Information Communication Technologies

Semantic Social TV

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Abstract

| Intelligent online TV platforms and services become a new growing sector of the entertainment industry. They have already started to make use of Social Web (Web 2.0) and Semantic Web principles, techniques, approaches and tools, thus giving rise to the Semantic Social TV platforms and services. Here we discuss Social Media enablers and their implications on connecting, controlling and interacting as key Social Media functionalities that will be embedded within future Semantic Social TV platforms and services. Such platforms need to provide semantically congruent and personalized interaction between the users and Social Media via social networking websites. Furthermore, we discuss trends and extensions around Social Media and intelligent online TV. As a result of our recently proposed extension to the Linked Data principles for connecting distributed data across the Web, such as extending Linked Data principles for addition, modification and deletion of resources, access to media content, as well as retrieving content and metadata, we have recently implemented the Linked Media Framework (LMF). The main benefit of the LMF is to offer advanced search functionality that includes search for similar or related information integrated from different Social Media websites. Herein, we provide an example of how the LMF can access and describe various Social Media content types within the PopCorn.js event framework.

| **Keywords:**
Social Media, Web TV, Semantic Web, Linked Open Data, Linked Media Framework, Interaction

Content

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Social Media and TV: Motivation

Credits: to Jürgen Sewczyk, JS Consult , German TV Platform

Social Media and TV: Future Media?

| Intelligent TV platforms and services:
  | Social Web (Web 2.0)
  | Social Media
  | Semantic Web
| Convergence: Internet and TV
  What does the user really want?
  | TV, IP-TV, Web-TV
  | Smart TV ("Apps on TV")
  | Hybrid Solutions
    (proprietary solutions, HbbTV)
  | „Second screen" solutions
  | A question of devices?
    Mobile, tablet, laptop, TV screen
  | How much interaction?

SmartTV

HbbTV

Social Media and TV

| Characteristics of Social Media relevant (also) for TV
  | User communities
    | Easy befriending and connecting
    | Multiple personalities
    | "Snack culture"
  | User collaborative activities
    | Sharing information
    | Keeping in touch
    | On-going feedback
    | Instant gratification
    | Easy tagging
    | Forming interest groups
    | Searchability

The Social Media conversation prism
© Brian Solis and JESS3
http://prsse.de/files/2009/09/socialmedia-strategy.jpg

Social Media Key Enablers

| High level of personalisation: providing users' social context
| Enabling Consumer participation and engagement in
  | Content generation
  | Annotation (rating, tagging, commenting)
  | Distribution
  | Consumption
| Allowing collaborative activities among individuals while respecting the processes of the community and encouraging its evolution.
| Supporting user practices via interfaces allowing for content to be accessed, embedded and spread from/to elsewhere.

Social Media Functionalities

| Social Media interoperability features
  | **Connect:** Open Single Sign-On (SSO)
    | Protocols: OAuth 1.0, OAuth 2.0, AuthSub, WebID (access to protected resources via API)
    | Frameworks: OpenID (user-centric digital identity)
  | **Control** (over the content)
    | Reproducing and/or incorporating content into other Social Media content
    | Licensing Social Media content (not handled in this presentation)
  | **Interact** (accessing and sharing content)
    | RSS (RDF Site Summary/ Rich Site Summary/ Really Simple Syndication)
    | JSON (JavaScript Object Notation)
    | Activity Streams, Atom, PubSubHubbub, Open Graph Protocol, Social Graph API, Open Social REST Protocol, Open Social RPC Protocol

Implementation in Selected Social Media Sites

| **YouTube**
⎹ **Connect**: Using AuthSub and OAuth 1.0
⎹ **Control**: Creative Commons (CC)
⎹ **Interact**: Google Data API, based on APP (Atom Publishing Protocol), following RESTfull design, data represented as Atom, RSS feeds, or JSON

| **FlickR**
⎹ **Connect**: Using OAuth 1.0
⎹ **Control**: CC
⎹ **Interact**: REST, XML-RPC, SOAP (request), REST, XML-RPC, SOAP, JSON, PHP (response)

