perspective, it is evident that all companies providing payment services serve businesses and private individuals.
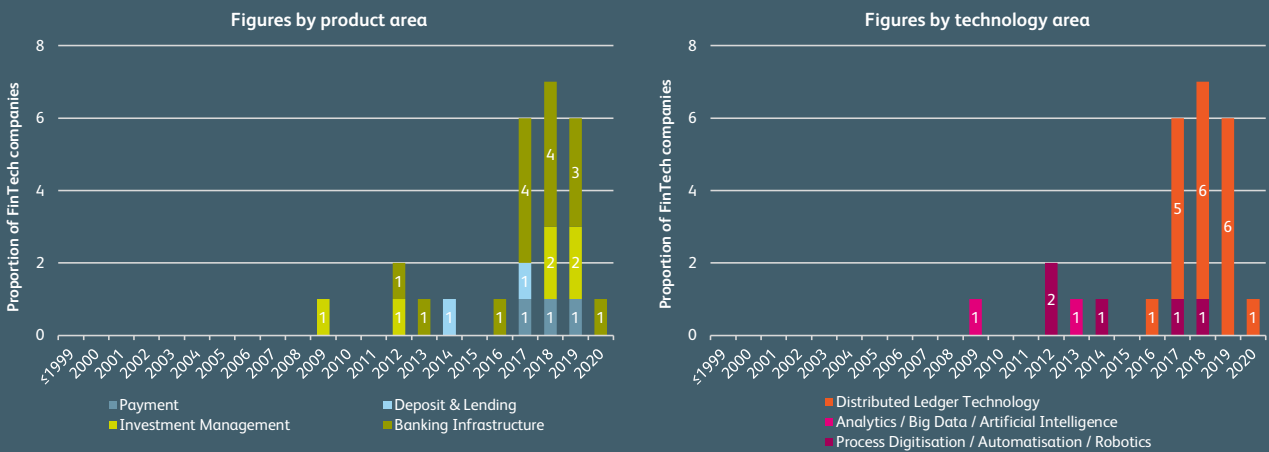
Figure 4.20: Number of Liechtenstein FinTech company incorporations per year by product (left-hand graph) and technology area (right-hand graph) (n=26)
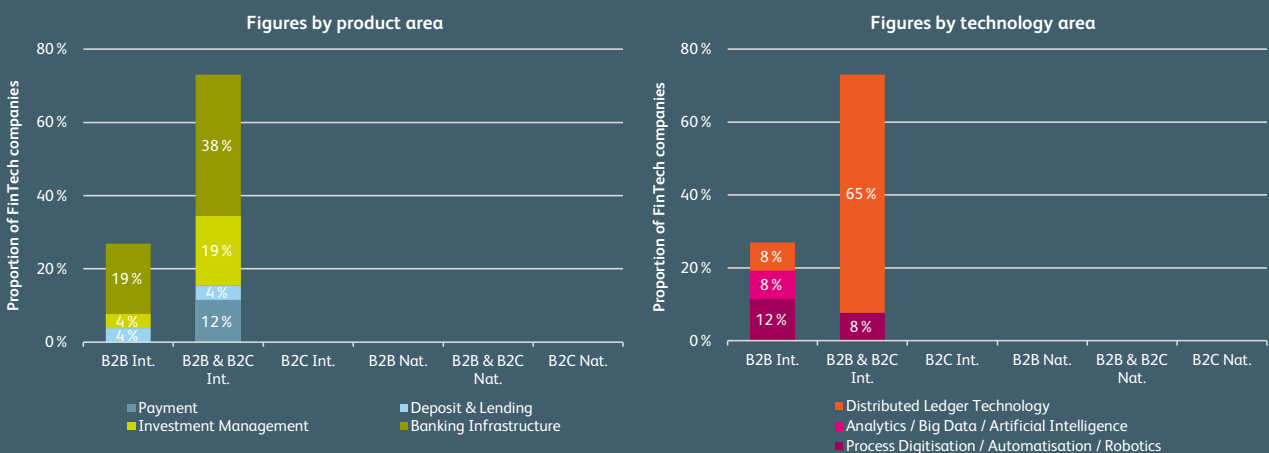
Figure 4.21: Proportion of Liechtenstein FinTech companies by customer segments, and by product (left-hand graph) and technology area (right-hand graph) (n=26)

5. Banks and FinTech

By Thomas Ankenbrand & Marc Grau, Institute of Financial Services Zug IFZ

This chapter aims to assess the impact of FinTech on established banks. In Section 5.1, the size of the Swiss financial services market in general is examined and the market share of FinTech companies is estimated. In Section 5.2, the focus shifts from a macro to a micro perspective. Thereby, the CIO Barometer, a survey conducted among individuals in charge of IT operations in Swiss banks, is presented. Aggregating individual priorities allows attempting to draw a bigger picture of current strategic technological trends and developments in the Swiss banking market.

5.1.   Market Sizing

An estimation of the market size provides an indication of the demand for product solutions in financial services. First, the market size for all Swiss financial service providers is estimated. Second, an attempt to assess the share associated to Swiss FinTech companies by investigating the largest firms measured by managed or transacted volumes is made. The general market size may be considered as the overall distribution potential for financial services, which is then shared between traditional banks and FinTech companies. To give a more comprehensive overview, the markets are separated into the product areas *Payment, Deposit & Lending, Investment Management*, and *Banking Infrastructure*, as defined in Chapter 1. Due to various business areas reflected in the dimension *Deposit & Lending,* it is further divided into two parts. The first part reflects the mortgage market, which constitutes a large part of lending activities of both banks and FinTech companies. The second part considers money market activities and borrowing on capital markets. FinTech companies in the area of *Banking Infrastructure* often provide software, fully fledged platforms, or other similar services, which are then used by banks. Market volume,

thus, cannot be easily assessed in such a setting and therefore, the respective area is neglected in this section.

The market shares of FinTech companies are separated into two distinct areas relying in general on the architecture introduced in Figure 6.1 in Chapter 6. The front-end layer represents the interface between the customer and the providers of financial products and services. It can be provided by a bank, a FinTech company, or other players in the market. In the second layer, i.e. execution and custody, the risk taking party and back-office operations are summarised. Note that front-end services as well as execution and custody do not necessarily have to be provided by the same company. Companies such as *MoneyPark*, for example, provide services around real estate financing and help in finding optimal solutions for mortgages. However, the mortgage itself is booked by other market participants like banks or insurance companies. The volumes of FinTech companies can therefore not be interpreted as additive, but rather accounts for volumes either associated to the front-end, the execution and custody, or both.

All estimates in this section are based on publicly available data. As various FinTech companies are still in their start-up or scale-up phase and data is thus scarcely available, a consistent estimate is very difficult to obtain. Hence, the results presented are only of an indicative nature and are not expected to exactly represent the markets' sizes. The estimated total volume for FinTech companies per dimension relies on the market volumes of the biggest FinTech companies (of which data is available) active in the respective area. Due to the underlying methodology, figures are expected to be underestimated. As some incumbents such as *SIX* or *Swissquote* fall under the definition of FinTech in Chapter 1 and are thus considered as FinTech companies in the present study, results are significantly influenced by few single providers.

Figure 5.1 provides an overview of the estimates and the volumes the largest FinTech companies account for within each particular product area. The grey box on top represents the overall market size in CHF billion, while the numbers at the intersection between the dimensions and the layers show the cumulative share of the largest FinTech companies in CHF billion.

	Payment	Deposit & Lending		Investment Management	
		Mortgages	Money & Capital Market		
Total Market	7,420	1,082	547	7,893	
FinTech					
Front-end	8	37	14	52	
Execution & Custody	2,706	2	0	57	
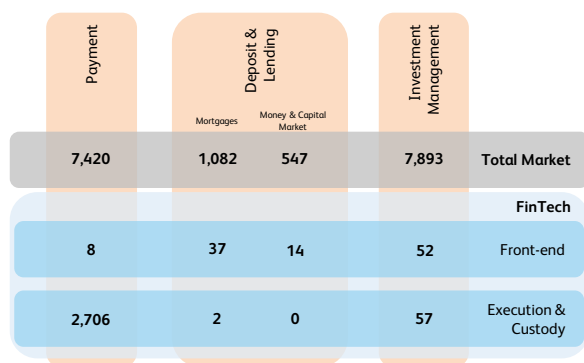
Figure 5.1: Market size per product area, all estimates in CHF billion[1]

In the year 2019, outgoing payments of CHF 7,420 billion were processed in Switzerland, including both domestic and cross-border outgoing payments (Swiss National Bank, 2020c). A large share of all transactions are money transfers through e-banking payments (Swiss National Bank, 2020b). Various FinTech companies in the payment sector are especially active in the area of mobile payments. However, banks also consider mobile payments a strategically important or very important topic for the next years (Dietrich, Lengwiler, Passardi, & Amrein, 2020). Dietrich and Wernli (2021) estimate the market potential for companies active in the Swiss mobile payment sector to CHF 173 billion yearly. Estimates for the overall volume accounted for by the largest FinTech companies sum up to approximately CHF 8 billion in the front-end layer. In relation to the overall market size, FinTech companies only account for 0.1 percent of the payment market. In terms of execution and custody, the estimated volume handled by FinTech companies amounts to CHF 2,706 billion. This result is driven in particular by the inclusion

of *SIX Payment Services*, which is classified as a FinTech company in the present sample.

Under *Deposit & Lending*, various business models are summarised by either the classic lending businesses with consumer and mortgage credits or debt financing and liquidity services for companies. In Switzerland, the majority of outstanding credit are mortgage loans amounting to CHF 1,082 billion as of December 2020 (Swiss National Bank, 2021b). Usually, mortgages are structured as long-term commitments and are therefore not renewed on a frequent basis. Accordingly, only a fraction of the total mortgage volume is renewed each year, resulting in slow growth potential for new competitors. *MoneyPark*, one of the largest Swiss FinTech companies in the mortgage loan sector, estimates a renewable volume of CHF 150 billion yearly with an additional growth component of CHF 30 billion, whereby approximately 90 percent of all borrowers sign an extension without considering other options (MoneyPark, 2020). In 2020, FinTech companies were estimated to have been involved in deals worth approximately CHF 6.5 billion, equivalent to around 3.6 percent of yearly renewable mortgages (IFZ & e.foresight, 2020). The total outstanding volume of FinTech companies is estimated to account for roughly CHF 37 billion, rounding up to 3.4 percent of the market outstanding volume. Nonetheless, most of the FinTech companies are mainly active at the client intersection (front-end). Mortgages without any involvement of banks are mostly transacted on peer-to-peer platforms. In 2019, real estate crowdlending volume reached a total of CHF 191 million (Dietrich & Amrein, 2020). Hence, execution and custody by FinTech companies accounts for only 0.02 percent of the total market.

To estimate the size of the second market of the *Deposit & Lending* product area, i.e. the overall market of liquidity provision for institutions such as the capital and the money market, transaction volumes in the repo and interbank markets as well as the volume of issued bonds are used as an approximation. CHF 328 billion worth of repurchasing agreements were processed by the Swiss National Bank in 2020 (Swiss National Bank, 2020d). The interbank market, in addition, accounts

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[1] As far as available, the data refer to the year 2020.

for around half of this volume (Swiss National Bank, 2021c), which is therefore estimated to be sized around CHF 164 billion. Furthermore, throughout the year 2020, a volume of CHF 55 billion in CHF bonds were issued by Swiss issuers (Swiss National Bank, 2021a). Summing all figures estimates the market to the size of approximately CHF 547 billion. Note that this neglects the unsecured OTC market and therefore the total market volume is underestimated. Large FinTech companies active in this sector provide their services mostly as brokers. Hence, all estimated volumes can be accounted to the front-end layer. The estimates sum up to approximately CHF 14 billion in 2020. They thus cover roughly 2.6 percent of the overall market.

The size of the product area *Investment Management* is approximated through the assets under management of Swiss financial institutions for private, institutional, and corporate clients. In total, the assets summed up to CHF 7,893 billion in 2019 (SwissBanking, 2020a). Many FinTech companies in the area of *Investment Management* provide portfolio management services through robo-advisors or similar applications. However, the assets do not necessarily have to be booked in their own company. Usually, such companies rely on custody services provided by banks, which explains the difference in volumes between the two layers. In addition, a large proportion of the volumes in both layers is associated to *Swissquote*, which skews the volumes accounted for by FinTech companies. Relative to the total market, the largest FinTech companies account for an estimated 0.7 percent of total assets under management. The market for robo-advisors in general is nonetheless expected to grow in the future (Dietrich, Agnesens, & Wernli, 2020). Besides FinTech companies becoming established, large incumbents are increasingly becoming more active in the market by either teaming up with FinTech companies or developing their own solutions.

FinTech companies have been able to acquire market shares across all dimensions. Nonetheless, compared to the overall market sizes, their estimated stakes mostly make up only a small part and it is still the banks that hold the overwhelming majority. However, the im-

pact of FinTech companies can hardly be reduced to solely B2C business models. 52 percent of Swiss FinTech companies in the present sample are active exclusively as B2B providers (see Section 4.1) and banks are often their clients. To assess a potential impact of Swiss FinTech companies on banks, a closer look at the development of Swiss banks' productivity indicators might be appropriate. As a suitable comparison, the costs and income of all banks to the respective business size are compared. The size of the balance sheet and assets under management serve as proxies to measure business volumes. The left-hand graph in Figure 5.2 shows the development of each cost indicator indexed at 100 points in the year 2010. Total expenditure remains almost constant across the time period, but there is a clear difference between relevant cost drivers. Reductions of expenses are mostly driven by a decrease in labour costs, which goes hand in hand with a decreasing number of employees. An increase in material costs, however, cancels out the saved costs from labour, leading to the constant development of overall expenditures. Assets under management as well as the size of the balance sheet increased significantly over the past years. Hence, from a general perspective, it can be said that banks have become more efficient over time. While keeping their expenses at the same level over the past years, they were able to grow both in terms of size of the balance sheet and assets under management. However, growth in assets under management might be partly driven by an increase in asset prices.

The right-hand graph in Figure 5.2 provides an overview of the development of total income, commission income from securities and investment business, as well as income from interest. Both sub-items have not registered substantial growth, contrary to the associated volumes. Commission income from the investment business even decreased significantly over the observation period. Despite growing balance sheet volumes and assets under management, the income sources have not increased in accordance. Correspondingly, both margins show decreasing rates in the past years, which hints towards higher competition within the market.
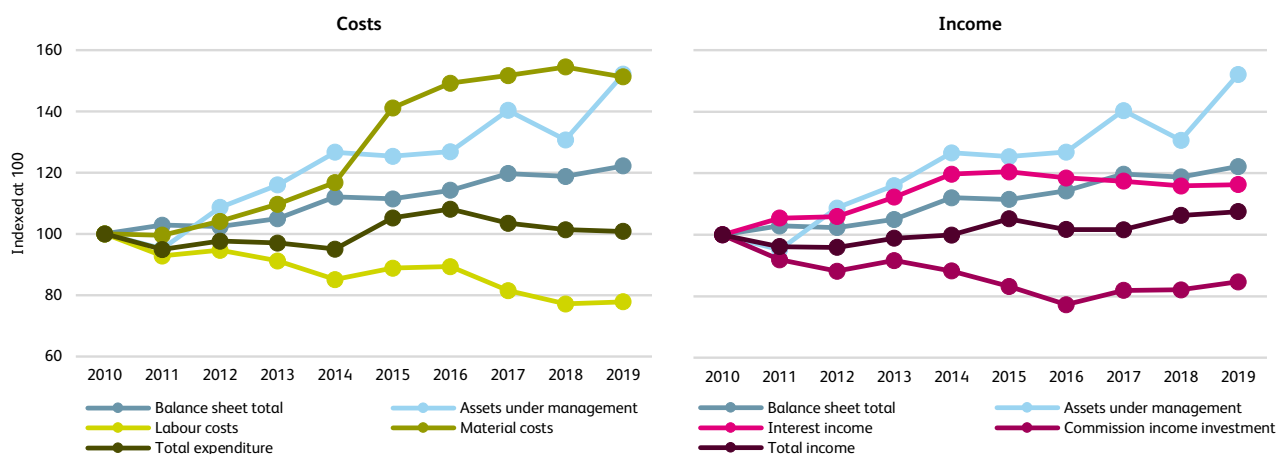
Figure 5.2: Size, costs, and income indicators for Swiss banks indexed at 100 in 2010 (source: Swiss National Bank (2021d))

In summary, it appears that banks have become more efficient over time and the effect of digitisation is starting to reflect in the numbers. With more efficient processes, Swiss banks were able to increase the managed volumes, while keeping their costs stable. However, this development is not reflected on the income side, as efficiency gains are directly passed on to the client. Due to the higher volumes, banks were able to absorb the decreasing margins' negative impact on their revenues. Otherwise a decrease in revenues would have been expected.

5.2. CIO Barometer

The fifth edition of the CIO Barometer survey was conducted in 2020, with the structure being kept similar to the previous surveys in order to guarantee the comparability of results. After presenting the methodology in Section 5.2.1, the results of this year's CIO Barometer are examined in Section 5.2.2, followed by the a discussion of the findings in Section 5.2.3.

5.2.1   Methodology

Technological advances and digitisation bring a new dynamic into the banking industry, with IT departments in particular being faced with new challenges and opportunities. Constructed as an anonymous sur-

vey among IT representatives of Swiss banks, the CIO Barometer attempts to capture the most recent developments and structure them into different dimensions. As a basis for structuring the survey and its analysis, the IT balanced scorecard concept by Van Grembergen and Saull (2001), which relies on the original balanced scorecard approach by Kaplan and Norton (1996), is used. The main dimensions considered are user orientation, operational excellence, business contribution, and the future orientation, whereby all of them are evaluated from the perspective of the banks' IT departments. Each dimension is further divided into three indicators expected to be relevant for the assessment of the respective dimension. The participants were asked to rate all three indicators per dimension on a four point scale, reflecting their priorities ranging from very low (1), low (2), high (3), to very high (4). Priorities have been assessed for the present and the expected importance in five years. Furthermore, general questions concerning information about the bank were asked. These include general information to put the banks into segments and questions about allocation of financial resources.[2]

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[2] All previous editions of the survey relied on the same approach. Slight changes to questions have been implemented over time.
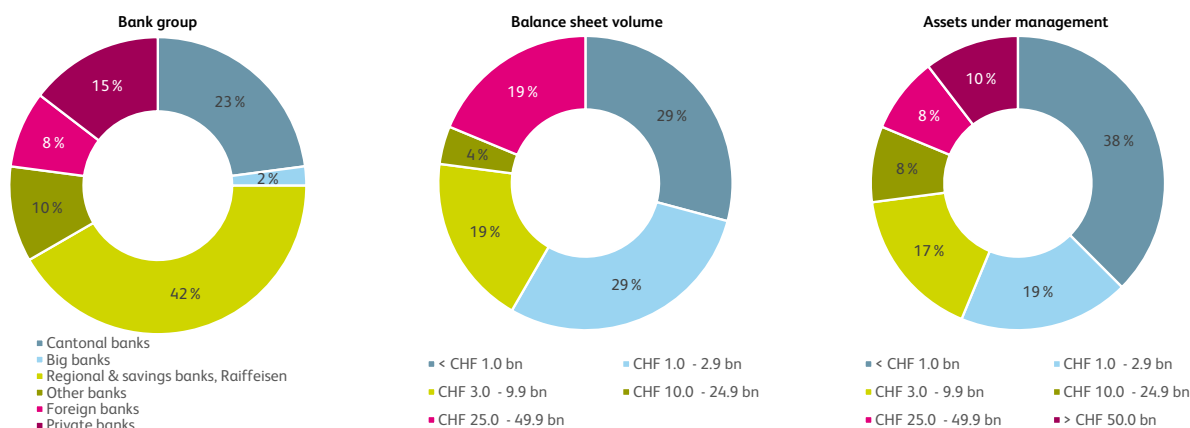
Figure 5.3: Survey participants according to bank group, balance sheet volume, and assets under management (n=48)

5.2.2 Results of the CIO Barometer

5.2.2.1 Sample Description

Starting in December 2020, 238 representatives of Swiss banks' IT departments were contacted and asked to complete the survey. 48 completed questionnaires were returned, resulting in a response rate of 20 percent. Figure 5.3 provides an overview of all the participating banks. On the left-hand side, banks are segmented into bank groups. The majority of all responding banks (42 %) are regional banks, saving banks, and the Raiffeisen bank summarised as a single institution. Cantonal banks comprise the second largest group with a share of 23 percent. The remaining 35 percent include foreign, private, big, and other banks. The chart in the middle of Figure 5.3 shows the distribution of participating banks with regard to the volume of their balance sheet. Over half of all banks have balance sheet volumes smaller than CHF 3 billion. Medium sized banks make up 23 percent and 19 percent of participating banks have balance sheet volumes between CHF 25 and 50 billion. The chart on the right-hand side in Figure 5.3, presenting the proportions according to assets under management, shows a similar distribution. More than half of the participants manage less than CHF 3 billion assets. However, there are more banks with large volumes compared to last year. Ten percent

of all participants have more than CHF 50 billion assets under management, which reflects the importance of the Swiss financial centre in wealth management.

Due to the relatively small size of 48 participants, the results are not considered to be representative for the Swiss banking sector. In addition, compared to the results in SwissBanking (2020a), the distributions following the bank group, balance sheet volume, and assets under management differ from the overall distribution of the underlying population. Smaller banks tend to be overweighted and foreign banks are represented less in this survey's sample. Nonetheless, the results of the survey still provide a helpful overview of the strategic priorities and further developments in the Swiss banking sector with respect to aspects concerning information technology.

5.2.2.2 IT Balanced Scorecard

The survey results for the four different mentioned dimensions are shown in Figure 5.4. The highest prioritised dimension, on average, is business contribution, followed by operational excellence with average scores of 3.10 and 3.06, respectively. While user orientation yields an average score of 2.84, future orientation is the least important dimension, but still yields a score of 2.56. Compared to the results of last year's
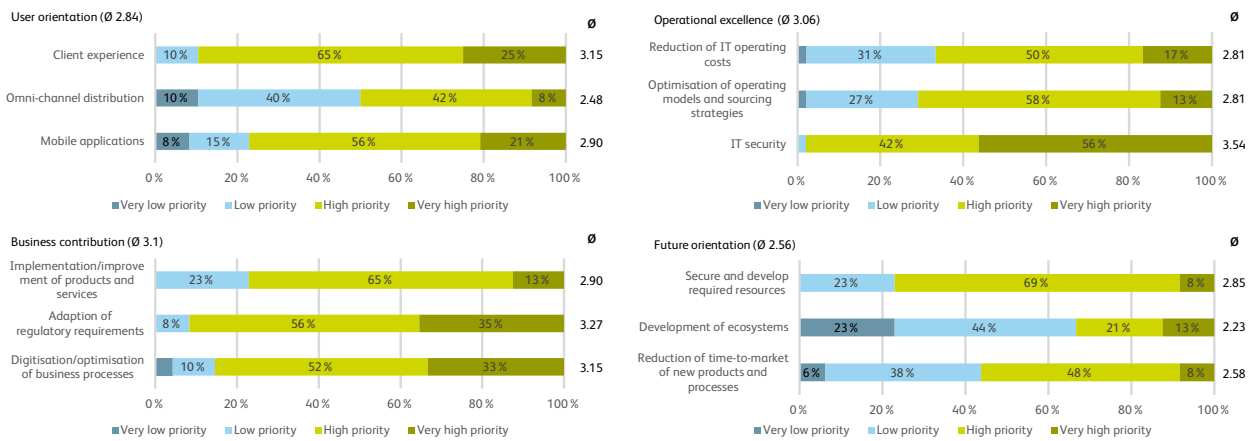
Figure 5.4: Results for the IT balanced scorecard 2020 (n=48)

CIO Barometer, all dimensions remain prioritised in the same order. The average priority per dimension has not changed substantially, either. Hence, banks are consistent in their beliefs and the environment banks are active in has apparently only changed marginally. The dimension user orientation is the dimension with the sharpest decrease with an average score of 2.84, resulting in a decrease of 0.1 points. While business contribution also suffers a slight decrease of 0.06 points, operational excellence and future orientation reveal a slight increase in importance of 0.01 points and 0.08 points, respectively.

With regard to the individual indicators, "IT security" remains the leading indicator across all dimensions with an average score of 3.54. However, compared to last year's result (74 %), only 56 percent of all participants declare it a very high priority. When looking at the development of the second most important indicator, i.e. "adaption of regulatory requirements", with an average score of 3.27, this year's result is in line with last year's observation. Other important indicators are "client experience" and "digitisation/optimisation of business processes", with an average score of 3.15 each. The least important indicators are "omni-channel distribution" (2.48) and "development of ecosystems" (2.23). Both indicators, however, are expected to grow in importance for the foreseeable future (for more informa-

tion on financial ecosystems, see Chapter 6). The expected priority score assessed for five years ahead of when the survey took place, increases for both indicators by 0.71 and 0.6 points, respectively, which are the highest increases in expected priority across all indicators.
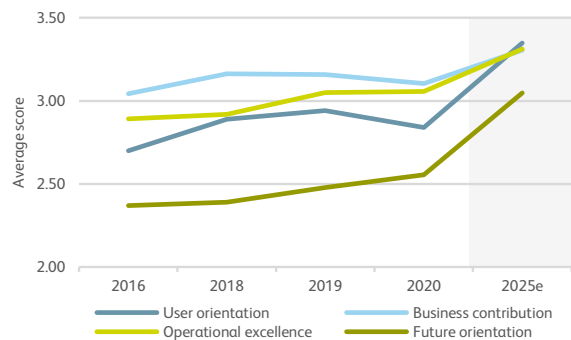
Figure 5.5: Priority averages of the four dimensions over time (n_{2020}=48)

Figure 5.5 provides an overview of the development of all average scores per dimension. The expected average score in 2025 is derived from this year's survey participant's expected priority each indicator will have in five years time. The average importance of all dimensions is anticipated to be higher in five years. Contrary to current priorities, the dimensions user orienta-

tion and future orientation tend to gain more importance, in a relative perspective. This growth in importance, however, cannot only be explained by a focus on omni-channel distribution and the development of ecosystems, respectively. Notable increases in priorities are also recorded for mobile applications (+0.58) and reduction of time-to-market of new products and processes (+0.46). In the two currently most important dimensions, the reduction of IT operating costs (+0.36) and digitisation/optimisation of business processes (+0.35) increase the most. The only indicator considered to be less important in the future is the adaption of regulatory requirements (-0.08). With an average score of 3.73, IT security is still expected to be the most highly prioritised indicator in five years (+0.19).

It appears that the bank's IT departments allocate a higher priority to digitising their business in the future. On the one hand, services and products are expected to be improved and made available through multiple channels to serve clients more products in whichever way they prefer. In addition, banks increasingly aim to embed their services into ecosystems to combine with other services to provide added value. On the other hand, digitisation is expected to decrease costs and lead to a reduction in time-to-market for these services. While leveraging possibilities enabled through digiti-

sation, IT security and therefore customers' trust into banks remains a high priority.

5.2.2.3   Cost Management

Figure 5.6 shows the banks' cost allocations and the fractions associated to information technology. The chart on the left-hand side reveals that only 16 percent of labour costs are affiliated with information technology. On the contrary, general and administrative costs, as shown by the chart on the right-hand side, are driven significantly by expenses for information technology. Both results are almost identical to the results of last year's study. The larger share of IT related costs in general and administrative costs compared to the share in labour costs could potentially be explained by a relatively high degree of outsourcing.

To gain a better overview of how costs are allocated within the IT department, the participants were asked to assess the relation between costs associated with running-the-bank, i.e. efforts for ongoing operations, and changing-the-bank, i.e. efforts for development and innovation. Possible answers range from 100 percent change-the-bank and zero percent run-the-bank to the opposite zero percent change-the-bank to 100 percent run-the-bank. Figure 5.7 highlights that the majority of the participants focus on run-the-bank activities. One third of all participants allocate at least 80 percent
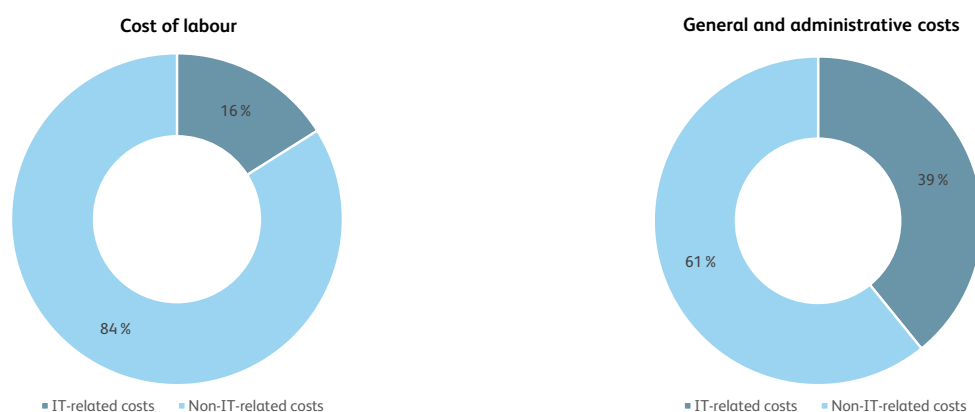
Figure 5.6: Average percentage of IT-related and non-IT-related costs (n=48)

of their resources on ongoing operations. More than half of the participating banks have a mix of 60 percent run-the-bank and 40 percent change-the-bank IT costs. A small share of banks invests more resources in innovative activities rather than operational activities and therefore have an allocation of 60 percent change-the-bank and 40 percent run-the-bank. Compared to last year's results, where more than half of all participants allocate at least 80 percent of the resources to running the bank, banks increasingly tend to contribute more resources to change-the-bank activities.

Run-the-Bank / Change-the-Bank

- 100 % RtB   - 80 % RtB / 20 % CtB   - 60 % RtB / 40 % CtB   - 40 % RtB / 60 % CtB
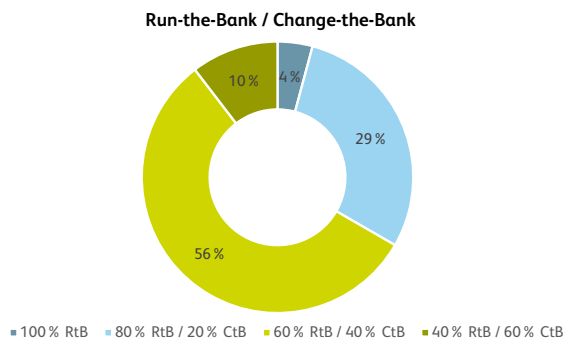
Figure 5.7: Percentage of IT costs associated to change-the-bank and run-the-bank (n=48)

5.2.3   Discussion

A higher allocation of resources to change-the-bank activities and high future priorities on the improvement of processes and products shows that banks increasingly tend towards more innovative activities and try to extend their offering by leveraging technology and end-to-end digitisation of products and processes.

Although currently not of greatest significant, omni-channel distribution and the development of ecosystems are expected to gain in relevance in the future. The current situation, however, is still mainly characterised by relatively high expenditures for ongoing operations and a focus on IT security and adaption of regulatory requirements. Hence, banks are turning towards a more active role in the development and strategic planning of their business models and processes, but existing issues are still a major factor in the current setting.

In line with the above, a joint study by the *Swiss Finance Institute (SFI)* and *ZEB* on the digital maturity of banks with a focus on Switzerland reveals similar results. Swiss banks are leading in developing digital strategies compared to European peers. Established institutes are starting to catch up to digital leaders such as neobanks. Nevertheless, the materialisation of concrete projects and processes originating from strategic planning remains an issue and still hampers the digital transformation. In addition, two thirds of all banks in the study by *SFI* and *ZEB* are eager to extend their business model through digital ecosystems, which is in line with the expected priorities in the results of the survey conducted in the present study. However, when it comes to implementation, they still see issues in a lack of both clear business cases and the availability of necessary skills within the bank's workforce (Fahlenbrach et al., 2021).

To conclude, banks are actively pushing their digital transformation forward. Strategies and priorities are clear and investments start turning more towards change-the-bank activities. Nonetheless, these visions have yet to be put into practice.

6. Open Banking

By Thomas Ankenbrand, Denis Bieri & Damian Lötscher, Institute of Financial Services Zug IFZ

Driven by pressure on business models, technological advances, changing customer needs, and regulatory requirements, Open Banking is considered a significant trend in the financial industry. In general, Open Banking describes the exchange of data and services between banks and third-party providers via available and published interfaces, e.g. OpenAPIs, whereby the exchange can take place in both directions. On the one hand, this includes opening up banks and parts of their data, which currently typically relates to account and deposit information as well as payment transactions, by providing interfaces for trusted external third-party providers, such as FinTech companies. On the other hand, financial institutions can also act as recipients of data and services from third-party providers as part of Open Banking. In order to create good conditions for a market-driven implementation of Open Banking in Switzerland, the *Swiss Bankers Association* (SBA) published a set of guidelines for implementation in 2020 (SwissBanking, 2020b).

In addition to Open Banking, Open Finance and Decentralised Finance (DeFi) have increasingly established themselves as trends. Open Finance describes the extension of the principles of Open Banking to functions of other providers of financial services, such as insurers or asset managers, and their data or offers. DeFi describes the merging of the traditional financial industry with Distributed Ledger Technology (DLT) to create trustworthy and transparent systems based on protocols that do not require intermediaries (e.g. banks or exchanges). The products and services offered decentrally are based on smart contracts, whereby predefined rules are automatically and independently enforced and all corresponding data is stored decentrally by a distributed ledger (e.g. blockchain). The currently most widely used DeFi solutions can be found in the areas of trading, peer-to-peer payments and loans, insur-

ance, and the issuance of stablecoins (Bitcoin Suisse, 2020).

6.1. Definitions

Open Banking, Open Finance, and DeFi aim to give customers back control over data usage and allow them to access and selectively share their data with authorised third parties for the development of customised innovative products and services. This is in line with a top trend mentioned by Gartner (2019): transparency and traceability. Consumers are increasingly aware of the value of their personal information and therefore demand control and, if possible, compensation. There is a need for efficient marketplaces that enable integrated and seamless data exchange (Ankenbrand, Bieri, Dietrich, & Illi, 2020). Where appropriate and possible, technology takes on the role of an intermediary. Additionally to the benefits for customers, there are also benefits for the various providers of financial services. These essentially include automation and scaling through optimised data flow and, as a result, optimised data quality and analytics.

Open Banking, Open Finance, and DeFi represent three different approaches of such open ecosystems for the financial sector. Since they pursue similar objectives and are interconnected in their functioning, it is advisable to take an integrated view of these three approaches. In Figure 6.1, a corresponding structuring framework is presented.

The architecture distinguishes between the following layers, which can be interconnected by means of the Application Programming Interface (API) environment (lines shown in magenta):

- **Customer:** The top component of the architecture is the end user who wants to access (tailor-made and seamlessly integrated) financial products and services.
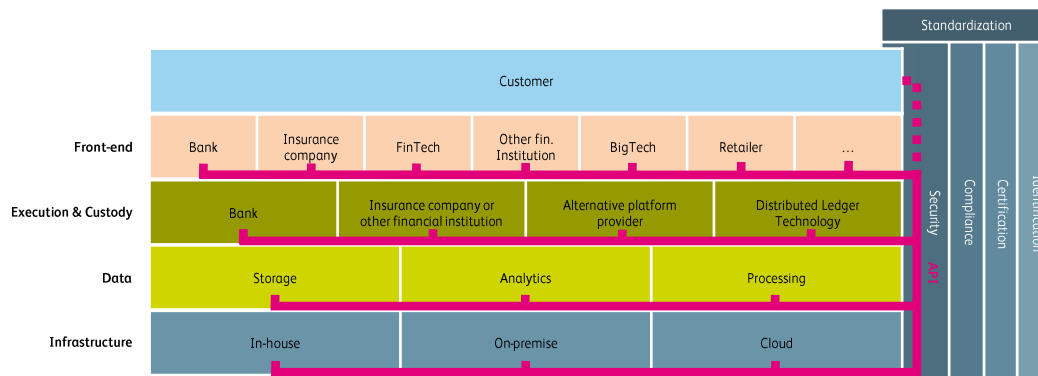
Figure 6.1: Architecture of financial ecosystems

- **Front-end:** The front-end is the interface between the customer and the providers of financial products and services, which enables interaction and data exchange. The front-end can be provided by a bank, an insurance company, a FinTech, a BigTech, or a retailer, for example. The vertical API stack shows that these providers can in turn be linked to each other.

- **Execution & Custody:** The execution of the products and services offered as well as the custody of related assets is often not directly covered by the front-end provider but by another party, such as a bank, an insurance company or another financial institutions, or an alternative platform provider like a crowdfunding platform. In the case of DeFi, this is done based on a DLT protocol (e.g. blockchain). The open architecture of financial ecosystems in turn allows execution and custody service providers to be linked to different (front-end) providers via APIs.

- **Data:** The systematic handling of data forms the basis for open financial ecosystems. This includes the storage, analysis, and processing of data for the provision of financial products and services, whether by the front-end provider or the execution and custody service provider. The authorised and secure exchange of specific data, and possibly also public data, between different ecosystem participants using APIs enables efficient processes for every involved party.

- **Infrastructure:** The basis of each ecosystem participant is the IT infrastructure required for the storage, analysis, and processing of data. This can be operated in-house or by a third-party provider on site or, as is increasingly the case, on a cloud infrastructure. In cloud operation, a distinction is made between different service models, i.e. Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), and Software-as-a-Service (SaaS), and different types of provision, i.e. public, hybrid, community, and private.

The four vertical layers on the right-hand side of the architecture in Figure 6.1 are relevant for the APIs that enable the necessary technical interconnectivity of participants and the different layers of an open financial ecosystem. The security layer covers the protection of the corresponding systems and processes, while the compliance layer comprises the legal and regulatory requirements to be met. The certification layer regulates to whom and how participation in the ecosystem is permitted. Finally, the identity layer defines how users' identities are processed and how participants authenticate themselves to participate in the ecosystem. The APIs and all four vertical layers of the framework can have different characteristics in terms of their technical or functional standardisation. Technical standardisation is particularly important in the design of open APIs, as they define the protocol. Functional standardisation is about harmonising the system architecture from a process perspective. This is especially relevant for ensuring system security and compliance, as well

as certification and identification of ecosystem partici-pants. The latter may include, for example, the estab-lishment of a secure, government-approved electronic identity that is used to identify end customers for the purchase of services and products in an open financial ecosystem.

As illustrated in Figure 6.2, Open Banking, Open Fi-nance, and DeFi differ fundamentally in the instance re-sponsible for execution and custody, or in the party pro-viding the balance sheet (Execution & Custody layer). While in Open Banking the bank takes over these activ-ities, in Open Finance this is also possible for insurance companies or other financial institutions and alterna-tive platform providers. In the case of DeFi, the execu-tion of services and the custody of assets is based on a DLT protocol. One example of such a DeFi applica-tion is *Uniswap*, an Ethereum-based liquidity protocol and decentralised exchange, which is open to all mar-ket participants, including the end customer, and pro-vides APIs for other applications to enable open data exchange (Bulat, 2020). *Uniswap* thus represents a public platform, whereby the execution of transactions, the safekeeping of assets, and the storage and pro-cessing of data is based on the Ethereum blockchain or corresponding smart contracts. The operation of the blockchain is ensured by so-called miners, which source the computing power provided either on site or from cloud providers.

In addition to the three main types of open financial ecosystems mentioned, other types have emerged in the expert discussion, such as "API Services and Prod-ucts", i.e. the integration of third-party financial so-lutions into the value chain of financial institutions and vice versa, and "Embedded Finance", i.e. the in-tegration of financial solutions into traditionally non-financial ecosystems. These specific manifestations of open financial ecosystems typically presuppose the un-bundling of the execution and custody layer, and can therefore be understood as the (re-)bundling of finan-cial products and services into other financial institu-tions or into non-financial ecosystems. This API-based integration allows for new business models beyond sim-ple data exchange, such as the Banking-as-a-Service platforms offered by *Hypothekarbank Lenzburg AG* and *Solarisbank AG* (see Section 6.2).

The diversity of forms of open financial ecosystems and also the different ways of integration of corre-sponding solutions mean that established financial in-stitutions can take on different roles in such a net-work. A definition of these roles into four basic types has been published by the *Swiss Bankers Association* (SBA). The framework differentiates between the inte-grator, which develops its own financial products and services and offers them through its own channels, the supplier, which makes the bank's own services and products available to third-party providers, the orches-trator, which brings together producers and distribu-tors of financial products and services as a third party, and the aggregator, which offers products and services from third-party providers through its own channels (SwissBanking, 2020b). These different roles can also be mapped via the framework in Figure 6.1, depend-ing on which third-party providers a financial institution opens its interfaces to or which external interfaces a fi-nancial institution calls.
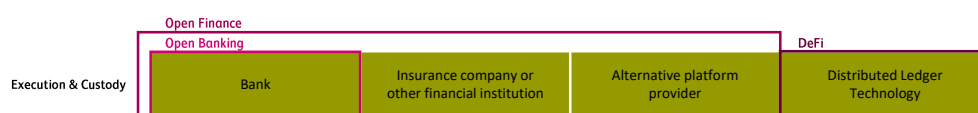
Figure 6.2: Distinction between Open Banking, Open Finance, and DeFi

6.2.   Use Cases of Open Financial Ecosystems

Although open financial ecosystems generally enable a wide range of use cases for the financial industry, the first prominent use cases are relate to payment transactions, driven not least by the introduction of new regulations. In the European Union, for example, the introduction of PSD2 regulation has laid the foundation for new payment services by requiring financial institutions to open up to third-party providers such as FinTech or BigTech companies for payment initiation, account information services, and confirmation for availability of funds, upon the client's explicit consent. However, the range of interfaces offered by some banks already goes beyond these services. Two examples are *Deutsche Bank* and *Commerzbank*[1], which, in addition to the interfaces mentioned, offer additional API services in the areas of payment, trading, credit, and customer information, supplementary to other areas, and are developing further offerings (Commerzbank, n.d.; Deutsche Bank, n.d.). Within the framework in Figure 6.1, banks in this case thus act as data providers for verified and authorised third parties who leverage the provided data to develop new applications and offer them via their own front-end. Where necessary, the bank themselves still act as provider for execution and custody. With regard to the vertical layers, banks act as designer and suppliers of APIs and are responsible for their security, compliance, for example with the regulatory requirements of PSD2, and third-party certification.

In Switzerland, there are also applications that follow the principle of open financial ecosystems. A first example is API-based business software solutions that enable companies to manage their finances and accounting more efficiently by exchanging relevant data with software providers and are linked to banks via APIs. Such a solution is offered by *KLARA*, for example. A Swiss-based example for a bank that provides Banking-as-a-Service solutions via APIs that go beyond mere data exchange is *Hypothekarbank Lenzburg AG* with its

Finstar Open Platform, which was opened in 2017 for FinTech companies and serves as a platform for various third-party providers (Hypothekarbank Lenzburg, 2017). Selected FinTech companies are provided with partner interfaces to access data and services around accounts, securities accounts, and other banking processes of *Hypothekarbank Lenzburg AG*. In the architecture illustrated in Figure 6.1, these FinTech companies, e.g. *Neon*, form the front-end layer, which offer independent products and services to end customers, but whose execution and custody is handled by *Hypothekarbank Lenzburg AG* via the *Finstar* platform (Execution & Custody layer). The end customer can therefore purchase products and services from these authorised third-party providers, although *Hypothekarbank Lenzburg AG* continues to sell its own products and services. *Hypothekarbank Lenzburg AG* itself is responsible for the storage and processing of the data released for exchange, while the analysis of this data is largely handled by the third-party providers in order to develop and offer new types of products and services. With regard to the management of APIs, *Hypothekarbank Lenzburg AG* is primarily responsible for their security and compliance as well as the certification of subscribing third parties.

However, opening up interfaces at financial institutions to third-party providers does not necessarily mean losing the front-end to the customer. An example of integrating API-based third-party solutions into the value chain of established financial institutions without also taking over the front-end is provided by *Solarisbank*, which offers Banking-as-a-Service solutions with regard to digital banking, cards, lending, payments, and know-your-customer for financial institutions to complement or enhance their offerings (Solarisbank, n.d.). With respect to the framework in Figure 6.1 *Solarisbank* thus acts as a provider of different kinds of back-end solutions, including execution and custody. Another example for the integration of innovative solutions into the value chain of traditional financial institutions is *Raisin*, a savings and investment marketplace enabling banks to expand or to diversify their funding reach as well as to monetise their excess liquidity (Raisin, 2020).

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[1] Note that the described use cases and the mentioned solutions in this section are only exemplary and do not represent a comprehensive set.

Raisin, also possessing a banking licence, thus again leaves the customer interface to the subscribing financial institution and can be seen in particular as an alternative platform provider with regard to the Execution & Custody layer in Figure 6.1. Referencing to the vertical layers, both *Solarisbank* and *Raisin* take on tasks in the area of designing and supplying interfaces and applications, their security, and the certification and identification of the sourcing partner and clients, respectively.

Furthermore, there are also some prominent API-based use case examples of financial institutions and other financial services providers that integrate their products and services into non-financial service providers such as retailers or e-commerce. In this setup, often referred to as *Embedded Finance*, the distribution model for financial institutions is being reshaped while creating a new role for technology-driven companies. The financial institution typically hands off the front-end to the third-party provider, such as the retailer or other financial service providers, while the financial institution is integrated. This can be done in a white-label approach, where the financial institution takes care of the back-office activities, particularly in the area of execution and custody. However, other forms are possible, where the product or service integrated in the front-end of the third-party provider gets visibly branded by the financial institution. Financial institutions therefore do not necessarily lose the client interface. The responsibilities in relation to the vertical axes in Figure 6.1 vary depending on the specific application. Providers for integrating financial services with non-financial service providers are, for example, *Mastercard* with its "Pay by Bank" app for paying directly from a user's bank app, and *Stripe* and *Adyen* with their payment processing suites for businesses. However, it can also be observed that originally non-traditional financial service providers are increasingly entering the financial industry in order to offer their customers a uniform customer journey and/or to open up new revenue channels. Examples include the introduction of checking accounts by *Google*, credit cards by *Apple*, and short-term business loans by *Amazon*.

While there are existing use cases of open financial ecosystems, identifying generally valid success factors is not easy, as success is something that cannot be measured in one particular way, especially for use cases that follow different goals. For example, while one application may aim to best monetise the newly created opportunities of open financial ecosystems, another may aim to open up new acquisition and distribution channels or prevent customer churn. What generally fuels the success of an application is a clear benefit for all stakeholders involved, including, for example, incentives for banks to provide valuable data, the approval of the regulator, management capacity for rapid implementation, and a sufficient degree of standardisation for smooth implementation and to achieve network effects. In addition, financial ecosystems can be suitable for creating value in a low-margin, high-volume business. One example of such a volume business is billing, whose potential for open financial ecosystems is evaluated in more detail in an excursus on pages 99 to 100.

Regarding the selected prominent use cases described, it can be said that these are primarily not real open financial ecosystems, but rather API-based collaborations between financial institutions and third-party providers. These one-to-many relationships between individual banks or banking service providers and a set of subscribing third parties do not exploit the full potential of possible network effects in the financial industry and therefore cannot be considered true open financial ecosystems. However, a trend away from one-to-many relationships to many-to-many platform models, which better exploit the full potential of open ecosystems, can be observed in the market.

This concept of platformification has already found its way into other industries, such as transportation with *Uber* or *Didi Chuxing* and the hotel industry with *Airbnb*. In general, such platforms aim to facilitate interactions and value exchange between a large number of participants and are typically offered, governed, and operated by technology-driven companies.[2] International examples of such companies that are aiming to

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[2]See Section 6.3 for a selection of Swiss-based platforms for open financial ecosystems.

platformise the financial industry include, for example, *AntFinancial*, *Klarna*, *Plaid*, and *Tink*. It remains to be seen how this trend towards platformification will develop in different jurisdictions, which is also influenced by their approach to boost open financial ecosystems. An overview of the two main approaches to promoting open financial ecosystems and how Switzerland has positioned itself in this regard can be found in the next section.

6.3. The Swiss Way in an International Perspective

The subject of open financial ecosystems is approached differently in different jurisdictions. In general, a distinction between two different approaches can be made:

1. **Regulatory-driven:** In this approach, the regulator sets the framework for the implementation of open financial ecosystems to which market participants must adhere. The goal is to push for more competition and innovation by opening up banking data to third-party providers. The revised Payment Services Directive (PSD2) in the European Union is a well-known example of a regulatory-driven approach. The directive establishes a set of rules applicable to providers of payment services to ensure that all players compete on a level playing field and seeks to make payments more secure, as well as boosting competition and innovation in the European payment services industry (European Commission, 2015). Arguably the biggest impact of the directive is the selected opening of bank interfaces to third-party providers for payment initiation and account information services. However, the policy does not propose guidelines covering the functional and technical details concerning the design of the interfaces, which has led to various different implementations. Accordingly, industry groups such as *The Berlin Group* have formed to drive API standardisation in support of Open Banking implementation (BBVA, n.d.).

A similar objective is pursued by the UK Open Banking Standard, which, however, goes beyond the scope of PSD2. It covers all online payment accounts and includes guidelines regarding API specification, as well as customer experience and operational guidelines. The nine largest banks and building societies in the UK have been required by the *Competition and Markets Authority (CMA)* to adopt the standard, i.e. to open their retail and SME account data, while smaller financial institutions are free to follow the guidelines (Open Banking Implementation Entity, n.d.). However, the UK Open Banking Standard approach has also been criticised by the *Coalition for a Digital Economy (Coadec)*, a non-profit organisation that campaigns for policies to support digital start-ups in the UK, in terms of overly prescriptive technical standards and anti-competitive security measures that prevent the widespread adoption of Open Banking in the UK. The coalition is calling for a range of improvements such as the introduction of a new data sharing right empowering end customers (Gladwin & Hallas, 2020).

Customer data is at the heart of Australia's approach to Open Banking. The Consumer Data Right (CDR) legislation, introduced in July 2020 and aiming at giving consumers more access to and control over their data, is to be applied sector by sector across the economy, starting with the banking industry (Office of the Australian Information Commissioner, n.d.). Under the CDR, customers can use a secure online system to order the transfer of their data to an accredited provider of their choice, for example, to monitor their finances, or compare or switch between offers from different financial service providers. The *Australian Competition and Consumer Commission* is responsible for implementing the system, accrediting data recipients, and enforcing the rules of the CDR legislation (Office of the Australian Information Commissioner, n.d.).

2. **Market-driven:** In a market-driven approach, the assumption is that the market best determines the framework for open financial ecosystems itself, and thus should not be regulated by the government. On the one hand, this has the advantage that the strategies and standards defined by the industry are in line with the market's needs and requirements. On the other hand, a market-driven approach can also lead to the initiation of different initiatives that compete with each other and thus hinder the adoption of open financial ecosystems. Although regulators do not determine legal mandates for financial institutions to open up interfaces for third-party providers, they can still carry out support activities for the adoption of open financial ecosystems. This can be seen in Singapore, for example, where the *Association of Banks in Singapore (BAS)* and the *Monetary Authority of Singapore (MAS)* have published a playbook to guide financial institutions in communicating and sharing data with each other by defining non-binding guidelines for API design and usage for market participants such as banks, FinTech companies, consumers, and developer communities (BAS & MAS, n.d.).

Another example of a market-led approach to the introduction of Open Banking can be found in the U.S, where major banks are aware of the strategic importance of Open Banking and are therefore developing API-based offerings in contractual partnerships with third-party providers to gain new customers and competitive advantage (Ernst & Young, n.d.). However, the lack of a uniform industry standard for the design and use of APIs is costly and inefficient for both banks and third-party providers. To counteract this development, a non-profit organisation, the *Financial Data Exchange (FDX)*, has been formed to unite the financial industry around a common standard for secure access to user-authorised financial data. In parallel, the regulator is evaluating how customer data rights can be enforced (Consumer Financial Protection Bureau, 2020).

With respect to these two concepts, Switzerland clearly follows a market-driven approach, without government agencies independently enforcing binding guidelines but nevertheless are interested in the developments in the field. One example of an information exchange between different stakeholders was the Open Bank-

Table 6.1: Swiss platforms and initiatives for open financial ecosystems

Platform	Type	Initiator(s)
additiv DFS®	Platform	*additiv*
Avaloq.one	Platform	*Avaloq*
b.Link	Platform	*SIX*
Finnova Open Platform	Platform	*Finnova*
Finstar Open Platform	Platform	*Hypothekarbank Lenzburg*
Inventx Open-Finance-Plattform	Platform	*Inventx*
Open Business Hub	Platform	*Swisscom*
Temenos MarketPlace	Platform	*Temenos*
Common API	Standardisation/ OpenAPI initiative	*Swiss FinTech Innovations (20+ members)*
OpenBankingProject.ch	Standardisation/ OpenAPI initiative	*Avaloq, DXC Technology, Ergon Informatik, Finnova, Hypothekarbank Lenzburg, Inventx, Netcetera, University of Bern, SWISS FinTech, Business Engineering Institute St. Gallen*
OpenWealth Association	Standardisation/ OpenAPI initiative	*Alphasys, Assetmax, SIX, St.Galler Kantonalbank, Zürcher Kantonalbank, Synpulse (executive management)*

ing roundtable on December 23, 2020, chaired by the Head of the Department of Finance Ueli Maurer, where industry representatives discussed ways to accelerate the development of an open financial ecosystem in Switzerland (State Secretariat for International Finance, 2020). The industry-driven approach in Switzerland allows the domestic financial industry to dynamically and quickly adapt to the needs and demands of the market, facilitating adoption of open financial ecosystems. The lack of a uniform government-defined framework for open financial ecosystems has led to multiple initiatives and platforms in Switzerland. A selection of the most relevant of these is listed in Table 6.1.

It shows that a range of platforms already exists for financial institutions to connect to third-party providers. The table also shows three initiatives to promote the adoption of open financial ecosystems in Switzerland, with the initiatives coordinating their activities with each other and individually with other stakeholders such as *FINMA*, the *Swiss Bankers Association*, and the Swiss government. While the Common API initiative is the general standardisation body for APIs in the Swiss financial industry, the OpenWealth Association is a domain-specific standardisation initiative for APIs in the wealth management sector. The OpenBankingProject.ch initiative, in contrast, is to be understood as a catalog for existing OpenAPIs in the sector. Despite the platforms available and the efforts being made in Switzerland to promote open financial ecosystems from within the industry, many Swiss banks have been reluctant to embrace this development, which is why this year's CIO Barometer, in addition to a survey on more general IT developments in the Swiss financial sector (see Section 5.2), includes a focus on how Swiss banks view open financial ecosystems. The core findings of this survey are provided in the following section.

6.4. Swiss Banks' View on Open Financial Ecosystems

Open financial ecosystems have not yet been established on a broad scale in the Swiss financial landscape.

One reason for this could be the lack of pressure on banks from their customers to open up their interfaces. This is reflected in the self-perception of Swiss financial institutions and is underlined by Figure 6.3. The figure shows that over three-quarters of the Swiss banks participating in this year's CIO Barometer feel only low or even very low pressure from their customers to open up to third-party providers.
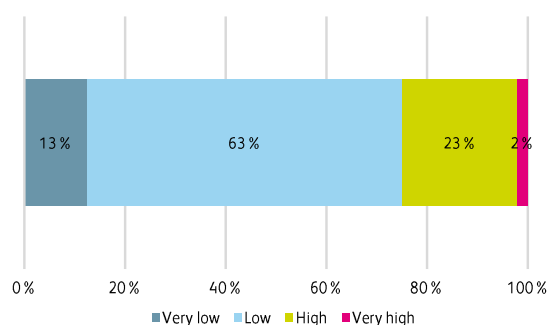
Figure 6.3: Pressure on Swiss banks to open up their interfaces (n=48)

However, this does not imply that the banks surveyed see no potential for open financial ecosystems. In particular, banks especially see potential for business customers, as shown in Figure 6.4. Around two-thirds of the participating banks estimate the need for open financial ecosystems among corporate customers to be high or very high, while this is not reflected as strongly in the case of private customers with only 25 percent. One reason for this could be that managing finances tends to be more complex for business customers than for private customers. SMEs in particular typically do not have their own finance department, which offers potential for open finance ecosystems to offer appropriate solutions, for example in the area of cash flow and liquidity management, via third parties (Accenture, 2020).

In addition, the corporate customer business still lags behind the retail customer segment when it comes to digitisation, as there is still a lack of a digital product and services offering, and therefore offers untapped potential (zeb, 2020). A survey of 290 European finan-
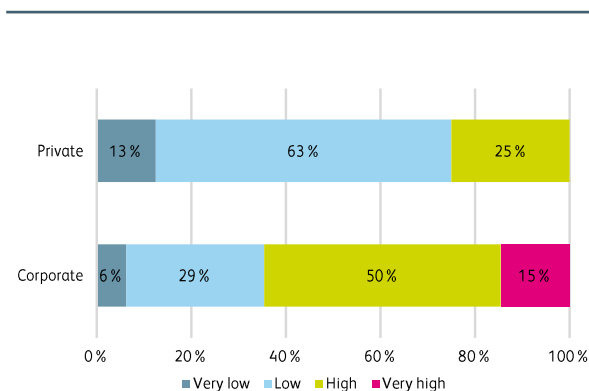
Figure 6.4: Need for open financial ecosystems by customer type (n=48)

Figure 6.5: Impact of open financial ecosystems on FinTech product areas (n=48)

cial executives by *Tink* also comes to a generally positive conclusion about Open Banking. In the corresponding survey, the majority of participants showed a positive attitude towards the Open Banking movement and view it as an opportunity rather than a threat (Tink, 2020).

With regard to the impact of open financial ecosystems on the FinTech product areas defined in Figure 1.1, the result is a twofold picture. Figure 6.5 shows that 88 percent of the participants of the CIO Barometer assess the impact of open financial ecosystems in the payment area as high or very high. This share is significantly lower for the remaining three products areas. However, with around 50 percent high or very high impact, the influence of open financial ecosystems is still considerable in the areas of investment management (56 %), banking infrastructure (55 %), and deposit and lending (48 %). The major impact of open financial ecosystems in the area of payments can already be observed in the existing prominent use cases (see Section 6.2), which in turn could influence the assessment of the participating banks accordingly.

As shown in Figure 6.1, open financial ecosystems can take different forms, which makes it difficult to identify generally valid success factors for their adoption. Moreover, success is something that cannot be measured in one particular way. To foster the emergence of open financial ecosystems, there must be clear benefits for all participants and potential implementation ob-

stacles must be removed as effectively as possible. This is especially true with respect to incumbent financial institutions, which hold large amounts of financial data, making their participation in an open financial ecosystem critical to its success. From the banks' point of view, the advantages of opening up interfaces to third-party providers are manifold, but as are the obstacles, in addition to the relatively low pressure by customers shown in Figure 6.3.

Figure 6.6 shows a corresponding evaluation of the advantages and obstacles, measured by the number of mentions by the participating banks. The two obstacles mentioned by the majority of the participants are the high effort and costs involved with opening up bank interfaces (60 %) and missing standardisation and security of APIs (56 %). A concrete example of a lack of standardisation in Switzerland can be found with regard to electronic identification services. To remedy this situation, Parliament and the Federal Council have drafted an e-ID law[3] that creates the legal basis for a state-recognised Swiss electronic identity. The law has been subject to a referendum, with a corresponding popular vote on March 7, 2021 (Federal Council, 2021). Other drawbacks expressed by at least one-third of the participating bank representatives include the integration of open finance ecosystems into existing legacy systems (46 %), dependence on partners (40 %), and fear of cannibalising their own business (38 %).

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[3]For further information on the e-ID law, see the excursus on page 30.

Advantages		Obstacles
Simpler collaboration with third parties	69 % / 60 %	High effort and costs
Better customer experience	63 % / 56 %	Missing standardisation and security of APIs
Efficiency gains	54 % / 46 %	Legacy systems
New business opportunities	54 % / 40 %	Dependence on partners
Expansion of client base	44 % / 38 %	Cannibalisation of own business
	31 %	Legal/regulatory uncertainty
	29 %	Lack of demand
	27 %	Missing strategy
	25 %	Lack of internal know-how and resources
	23 %	Lack of management support, capacity and understanding
	21 %	Loss of clients
	19 %	Missing incentives for banks
	15 %	Reputational damage
	6 %	Lack of partner certification
	2 %	Missing client interaction

Figure 6.6: Advantages and obstacles with regard to open financial ecosystems (n=48, multiple answers possible)

On the other hand, the most mentioned advantage of opening up bank interfaces is seen in an increased ease of collaboration with third-party providers (69 %), followed by a better customer experience (63 %), efficiency gains (54 %), and new business opportunities (54 %). The only advantage mentioned by less than half of the participants is the expansion of the customer base (44 %), possibly because many financial institutions already have an established clientele.

Although the advantage is recognised, Swiss banks are not seeking the benefits of simplified collaboration with all types of third-party providers, as shown in Figure 6.7. While FinTech companies (87 %), other banks (79 %), and insurance companies (62 %) are considered as potential partners by the majority of the participating representatives of Swiss banks, only 28 and 17 percent are ready for a collaboration with retailers and BigTech companies, respectively. Four percent, or two respondents in absolute terms, are not willing to collaborate with third-party providers at all. These two banks are among the smaller institutions with a balance sheet and assets under management of less than CHF 3 billion. The generally high level of willingness to collaborate with FinTech companies is not only evident for Swiss banks, but also at the European level, where over 80 percent of banks have or are seeking partnerships with FinTech companies, according to a survey by *Tink* (Tink, 2020).

FinTech	87 %
Bank	79 %
Insurance	62 %
Retailer	28 %
BigTech	17 %
None	4 %
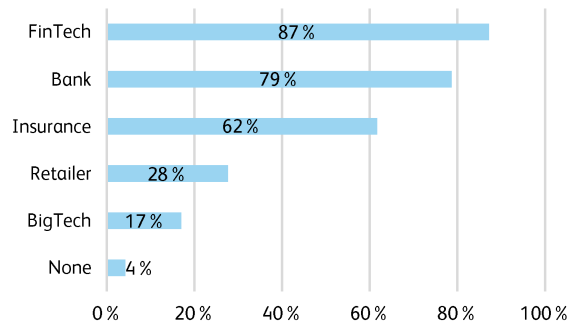
Figure 6.7: Potential partners in an open financial ecosystem (n=48, multiple answers possible)

Finally, the banks participating in the CIO Barometer also differ in terms of the role they play or intend to play in an open financial ecosystem. A corresponding evaluation of the various roles of banks in an open financial system, as defined by the *Swiss Bankers Association* (SwissBanking, 2020b), can be found in Figure 6.8, whit multiple answers per survey participant being possible. At 74 percent, the by far most popular role is the one as an aggregator, i.e. a bank that sources products and services from third parties to distribute them through its own channels. The second most frequently mentioned role is that of an orchestrator (38 %), which serves as a trusted third party to connect providers of financial services and distributors. The two least mentioned roles are that of the supplier (34 %), i.e. the provider of

products and services for distribution to third parties, and that of the integrator (26 %), which develops financial products and services itself and distributes them through its own channels.
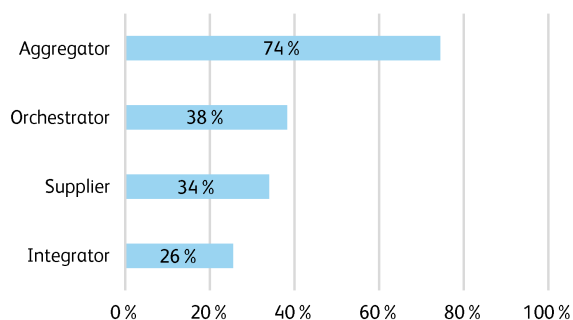
Figure 6.8: Banks' roles in an open financial ecosystem (n=48, multiple answers possible)

6.5. Summary

Integrated financial ecosystems are expected to gain relevance in the medium to long term, driven by the need of bank customers to make their personal data available to other banks or financial service providers such as FinTech companies in order to obtain innovative, efficient financial solutions tailored to their needs. Open financial ecosystems also offer potential from the perspective of financial institutions, for example as a fast track for innovation. The design of such an ecosystem can vary and is highly dependent on the chosen promotional approach, either regulation- or market-driven. One development that is already emerging is a trend away from individual API-based collaborations between financial institutions and third-party providers towards platform solutions for a variety of market participants. This can also be observed in Switzerland, which is already home to a number of platform providers. According to the results of the CIO Barometer, however, domestic banks do not yet feel great pressure to open up their interfaces to third-party providers, although potential for corresponding solutions is identified in the payments area in particular. Furthermore, in an open financial ecosystem, banks see themselves as aggregators, i.e. as procurers of products and services from third parties in order to distribute them through their own channels. In this regard, partnerships with FinTech companies and other banks are preferred over those with BigTech companies. To promote the success of open financial ecosystems, there is a particular need to incentivise the participation of banks that hold large amounts of financial data and to reduce existing obstacles. In this context, banks see the greatest advantage of open financial ecosystems in the simplified collaboration with third-party providers and in the potential for an improved customer experience, while significant effort and cost, as well as a lack of standards and security related to APIs, are the two biggest obstacles.

Excursus: Billing[4]

In Switzerland, 1.16 billion outgoing payments with an associated volume of CHF 7.42 trillion were reported in 2019 (Swiss National Bank, 2020a). This volume corresponds to more than ten times Switzerland's gross domestic product (Federal Statistical Office, 2020). The high number and volume of payment transactions underlines the significant relevance of the corresponding industry in Switzerland. Billing is a specific part of the payments industry and is defined as follows:

> Billing transactions can be defined as transactions whereupon the buyer of goods or services pays his or her debt usually with a delay after the order or receipt of the goods or services.

While the problem with new open financial ecosystems is often their low volume at the beginning, an alternative is to leverage existing high-volume platforms in order to integrate new technologies. Increasingly sophisticated technologies are entering the payments industry, many of which seek to optimise the payment process and customer journey by using data or technology to assist the consumer and reduce payment pain. Intelligent billing could help to transform traditional billing from an unattractive activity to a new touchpoint for invoice issuers and recipients.

The basis of a billing platform is an intelligent document storage or filing system. By offering an overview of all the outstanding and paid bills, the platform is able to show the invoice recipient or his or her digital assistant which bills still need to be paid. According to a survey by *Fiserv* among 3,114 U.S. adults, consumers are interested in this ability to see all the bills that are still due (fiserv, 2018). In addition, creating a trusted platform for all purchase and sale-related documents, such as digital receipts and warranty certificates, allows invoice recipients and invoice issuers to access a personal,

centralised, and safe document storage centre. With the establishment of common APIs, a billing platform is open to additional, "beyond billing", added value services. For example, it could offer intelligent factoring to provide invoice issuers with more liquidity or credits for invoice recipients. Personal financial management, advisory services, lending, and insurance-related services are further examples of what could be possible to access through an intelligent billing platform. Such a platform could also offer direct interfaces to tax declaration systems or allow loyalty and bonus programmes to use the platform to store and manage corresponding activities. Furthermore, the platform could offer updates or reminders related to registered purchases, such as when a car needs its next service. This shows that a range of different possibilities exist for intelligent billing to assist in everyday life and improve the customer experience and convenience. The intelligent billing platform allows building efficient ecosystems with new revenue models for the participants.

An important side effect of BigTech companies entering the payments industry are the masses of data collected due to a large number of users (BIS, 2019). This data is analysed so that services can be offered that exploit network effects and generate further usage activity (BIS, 2019). Intelligent billing could incorporate these techniques on a platform. Data analytics, artificial intelligence, and machine learning, for example, could be used to avoid fraud and improve operations (EY, 2019). With more data available on each user of a billing platform, more sophisticated predictions and analyses are possible. This offers the user a more personalised experience and an increased efficiency of processes. Open Banking, a trend that has been supported over the years with an increasing number of available financial APIs, facilitates the use and spread of data (Ankenbrand, Bieri, et al., 2020). Open Banking allows external service providers to gain access

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[4] This excursus is based on Ankenbrand, Berger, Illi, and Lötscher (2020). More information about billing and its future can be found at https://www.six-group.com/en/company/innovation/research-reports/future-of-billing.html.

to the financial market and customers (see Section 6.1), and thus to seamlessly connect different applications (Goerdten, Lehmann, Steingruber, & Verbeck, 2019). A billing platform could ensure the invoice issuers' and recipients' control over their data and thus creates a trusted environment. Upon the platform users' request, various companies and applications could use the data for the benefit of the recipient and issuer (Swiss FinTech Innovations, 2020). The advantages of e-invoicing, such as structured, automated invoicing and booking, which are so far primarily reserved for B2B transactions, could also become available in the B2C area.

Figure 6.9 illustrates what a billing platform in the future could look like. The user of the billing platform, be that an invoice recipient or invoice issuer, has complete control over all his or her data, data sharing op-

tions, configuration preferences, and access to added value services. Documents and data from transactions made by the user are provided by invoice issuers, IoT devices, and other stakeholders, and directly stored on the billing platform. These documents include invoices, confirmations, warranties, reports, manuals, and any other documents the user wishes to store. If the user chooses to make use of the added value services, he or she must first grant permission for the service providers to access the relevant data from the storage centre. The service provider can then access the data or documents and apply data analysis methods such as artificial intelligence or machine learning in order to provide the billing platform user with optimised support or services. Value-added services can range from insurance services to tax declaration assistance to advisory services.
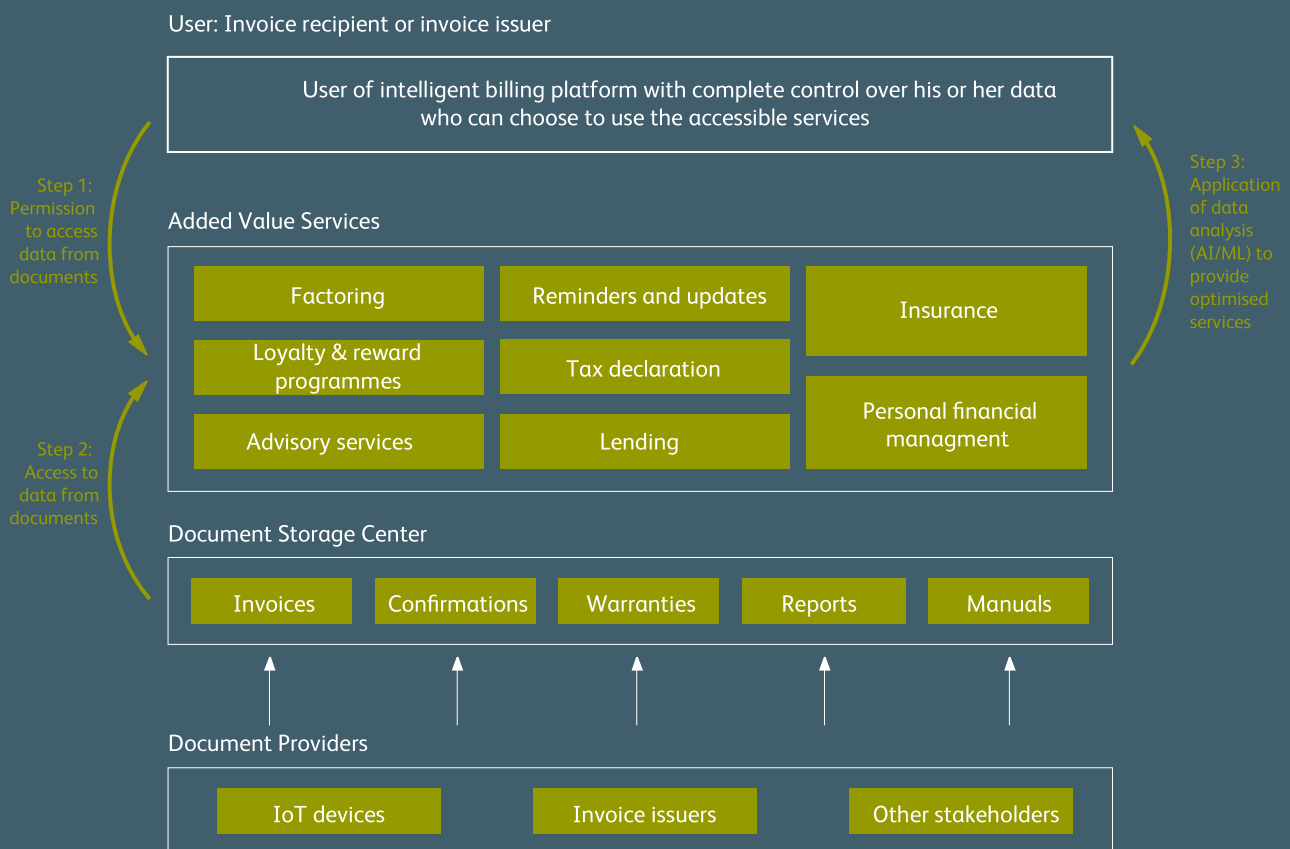
Figure 6.9: The intelligent billing platform of the future (source: Ankenbrand, Berger, et al. (2020))

7. Conclusion & Outlook

The IFZ FinTech Study provides an annual overview of developments in the Swiss FinTech ecosystem and summarises them for 2021 in the following findings and theses:

Growth slows down. The number of Swiss FinTech companies grew for the fifth year in a row in 2020, albeit at a lower pace. As of the end of 2020, a total of 405 FinTech companies were incorporated in Switzerland, representing a year-to-year growth of six percent. However, there are also indications of a stagnation in the sector, such as the declining median values for average total funding and the unchanged median value with regard to the average number of employees at Swiss FinTech companies.

Conditions for FinTech companies are good but deteriorating in Switzerland. The favourability of Switzerland's general environment for FinTech companies has tended to deteriorate in recent years in comparison to other leading FinTech hubs, especially in terms of social and economic factors. Furthermore, an increasing share of employees at Swiss FinTech companies is located abroad. A comparison of the quality of the general environment with the size of a FinTech sector has shown that there is a clear positive relationship. Good framework conditions therefore seem to favour the emergence and growth of a FinTech industry. Further analysis reveals that the political/legal and technological ecosystem appears to be particularly important in this respect.

FinTech is slowly arriving in the real world. A large proportion of volumes, whether in terms of payment transactions, loans, or investments, is still handled by traditional financial institutions and individual incumbent FinTech companies. Taking a look at the figures shows that Swiss banks have become more efficient over time and that the effect of digitisation is slowly materialising. To a certain extent, this is also due to FinTech solutions, which mostly pursue B2B models and therefore offer innovative solutions for established banks. In general, traditional financial institutions were able to increase the volumes managed while keeping their costs stable. However, this development is not reflected on the revenue side, suggesting that the efficiency gains are passed on directly to the customer. Due to the higher volumes, banks were able to absorb the decreasing margins' negative impact on their revenues.

Open Banking becomes reality through platforms. Swiss banks perceive the need to open up interfaces in the B2C area to third-party providers as relatively low. Larger potential is seen in the B2B segment. In Switzerland, Open Banking is market-driven and not mandated by the government as in the European Union via PSD2. Due to this market approach, various platforms and initiatives have emerged that enable the secure and standardised exchange of data and services. These are also increasingly being used by banks, especially in the area of corporate banking.

Skin in the game matters. Venture capital activity is the most relevant indicator with the highest significance in the FinTech hub ranking. In this respect, Switzerland is generally well positioned, measured by the volume of venture capital invested in the FinTech industry as well as the comparatively low difficulties perceived by Swiss FinTech companies in raising new funding. The importance of total funding also applies at the level of individual companies. In addition to revenue and the number of employees, this figure shows a significant relationship with the valuation of a FinTech company.

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8. Factsheets of Swiss FinTech Companies

This final chapter provides an overview of all FinTech companies that participated in this study's survey using individual factsheets based on the Business Model Canvas by Osterwalder and Pigneur (2010). The information provided by the companies was not verified and only the factsheets returned by FinTech companies are presented (n=166). Parts of the analysis of Swiss FinTech companies in Chapter 4, meanwhile, include all the companies which received a factsheet (n=405). At this point, we would like to express our thanks to all the participating companies for their efforts and valuable contribution.

Companies

3circlefunding	105	Beedoo	118
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AlgoTrader	111	CreditGate24 (Schweiz)	124
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AM-One	113	Crypto Finance	126
Anova Partners	113	Custodigit	126
Apiax	114	Cynos	127
Ariadne Business Analytics	114	datalevel	127
Assetmax	115	Datatrans	128
atfinity	115	daura	128
Avance Pay	116	DecentAge	129
aXedras	116	decentriq - dq technologies	129
Aximetria	117	Delega Treasury	130
Base58 Capital	117	Descartes Finance	130

Companies

Companies

3circlefunding GmbH
https://www.3circlefunding.ch/

Multi-product crowdfinancing platform - with the aim of giving both borrowers and lenders more freedom and control over their loans, 3circlefunding allows borrowers to set loan interest rates and investors to sell loan parts in its secondary market.

Year of foundation	2015
Headquarters (canton)	Zurich
Employees	4
… of which in CH	4
Valuation	
Total funding	
Board members	Anthony McCarthy
Management team	Anthony McCarthy
Key partners	Bisnode, Creditreform & CRIF (credit check agencies)

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

3rd-eyes analytics AG
https://3rd-eyes.com/

We develop software that empowers wealth and insurance advisors to provide goal-based, individual, realistic and sustainable wealth and life event planning. Our solutions provide a holistic assessment and simulation of the clients' wealth, optimises their asset allocation across various capital scenarios, and recommends a set of financial products for execution.

Year of foundation	2015
Headquarters (canton)	Zurich
Employees	30
… of which in CH	10
Valuation	CHF 25,000,000
Total funding	CHF 3,725,000
Board members	Rodrigo Amandi, Stephan Mohrhardt, Thomas Pütter, Marc Mettler, Stephanie Feigt
Management team	Stephanie Feigt, Rodrigo Amandi, Michael Koschinsky, Marc Joye, Marc Mettler
Key partners	Synpulse, Morningstar, BhfS, Investment Navigator, TeamWork, Logismata etc.

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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4cash - 4bridges GmbH
https://4cash.io/; https://4cash.exchange/

4bridges is supporting mass adaption of cryptocurrencies. Our regulation request to become a regulated Swiss Cryptocurrency Exchange and a regulated Swiss Virtual Asset Service Provider has been shipped. New webapp features ready for release are: to create eCommerce shops in minutes & to add crypto checkout, to receive/send SEPA- or Cash-transactions and to pay Swiss QR-bill invoices using crypto.
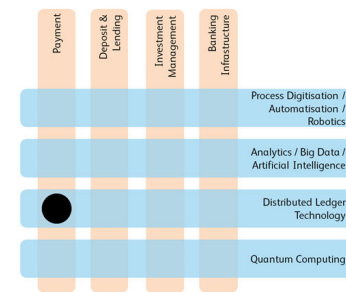
Year of foundation	2019
Headquarters (canton)	Zurich
Employees … of which in CH	5 / 2
Valuation	CHF 4,000,000
Total funding	CHF 350,000
Board members	Simon Tiberius Fundel, Robin Caduff, Emad Hassanipanah
Management team	Simon Tiberius Fundel, Robin Caduff, Emad Hassanipanah
Key partners	10+ confidential cooperation- and API-agreements signed in 2020

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Accounto AG
https://accounto.ch/

Accounto represents a paradigm shift in bookkeeping for SME and trust companies by removing the actual booking and administrative work from both parties. Thanks to the bookkeeping automatisation, trust complanies are able to scale their business model and concentrate more on customer service.
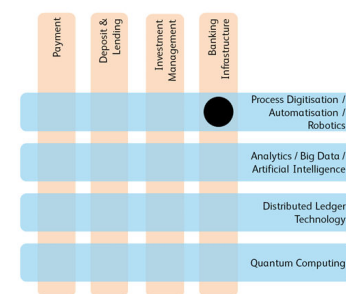
Year of foundation	2018
Headquarters (canton)	Zurich
Employees … of which in CH	35 / 35
Valuation	
Total funding	CHF 2,000,000
Board members	Alain Veuve, Dominique Andreas Kasper, Jan-Hendrik Heuing, Michael Manz, Alessandro Micera
Management team	Alessandro Micera, Jan-Hendrik Heuing, Kilian Perrin
Key partners	AXA, Treuhand Suisse, BLKB, WIR-Bank
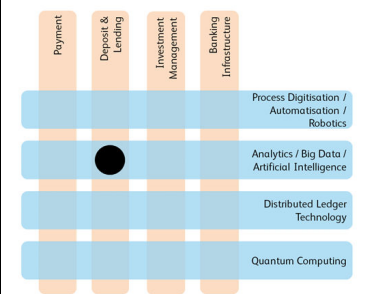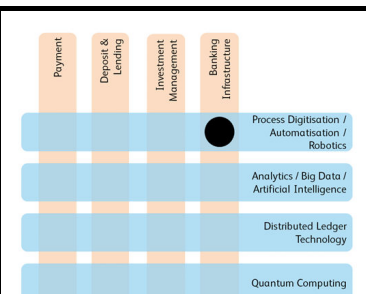
Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Acredius AG
https://www.acredius.ch/

Acredius is a Swiss independent crowdlending platform. Private and institutional investors can diversify their portfolios starting from a CHF 200 investment. SMEs and startups get access to fair loans using their traditional and non-traditional data.

Year of foundation	2017
Headquarters (canton)	Zurich
Employees … of which in CH	10 10
Valuation	
Total funding	
Board members	Nada Chebli-Raafat, Ghassen Benhadjsalah, Thomas Hentz
Management team	Ghassen Benhadjsalah
Key partners	TMF Group, CRIF

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Adamant Lane AG
https://adamantlane.com/

Adamant Lane's SaaS platform, LiquidityHub, delivers fully integrated services for trade finance products – always customized to your needs, completely on cloud and yet 100 % compliant.

Year of foundation	2019
Headquarters (canton)	Zurich
Employees … of which in CH	12 4
Valuation	CHF 12,500,000
Total funding	
Board members	Otto Johannsen, Oliver Schreiber
Management team	Otto Johannsen, Oliver Schreiber
Key partners	SAP SE

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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additiv

Additiv AG
https://additiv.com/

Leading catalyst for change in the financial services industry driven by the new possibilities of digitalisation. Based on its DFS platform, the "Wealth-as-a-Service" offering enables new operating, servicing and sourcing models – differentiating value propositions, out-of-the-box, at a cost advantage. additiv partners with the world's leading financial institutions, giving them the intelligence to maximize customer engagement and unleash growth.

Year of foundation	1998
Headquarters (canton)	Zurich
Employees … of which in CH	175 50
Valuation	
Total funding	
Board members	Roger Steiner, Benjamin Paul Robinson, Thomas Scherr, Rolf Theo Schönauer
Management team	Michael Stemmle, Dario Bernasconi, Yann Kudelski, Guy Levy, Vlad Magereanu, Christine Schmid, Silvan Schriber, Adrian Weiss, Thomas Schornstein, Kevin Hardy, Eric Andersson, Thomas Ojanga
Key partners	Technology and expert partners: Microsoft, unblu, Idnow, fidentity, edgelab, and others. Sales and implementation partners: accenture, Qcentris, synpulse, Thakral One, Fehr Advice, and more than 20 others.

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital	Operative business & serving clients	Trading	Data
					Advertising
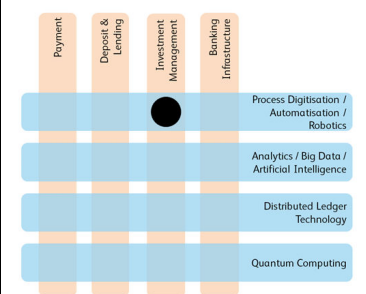
Advice Online AG
https://www.adviceonline.ch/

For Wealth Managers (Banks, EAM's, Family Offices etc.). Including Risk-Profiling, Suitabitliy, CRM, Doc Archive, Advisory Protocol, Advisory Process for Investing & Mortgages, HQ Reporting, PRC & own Rating, Investment Controlling, Realtime Rule-Engine, PTF Managment, Robotization of all Modules available (above), Simulators, Full White Labelling, Remote Acces.

Year of foundation	2013
Headquarters (canton)	St. Gallen
Employees … of which in CH	6 2
Valuation	CHF 1,800,000
Total funding	
Board members	Christian Neff
Management team	Christian Neff, Davide Iuorno
Key partners	Private- and Regionalbanks, Independent Asset Managers, Insurances, Fintech-Platforms (SaaS-Delivery).

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital	Operative business & serving clients	Trading	Data
					Advertising
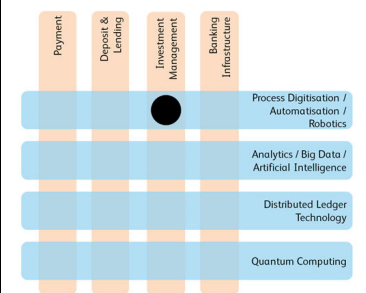
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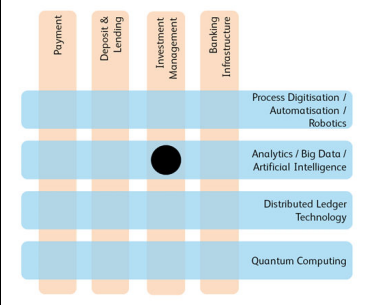
Adviscent AG
https://adviscent.com/

Interactive Advisor Framework – integrages people, processes and content from the investment- and sales process into the advisory process.

Year of foundation	2010
Headquarters (canton)	Zurich
Employees … of which in CH	50
Valuation	
Total funding	
Board members	Thomas Bosshard, Stephan Jöhri
Management team	Thomas Bosshard, Stephan Jöhri
Key partners	Avaloq, DXC Luxoft, Temenos

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
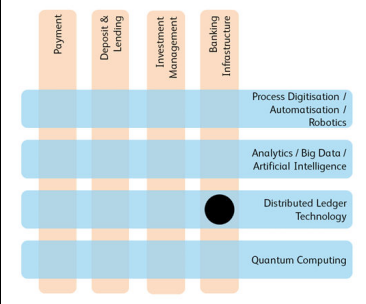
Aequitec AG
https://www.aequitec.ch/

Aequitec has developed a platform for automated corporate governance workflows. Their core product is a share register for paper certificates, intermediated securities ("Bucheffekten") and tokenized shares.

Year of foundation	2020
Headquarters (canton)	Zurich
Employees … of which in CH	
Valuation	
Total funding	
Board members	Florian Herzog, Dirk Sebald, Johannes Schneebacher
Management team	Christian Wilk
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative Business & serving clients	Trading	Advertising
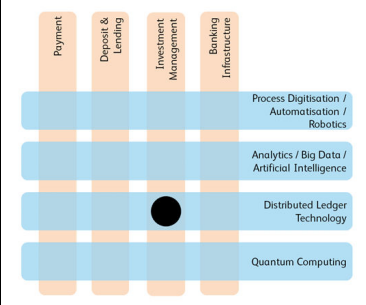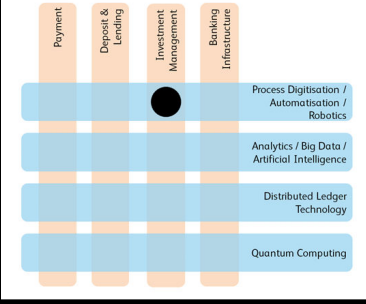
Aisot GmbH
https://www.aisot.ch/

aisot helps take better trade & investment decisions by providing real-time data and signals. Our analytics and predictive analytics for financial markets create valuable insights and statistical advantages for our customers. We bridge the last mile problem in data-driven decision making.

Year of foundation	2019
Headquarters (canton)	Zurich
Employees … of which in CH	3 3
Valuation	
Total funding	
Board members	
Management team	Stefan Klauser, Nino Antulov-Fantulin
Key partners	SIX, F10

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative Business & serving clients	Trading	Advertising
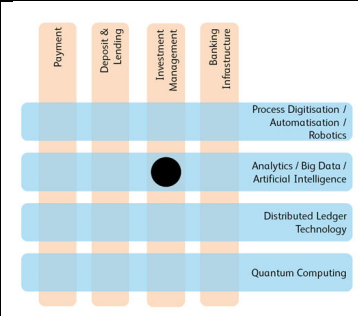
Aktionariat AG
https://aktionariat.com/

Aktionariat AG offers a set of tools for Swiss companies to create a market for their shares on their own website. Open technology. No intermediaries. Powered by the Ethereum blockchain.

Year of foundation	2020
Headquarters (canton)	Zurich
Employees … of which in CH	5 5
Valuation	CHF 4,000,000
Total funding	CHF 150,000
Board members	Murat Ögat, Luzius David Meisser
Management team	Murat Ögat, Luzius David Meisser, Nicola Plain
Key partners	LEXR AG

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
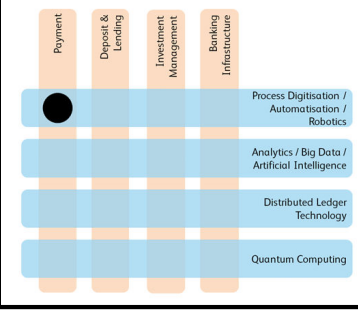
AlgoTrader AG
https://www.algotrader.com/

Algorithmic trading software for trading companies such as hedge funds, proprietary trading and crypto trading firms. Execution and trading of digital assets for banks and brokers.

Year of foundation	2014
Headquarters (canton)	Zurich
Employees … of which in CH	35 12
Valuation	
Total funding	CHF 6,600,000
Board members	Andreas Flury, Roger Daniel Altorfer, Luzius David Meisser, Martin Alexander Trepp, Theo Woik
Management team	Andreas Flury, Jakob Bosshard, Stuart Petersen, Bartosz Wojcik, German Ramirez
Key partners	Swisscom/Custodigit, Avaloq, Metaco, Blockfills, Deribit

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
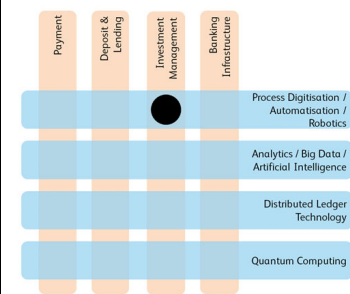
Alphasys AG
https://www.alphasys.ch/

Alphasys AG is a dynamic software enterprise. With Netfolio, we have developed a software solution for in-depth and professional asset management.

Year of foundation	2003
Headquarters (canton)	Zurich
Employees … of which in CH	12 12
Valuation	
Total funding	
Board members	Andreas Bachmann, Fabrizio De Ambroggi, Roger Rüfenacht
Management team	Andreas Bachmann, Fabrizio De Ambroggi
Key partners	SIX Financial Information, ZHAW, Investment Navigator, CDDS

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
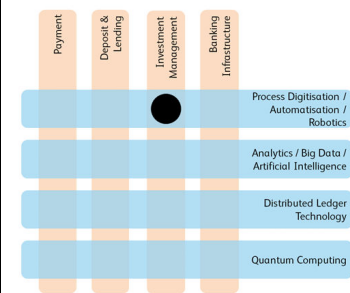
Altoo AG
https://altoo.io/

The Altoo Wealth Platform empowers wealthy individuals and their families to consolidate and interact intuitively with their total wealth.

Year of foundation	2017
Headquarters (canton)	Zug
Employees ... of which in CH	23 23
Valuation	
Total funding	
Board members	Søren Holm Mose, Joris Engisch, Fabian Markus Tschan
Management team	Martin Stadler, Stefan Thiel, Stefan Weber
Key partners	Our clients are the key partners: Altoo stands for "altogether": Our features and user experience have been developed in co-creatorship with our clients and they are our best ambassadors to win new clients.

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
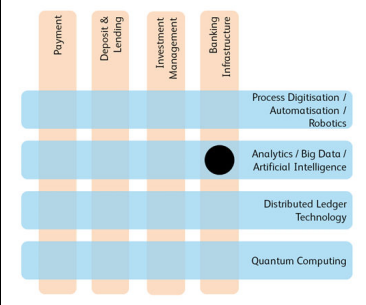
AMNIS Treasury Services AG
https://www.amnistreasury.ch/

Our fully automated electronic platform simplifies foreign exchange and international payments for SME.

Year of foundation	2014
Headquarters (canton)	Zurich
Employees ... of which in CH	12 12
Valuation	
Total funding	CHF 1,000,000
Board members	Michael Wüst, Philippe Christen, Robert Bloch
Management team	Michael Wüst, Andras Ratz, Philippe Christen, Robert Bloch
Key partners	VQF, Swiss Mechanic, swiss made software, Swiss Finance Startups, WIR Bank

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
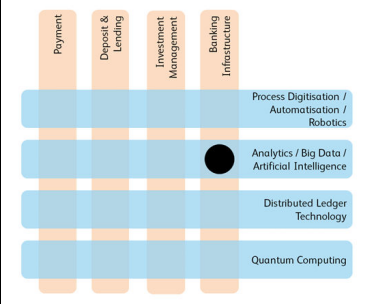
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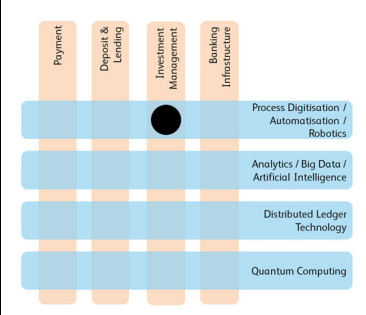

AM-One AG
https://www.am-one.ch/

Complete outsourcing platform with Swiss cloud hosting and operational services for Independent Asset Managers and Family Offices.

Year of foundation	2017
Headquarters (canton)	Zug
Employees … of which in CH	>260 (Group) >70 (Group)
Valuation	
Total funding	
Board members	Urs-Peter Oehen
Management team	Philipp Bisang, Dominic Greenwood, George Prapopoulos
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Anova Partners AG
https://anovapartners.com/

We provide an independent marketplace where investors and manufacturers meet to achieve better investment decisions facilitated through technologically enabled investment, risk, product management as well as execution services.

Year of foundation	2020
Headquarters (canton)	Zurich
Employees … of which in CH	10 10
Valuation	
Total funding	CHF 1,000,000
Board members	Eric Barthe, Thomas Aebli
Management team	Jan Schoch, Eric Barthe, Thomas Aebli, David Straumann, Raphael Dorsaz, Giuliano Fusco, Maxence Coupet
Key partners	25 well-known issuers of structured products

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative Business & serving clients	Trading	Advertising

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Apiax AG
https://www.apiax.com/

Apiax offers the most powerful tools to master complex financial regulations digitally.

Year of foundation	2017
Headquarters (canton)	Zurich
Employees … of which in CH	49 20
Valuation	
Total funding	CHF 8,100,000
Board members	Nicolas Blanchard, Sonja Stirnimann, Jürg Steiner, Philip Schoch, Ralph Mogicato
Management team	Philip Schoch, Ralf Huber, Thomas Suter, Nicolas Blanchard
Key partners	Swisscom, EY, PwC, BDO, Temenos, Aosphere

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Ariadne Business Analytics AG
https://www.ariadne.swiss/

Our mission is to support leading corporations world-wide in finding their way out of the financial data maze.

Year of foundation	2015
Headquarters (canton)	Zug
Employees … of which in CH	17 5
Valuation	
Total funding	CHF 1,300,000
Board members	Willi Franz Brammertz, Shirish Kumar, Daniel Imfeld, Nils Bundi, Jeff Braswell, Wolfgang Breymann
Management team	Willi Franz Brammertz, Daniel Imfeld, Shirish Kumar
Key partners	Actus, atpar, Mobile First Finance, Oxial, Oded, Finelis, ZHAW

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Assetmax AG
https://www.assetmax.ch/

Assetmax offers compliance & regulation, portfolio management, front office, fees & profitability and backoffice outsourcing services in one integrated platform for Independent Asset Managers and banks.

Year of foundation	2014
Headquarters (canton)	Zurich
Employees … of which in CH	35 35
Valuation	
Total funding	
Board members	Alexander Christen, Benedict Wollschlaeger, Massimo Nicola Ferrari, Markus Oswald, Christophe Héribert André Audergon, Sven Robert Müller
Management team	Massimo Nicola Ferrari, Sven Müller, Jacopo Malnati, Yuval Sharon, Dimitri Petruschenko
Key partners	Integration Partners Solutions: Altoo, Edgelab, Evooq, InCube, Indigita, Investment Navigator, Performace Watcher, Prometeia, World-Check; Partner Services: GW-Group, Synpulse, Noveras, Numas, Swisscomply, Tinext; Data Providers: Bloomberg, SIX

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative Business & serving clients	Trading	Advertising

atfinity GmbH
https://atfinity.io/

atfinity developed a no code platform that enables our clients to digitize business processes in no time. Thus, our clients save time and earn more money by accelerating, simplifying and optimizing their processes.

Year of foundation	2016
Headquarters (canton)	Zurich
Employees … of which in CH	7 7
Valuation	
Total funding	
Board members	Alexander Balzer, Thorben Croisé, Ingo Drexler
Management team	Alexander Balzer, Thorben Croisé
Key partners	Business consultants, implementation consultants, legal content providers

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Avance Pay AG
https://www.avance-pay.com/

As expert in the banking and payment area, Avance Pay specializes in the development of innovative solutions for NFC-based and contactless payments.

Year of foundation	2011
Headquarters (canton)	Bern
Employees … of which in CH	5 4
Valuation	
Total funding	
Board members	Peter Nicoleit, Herbert Gartner
Management team	Peter Nicoleit, Peter Danz, Heinz Bircher-Nagy
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

aXedras AG
https://www.axedras.com/

aXedras is connecting and digitalizing the precious metal industry. aXedras is a DLT infrastructure and application provider for product and data integrity in the bullion market (and for other high-value industries). aXedras has been developing a distributed Corda application which operates on a permissioned and private blockchain and which efficiently combines integrity, traceability and confidentiality of business transactions on a technical level.

Year of foundation	2019
Headquarters (canton)	Schwyz
Employees … of which in CH	15 8
Valuation	
Total funding	
Board members	Frank Richard Süss, Oliver Kehl, Alex Ernst Seidel, Florian Herzog, Urs Röösli
Management team	Urs Röösli, Iwan Lottenbach, Bernd Stöger
Key partners	ASFCMP, Microsoft, R3, Scalefocus, SFTA, market-leading corporates and (inter-)national regulatory bodies

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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Aximetria GmbH
http://www.aximetria.com/

Aximetria offers infrastructure and end-user services in the domain of cryptocurrency for financial institutions and banks.

Year of foundation	2018
Headquarters (canton)	Zug
Employees … of which in CH	16 2
Valuation	CHF 7,000,000
Total funding	CHF 1,000,000
Board members	Alan Vaksman
Management team	Alex Axelrod
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Base58 Capital AG
https://base58.ch/

We are a technology-driven investment firm specialized in cryptoassets.

Year of foundation	2017
Headquarters (canton)	Zug
Employees … of which in CH	5 4
Valuation	
Total funding	
Board members	Ivo Sauter, Fabio Federici
Management team	Fabio Federici
Key partners	Coinbase Custody, Copper Technologies

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

BEEDOO.CH

Beedoo SA
https://www.beedoo.ch/

A platform proposing real investment solutions with investment advice.

Year of foundation	2014
Headquarters (canton)	Vaud
Employees … of which in CH	
Valuation	
Total funding	
Board members	Maria Del Carmen Croisier
Management team	David Croisier
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Billte

Billte AG
https://billte.ch/

We are a multichannel for sending invoices (email, Whatsapp, SMS, eBill) and payments (credit cards, online banking, instalments). Billte serves as a bridge between companies and consumers for bill payments.

Year of foundation	2018
Headquarters (canton)	Zurich
Employees … of which in CH	14 5
Valuation	CHF 9,000,000
Total funding	CHF 1,200,000
Board members	Andrea Girasole, Raphael Bianchi, Daniele Mario Albisetti, Edgar Dos Santos Silva, Enrico Ceccato, Sabina Lindevall, Srdjan Micic
Management team	Andrea Girasole, Sabina Lindevall
Key partners	Banca Stato (Cantonal Bank of Ticino), Generali Switzerland

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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Bitcoin Suisse AG
https://www.bitcoinsuisse.com/

Founded in 2013, Bitcoin Suisse is the Swiss crypto-finance and technology pioneer and market leader. Bitcoin Suisse has helped to shape the crypto and blockchain ecosystem in Switzerland. As a regulated Swiss financial intermediary and undergoing licensing as a Swiss and Liechtenstein bank, Bitcoin Suisse offers prime brokerage, trading, custody, lending, staking and other crypto-financial services for private and institutional clients.

Year of foundation	2013
Headquarters (canton)	Zug
Employees … of which in CH	175+ ~140
Valuation	CHF 302,500,000
Total funding	CHF 45,000,000
Board members	Niklas Nikolajsen, Arthur Vayloyan, Urs Bigger, Luzius Meisser, Giles Keating, Roger Studer
Management team	Arthur Vayloyan, Niklas Nikolajsen, Stefan Lütolf, Andrej Majcen, Lothar Cerjak, Fabian Hediger, Michael Gauckler, Christian Holm, Søren Nielsen, Lars Hodel, Rolf Gätzi, David Riegelnig, Philipp Vonmoos, Mauro Casellini, Markus Perdrizat, Armin Schmid
Key partners	Worldline

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

BLP Digital AG
https://www.blp-digital.com/

Automated ERP processes such as delivery note and invoice control, as well as order registration through Artificial Intelligence.

Year of foundation	2019
Headquarters (canton)	Zurich
Employees … of which in CH	11 11
Valuation	
Total funding	
Board members	Tim Beck, Sven Beck
Management team	Tim Beck, Sven Beck
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative Business & serving clients	Trading	Advertising

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Byjuno AG
https://www.byjuno.ch/

Byjuno is a FinTech start-up within the payment and consumer finance industry for alternative payments.

Year of foundation	1986
Headquarters (canton)	Zug
Employees … of which in CH	50 20
Valuation	
Total funding	
Board members	Per Christofferson, Mikael Ericson, Johan Brodin, Christian Stolz
Management team	Christian Stolz, Mike Strahm, Michele Pintori
Key partners	SBB, ZVV, Migros, Datatrans

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Canopy Europe AG
https://canopy.cloud/

Canopy is a private & anonymous wealth account aggregation, portfolio analytics and client reporting platform for High Net-Worth Individuals and their Wealth Managers.

Year of foundation	2018
Headquarters (canton)	Zug
Employees … of which in CH	50 2
Valuation	
Total funding	CHF 16,300,000
Board members	Andrea Elia, Tanmai Sharma
Management team	Tanmai Sharma, Amit Gupta, Michiel van Selm, Sinan Biren
Key partners	Bloomberg, FactSet, Morningstar, Sustainalytics, Tableau, AWS, MS Azure, Safe Swiss Cloud

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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Capnovum (Switzerland) GmbH
https://capnovum.com/

Capnovum's cognitive compliance management platform provides an up-to-date repository of regulations, obligations, and regulatory news.

Year of foundation	2016
Headquarters (canton)	Zurich
Employees … of which in CH	11-20 1-10
Valuation	
Total funding	
Board members	
Management team	Inga Jovanovic
Key partners	Alumni of Google Cloud for Startups, PwC Scale LawTech, Microsoft for Startups, Momentum London, SuperCharger FinTech Accelerator, and Microsoft BizSpark.

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital	Operative business & serving clients	Trading	Data
					Advertising

Process Digitisation / Automatisation / Robotics
Analytics / Big Data / Artificial Intelligence
Distributed Ledger Technology
Quantum Computing

Payment | Deposit & Lending | Investment Management | Banking Infrastructure

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Centi AG
https://www.centi.ch/

With Centi you can easily make Bitcoin SV payments via the Point of Sales Terminal. Further we serve events and online pay per use and micropayment business cases.

Year of foundation	2020
Headquarters (canton)	Zurich
Employees … of which in CH	2 2
Valuation	CHF 1,500,000
Total funding	CHF 550,000
Board members	Bernhard Frank Müller Hug, Jürg R. Conzett, Paul Rajchgod
Management team	Bernhard Frank Müller Hug
Key partners	Not public yet

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital	Operative business & serving clients	Trading	Data
					Advertising

Process Digitisation / Automatisation / Robotics
Analytics / Big Data / Artificial Intelligence
Distributed Ledger Technology
Quantum Computing

Payment | Deposit & Lending | Investment Management | Banking Infrastructure

CLEAR MINDS

Clear Minds Investment AG
https://clearminds.ch/

Clear Minds offers regulatory compliant digital investment processes (advisory/discretionary) for B2C and B2B, fully integrating their B2B partners' proprietaty investment solutions & communication processes to serve their end client.

Year of foundation	2016
Headquarters (canton)	Basel-City
Employees ... of which in CH	6 4
Valuation	
Total funding	
Board members	Adrian Schatzmann, Juerg Steiger, Nils Patrik Ludvig Hansson, Alexa Ipen-Providoli
Management team	Gustav Inglin, Adrian Schatzmann
Key partners	Futurea, Djangostars, Swissquote, Wealtharc

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

COLENDI

Colendi GmbH
https://www.colendi.com/

Colendi is the financial services platform that helps consumers, merchants, and the financial institutions overcome the boundaries within the credit card and consumer lending business.

Year of foundation	2018
Headquarters (canton)	Zug
Employees ... of which in CH	30
Valuation	
Total funding	CHF 2,425,000
Board members	Markus Franz Breuer, Mihriban Ersin Tekmen
Management team	Bulent Tekmen, Erbil Eren, Barış Alayoğlu, Serkan Omerbeyoglu, Murat Cansoy
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Crealogix Holding AG
https://crealogix.com/

CREALOGIX Group (SWX:CLXN) is a Swiss Fintech 100 company and is among the global market leaders in digital banking. Using the products from CREALOGIX, financial institutions can better respond to evolving customer needs in the area of digital transformation.

Year of foundation	1996
Headquarters (canton)	Zurich
Employees … of which in CH	700 200
Valuation	CHF 165,000,000
Total funding	
Board members	Bruno Richle, Ruedi Noser, Ralph Mogicato, Christoph Schmid, Richard Dratva
Management team	Oliver Weber, Richard Dratva, Daniel Bader, David Moreno
Key partners	Adesso, CGi, Cognizant, DXC, HPE, IBM, Oracle, redhat, Inventx, Meniga, unblu, Entersekt, Promon, Swisscom, Syngenio, Synpulse, Zeb, Qontis, OneSpan, among others

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
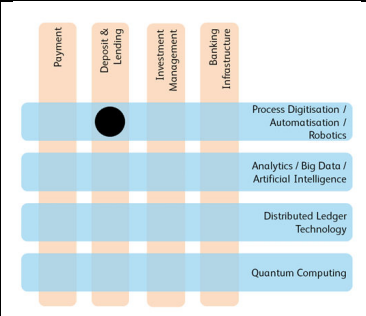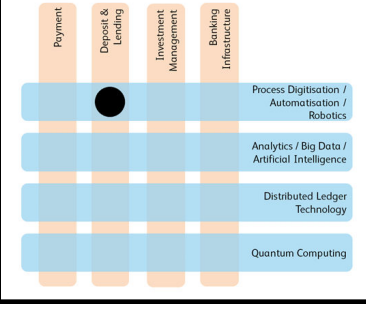
Credit Exchange AG
https://www.creditexchange.ch/

Development of an open exchange for the mortgages business to fundamentally innovate and digitalise the mortgage market in Switzerland.

Year of foundation	2018
Headquarters (canton)	Zurich
Employees … of which in CH	5 5
Valuation	
Total funding	
Board members	Thomas Andrea Müller, Fabio Perlini, Johannes Höhener, Reto Kuhn, Sven Rump
Management team	Hanspeter Ackermann, Andrea Canonica
Key partners	Bank Avera, EY, Glarner Kantonalbank, die Mobiliar, Vaudoise, Swisscom, Bank Linth, Bank CIC, Assepro, SUVA, SICPA Pension, Bank WIR, Hypoteq

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
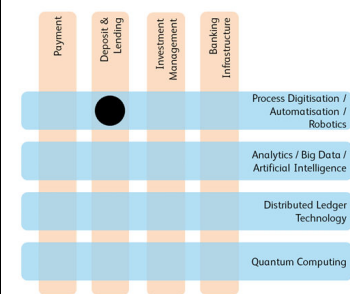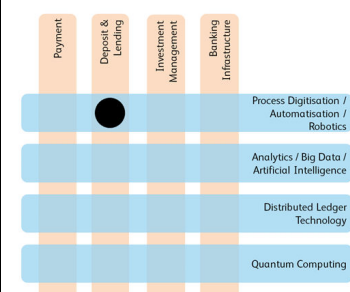
CreditGate24

CreditGate24 (Schweiz) AG
https://www.creditgate24.ch/

As a marketplace lender CreditGate24 provides businesses, consumers and professional real estate investors financing through various products and offers retail and institutional investors investment opportunities into private debt.

Year of foundation	2014
Headquarters (canton)	Zurich
Employees … of which in CH	40 32
Valuation	
Total funding	
Board members	Christoph M. Mueller, Daniel Gutenberg, Luigi Vignola, Josef Rickenbacher
Management team	Christoph M. Mueller, Stephan C. Zimmermann, Samuel L. Krämer
Key partners	Bank Frick, Generali, Leonteq, Bexio, Hypothekarbank Lenzburg, Alkione FL, 1741 Group, Anova Partners

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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creditworld

creditworld AG
https://www.creditworld.ch/

The online marketplace for SME financing in Switzerland.

Year of foundation	2015
Headquarters (canton)	Schaffhausen
Employees … of which in CH	11 9
Valuation	
Total funding	
Board members	Kai Ren, Philipp Schnyder
Management team	Kai Ren, Philipp Schnyder, Harel van Dijk
Key partners	Euler Hermes, Wenger & Vieli

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

CROWD4CASH

Crowd4Cash - Crowd Solutions AG
https://crowd4cash.ch/

We are an innovative company in the financial service sector, specialized in supporting SME and corporates regarding instalment solutions in their offline and online business (Loan as service).

Year of foundation	2016
Headquarters (canton)	Zug
Employees … of which in CH	7 5
Valuation	
Total funding	CHF 1,100,000
Board members	Roger Bossard, Peter Oesch
Management team	Andreas Oehninger
Key partners	More than 40 points of sale partners and online shops, a few large corporates (names disclosed), other FinTech companies

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

crowdhouse

Crowdhouse AG
https://crowdhouse.ch/

Crowdinvesting in carefully selected Swiss real estates. Every investor gets his own entry in the land register.

Year of foundation	2015
Headquarters (canton)	Zurich
Employees … of which in CH	110 110
Valuation	
Total funding	
Board members	Francisco Fernandez, Ardian Gjeloshi, Robert Plantak
Management team	Robert Plantak, Ardian Gjeloshi
Key partners	Luzerner Kantonalbank, Raiffeisen, Glarner Kantonalbank, Liechtensteinische Landesbank, Wüest & Partner, PwC, Quali Casa, SVIT

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Crypto Finance AG
https://www.cryptofinance.ch/

Crypto Finance AG is a financial technology company founded in June 2017. The company provides blockchain-related services through its operations in asset management, brokerage, storage infrastructure services and tokenisation.

Year of foundation	2017
Headquarters (canton)	Zug
Employees … of which in CH	42 40
Valuation	
Total funding	CHF 36,000,000
Board members	Ming Shu, Philippe Albert Paul Cottier, Raymond J. Bär, Tobias Reichmuth, Jan Brzezek, Marc Bernegger
Management team	Jan Brzezek, Lewin Boehnke, Jürg Egli, Simon Trippel
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Custodigit AG
https://www.custodigit.com/

Digital Asset Custody Platform. The Swiss pioneering solution for regulated financial services providers.

Year of foundation	2018
Headquarters (canton)	Zurich
Employees … of which in CH	10 10
Valuation	
Total funding	
Board members	Johannes Höhener, Fabian Dori, Roger Rolf Wüthrich-Hasenböhler, Robert Gebel
Management team	Peter Hofmann, Christian Bieri, Andreas Borg, David Watrin
Key partners	Swisscom, Metaco, Algotrader

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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CYN•S

Cynos AG
https://www.cynos.ch/

Cynos is a full-service compliance provider offering IT solutions and comprehensive compliance services to support financial institutions in their regulatory compliance. The Cynos Toolbox is the first digital compliance solution for financial institutions to efficiently deal with the newly introduced requirements imposed by FinIA/FinSA and the AML obligations. The Compliance Service Centre support financial institutions in the design of compliance frameworks and policies, in implementing new regulations and acts as compliance function required under FinIA.

Year of foundation	2019
Headquarters (canton)	Zurich
Employees … of which in CH	4 4
Valuation	CHF 5,500,000
Total funding	CHF 600,000
Board members	Stefan Zumtaugwald, Daniel Gonzenbach, Pascal Forster, Claude Ehrensperger
Management team	Claude Ehrensperger, Martin Polasek, Stefan Zumtaugwald, Florian Patscheider
Key partners	Inventify AG (IT Partner), Schellenberg Wittmer (Legal Partner), bexio AG (Distribution Partner)

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital	Operative business & serving clients	Trading	Data
					Advertising

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datalevel
redefined · reconciled · refined

datalevel AG
https://www.datalevel.ch/

datalevel's Data Refinery Box refines your financial data and forms the solid basis for the implementation of innovative banking models.

Year of foundation	2017
Headquarters (canton)	Zurich
Employees … of which in CH	5 5
Valuation	
Total funding	CHF 100,000
Board members	Manfred Köhl, Reinhard Stary, Wolfgang Millat, Peter Christian Strittmatter
Management team	Wolfgang Millat, Peter Strittmatter
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital	Operative business & serving clients	Trading	Data
					Advertising

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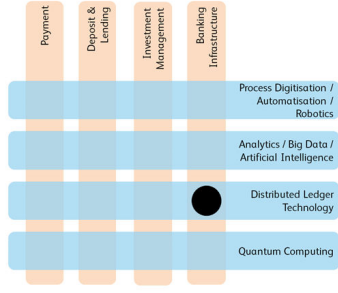
datatrans.

Datatrans AG
https://www.datatrans.ch/

We are the online payment experts for demanding customers with individual requirements.

Year of foundation	2001
Headquarters (canton)	Zurich
Employees	55
… of which in CH	50
Valuation	
Total funding	
Board members	Bettina Reimers, Urs Kisling, Hanspeter Maurer
Management team	Daniel Ellersiek, Oliver Heister, Thomas Willenborg
Key partners	SIX/Worldline, Worldpay, Elavon, TWINT, Paypal, Apple Pay, Google Pay, Mastercard, VISA, Amercian Express, Klarna, Byjuno, Fairtiq, Lezzgo, Parkingpay, Mathon, Mobility, Amadeus, Sita etc.

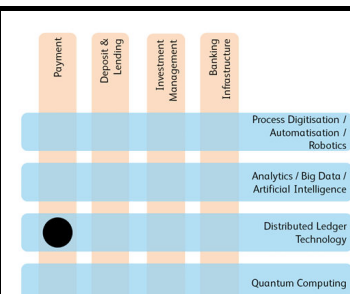| Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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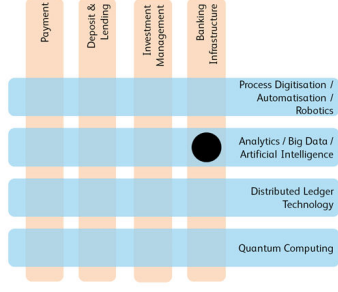
daura

daura AG
https://www.daura.ch/

daura is the digital share platform for financing and investing in Swiss SMEs: Thanks to the blockchain technology, the existing share register is easily digitized and capital increases are carried out quickly and inexpensively at the push of a button.

Year of foundation	2018
Headquarters (canton)	Zurich
Employees	10
… of which in CH	10
Valuation	
Total funding	
Board members	Johannes Höhener, Andreas Rudolf, Mathias Imbach, Valerio Roncone, Christian Wenger
Management team	Peter Schnürer
Key partners	Swisscom, MME, BDO, Raiffeisen Unternehmerzentrum, Custodigit, Sygnum, Wenger & Vieli, SIX Group

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative Business & serving clients	Trading	Advertising
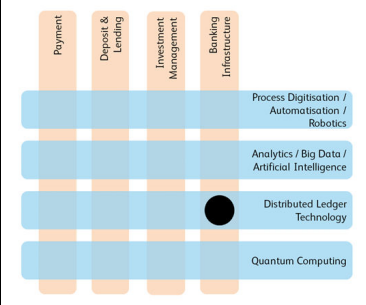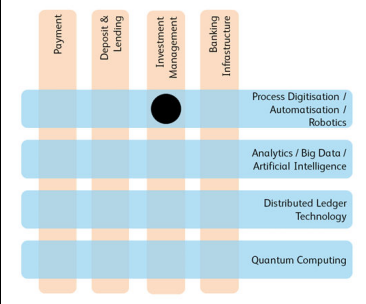
DecentAge AG
https://decentage.io/

Decentage is specialised in asset tokenization/blockchain and business process digitization. Proven products offered (SaaS or on-premise) are asset tokenization (B2C) or setting up your services to tokenize assets (B2B), business process management solution to manage all your processes front to back, all channels (work flow engine), and client/investor onboarding solution (DACHLI).

Year of foundation	2018
Headquarters (canton)	Zurich
Employees … of which in CH	9 5
Valuation	
Total funding	CHF 100,000 (AG)
Board members	Pedro Ramon Cuadra, Marco Michael Oesch
Management team	Pedro Ramon Cuadra, Marco Michael Oesch
Key partners	Fidentity (digital identification), Skribble (digital signature), Flowable (intelligent business automation)

Customer segments		Channels	Key activities	Revenue streams		
B2B	National	Personal	Programming & engineering	Interest	Licence fee	
			Marketing & finding clients	Commission	SaaS/Subscription	
B2C	International (incl. CH)	Digital	Operative business & serving clients	Trading	Data	
					Advertising	

decentriq - dq technologies AG
https://decentriq.ch/

Enabling our customers to create secure data ecosystems by combining, analyzing, and sharing sensitive data, with anyone, without restrictions.

Year of foundation	2019
Headquarters (canton)	Zurich
Employees … of which in CH	
Valuation	
Total funding	
Board members	Kenneth Pentimonti, Maximilian Groth, Sebastian Deml
Management team	
Key partners	

Customer segments		Channels	Key activities	Revenue streams		
B2B	National	Personal	Programming & engineering	Interest	Licence fee	
			Marketing & finding clients	Commission	SaaS/Subscription	
B2C	International (incl. CH)	Digital	Operative business & serving clients	Trading	Data	
					Advertising	
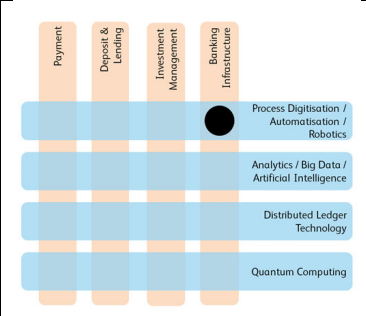
Delega Treasury AG
https://www.delega-banks.com/

Multi-bank signatory management.

Year of foundation	2019
Headquarters (canton)	Zug
Employees … of which in CH	
Valuation	
Total funding	
Board members	Riccardo Balsamo
Management team	Riccardo Balsamo, Patrick Ramseyer, Elenia Gamba
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative Business & serving clients	Trading	Advertising

Descartes Finance AG
https://descartes-finance.com/

Descartes is a leading digital Swiss wealth manager bringing together the latest insights in financial theory, leading technology, and successful investment specialists. It also operates Descartes Vorsorge, a leading independent digital provider of pensions solutions.

Year of foundation	2015
Headquarters (canton)	Zurich
Employees … of which in CH	7
Valuation	
Total funding	
Board members	Rino Borini, Adriano B. Lucatelli, Eric Gisiger
Management team	Adriano B. Lucatelli, Angela Agostini Dagmara Nägeli, Rino Borini
Key partners	Blackrock iShares, OLZ AG, Swisscanto, UBS, Lienhardt Privatbank

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

DSwiss AG
https://www.dswiss.com/

We offer digital safes, mailboxes for bank documents delivery and secure exchange platforms for financial advisors and customers.

Year of foundation	2006
Headquarters (canton)	Zurich
Employees … of which in CH	80 70
Valuation	
Total funding	
Board members	Marc Erni, Tecla Solari, Roland Zeller, Walter Hürsch, Lukas von Känel
Management team	Tobias Christen, Michael Tschannen, John Schriber, Burkhart Böttcher
Key partners	Karakun

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Dufour Capital AG
https://www.dufour-capital.ch/

Dufour Capital is an asset management company specialised on rule-based investing.

Year of foundation	2011
Headquarters (canton)	Zurich
Employees … of which in CH	4
Valuation	
Total funding	CHF 500,000
Board members	Marc Weber, Ryan Held, Sascha Freimüller
Management team	Ryan Held, Sascha Freimüller
Key partners	VZ VermögensZentrum

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
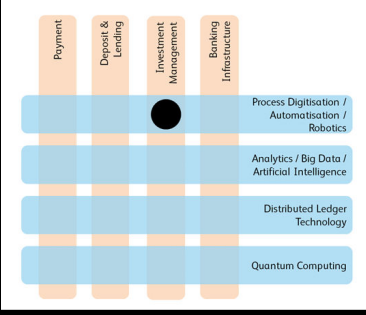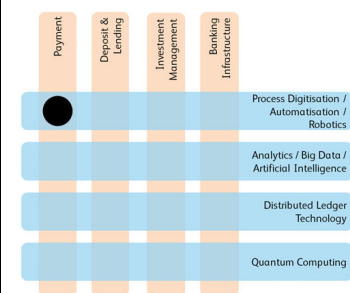
Dydon AG
http://dydon.net/

Dydon has built an explainable AI platform integrating data capture, text analysis, prediction and result presentation. The flexible DYDON AI platform simplifies the usage of AI for business experts, rendering no AI expert necessary anymore to realise individual AI projects. While the Dydon AI platform can be trained to any business topic Dydon is currently concentrating on two main focus areas: FinTech and MedTech.

Year of foundation	2016
Headquarters (canton)	Zurich
Employees … of which in CH	8 1
Valuation	CHF 10,000,000
Total funding	
Board members	Hans-Peter Güllich
Management team	Hans-Peter Güllich, Katharina Dalka, Kristian Maiwald, Bhupesh Belchandan
Key partners	Verband öffentlicher Banken Deutschland (VöB), d-fine Germany

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital	Operative business & serving clients	Trading	Data
					Advertising
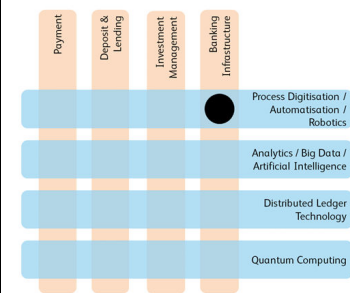
Ecofin Holding AG
https://www.ecofin.ch/

ECOFIN's offering is based on three pillars: a cost-efficient wealth manager, a dedicated investment consultant, a digital wealth management solution provider for banks, asset managers, pension funds, trusts and family offices.

Year of foundation	1986
Headquarters (canton)	Grisons
Employees … of which in CH	50+ 50+
Valuation	> CHF 50,000,000
Total funding	
Board members	Alexandra Janssen, Hans Jörg Kistler, Maarten Christopher Janssen
Management team	Maarten Janssen, Christian Dicke
Key partners	Our customers

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital	Operative business & serving clients	Trading	Data
					Advertising
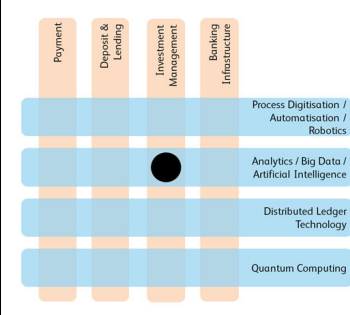
EM Exchange Market GmbH
https://exchangemarket.ch/

Exchange Market enables people to do currency exchanges.

Year of foundation	2012
Headquarters (canton)	Zurich
Employees … of which in CH	6 3
Valuation	
Total funding	
Board members	Michael Wychowaniec
Management team	Michael Wychowaniec
Key partners	Swiss Finace Startups, Zürcher Kantonalbank, PolyReg, AML Revisions AG

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative Business & serving clients	Trading	Advertising
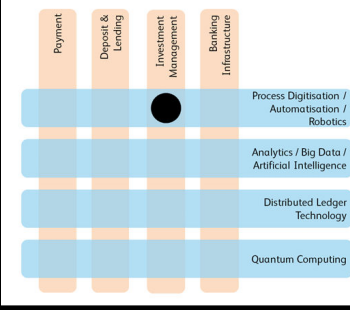
ERI Bancaire SA
https://www.eri.ch/

ERI is an international company, specialising in the design, development, implementation, and support of an integrated, real-time banking software package: the OLYMPIC Banking System.

Year of foundation	1989
Headquarters (canton)	Geneva
Employees … of which in CH	405 185
Valuation	
Total funding	
Board members	Monika Assaraf, Yehuda Assaraf, Blaise Grosjean
Management team	Jean-Philippe Bersier, Nicholas Hacking, Franck Lamoureux
Key partners	Technology Partners: IBM, Oracle, Microsoft, BIAN; Solution Partners: more than 50 soltion software suppliers in areas that are complementary to our offering. We are also corporate sponsors of the F10 (initiated by SIX) start-up incubator in Zürich.

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Etops AG
https://www.etops.ch/

Etops covers the whole value chain of independent wealth managers, single and multi family offices, private banks and pension funds. Based on state-of-the-art interface and aggregation technology and supported by an experienced operations team, Etops offers comprehensive PMS/CRM desktop and mobile solutions, high-end data analytics and reporting both in printed and digitized form accompanied by an integrated marketplace.

Year of foundation	2010
Headquarters (canton)	Schwyz
Employees … of which in CH	85 30
Valuation	
Total funding	
Board members	Pius Stucki
Management team	Pius Stucki, Daniel Jazbec, Jürgen Kuza, Christian Jedlicka, Myriam Reinle
Key partners	Axeed, Atfinity, BDO, Evolute AG (acquired in Dec. 2020)

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Everon AG
https://everon.swiss/

Everon stands for private banking in the 21st century and offers comprehensive financial services in one app.

Year of foundation	2019
Headquarters (canton)	Zurich
Employees … of which in CH	10 10
Valuation	
Total funding	CHF 1,200,000
Board members	Michael Georg Eugen Rümmelein, Florian Rümmelein, Jonas Bächinger, Michael Albrecht Bufler
Management team	Florian Rümmelein, Jonas Bächinger
Key partners	Hypothekarbank Lenzburg, Liberty Vorsorge

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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e ✕ e o n
Exeon Analytics AG
https://exeon.com/

Exeon is a leading Swiss cyber security company, dedicated to protecting enterprise IT landscapes through AI-driven security analytics.

Year of foundation	2016
Headquarters (canton)	Zurich
Employees … of which in CH	20 20
Valuation	
Total funding	
Board members	Beat Schillig, David Gugelmann, Markus Alexander Eugster
Management team	David Gugelmann, Markus Happe, Carola Hug, Sandro Ferrari
Key partners	We have several large Swiss banks as clients, amongst them Postfinance and another system-critical Swiss bank

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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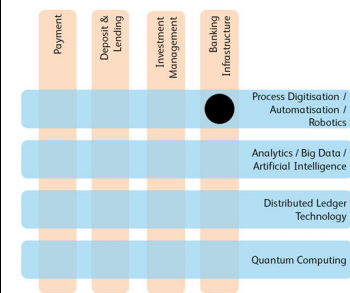
fidectus
Fidectus AG
https://fidectus.com/

Fidectus revolutionizes post trading in OTC energy and commodity markets. We connect market participants and enable them to better manage their working capital.

Year of foundation	2019
Headquarters (canton)	Zurich
Employees … of which in CH	11 7
Valuation	
Total funding	> CHF 1,500,000
Board members	Jens Bartenschlager, Chris Sass
Management team	Jens Bartenschlager, Chris Sass, Michael Panson, Matthias Raeck
Key partners	Currently under NDA

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
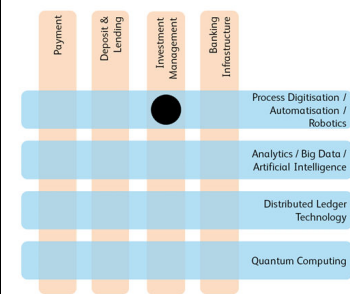
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Findependent AG
https://findependent.ch/

With our simple and transparent investment-app, findepenent makes investing as natural and easy as saving on a bank account.

Year of foundation	2019
Headquarters (canton)	Aargau
Employees … of which in CH	3 3
Valuation	
Total funding	
Board members	Matthias Bryner
Management team	Matthias Bryner, Nadine Hitz, Beat Müller
Key partners	Hypothekarbank Lenzburg

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

finnova AG Bankware
https://www.finnova.com/

Finnova is a leading provider of end-to-end banking software in the Swiss financial centre.

Year of foundation	1999
Headquarters (canton)	Aargau
Employees … of which in CH	400 400
Valuation	
Total funding	
Board members	Hans Zehetmaier, Stephan Frohnhoff, Walter Knabenhans, Hanspeter Rhyner, Robert Gebel, Hendrik Lang
Management team	Hendrik Lang, Simon Kauth, Raphael Widmer, Markus Metzger, Jörg Steinemann, Daniel Bernasconi, Olaf Romer
Key partners	In addition to our strategic partners msg systems and Swisscom, Finnova maintains an actively managed network with more than 70 services, product and technology partners.

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

finpension

finpension AG
https://finpension.ch/

finpension is a provider of retirement savings solutions.

Year of foundation	2017
Headquarters (canton)	Lucerne
Employees … of which in CH	16 13
Valuation	> CHF 15,000,000
Total funding	CHF 500,000
Board members	Beat Bühlmann, Ivo Blättler, Gaëtan Alexandre Maraite
Management team	Beat Bühlmann, Ivo Blättler
Key partners	Various banks

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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flovtec.

flov technologies AG
https://www.flovtec.com/

We are a Swiss technology company with the purpose to unlock digital assets by providing liquidity.

Year of foundation	2018
Headquarters (canton)	Zug
Employees … of which in CH	9 9
Valuation	
Total funding	CHF 4,500,000
Board members	Daniel Leo Diemers, Manuel Caspar Krieger, Anton Golub
Management team	Anton Golub, Thomas Fecker Boxler, Emanuel Burgener
Key partners	Digital asset trading venues

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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Forctis

Forctis AG
https://forctis.io/

Forctis has created a new DLT protocol (infrastructure and token) for digital asset tokenisation and its management across a variety of asset classes.

Year of foundation	2017
Headquarters (canton)	Schwyz
Employees … of which in CH	7
Valuation	CHF 9,000,000
Total funding	CHF 885,000
Board members	Eduardo Salazar, Isabelle Ganz, Simon Tobler
Management team	Eduardo Salazar, Isabelle Ganz, Luca Dondi, Kofi Osei-Ntem
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Technology fields: Distributed Ledger Technology (Investment Management)

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foxstone

Foxstone SA
https://www.foxstone.ch/

Foxstone democratizes real estate investment by offering intitutional quality opportunities to Swiss citizens and residents by increasing transparency and lowering the minimum investment amount to 25'000.-.

Year of foundation	2016
Headquarters (canton)	Geneva
Employees … of which in CH	20 / 15
Valuation	
Total funding	
Board members	Dan Amar, Michael Lahyani
Management team	Dan Amar, Yossi Amar, David El-Eini
Key partners	Vaudoise, Investis Group, PwC, CMTA, SVIT

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Technology fields: Process Digitisation / Automatisation / Robotics (Deposit & Lending)

Futurae Technologies AG
https://www.futurae.com/

Futurae offers a strong suite of multi-factor authentication tools that provide a high degree of security and improve the customer experience while protecting the user's privacy.

Year of foundation	2016
Headquarters (canton)	Zurich
Employees … of which in CH	16 8
Valuation	
Total funding	
Board members	François Robinet, Thomas Hilgendorff-Trampusch, Sandra Tobler
Management team	Sandra Tobler, Claudio Marforio, Nikolaos Karapanos
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital	Operative Business & serving clients	Trading	Data
					Advertising

GlaDIS AG
https://www.gladisag.com/

GlaDIS AG: Digital and financial consulting, model building, investment analytics.

Year of foundation	2007
Headquarters (canton)	Zug
Employees … of which in CH	2 2
Valuation	CHF 5,000,000
Total funding	CHF 1,000,000
Board members	Franz W. Schmadl
Management team	Franz W. Schmadl
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital	Operative business & serving clients	Trading	Data
					Advertising

HYPOTEQ AG
https://www.hypoteq.ch/

HYPOTEQ offers independent brokers, realtors, financial advisors and tax experts an uncomplicated access to the first Swiss exchange for mortgage loans to start offering mortgages to their clients.

Year of foundation	2020
Headquarters (canton)	Zug
Employees	5
… of which in CH	4
Valuation	
Total funding	
Board members	Claudio Schneider Blank, Christian Neff, Davide Iuorno
Management team	Christian Neff, Davide Iuorno
Key partners	Credit Exchange AG, UB Partner, Globalsana and over 10 other corporate partners all over Switzerland, including Business Networks.

Customer segments		Channels	Key activities	Revenue streams		
B2B	National	Personal	Programming & engineering	Interest	Licence fee	
			Marketing & finding clients	Commission	SaaS/Subscription	
B2C	International (incl. CH)	Digital			Data	
			Operative business & serving clients	Trading	Advertising	

HYPOTHEKE.CH - GTF Gesellschaft für technologiebasierte Finanzdienstleistungen AG
https://www.hypotheke.ch/

HYPOTHEKE.CH networks real estate owners with banks, insurance companies and pension funds. HYPOTHEKE.CH is a 100 % digital mortgage broker.

Year of foundation	2019
Headquarters (canton)	Zurich
Employees	3
… of which in CH	3
Valuation	
Total funding	
Board members	Florian Schubiger, Damian Gliott, Lars-Christian Schultz
Management team	Florian Schubiger, Damian Gliott, Lars-Christian Schultz
Key partners	VermögensPartner AG

Customer segments		Channels	Key activities	Revenue streams		
B2B	National	Personal	Programming & engineering	Interest	Licence fee	
			Marketing & finding clients	Commission	SaaS/Subscription	
B2C	International (incl. CH)	Digital			Data	
			Operative Business & serving clients	Trading	Advertising	

ibani SA
https://www.ibani.com/

ibani is an online currency exchange service helping people and businesses get the best exchange rates of the market the easy way.

Year of foundation	2018
Headquarters (canton)	Geneva
Employees … of which in CH	5 5
Valuation	CHF 4,500,000
Total funding	
Board members	Michael Ernst Felix Stumm, Arnaud Salomon, Reynald Besson
Management team	Arnaud Salomon, Sébastien Krafft, Yann Gerardi, Reynald Besson, Diana Gunduz
Key partners	VQF, Swiss Finance + Technology Association, Fusion, HUB612

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

IFINITY AG
https://ifinity.ch/

IFINITY AG is an independent service company and the perfect partner for independent asset managers and small/mid-sized banks located in Switzerland.

Year of foundation	2015
Headquarters (canton)	Schwyz
Employees … of which in CH	
Valuation	
Total funding	
Board members	Peter Werner Römer, Thomas Rutz
Management team	Eliane Gmünder, Frank Müller-Erkelenz
Key partners	Temenos, GFI-IMPAQ, Canon

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital	Operative business & serving clients	Trading	Data
					Advertising

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iLoy Solutions SA
https://www.iloy-group.com/

iLoy creates next-generation platform technology for loyalty, crm and payment systems using advanced rule- and BPMN-based methodologies and AI/predictive analytics.

Year of foundation	2019
Headquarters (canton)	Ticino
Employees … of which in CH	35 15
Valuation	> CHF 10,000,000
Total funding	
Board members	Roberto De Nando, Simon Grenacher, Alexander Raoul Schmid, Anton Weber, Daniel Canzani, Thomas Wagner
Management team	Roberto De Nando, Simon Grenacher, Tony Weber, Daniel Canzani, Thomas Wagner
Key partners	Not disclosable

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Imburse AG
https://www.imbursepayments.com/

Integration-free access to the global payments ecosystem.

Year of foundation	2018
Headquarters (canton)	Zurich
Employees … of which in CH	19 4
Valuation	
Total funding	CHF 4,250,000
Board members	Oliver Werneyer, Carl Robert Strempel, Ralph Mogicato, Mark John Jerome
Management team	Oliver Werneyer, Mark John Jerome, David Turner, Carl Robert Strempel
Key partners	Visa, WorldPay, WorldLine, EY, Symbility Intersect

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

IMVESTERS

Démocratisons l'investissement immobilier

imvesters.ch - S2I (Swiss Innovative Investment) SA
https://www.imvesters.ch/

Imvesters is a crowdfunding platform for the real estate industry. Imvesters selects investment properties and offers them to be purchased in small tranches via our platform.

Year of foundation	2019
Headquarters (canton)	Vaud
Employees **… of which in CH**	
Valuation	
Total funding	
Board members	Nicolas Krauer, Gillian Nespolo, Aymeric Peignon, Thierry Wiser
Management team	Gillian Nespolo, Nicolas Krauer
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

.inapay
AN INACTA COMPANY

Inapay AG
https://inapay.ch/

Inapay allows a merchant to easily accept crypto currencies from her clients. Thanks to inapay, the merchant gets credited the usual/desired currency (CHF, EUR) to her bank account without ever touching the cryptocurrency or having exposure to the risk of price fluctuations.

Year of foundation	2019
Headquarters (canton)	Zug
Employees **… of which in CH**	6 6
Valuation	CHF 5,000,000
Total funding	
Board members	Marco Bumbacher, Ralf Glabischnig
Management team	Daniel Rutishauser, Roger Darin
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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InCube Group AG
https://www.incubegroup.com/

InCube is a Swiss-based FinTech and consulting company. Our team of highly skilled professionals focuses on intelligent and data-driven digitisation of financial services.

Year of foundation	2009
Headquarters (canton)	Zurich
Employees … of which in CH	25 21
Valuation	
Total funding	
Board members	Ralf Emmerich, Christine Deborah Ciriani, Alessandro Tonchia, Ian Savage
Management team	Boris Rankov, Daniel Lenz, Erich Felder, Andreas Felber
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Integration Alpha GmbH
https://integrationalpha.com/

We built our data science platform "ferris.ai" a kind of "Swiss army pocket knife" stitching all relevant open source data science tools into one "enterprise-ready" platform.

Year of foundation	2014
Headquarters (canton)	Zug
Employees … of which in CH	50 40
Valuation	
Total funding	
Board members	Frank Kaminsky, Marco Selva, Thomas Debus
Management team	Frank Kaminsky, Marco Selva, Thomas Debus
Key partners	Google for "ferris.ai", Azure (ferris.ai), DxC and AXIOM SL (Regulatory Reporting as a Service).

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Interaction Partners AG
https://www.interactionpartners.ch/

Interaction Partners is an investor engagement solution provider.

Year of foundation	2016
Headquarters (canton)	Zug
Employees … of which in CH	5
Valuation	
Total funding	CHF 450,000
Board members	Mark Diethelm, Kilian Maier, Stefan Schnarff
Management team	Kilian Maier
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital	Operative business & serving clients		Data
				Trading	Advertising

Invemo GmbH
https://www.invemo.ch/

Invemo GmbH is an asset manager, broker and liquidity provider.

Year of foundation	2017
Headquarters (canton)	Zug
Employees … of which in CH	6 3
Valuation	CHF 5,000,000
Total funding	CHF 2,000,000
Board members	Peter Kubli, Maxim Zimin
Management team	Peter Kubli, Maxim Zimin
Key partners	SEBA, Sygnum, Copper.co, VQF, Crystal, BDO

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital	Operative Business & serving clients		Data
				Trading	Advertising

Inventx AG
https://inventx.ch/

Inventx is the Swiss IT partner for leading financial institutions and insurance companies. The basis for our business activities are our values: innovation, interaction and Swissness.

Year of foundation	2010
Headquarters (canton)	Grisons
Employees … of which in CH	280 280
Valuation	
Total funding	
Board members	Gregor Stücheli, Hans Nagel, Ivo Furrer, Urs Saxer, Manuel Thiemann
Management team	Gregor Stücheli, Hans Nagel, Urs Halter, Roland Eilinger, Patrick Hagen, Christoph Züger
Key partners	Arcplace, Avaloq, Citrix, Crealogix, IBM, ivanti, Finnova, Oracle

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital	Operative business & serving clients	Trading	Data
					Advertising

InvestGlass SA
https://www.investglass.com/

InvestGlass offers a streamlined solution for wealth and asset managers. On-boarding, CRM, CMS, PMS, MIFID2 LSFIN and more.

Year of foundation	2014
Headquarters (canton)	Geneva
Employees … of which in CH	15
Valuation	
Total funding	CHF 100,000
Board members	Alexandre Gaillard
Management team	Alexandre Gaillard, Diego Milla
Key partners	Cap Gemini, Chappuis Halder, Onfido, Indigita, Neuroprofiler

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital	Operative business & serving clients	Trading	Data
					Advertising
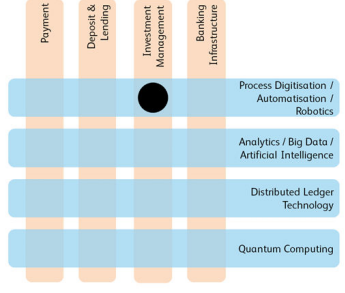
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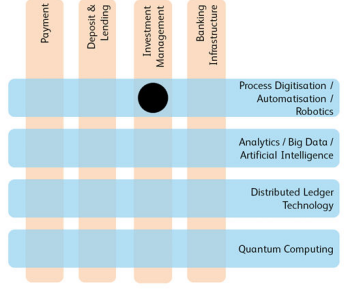
Investiere.ch - Verve Capital Partners AG
https://www.investiere.ch/

investiere.ch offers accredited private and institutional investors direct and professional access to start-up investments and is opening up the asset class venture capital to a wider audience.

Year of foundation	2007
Headquarters (canton)	Zug
Employees … of which in CH	45
Valuation	
Total funding	
Board members	Heinz Christian Kunz, Michel Kaufmann, Peter Werner Quadri, Ralph Martin Zurkinden, Lukas Weber
Management team	Lukas Weber, Steffen Wagner
Key partners	Zürcher Kantonalbank, nest, Die Post

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Investment Navigator AG
https://www.investmentnavigator.com/

We enhance the investment and advisory value chain from research to distribution with suitability assessments. We offer tailored platforms to banks, independent wealth managers and the financial community.

Year of foundation	2014
Headquarters (canton)	Zurich
Employees … of which in CH	15 / 15
Valuation	
Total funding	
Board members	Julian Köhler, Philipp Portmann, Jochen Gutbrod, Maurus Fries, Alberto Rama
Management team	Alberto Rama, Julian Köhler, Maurus Fries
Key partners	FE fundinfo, Clearstream Fund Centre, Refinitiv/Lipper, KPMG, Avaloq

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
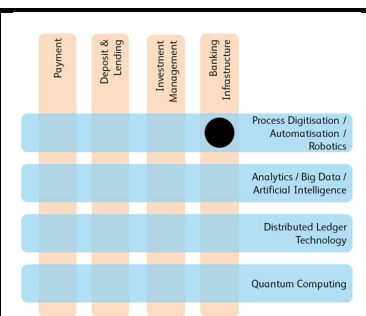
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Kasparund AG
https://www.kasparund.ch/

We create access to professional financial services and offer you a new level of financial wellness. Starting with investing.

Year of foundation	2020
Headquarters (canton)	St. Gallen
Employees … of which in CH	4 4
Valuation	
Total funding	
Board members	Jan-Philip Schade, Lukas Plachel, Lauro Böni, Sebastian Büchler
Management team	Jan-Philip Schade, Lukas Plachel, Lauro Böni, Sebastian Büchler
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
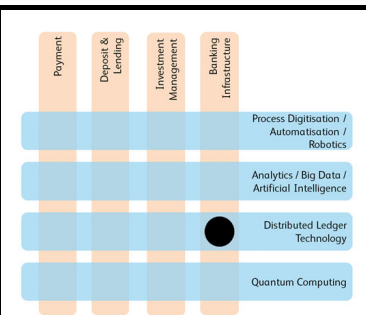
KeeSystem SA
https://www.keesystem.com/

Keesystem designs and deploys KeeSense, a complete tool for independent asset managers. Our solution enhances your performance allowing you to match your client requirements while drastically reducing all constraints linked to compliance.

Year of foundation	2012
Headquarters (canton)	Geneva
Employees … of which in CH	
Valuation	
Total funding	
Board members	Anne-Caroline Rousselot, Pierre-Alexandre Rousselot
Management team	Pierre-Alexandre Rousselot, David Crepin, Olivier Helies
Key partners	Interactive Data, FileMaker, European Investor Relations, flag, and multiple banking partners

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
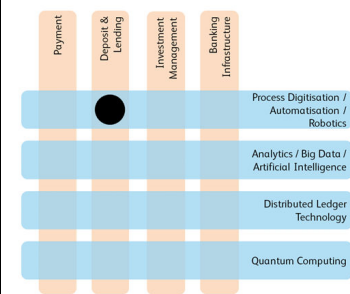
KLARA Business AG
https://www.klara.ch/

KLARA takes care of your administrative tasks for you - at work and at home. It automatically communicates with authorities, tax offices, insurance companies and banks - so you don't have to worry about the paperwork and much more, like your online presence in the web.

Year of foundation	1993
Headquarters (canton)	Lucerne
Employees ... of which in CH	125 55
Valuation	
Total funding	
Board members	Hans Gurtner, Christian Plüss, Nicole Burth Tschudi, Peter Delfosse, Stephan Bruno Muff, Patric Deflorin
Management team	Renato Stalder, Jens Margraf, Daniel Gauch, David Schnetzer, Daniel Schütz, Manuela Unger, Adrian Rensch
Key partners	Die Post, Die Mobiliar, Vaudoise, Valiant Bank, Credit Suisse, UBS and others

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
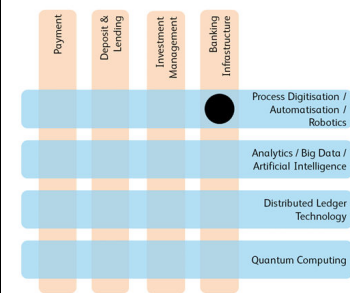
KORE Technologies AG
https://www.kore-technologies.ch/

Leader in high-performance digital asset systems.

Year of foundation	2019
Headquarters (canton)	Zug
Employees ... of which in CH	6 5
Valuation	CHF 10,000,000
Total funding	CHF 100,000
Board members	Michael Guzik, Thomas Taroni, Carla Bünger, Robert Rogenmoser
Management team	Carla Bünger, Thomas Taroni, Michael Guzik
Key partners	IBM, Securosys AG, Phoenix Systems AG

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
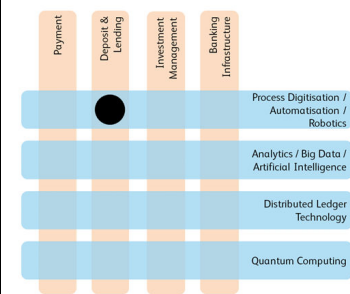
Kreditfabrik AG
https://kreditfabrik.ch/

Kreditfabrik offers ambitious clients a comprehensive service for the settlement, management and risk assessment of mortgages.

Year of foundation	2016
Headquarters (canton)	Zurich
Employees	6
… of which in CH	6
Valuation	
Total funding	
Board members	Walter Boreatti
Management team	Emil Meier, Gerhard Kurt Gfeller
Key partners	Base Net Informatik AG, Base Net IT Services AG, Peax AG

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative Business & serving clients	Trading	Advertising

KYC Spider AG
https://www.kyc.ch/

We offer a comprehensive solution that is used to improve regulatory processes in the financial services sector as well as for FinTech or industrial companies. Our digital platform is designed to fulfil your AML/CTF/Sanctions compliance requirements.

Year of foundation	2003
Headquarters (canton)	Zug
Employees	
… of which in CH	
Valuation	
Total funding	
Board members	Tobias Unger, Markus Georg Gröninger, Luka Müller-Studer, Peter Schäuble
Management team	Miki Vayloyan, Adriano Meyer Broyn
Key partners	MME Legal Tax Compliance, Eurospider Information Technologies, Intrum AG

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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Lendity AG
https://lendity.com/

Investment and technology solutions for the lending industry.

Year of foundation	2018
Headquarters (canton)	Zurich
Employees … of which in CH	
Valuation	
Total funding	
Board members	Rafael Karamanian, Armen Karamanian
Management team	Rafael Karamanian, Armen Karamanian
Key partners	SIX, PwC, Julius Bär and F10

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Lendora SA
https://lendora.ch/

Lendora is a Swiss crowdlending platform that connects borrowers and investors online to make credit more accessible and investing more rewarding.

Year of foundation	2016
Headquarters (canton)	Vaud
Employees … of which in CH	5 / 5
Valuation	USD 6,000,000
Total funding	CHF 1,200,000
Board members	Jean-Jacques Frey, Philippe Suter, Chrystelle Bégin-Proth, Jonathan Bory, Céline Le Gallais-Frey
Management team	Simon Pelletier
Key partners	Swissquote Bank SA

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Leonteq AG
https://www.leonteq.com/

Leonteq is an independent expert in structured investment products and long-term savings solutions.

Year of foundation	2007
Headquarters (canton)	Zurich
Employees … of which in CH	523 357
Valuation	CHF 610,000,000
Total funding	CHF 436,000,000
Board members	Christopher Chambers, Jörg Behrens, Patrick de Figueiredo, Susana Gomez Smith, Richard Laxer, Thomas Meier, Dominik Schärer, Philippe Weber
Management team	Lukas Ruflin, Marco Amato, Jochen Kühn, Manish Patnaik, Reto Quadroni, Markus Schmid, Ingrid Silveri, Alessandro Ricci
Key partners	Aargauische Kantonalbank, Banque International à Luxembourg, Basler Kantonalbank, Cornèr Bank, Crédit Agricole CIB, EFG International, PostFinance, Raiffeisen Switzerland, Rand Merchant Bank, Standard Chartered Bank, Helvetia, Swiss Mobiliar

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
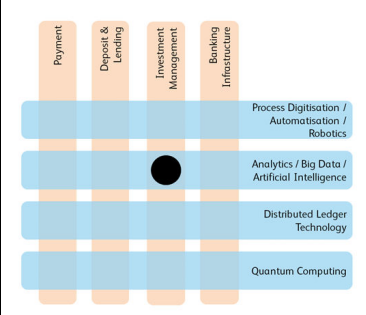
Liquity AG
https://www.liquity.org/

Decentralized, interest free borrowing protocol.

Year of foundation	2020
Headquarters (canton)	Zug
Employees … of which in CH	8 1
Valuation	
Total funding	CHF 2,400,000
Board members	Robert Lauko, Cédric Thomas Waldburger
Management team	Robert Lauko, Richard Pardoe
Key partners	Polychain, Tomahawk.vc, Lemniscap, acapital, Trail of Bits, Gauntlet Network

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative Business & serving clients	Trading	Advertising

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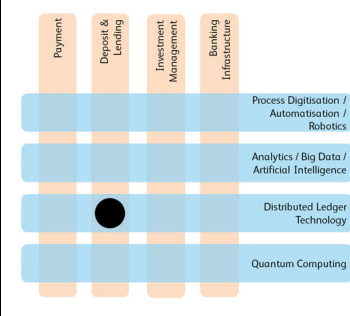
Loanboox.

Loanboox - Swiss FinTech AG
https://loanboox.com/

Loanboox is the independent debt capital market platform, connecting big ticket borrowers and investors. We offer an easy process, personal support and competitive rates to borrowers while providing investors with a large dealflow, automation tools and market data to enable an efficient deployment of their capital.

Year of foundation	2015
Headquarters (canton)	Zurich
Employees … of which in CH	50 25
Valuation	CHF 122,000,000
Total funding	CHF 30,000,000
Board members	Andi Burri, Dario Zogg, Stefan Mühlemann, Felix Ehrat
Management team	Philippe Cayrol, Dario Zogg, Dominique Hügli, Martina Bühler
Key partners	I-CV (Independent Credit View) AG, FINMA certified Swiss datacenter

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

MASTTRO

Masttro Switzerland AG
https://www.masttro.com/

Masttro is a Swiss financial technology company that provides state-of-the-art wealth information solutions for families with substantial net worth, family offices and asset managers around the world.

Year of foundation	2015
Headquarters (canton)	Zurich
Employees … of which in CH	80 4
Valuation	
Total funding	
Board members	Javier Manuel Gutierrez Rodriguez, Domingo Viesca Decanini, Luis Julián Ugedo, Oliver Thommen
Management team	Luis Julián Ugedo, Oliver Thommen
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

MatterSphere - Diamond Digital AG
https://www.mattersphere.finance/

MatterSphere is a secure platform that brings together companies who require commodity trade financing with lenders who would like to provide the necessary capital. To reduce the financing risk, our platform allows users to create, execute and track commodity trade loans and the underlying commodity trades in real-time. Secure, tamper-proof and easy to use.

Year of foundation	2017
Headquarters (canton)	Schwyz
Employees … of which in CH	
Valuation	
Total funding	
Board members	Mathias Josef Bucher
Management team	Mathias Josef Bucher, Michele Forte
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital	Operative business & serving clients	Trading	Data
					Advertising

meetinvest AG
https://meetinvest.com/

Sharing investment knowledge to empower everyone and providing world class digital investment solutions to wealth mangement financial institutions.

Year of foundation	2014
Headquarters (canton)	Zug
Employees … of which in CH	4 4
Valuation	
Total funding	CHF 2,700,000
Board members	Michel Jacquemai, Maria Jacquemai
Management team	Michel Jacquemai, Maria Jacquemai
Key partners	Integrated in the Temenos T24 core banking system (sandbox and Marketplace).

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital	Operative business & serving clients	Trading	Data
					Advertising

MoneyPark AG
https://moneypark.ch/

MoneyPark is a financial advisory company focusing on mortgage, retirement planning and real estate advice.

Year of foundation	2011
Headquarters (canton)	Schwyz
Employees … of which in CH	300+ 300+
Valuation	
Total funding	
Board members	Martin Robert Tschopp, André Keller, Uwe Bartsch, Ralph Jeitziner, Samuel Hügli, Stefan Heitmann
Management team	Stefan Heitmann, Michael Rogenmoser, Benjamin Tacquet, Viola Kirsch, Jasser Kassab, Stéphan Mischler, Shahram Shad, Sebastian Adam, Judit Zwahlen, Lukas Vogt
Key partners	More than 150 partners (banks, insurances and pension funds) in Switzerland.

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Mt Pelerin Group SA
https://www.mtpelerin.com/

Mt Pelerin is a Swiss FinTech expert in asset tokenization and digital compliance building the infrastructure for tomorrow's finance.

Year of foundation	2018
Headquarters (canton)	Geneva
Employees … of which in CH	8 7
Valuation	CHF 40,000,000
Total funding	CHF 2,150,000
Board members	Arnaud Salomon, Reynald Besson
Management team	Arnaud Salomon, Reynald Besson, Sébastien Krafft, Yann Gerardi
Key partners	ID Quantique, CMTA, Lenz & Staehelin

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
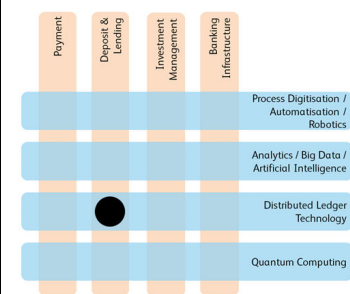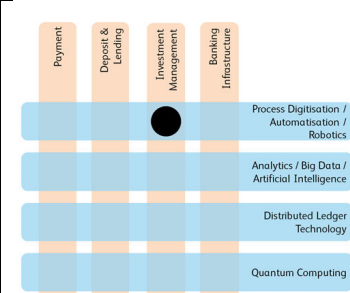
neon Switzerland AG
https://www.neon-free.ch/
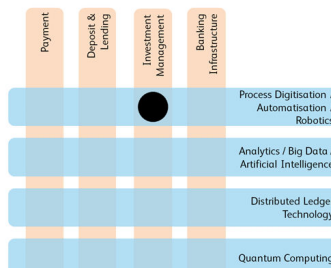
neon is an independent smartphone account.

| Process Digitisation / Automatisation / Robotics |
| Analytics / Big Data / Artificial Intelligence |
| Distributed Ledger Technology |
| Quantum Computing |

Year of foundation	2017
Headquarters (canton)	Zurich
Employees … of which in CH	20 14
Valuation	
Total funding	CHF 11,750,000
Board members	Jörg Sandrock, Julius Kirscheneder, Krzysztof Bialkowski, Markus Oswald, Miklos Stanek, Simon Youssef
Management team	Jörg Sandrock, Julius Kirscheneder, Patric Ammann, Simon Youssef
Key partners	Hypothekarbank Lenzburg, TransferWise, Smile, Mastercard, Yova, Selma, Moneypark, QoQo, Brack, Eden Project etc.

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
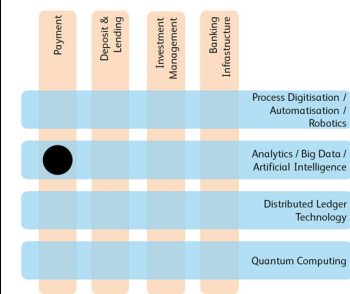
Netcetera Group AG
https://www.netcetera.com/

Netcetera is a global software company with cutting-edge IT products and individual digital solutions in the areas of secure digital payment, financial technologies and insurance.

| Process Digitisation / Automatisation / Robotics |
| Analytics / Big Data / Artificial Intelligence |
| Distributed Ledger Technology |
| Quantum Computing |

Year of foundation	2003
Headquarters (canton)	Zurich
Employees … of which in CH	650 200
Valuation	
Total funding	
Board members	Ralf Wintergerst, Philipp Schulte, Ronald Brunner, Ulrich Mike Franz, Thomas Christian Flatt, Johann Rudolf Vonder Mühll, Andrej Vckovski
Management team	Andrej Vckovski, Mark Faris, Dominique Ramelet, Micaëla Raschle Grand, Peter Frick, Gabriele Brechbühl, Kiril Milev, Michael Brantschen, Vlado Galevski, Aleksandar Nikov, Corsin Decurtins, Peter Kohler, Martin Jäger, Roger Wettstein, Martin Meier
Key partners	Giesecke+Devrient, Blindflug Studios, Blockverse, Braingroup, Cognism, Done, proCentric, Rhumbnet, Unitek Engineering, Securities Grid

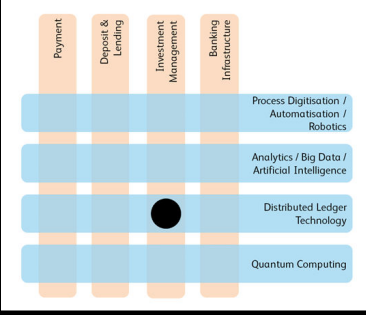| Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
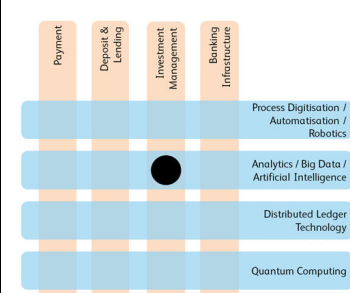
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Nexo AG
https://nexo.io/

Nexo is the world's leading regulated financial institution for digital assets with $4 billion in assets under management. The company's mission is to maximize the value and utility of cryptocurrencies by offering tax-efficient Instant Crypto Credit Lines™, a high-yield Earn on Crypto & Fiat suite, and sophisticated trading and OTC capabilities, while providing the top-tier custodial insurance and military-grade security of the Nexo Wallet. Nexo has processed $5+ billion for 1,000,000+ users across more than 200 jurisdictions.

Year of foundation	2018
Headquarters (canton)	Zug
Employees … of which in CH	140
Valuation	
Total funding	CHF 50,925,000
Board members	Kosta Kalinov Kantchev, Antoni Antoniev Trenchev
Management team	
Key partners	BitGo, Jumio, Circle, Paxos, Nomics, Fireblocks, LedgerVault, Brave, BCBGroup, HuobiGlobal, Securitize, TrueUSD, UCL

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

One PM AG
https://www.one-pm.com/

ONE PM enables open banking beyond cash and offers cloud-based, API-driven financial data management services by excelling existing bank-interfacing capabilities and overcoming missing standards with self-learning mechanisms. We norm, aggregate, process and transfer financial data.

Year of foundation	2015
Headquarters (canton)	Zurich
Employees … of which in CH	16 / 15
Valuation	
Total funding	
Board members	Giulio Giuseppe Rosamilia, Andreas Ahlm, Fabio Giuri (BoD Secretary)
Management team	Reto Casutt, Andreas Ahlm, Fabio Giuri
Key partners	SWIFT, ebics, Sitrox, ergon, Opensystems, Openbanking Project, Swiss Finance Startups, Microsoft for Start-ups, First Advisory Group

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative Business & serving clients	Trading	Advertising
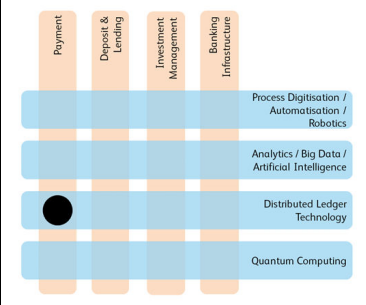
OneVisage SA
https://www.onevisage.com/

OneVisage develops Strong Customer Authentication (SCA) technologies and white-labeled solutions on all platforms, all hardware for large integrators to eliminate digital identity theft.

Year of foundation	2016
Headquarters (canton)	Vaud
Employees	5
… of which in CH	5
Valuation	CHF 15,000,000
Total funding	CHF 1,000,000
Board members	Maxim Lyadvinskiy, Christophe Remillet, Alexandre Benhamou
Management team	Christophe Remillet, Ronni Guggenheim
Key partners	Prof. Marc Pollefeys, Prof. Thomas Vetter, Sebastien Marcel, IDIAP

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
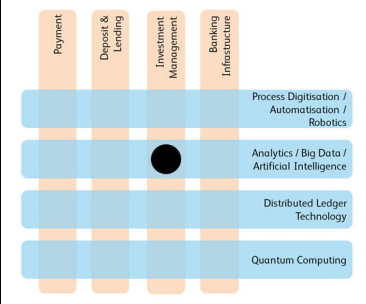
OpenMetrics Solutions GmbH
https://www.openmetrics.ch/

OpenMetric's technologies provide systematic protection against losses from financial market crises or the negative market movements that these causes. Portfolio managers in banks, insurance companies, pension funds and fund companies can systematically and efficiently hedge their investment strategies with dynamic risk overlays.

Year of foundation	2016
Headquarters (canton)	Zurich
Employees	2
… of which in CH	2
Valuation	CHF 1,200,000
Total funding	0
Board members	
Management team	Félix Fernandez Martinez, Tobias Setz
Key partners	Jacot Investment Management AG, Leonteq AG

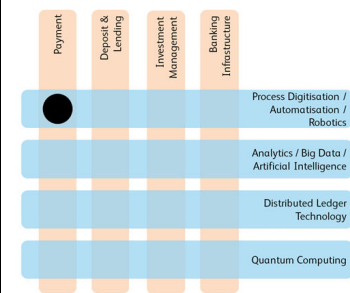| Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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Payment 21.com - Moving Media GmbH
https://payment21.com/

Payment21.com is an innovation-intermediary, moving forward with the concept of encouraging digital currency as a global medium of exchange.

Year of foundation	2002
Headquarters (canton)	St. Gallen
Employees … of which in CH	
Valuation	
Total funding	
Board members	
Management team	Bernhard Kaufmann
Key partners	ACI Worldwide

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
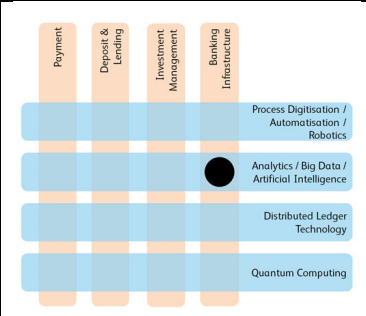
Performance Watcher - INVESTMENT BY OBJECTIVES (IBO) SA
https://www.performance-watcher.ch/

Performance Watcher is a community initiated by the company IBO. It allows all participating investors to evaluate and monitor the performance of their portfolios by comparing them with other portfolios with the same risk budget.

Year of foundation	2009
Headquarters (canton)	Vaud
Employees … of which in CH	3 3
Valuation	CHF 1,100,000
Total funding	CHF 990,000
Board members	Nicholas Hochstädter, Klaus Stark, Joseph Bechaalany
Management team	Nicholas Hochstädter
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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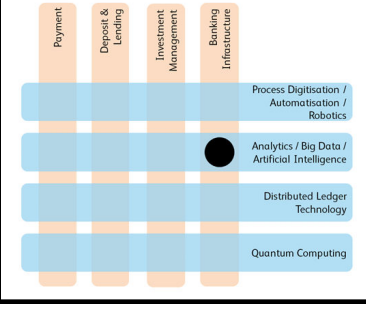
Polixis Sàrl
http://www.polixis.com/

Polixis is among this handful of companies globally owning and operating terabytes of refined KYC & Compliance datasets. Given our data's deep interlinks and powerful NLP we are able to offer truly automated analysis of AML, KYC, Sanctions & Beneficial Ownership.

Year of foundation	2012
Headquarters (canton)	Geneva
Employees … of which in CH	60 10
Valuation	
Total funding	
Board members	Gagik Sargsyan
Management team	Gagik Sargsyan
Key partners	We count more than half of top Swiss Private Banks among our clients, expanding gradually to international markets.

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

PRODAFT Sàrl
https://www.prodaft.com/

PRODAFT provides cyber intelligence and cyber security services for many organizations from different sectors such as public institutions, banking and finance, insurance, telecommunication, aviation, and e-commerce.

Year of foundation	2016
Headquarters (canton)	Vaud
Employees … of which in CH	28 4
Valuation	CHF 60,000,000
Total funding	
Board members	
Management team	Can Yildizli
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

PSS AG
https://www.pssplattform.ch

PSS enables investors to invest with the strategy of leading Swiss investment experts. Including individual investment objectives, digital onboarding and investment cockpit, and institutional level costs. Starting from CHF 50'000 and a TER of 0.55 % (including custody bank costs, product costs, transaction costs, asset management fee).

Year of foundation	2018
Headquarters (canton)	St. Gallen
Employees	4
… of which in CH	4
Valuation	
Total funding	
Board members	Ralf Seiz, Julius Agnesens, Simon Taro Müller
Management team	Alain Beyeler, Jöri Gujan, Felix Leontyev
Key partners	UBS, Credit Suisse, Hypothekarbank Lenzburg, Asga Pensionskasse, PAT-BVG Personalvorsorgestiftung

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
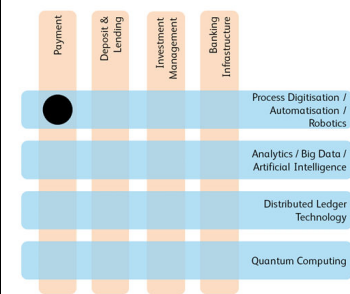
qashqade AG
https://qashqade.com/

qashqade is a FinTech Start-up focused on providing Private Equity solutions for GPs and LPs as well as for any private company who is in need of a Cashflow Analysis tool helping them to track their investors or shareholders.

Year of foundation	2018
Headquarters (canton)	Zurich
Employees	12
… of which in CH	7
Valuation	CHF 8,000,000
Total funding	CHF 1,000,000
Board members	Oliver Freigang, Gregor Kreuzer
Management team	Oliver Freigang, Gregor Kreuzer
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
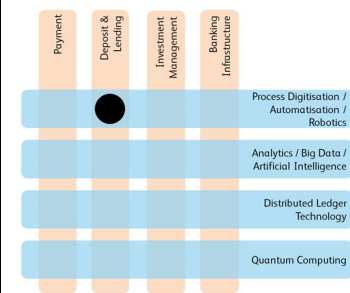
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radynamics software solutions

radynamics Reto Steimen
http://www.radynamics.com/

Software provider with projects in different areas. With our latest product QR-Zahlteil App we provide an easy way to scan swiss QR bills into customers' ERP systems.

Year of foundation	2020
Headquarters (canton)	Aargau
Employees … of which in CH	1 1
Valuation	
Total funding	
Board members	
Management team	Reto Steimen
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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raizers
THE INVESTMENT CIRCLE

Raizers SA
https://www.raizers.com/

Raizers is an online investment platform that allows every person or company to lend to real estate developers, thus providing access to investment opportunities, selected by our team of analysts, previously limited to institutional investors.

Year of foundation	2014
Headquarters (canton)	Vaud
Employees … of which in CH	13 1
Valuation	
Total funding	CHF 4,250,000
Board members	Mansour Khalife, Maxime Pallain, Grégoire Linder
Management team	Maxime Pallain, Grégoire Linder
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Ratyng - Onloan GmbH
https://www.ratyng.ch/

We provide the financial industry the opportunity to benefit from highly efficient & accessible SME risk assessment through our innovative rating model. Our risk assessment automates & digitizes the manual risk evaluation in banks, significantly reducing costs & time required. At the same time, this increase in efficiency allows us to bring proper credit risk evaluation to other financial services companies.

Year of foundation	2020
Headquarters (canton)	Zurich
Employees	2
… of which in CH	2
Valuation	
Total funding	
Board members	
Management team	Matthias Schaller, Volker Haushalter
Key partners	Migros Bank

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital	Operative business & serving clients	Trading	Data
					Advertising

Relai AG
https://relai.ch/

We're developing a smartphone app that allows everybody to invest in Bitcoin within one minute: no account, no verification, no deposit required.

Year of foundation	2020
Headquarters (canton)	Zurich
Employees	
… of which in CH	
Valuation	
Total funding	
Board members	Alexis Thomas Roussel, Julian Lucas Liniger, Lars Emil Jonas Diener
Management team	Julian Lucas Liniger, Adem Bilican, Fabian Dominguez
Key partners	Bity.com

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital	Operative Business & serving clients	Trading	Data
					Advertising
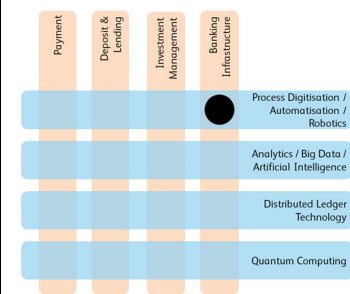
RepRisk AG
https://www.reprisk.com/

RepRisk is a pioneer in ESG data science that leverages the combination of AI and machine learning with human intelligence to systematically analyze public information and identify material ESG risks.

Year of foundation	1998
Headquarters (canton)	Zurich
Employees … of which in CH	150 40
Valuation	
Total funding	
Board members	Kurt A. Lambert, Daniela Bosshardt-Hengartner, Philipp Aeby
Management team	Alexandra Mihailescu Cichon, Antonio Fuentes, Benjamin Haltinner, Britta Margraf, Dan Santos, Elizabeth Teige, Gina Maria Walser, Giulia Misino, Heiko Bailer, Jenny Mathilde Nordby, Karoly Guba, Kathrin Weston Walsh, Luba Protopopova, Mariana Pote, Misty San Juan, Nicole Streuli-Fürst, Sergio Dias
Key partners	ICE Data Services, Apex, JP Morgan, FactSet, SAM (DJSI), wbcsd, WWF

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Rivero AG
https://rivero.tech/

Rivero offers SaaS products to banks, card issuers, acquirers and processors to gain efficiency and improve customer experience by end-to-end digitalization of (card)payment processes.

Year of foundation	2018
Headquarters (canton)	Schaffhausen
Employees … of which in CH	9 9
Valuation	
Total funding	
Board members	Daniel Bürchler, Flurin Müller, Thomas Weber, Fatemeh Alsadat Nikayin
Management team	Fatemeh Alsadat Nikayin, Thomas Müller, Thomas Weber
Key partners	Mastercard, Visa, several card issuers

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative Business & serving clients	Trading	Advertising
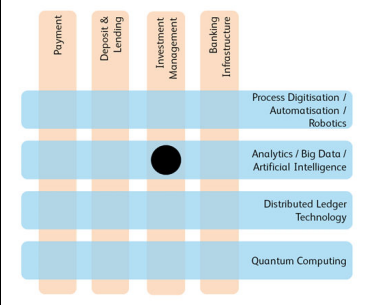
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ROCKON Digital Evolution AG
https://rockondigital.ch/

We specialize in digital client onboarding, digital lifecycle management, and digital payment transactions.

Year of foundation	2010
Headquarters (canton)	Zurich
Employees … of which in CH	14 10
Valuation	CHF 10,000,000
Total funding	
Board members	Roland Georg Rütimann, Felix Wenger, Dieter Beat Fröhlich
Management team	Roland Georg Rüttimann, Michael Wechner, Raffaele Lugli
Key partners	Swisscom, Quo Vadis, Inventx

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Run my Accounts AG
https://www.runmyaccounts.ch/

Accounting made simple. Run my Accounts has invented the automated accounting process for SME. We offer an end-to-end solution with personal services and support, enabling SMEs and startups to focus on their business.

Year of foundation	2008
Headquarters (canton)	Zurich
Employees … of which in CH	65 58
Valuation	
Total funding	CHF 800,000
Board members	Jean-Jacques Suter, Thomas Brändle, Martin Christoph Schlatter Villiger, Christian Axel Zenker
Management team	Thomas Brändle, Andréina Plath
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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Sanostro AG
https://sygnal.ai/

Through exclusive partnerships with hedge funds and quantitative research firms, SYGNAL aggregates millions of professional buy/sell signals. We collect, audit, and recombine trading signals to help investors continuously generate alpha.

Year of foundation	2013
Headquarters (canton)	Zurich
Employees … of which in CH	4 2
Valuation	
Total funding	
Board members	John Krehbiel, Roman Gaudenz
Management team	John Krehbiel, Roman Gaudenz
Key partners	Avaloq, Algotrader

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Schlossberg&Co Technologies AG
https://schlossberg.co/

Schlossberg&Co is a Swiss wealth manager. We have developed the most sophisticated mathematical algorithms that protect & grow your wealth in the unprecedented times we live in.

Year of foundation	2013
Headquarters (canton)	Zurich
Employees … of which in CH	5 5
Valuation	
Total funding	
Board members	David Dino Bühlmann, Andy Heilmann
Management team	David Dino Bühlmann, Serge Birri, Pascal Hügli, Andy Heilmann
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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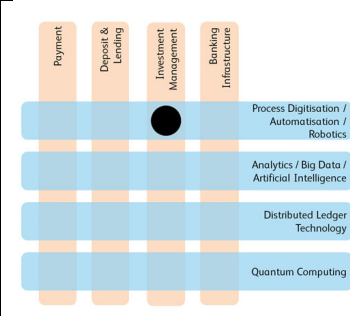
SEBA Bank AG
https://www.seba.swiss/

SEBA is a licenced and supervised Swiss bank providing the most comprehensive, secure, and easy-to-use bridge between digital and traditional assets. Store, trade, and manage your crypto currencies, digital and traditional assets all in one place.

Year of foundation	2018
Headquarters (canton)	Zug
Employees … of which in CH	80 80
Valuation	
Total funding	CHF 121,500,000
Board members	Päivi Elina Rekonen-Fleischer, Hans Kuhn, Sebastien Merillat, Choon Wee Chee, Evangelia Kostakis, Jin Hian Goh, Pak To Leung, Guy Vivian Ernst Schwarzenbach, Reto Kunz
Management team	Guido Bühler, Philipp Baretta, Urs Bernegger, Alistair Heggie, Oliver Deak, David Matter, Markus Blattman, Matthew Alexander, Nina Gartmann
Key partners	Julius Bär, Finstar, SmartTrade Technologies, Geissbühler Weber & Partner (GWP), Loomis International, Jaeksoft SaRL, BPC, Taurus Group SA

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
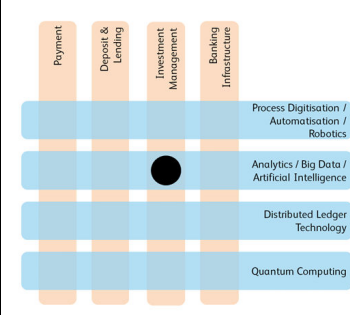
Securosys SA
https://www.securosys.com/

We develop, produce, and distribute hardware, software and services that protect and verify data and their transmission.

Year of foundation	2014
Headquarters (canton)	Zurich
Employees … of which in CH	22 20
Valuation	CHF 25,000,000
Total funding	CHF 1,350,000
Board members	Andreas Curiger, Robert Rogenmoser, Hans-Jörg Bärtschi, Boris Andrea Schlapbach Käppeli
Management team	Robert Rogenmoser, Andreas Curiger, Marcel Dasen, Reto Stäuble, Christian Willemin, Geraldine Critchley, Hans Kutter, Gebhard Scherrer
Key partners	Electronic Manufacturing Services Enics AG and GPV Switzerland SA

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
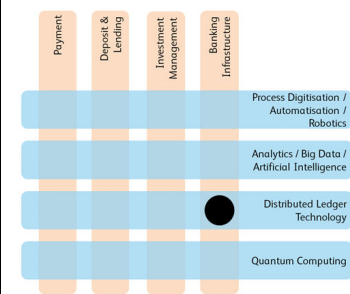
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SELMA

Selma Finance AG
https://www.selmafinance.ch/

Selma is a digital financial advisor that helps you to do the right things with your money, like a private banker in your pocket.

Year of foundation	2016
Headquarters (canton)	Schwyz
Employees … of which in CH	10 3
Valuation	
Total funding	CHF 2,300,000
Board members	Kevin Linser, Stefan Andri Jaecklin, Patrik Schär
Management team	Patrik Schär, Kevin Linser, Mikael Roos, Valeria Gasik
Key partners	Saxo Bank (Schweiz) AG, VZ VermögensZentrum

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Sentifi

Sentifi AG
https://sentifi.com/

Sentifi is an established fintech company and alternative data provider. We transform traditional and alternative raw data into investment analytics, supporting institutional investors across multiple stages of their decision-making process. Our solutions are used by leading financial services organizations to gain unique insights on over 50'000 companies, currencies, commodities, and the events that impact their valuation.

Year of foundation	2012
Headquarters (canton)	Zurich
Employees … of which in CH	25 1
Valuation	
Total funding	
Board members	
Management team	Marina Goche, Mark Ormes
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative Business & serving clients	Trading	Advertising

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SHIFT + CRYPTOSECURITY

Shift Crypto AG
https://shiftcrypto.ch/

Swiss made hardware wallet BitBox02.

Year of foundation	2020
Headquarters (canton)	Zurich
Employees … of which in CH	10 10
Valuation	
Total funding	CHF 4,500,000
Board members	Jonas Schnelli, Douglas Bakkum
Management team	Douglas Bakkum
Key partners	

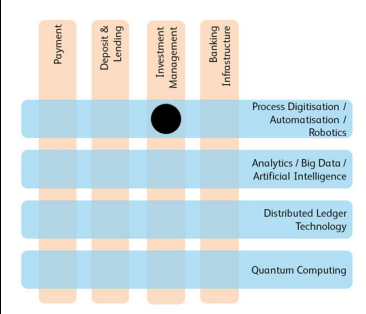| Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative Business & serving clients	Trading	Advertising

Simplewealth

Simplewealth AG
https://simplewealth.ch/

Simplewealth provides (a) onine automated wealth management services to clients ("robo-adviser") and (b) also licences its automation tools to other wealth managers ("digital investment solution tools").

Year of foundation	2015
Headquarters (canton)	Zurich
Employees … of which in CH	3 3
Valuation	
Total funding	CHF 100,000
Board members	Marcus Altenburg
Management team	Marcus Altenburg
Key partners	UBS, Blackrock, Deutsche Bank, Lyxor, Interactive Brokers

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

SIX Group AG
https://www.six-group.com/

SIX operates the infrastructure for the Swiss financial centre. The company provides services relating to securities transactions, the processing of financial information, payment transactions and is building a digital infrastructure.

Year of foundation	2002
Headquarters (canton)	Zurich
Employees … of which in CH	3,500
Valuation	
Total funding	
Board members	Thomas Peter Wellauer, Sabine Keller-Busse, Herbert Julius Scheidt, Belén Romana García, Jürg Bühlmann, Lorenz von Habsburg-Lothringen, David Jiménez-Blanco Carrillo de Albornoz, Søren Holm Mose, Jürg Gutzwiller, André Marc Helfenstein
Management team	Jos Dijsselhof, Jochen Dürr, Marco Menotti, Marion Leslie, Daniel Schmucki, Chris Landis, Thomas Zeeb, Javier Hernani Burzaco
Key partners	

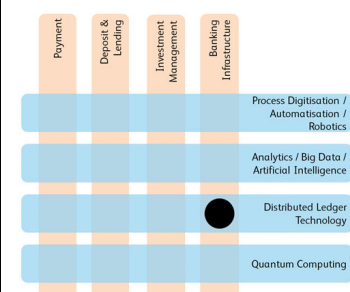| Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Small Invoice - Lourens Systems GmbH
https://www.smallinvoice.ch/

Online invoicing and project administration including time tracking.

Year of foundation	2009
Headquarters (canton)	Zurich
Employees … of which in CH	12 / 3
Valuation	
Total funding	
Board members	Graem Ruedi Lourens, Sandro Kunz
Management team	Graem Ruedi Lourens, Sandro Kunz
Key partners	Postfinance

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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Sparbatze

Besser vorsorgen.

Sparbatze AG
https://sparbatze.ch/

Sparbatze aims to disrupt the pension planning industry by offering state-of-the-art, cost-efficient and tailor-made investment portfolios for Switzerland.

Year of foundation	2018
Headquarters (canton)	Zurich
Employees … of which in CH	7 7
Valuation	CHF 12,000,000
Total funding	CHF 3,000,000
Board members	Oliver Patrick Steeg, Ivan Sosio, Andreas Siemers, Susanne de Zordi, Olga Miller
Management team	Oliver Patrick Steeg, Ivan Sosio, Peter Schnellmann
Key partners	Zuger Kantonalbank, Vaudoise Assurances

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

SPITCH

Spitch AG
https://www.spitch.ch/

Spitch helps enterprises to identify, understand and serve their customers better by using natural language processing. We are 5 YO Swiss company and have more than 30 running customers mainly from financial sector. We developed our own core technology and offer virtual assistants, voice biometric, speech analytics in omnichannel mode.

Year of foundation	2014
Headquarters (canton)	Zurich
Employees … of which in CH	47 17
Valuation	
Total funding	CHF 3,000,000
Board members	Kirill Tatarinov, Alexey Popov, Georgii Kravchenko, Igor Nozhov, Joe Novak, Vadim Shchepinov
Management team	Alexey Popov, Francisco Campillo, Javier Dieguez, Saglara Dzhavkaeva, Stephan Fehlmann, Shoin Hatano, Giovanni Mannarino, David Font Marin, Rosa Maria Molteni, Bernd Martin, Sascha Andreas Nafz, Josef Novak, Igor Nozhov, Mikhail Shamanin, Vadim Shchepinov, Juerg Schleier, Piergiorgio Vittori, Gary Williams
Key partners	Avaloq, Swisscom, TCS, QuandaGo, Crealogix, BSS, ti&m, Genesys, Netcetera, Acapela, Bucher + Suter, AdNovum, Comapp, System EVO, Oracle, Nexteria, Creative Virtual and others

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Squirro AG
https://squirro.com/

Squirro is a cognitive insights engine that enables companies to turn meaningless data into actionable insights.

Year of foundation	2009
Headquarters (canton)	Zurich
Employees … of which in CH	40 20
Valuation	
Total funding	CHF 12,000,000
Board members	Carmen Schlatter Broger, Nityen Ranjan Lal, Andrew James Honess, Patrice Marcel Neff, Ariel Frank Lüdi, Dorian Selz
Management team	Dorian Selz, Toni Birrer, Patrice Marcel Neff, Miguel Rodriguez, Nicolas Berney, Fredrik Rydius
Key partners	Synpulse, AdNovum, Refinitiv, Dow Jones, Accenture, DXC, Wipro, CMCI, Salesforce, ServiceNow

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
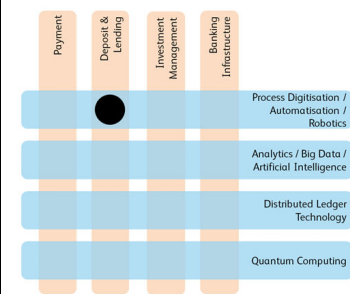
Stableton Financial AG
https://www.stableton.com/

Stableton's FinTech platform is the leading next-generation marketplace for alternative investments.

Year of foundation	2018
Headquarters (canton)	Zug
Employees … of which in CH	8 8
Valuation	
Total funding	
Board members	Andreas Bezner, Konstantin Heiermann
Management team	Andreas Bezner, Konstantin Heiermann, Vinzent Zerner, Carmine Meoli
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
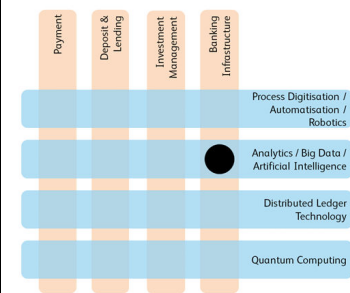
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Swiss Crypto Tokens AG
https://www.swisscryptotokens.ch/

The purpose of Swiss Crypto Tokens is to provide comprehensive services related to the issuing of tokens, including the issuance of our own tokens. The first token, a stablecoin XCHF, pegged to CHF, was launched in October 2018.

Year of foundation	2018
Headquarters (canton)	Zug
Employees ... of which in CH	1 1
Valuation	
Total funding	CHF 1,000,000
Board members	Niklas Nikolajsen, Luzius David Meisser
Management team	Armin Eduard Schmid
Key partners	Bitcoin Suisse AG as main partner. CryptoFranc (XCHF) is listed on multiple exchanges: Bitfinex, IDEX, Uniswap, etc.

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Swiss Crypto Vault AG
https://swisscryptovault.ch/

Swiss Crypto Vault provides hyper secure storage of crypto assets. Our proprietary cold storage solution bases on multiple layers of protection including highest standards of cryptographic, IT and physical security as well as multi-party segregation, whitelisted addresses and predefined time delays defined by the client.

Year of foundation	2017
Headquarters (canton)	Zug
Employees ... of which in CH	10 2
Valuation	
Total funding	
Board members	Philipp Vonmoos, Niklas Nikolajsen, Andrej Francisco Majcen, Ludwig Xaver Karl
Management team	Markus Perdrizat, Emil Kassow
Key partners	Bitcoin Suisse AG

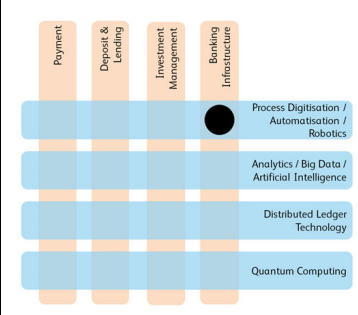| Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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SwissLending SA
https://www.swisslending.com/

The Swiss real estate crowdlending specialist. SwissLending is the first crowdlending platform in Switzerland specialising in loans for real estate professionals. Club deals and tokenisation will be added in 2021.

Year of foundation	2015
Headquarters (canton)	Geneva
Employees … of which in CH	1
Valuation	
Total funding	
Board members	Christophe Capelli, Dominique Goy
Management team	Dominique Goy, Rodolphe Peiron
Key partners	Groupe Capelli

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

SwissMetrics GmbH
https://www.swissmetrics.com/

Collaboratively onboard and continuously monitor the ongoing financial health of your suppliers, customers and potential acquisitions.

Year of foundation	2014
Headquarters (canton)	Zurich
Employees … of which in CH	3 / 1
Valuation	
Total funding	CHF 250,000
Board members	
Management team	Piotr Krzysztof Zmidzinski
Key partners	

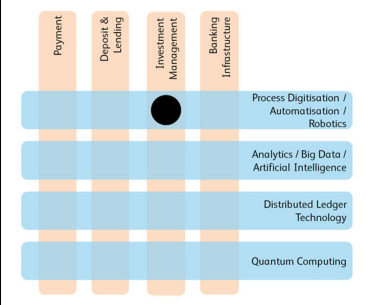| Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

swisspeers AG
https://www.swisspeers.ch/

swisspeers is an independent online platform that enables SMEs to raise loans financed directly by investors.

Year of foundation	2015
Headquarters (canton)	Zurich
Employees … of which in CH	10 10
Valuation	
Total funding	CHF 65,000,000
Board members	Jürg Hunziker, Urs Hofer, Christoph Ammann, Karin Rhomberg, Peter Sami
Management team	Alwin Meyer, Andreas Hug, Stefan Nägeli
Key partners	

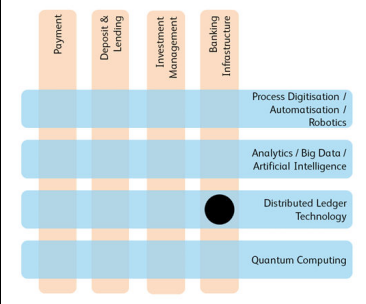| Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Swissquote Group Holding SA
https://www.swissquote.com/

Swissquote Group is the Swiss leader in online banking.

Year of foundation	1999
Headquarters (canton)	Vaud
Employees … of which in CH	768 (as per 30.6.2020) 644
Valuation	Listed entity
Total funding	
Board members	Markus Dennler, Monica Dell'Anna, Beat Oberlin, Jean Christophe Pernollet, Martin Naville
Management team	Marc Bürki, Paolo Buzzi, Michael Ploog, Morgan Lavanchy, Gilles Chantrier, Yves Cardenas, Lino Finini, Jan De Schepper, Yvan Cardenas
Key partners	Postfinance, Basellandschaftliche Kantonalbank, Bitstamp, Tesla etc.

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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SwissWide Holding AG
http://www.swisswide.ch/

SwissWide's main objective is the creation of a Global Investment Village and the Digitization of all assets on a proprietary Blockchain platform for easier exchange, transfer and asset allocation.

Year of foundation	2018
Headquarters (canton)	Zug
Employees … of which in CH	7 4
Valuation	CHF 5,000,000
Total funding	CHF 400,000
Board members	Arsenije Grgur
Management team	Arsenije Grgur
Key partners	

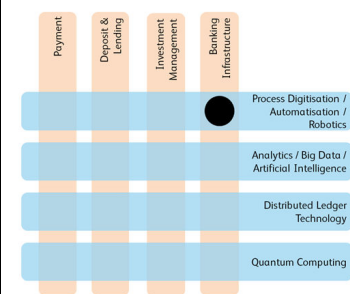| Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Sygnum Bank AG
https://www.sygnum.com/

Founded on Swiss and Singapore heritage, Sygnum empowers its clients to invest in the digital asset economy with complete trust.

Year of foundation	2018
Headquarters (canton)	Zurich
Employees … of which in CH	> 90 > 70
Valuation	
Total funding	
Board members	Peter Wuffli, Gabriela Maria Payer, Kim Leng Chua, Thomas Buess, Luka Müller-Studer
Management team	Mathias Imbach, Fabian Dori, Maria-Antonella Bino, Martin Burgherr, Thomas Eichenberger, Guido Hüppin, Philippe Imbach, Helmut Kaufmann, Firtz Jost, Martin Jost
Key partners	Swisscom, Custodigit (joint venture with Swisscom), Daura

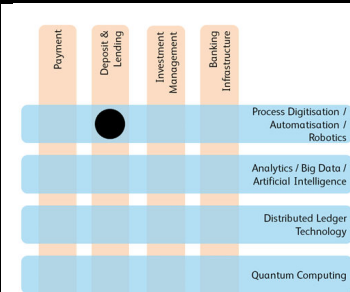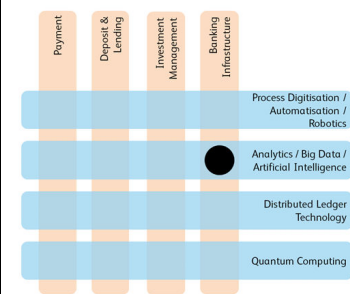| Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

SYSMOSOFT SA
http://www.sysmosoft.com/

Sysmosoft's vision is to become the world's leader in digital trust relationships between financial institutions and their customers. Sysmosoft's mission is to digitise human based processes aiming to provide trust in the banking field. We rely on legally binding technologies, such as electronic signatures, to achieve digital trust in a user friendly and secure manner.

Year of foundation	2010
Headquarters (canton)	Vaud
Employees … of which in CH	12 12
Valuation	
Total funding	
Board members	Nagi Moustafa, Julien Probst
Management team	Frédéric Mauger, Mark Vincent
Key partners	Swisscom, Temenos, Entrust Datacard, Signatys, ERI

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative Business & serving clients	Trading	Advertising
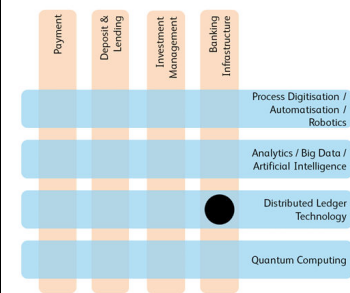
Systemcredit AG
https://www.systemcredit.com/

Lending made easy. Systemcredit's digital platform provides small and medium businesses with a choice of credit offers from several lenders. In 2020 it launched the fastest borrower onboarding of Switzerland taking just 3 minutes to credit.

Year of foundation	2018
Headquarters (canton)	Zurich
Employees … of which in CH	4 4
Valuation	
Total funding	
Board members	Andreas R. Herzog, Daniel V. Christen, Daniel Bont, Thomas Billeter
Management team	Daniel V. Christen, Gino Giuliato, José Rodriguez
Key partners	Systemcredit co-operates with 40 lenders such as banks and crowdlenders to provide the best loan offers to small and medium businesses. Research cooperation with IFZ.

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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Systemorph AG
https://systemorph.com/

Systemorph develops Enterprise Data Management solutions that revolutionize reporting, risk function and data analysis in banking & insurance companies.

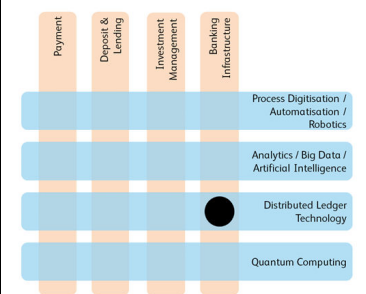| Year of foundation	2011
Headquarters (canton)	Zurich
Employees … of which in CH	50 25
Valuation	
Total funding	
Board members	Roland Bürgi
Management team	Roland Bürgi, Pedro Fonseca, Daniel Trzesniak, Markus Kleiner
Key partners	Synpulse, KPMG, EY, PwC, Deloitte

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital	Operative business & serving clients	Trading	Data
					Advertising

Matrix: Analytics / Big Data / Artificial Intelligence × Banking Infrastructure

Tatoshi AG
https://tatoshi.io/

We provide decentralized software solutions for storing of crypto assets to our business and retail customers. Our USP is a distributed private key recovery function and a tool to comply with the FATF travel rule.

Year of foundation	2018
Headquarters (canton)	Zug
Employees … of which in CH	3 1
Valuation	
Total funding	
Board members	
Management team	Tobias Kress
Key partners	

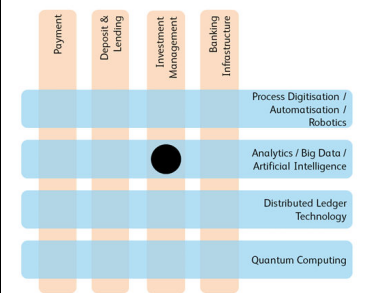| Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital	Operative business & serving clients	Trading	Data
					Advertising

Matrix: Distributed Ledger Technology × Banking Infrastructure

Taurus Group SA
https://www.taurusgroup.ch/

Taurus is a leading European provider of digital asset and blockchain infrastructure solutions for crypto-currencies, tokenized securities and digital currencies.

Year of foundation	2018
Headquarters (canton)	Geneva
Employees … of which in CH	25 25
Valuation	
Total funding	
Board members	Geoffroy De Ridder, Rani Jabban, Christian Gellerstad, Oren-Olivier Puder
Management team	Lamine Brahimi, Sébastien Dessimoz
Key partners	ELCA, Swiss Federal Institute of Technology (EPFL), C4DT, HES-SO Sierre

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Tensor Technologies AG
http://www.tensor.tech/

Tensor Technologies is a proprietary algorithmic trading company. We develop software and algorithms to trade in financial markets. We use the latest technologies to allow our small team to efficiently scale across many markets globally.

Year of foundation	2018
Headquarters (canton)	Zug
Employees … of which in CH	18 18
Valuation	
Total funding	
Board members	Leo Rüst, Andreas Meyer de Voltaire, Gerhard Michael Pfister
Management team	Andreas Meyer de Voltaire, Leo Rüst, Andreas Razen, Martin Marciniszyn, Otto ten Bosch
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative Business & serving clients	Trading	Advertising

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Teylor AG
https://www.teylor.com/

Teylor has built software that digitizes and automates the entire SME lending cycle. It uses this technology to broker its own loan under the Teylor brand and sells the technology to banks in a SaaS model.

Year of foundation	2018
Headquarters (canton)	Zurich
Employees … of which in CH	30 7
Valuation	
Total funding	CHF 9,250,000
Board members	Patrick Stäuble, Christophe Aumaitre, Oyvind Oanes, Patrick Pierre Severin Zbinden
Management team	Joshua Mauk, Thomas Nägele, Andre Cordesmeyer
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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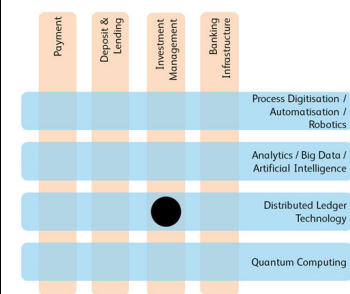
theScreener Investor Services AG
http://www.thescreener.com/

We assist leading financial institutions to optimise advice and performance.

Year of foundation	2004
Headquarters (canton)	Zug
Employees … of which in CH	30
Valuation	
Total funding	
Board members	Andreas Milan Lusser
Management team	Farwagi Alain, Andreas Milan Lusser
Key partners	Refinitiv, Factset, Morningstar, SIX, vwd, WFG, various IT suppliers

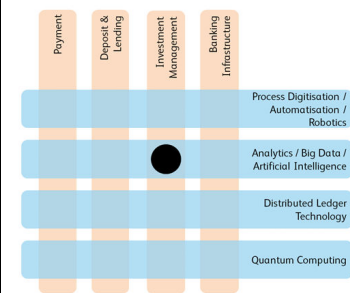| Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
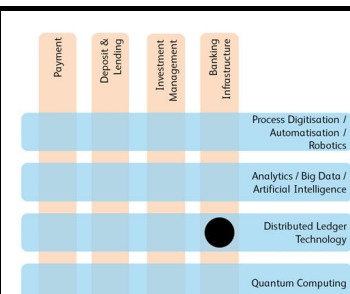
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ti&m AG
https://www.ti8m.com/

ti&m is a Swiss leader in digitisation, security, as well as innovation projects and products.

Year of foundation	2005
Headquarters (canton)	Zurich
Employees … of which in CH	400+ 380+
Valuation	
Total funding	CHF 100,000
Board members	Luisa Domenica Sartori, Markus Jordi, Urs Buner, Markus Nigg, Thomas Wüst
Management team	Thomas Wüst, Markus Nigg, Marius Matter, Samuel Scheidegger, Daniel Walther, Björn Sörensen, Holger Rommel, Philip Dieringer
Key partners	Microsoft, Jive, IBM, contovista, edorasware, finnova, Liferay, Magnolia, MeaWallet, Oracle, Qumram, Quo Vadis, Red Hat, Shopware, Swisscom, USP, aws, Google, Azure

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Tindeco Financial Services AG
https://www.tindecofs.com/

At Tindeco we are focused on helping asset and wealth managers by reducing complexity and increasing automation to enable our client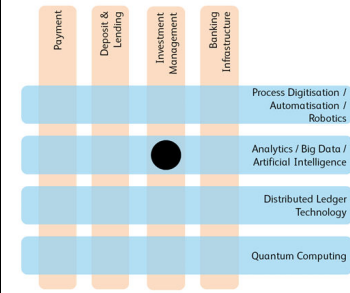s to provide better asset management solutions to their clients. Tindeco VISION is an award-winning platform that offers investment management software to asset and wealth managers including modules from portfolio management, risk management, order management to fully automated implementation of investment strategies.

Year of foundation	2010
Headquarters (canton)	Zug
Employees … of which in CH	15 3
Valuation	
Total funding	approx. CHF 5,000,000
Board members	Michael Kaimakliotis, Neil McLachlan, Moritz von der Linden, Michael Pearl
Management team	Michael Kaimakliotis, Neil McLachlan
Key partners	Microsoft, Bloomberg, Refinitiv

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Token Factory Switzerland AG
https://tokenfactory.global/

Token Factory, your Blockchain consultant & technology provider for asset digitalization: security token management, investor (whitelist) management and trading with liquidity.

Year of foundation	2018
Headquarters (canton)	Zug
Employees … of which in CH	3
Valuation	
Total funding	
Board members	Bastiaan Don
Management team	
Key partners	Bank Frick, Bitcoin Suisse

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

Tokengate.io - DSENT AG
https://www.tokengate.io/

Infrastructure for the digital finance.

Year of foundation	2018
Headquarters (canton)	Zug
Employees … of which in CH	5 5
Valuation	CHF 10,000,000+
Total funding	
Board members	Marco Bumbacher, Ralf Hans Glabischnig
Management team	Daniel Peter Rutishauser
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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BEAUTYCONTEST.CH
GET YOUR ASSET 🇨🇭 IN SWITZERLAND

Trechter.ch GmbH
https://beautycontest.ch/

Making the RFI/RFP process more efficient and effective. Anonymous pre-market screening for investors. Business directory of Swiss asset managers.

Year of foundation	2018
Headquarters (canton)	Lucerne
Employees … of which in CH	1 1
Valuation	
Total funding	
Board members	Andreas Troxler
Management team	Andreas Troxler
Key partners	Xappido AG (Software Partner: Cooperation)

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative Business & serving clients	Trading	Advertising
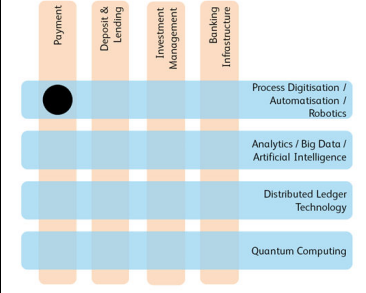
TRESIO

Tresio GmbH
https://www.tresio.ch/

TRESIO is a web-application that facilitates the cash flow management and financial planning for small- and mid-sized companies.

Year of foundation	2020
Headquarters (canton)	Zurich
Employees … of which in CH	3 1
Valuation	
Total funding	
Board members	
Management team	Tobias Angehrn, Roman Levchenko
Key partners	Bexio, Run my Accounts, Amnis Treasury Services AG, BDO, SVEA Finans AG

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative Business & serving clients	Trading	Advertising
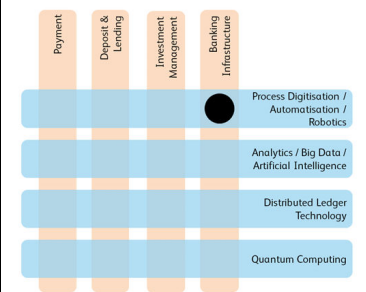
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Trustwise.io AG
https://www.trustwise.io/

trustwise.io ag provides a regulatory compliant blockchain access platform for the management of private equity.

Year of foundation	2017
Headquarters (canton)	Basel-Country
Employees … of which in CH	8 2
Valuation	
Total funding	CHF 1,000,000
Board members	Adrian Markus Hutzli, Christoph Niemann, Emanuel Dettwiler, Hans-Peter Gier, Rolf Ramseier
Management team	Hans-Peter Gier
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
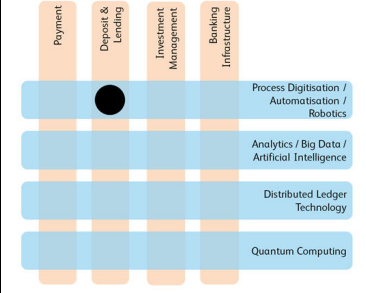
turicode AG
https://turicode.com/

Unlock the full potential of your documents: Turicode turns any document into structured data using machine learning.

Year of foundation	2016
Headquarters (canton)	Zurich
Employees … of which in CH	22 22
Valuation	
Total funding	CHF 2,200,000
Board members	Beat Steiner, Guillaume Waser, Martin Keller, Patrick Emmisberger
Management team	Martin Keller, Benjamin von Deschwanden, Patrick Emmisberger
Key partners	Microsoft for Startups Program

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

TWINT AG
https://www.twint.ch/

TWINT is Switzerland's leading digital payment service. People use TWINT to pay and get paid from person to person (P2P), online and at POS, for donations, parking, at clubs and restaurants and many other use cases.

Year of foundation	2014
Headquarters (canton)	Zurich
Employees … of which in CH	Ca. 150
Valuation	
Total funding	
Board members	Sandra Lienhart-Cozzio, Marc-Henri Desportes, Hans Martin Graf, Roland Jürg Altwegg, Søren Holm Mose, Andreas Kubli, Daniel Robert Previdoli, José François Sierdo
Management team	Markus Kilb, Anton Stadelmann, Paul Kreis, Thomas Wicki, Adrian Reto Plattner, René Hägeli, Jens Plath, Gökhan Filizer, Simon Wehrli and others
Key partners	Owners: SIX, BCV, Credit Suisse, PostFinance, Raiffeisen, UBS, ZKB

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

ubitec AG
https://ubitec.com/

ubitec is specialist for digital solutions in the finance and insurance sector. With ubiID, ubichat, ubibot and ubix2b, ubitec offers innovative products in the areas of digital identification, conversational business, conversational AI and open banking.

Year of foundation	2017
Headquarters (canton)	Zurich
Employees … of which in CH	45 15
Valuation	
Total funding	
Board members	Ralf Simon Jenzer, Patrick Brazzale, Orell Appenzeller
Management team	
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

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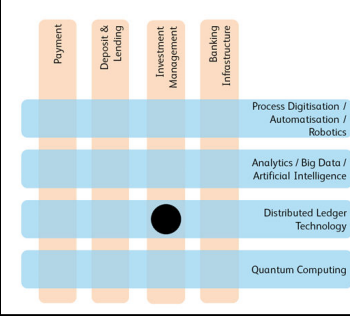
Valyo AG
https://www.valyo.com/

Valyo operates a financial market plattform enabling issuers to raise funds in the bond markets without the intermediation of banks. The fully digitalized process adds flexibility and transparency to issuers and investors.

Year of foundation	2019
Headquarters (canton)	Aargau
Employees … of which in CH	10 10
Valuation	
Total funding	
Board members	Werner Leuthard, Alexander Marco Cassani, André Walter Ullmann, Manuel Antonius Thiemann
Management team	Andreas Paredi, Daniel Schwab, Andreas Gasser, Stefan Linder
Key partners	Raiffeisen Schweiz

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising

VIAC AG
https://viac.ch/

VIAC initially started a fully digital 3rd pillar offered by the Terzo Vorsorgestiftung der WIR Bank. In 2020 VIAC added a vested benefits account offered through the Freizügigkeitsstiftung der WIR Bank.

Year of foundation	2017
Headquarters (canton)	Lucerne
Employees … of which in CH	5.4 5.4
Valuation	
Total funding	
Board members	Germann Wiggli, Max Peter, Heinz Zimmermann
Management team	Daniel Peter, Christian Mathis, Jonas Gusset
Key partners	Terzo Vorsorgestiftung, Freizügigkeitsstifung der WIR Bank, WIR Bank, Credit Suisse (Custodian)

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital			Data
			Operative business & serving clients	Trading	Advertising
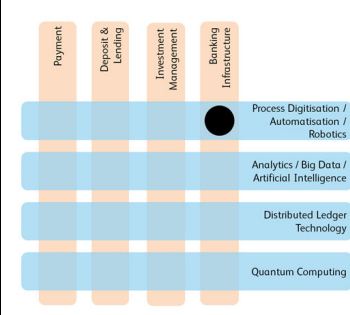
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Wecan Tokenize SA
https://wecantokenize.com/

Redefining institutional investment experience. In the near future every asset will be tokenized. Wecan Tokenize helps you digitize your investments: issue, distribute and custody your digital assets.

Year of foundation	2019
Headquarters (canton)	Geneva
Employees … of which in CH	15
Valuation	
Total funding	CHF 2,500,000
Board members	Vincent Pignon, Mathieu Saint-Cyr, Christophe Capelli
Management team	Vincent Pignon, Mathieu Saint-Cyr, Christophe Capelli
Key partners	Capelli, Geneva Management Group, Metaco, Wecan, Atdomco, Elvinger Hoss, Ochsner & Associés, Banque et Caisse d'épargne de l'état Luxembourg, Geneva Fintech

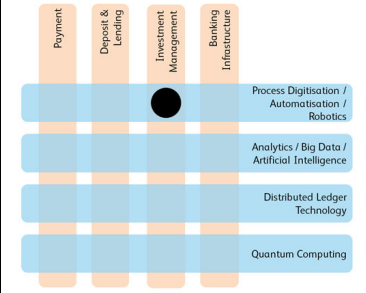| Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital	Operative business & serving clients	Trading	Data
					Advertising

Yapeal AG
https://yapeal.ch/

Yapeal builds a new digital bank and redefines the way people bank.

Year of foundation	2018
Headquarters (canton)	Zurich
Employees … of which in CH	36 / 36
Valuation	
Total funding	
Board members	Cyrill Steinebrunner, Stephan Murer, Hans Kuhn, Theodor Keiser, Werner Vontobel
Management team	Thomas Hilgendorff, Christian Meier, Enrico Bauer
Key partners	Bank Vontobel, Abacus Research

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS/Subscription
B2C	International (incl. CH)	Digital	Operative business & serving clients	Trading	Data
					Advertising

Authors

Guest Authors

Daniel Haeberli, LL.M.
Attorney-at-Law, Partner

Homburger AG

Dr. Esther Hänggi
Lecturer

Lucerne School of Computer Science and Information Technology

Timo Heroth
Senior Research Assistant / Co-Founder

IFZ / Equintel GmbH

Dr. Janna Lipenkova
Data Entrepreneur & CEO

Equintel GmbH

Dr. Benedikt Maurenbrecher, MBA
Attorney-at-Law. Partner

Homburger AG

Aetienne Sardon
Fintech Innovator

Swisscom AG

Christian Schüpbach
Co-Head FinTech Team

Swisscom AG

Stefan Stettler
Senior IT Architect Software

Inventx AG

Dominic Vincenz
FinTech Venture Building

Swisscom AG

Dr. Alex Wherlok
Attorney-at-Law, Associate

Homburger AG

Institute of Financial Services Zug IFZ

Prof. Dr. Thomas Ankenbrand
Head Competence Center Investments

Denis Bieri
Senior Research Associate

Moreno Frigg
Research Associate

Marc Grau
Research Associate

Damian Lötscher
Research Associate

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Appendix

Table 8.1: Indicator sources of the FinTech hub ranking.

Publisher	Factor	Source	Dimension
2THINKNOW	Innovation Cities	Innovation Cities Index 2019	Technological
App Annie Intelligence, International Monetary Fund	Mobile App Creation	World Economic Outlook Database October 2019	Technological
AT Kearney	Global Cities Report	A.T. Kearney 2020 Global Cities Report	Social
Clarivante Analytics	Scientific and Technical Publications	World Economic Outlook Database October 2019	Technological
Economist Intelligence Unit	Cities Competitiveness	Hot spots 2025 - Benchmarking the future competitiveness of cities	Economic
Ernst & Young	FinTech Adoption	EY FinTech Adoption Index 2019	Economic
Hays	Global Skills	The Hays Global Skills Index 2019/20	Social
Henley & Partners	Visa Restriction	Henley & Partners Passport Index 2020	Political/legal
HSBC	Expat Ranking	League Table HSBC Expat Explorer Survey 2020	Social
IHS Markit	Political and Operational Stability	Country Risk Scores, aggregated for end Q1, Q2, Q3, and Q4 2019	Political/legal
	Software Spendings	Information and Communication Technology Database	Technological
IMD	Digital Competitiveness	IMD World Digital Competitivess Ranking 2020	Technological
	Smart City	Smart City Index 2020	Technological
	Talent Competitiveness	IMD World Talent Ranking 2020	Social
Insead, The Adecco Group, Google	Global Talent Competitiveness	Global Talent Competitiveness Index 2020	Social
Institute for Economics and Peace	Global Peace	Vision of Humanity 2020 Global Peace Index	Political/legal
International Labour Organization	Female Employment Advanced Degree	ILOSTAT Annual Indicators	Social
	Knowledge-Intense Employment	ILOSTAT Database of Labour Statistics (2009-2019)	Social

Publisher	Factor	Source	Dimension
International Monetary Fund	Foreign Direct Investments	International Financial Statistics and Balance of Payments databases	Economic
	Domestic Credit to Private Sector	International Financial Statistics and Balance of Payments databases	Economic
International Telecommunication Union	Mobile Cellular Subscriptions	International Telcommunication Union, World Telecommunication/ICT Development Report and database	Technological
	ICT Access	World Telecommunication/ICT Indicators Database	Technological
	ICT Use	World Telecommunication/ICT Indicators Database	Technological
	Cybersecurity	Global Cybersecurity Index 2018	Technological
KPMG	Corporate Tax Rates	Corporate Tax Rates Table	Political/legal
Mercer	Cost of Living	Mercer's 2020 Cost of Living Ranking	Social
	Quality of Life	Mercer's 2020 Quality of Living Ranking	Social
NUMBEO	Prices by City of Average Monthly Net Salary	NUMBEO Database 2009-2020	Economic
	Purchasing Power	Local Purchasing Power Index by City 2020	Economic
OECD	PISA Ranking	PISA 2019 Results	Social
PwC	Ease of Paying Taxes	PwC Database	Political/legal
QS Quacquarelli Symonds Ltd	University Ranking	QS World Universtiy Ranking 2019, Top Universities	Social
Reporters without Borders	Press Freedom	2020 World Press Freedom Index	Political/legal
Tax Justics Network Limited	Financial Secrecy	Financial Secrecy Index 2020	Economic
The Global Entrepreneurship and Development Institute	Entrepreneurship Activity	Global Entrepreneurship Index 2019	Economic

Publisher	Factor	Source	Dimension
The Heritage Foundation	Investment Restriction	2020 Index of Economic Freedom	Political/legal
	Financial Restriction	2020 Index of Economic Freedom	Political/legal
The World Bank	Value of Stocks Traded	World Federation of Exchanges Database	Economic
	Infrastructure Quality	The World Bank LPI Global Rankings 2018	Social
	Domestic Market Scale	World Economic Outlook Database October 2019	Economic
	Cost of Redundancy Dismissal	Doing Business 2020	Political/legal
	Ease of Getting Credit	Doing Business 2020	Economic
	Ease of Protecting Minority Investors	Doing Business 2020	Economic
	Ease of Resolving Insolvency	Doing Business 2020	Economic
	Starting a Business	Doing Business 2020	Economic
	Applied Tariff Rates	World Development Indicators Database (2015-18)	Economic
	Gov. Effectiveness	Worldwide Governance Indicators 2019	Political/legal
	Regulatory Quality	Worldwide Governance Indicators 2019	Political/legal
	Human Capital	Human Capital Index and components 2018	Social
The World Bank and Turku School of Economics	Logistics Performance	LogisLogistics Performance Index 2018	Social
Thomson Reuters	Joint Venture Deals	Thomson One Banker Private Equity, SDC Platinum Database	Economic
	Venture Capital Deals	Thomson One Banker Private Equity, SDC Platinum Database	Economic
Transparency International	Corruption Perception	Corruption Perceptions Index 2019	Political/legal
UNESCO Institute for Statistics	Expenditure on Education	UIS Online Database 2009-2018	Social
	R&D Expenditure	UIS Online Database Eurostat, Eurostat Database, 2019	Technological
	Government Funding per Secondary Student	UIS Online Database 2009-2018	Social

Publisher	Factor	Source	Dimension
UNESCO Institute for Statistics	Graduates in Science and Engineering	UIS Online Database 2010-2019	Social
	Tertiary Inbound Mobility	UIS Online Database 2010-2019	Social
	Pupil-Teacher Ratio	UIS Online Database 2009-2019	Social
	Research Talents in Businesses	UIS Online Database Eurostat, Eurostat Database, 2019	Technological
	Researchers	UIS Online Database Eurostat, Eurostat Database, 2020	Technological
	School Life Expectancy	UIS Online Database 2009-2019	Social
	Tertiary Enrolment	UIS Online Database 2010-2019	Social
United Nations Public Administration Network	E-Participation	e-Government Survey 2018	Technological
	Gov. Online Services	e-Government Survey 2018	Technological
World Economic Forum	Cluster Development	Executive Opinon Survey 2019	Social
	University-Industry Collaboration	Executive Opinon Survey 2019	Technological
	ICTS and New Organisational Model Creation	Executive Opinion Survey 2019	Technological
World Federation of Exchanges	Market Capitalisation	World Bank's World Development Indicators Database (2011-18)	Economic
World Intellectual Property Organization	Patents in at Least Two Offices	World Economic Outlook Database, October 2019	Technological
World Trade Organization	ICT Services Imports	Trade in Commercial Services Database	Technological
	IP Payments	Trade in Commercial Services Database	Technological
World Trade Organization and United Nations	High-Tech Imports	Comtrade Database	Technological
Z/Yen Group, China Development Institute	Global Financial Centres	Global Financial Centers Index 28	Economic

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