| **Facebook**
⎹ **Connect**: Using OAuth 2.0, supporting two OAuth 2.0 flows
⎹ **Control**: CC
⎹ **Interact**: Social Graph API
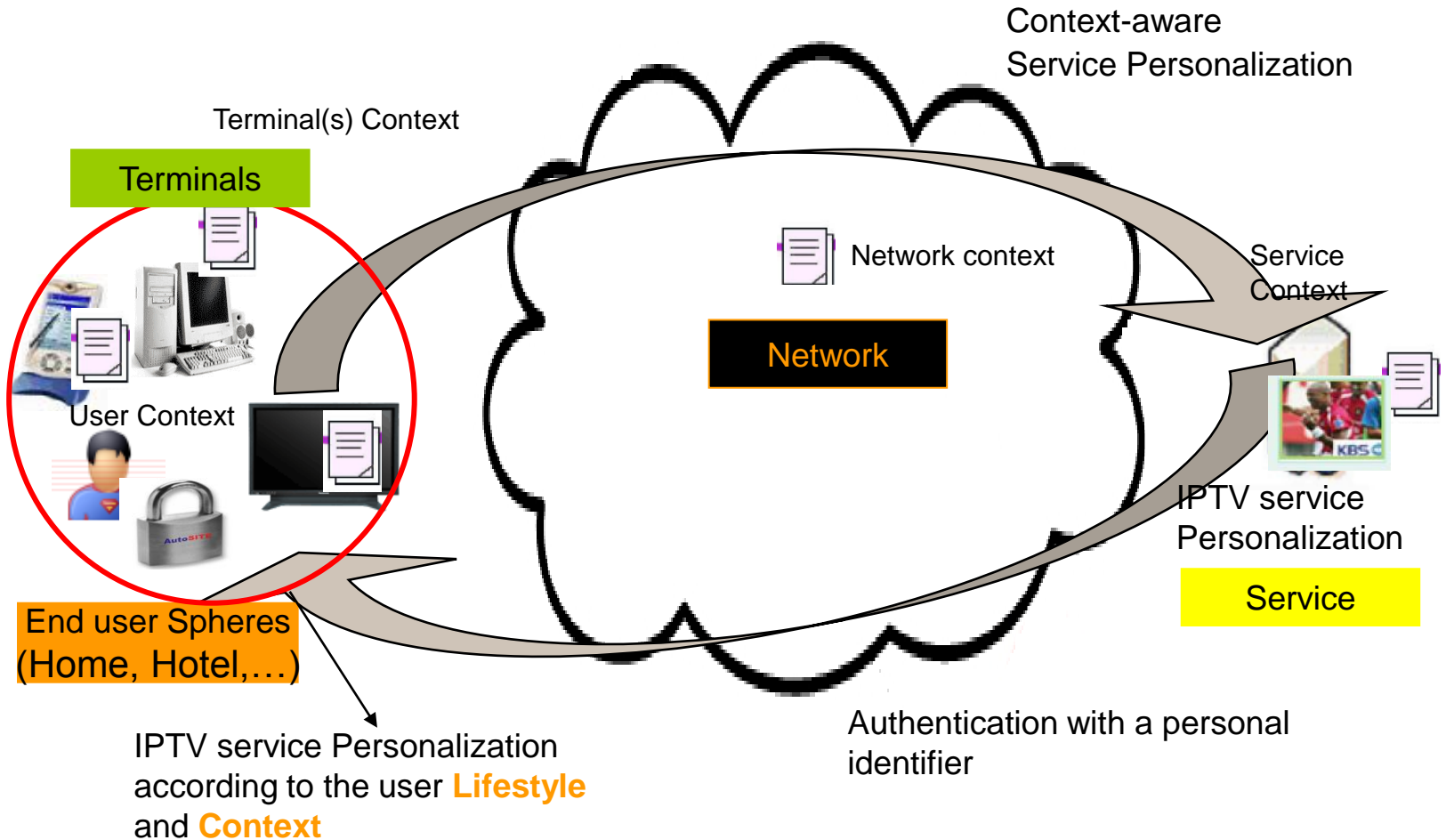
Trends and Extensions: NoTube

NoTube///

| EU FP7 NoTube project

   | NoTube is a European research project exploring Semantic Web and TV http://notube.tv/

   | Online interaction between people while watching TV

   | Novel infrastructure to support social TV APIs

   | Semantic Web, LOD

      | to enhance user experience

      | to discover more information related to a programme

      | to have smarter and more focused conversations around TV-related content

> NoTube about Social TV:
> *"The trend for using online social networks to talk about TV is increasing. Even when they are watching alone, people still want to talk about programmes and share their opinions with others, and a high proportion of the conversations in social media are around what people are watching. This is reflected in the recent proliferation of platforms designed around creating 'Social TV' experiences."*
> http://notube.tv/research-topics/social-tv/

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Trends and Extensions: UP-TO-US

| CELTIC UP-TO-US project
https://up-to-us.rd.francetelecom.com/

| Elaboration of new IPTV services through personalization of the end user experience and adaptation to his/her lifestyle.

> ### My Personal Content Moves with Me
> Nomadic access to personalized IPTV services

> ### My Content Follows Me in a Customized Manner
> Services continuity from terminal to terminal in the domestic sphere

| Technical solutions are expected to provide **Personalized, Ubiquitous, User-Centric and Secure IPTV Services**, through:

> | User IPTV Lifestyle modeling and fusion
> | Content adaptation according to user preferences, to Quality of Experience requirements, and to the different contexts
> | Privacy management, based on a multi-identity paradigm

UP-TO-US Vision

UP TO US

Context-aware
Service Personalization

Terminal(s) Context

Terminals

Network context

Service
Context

Network

User Context

IPTV service
Personalization

AutoSITE

Service

End user Spheres
(Home, Hotel,…)

IPTV service Personalization
according to the user **Lifestyle**
and **Context**

Authentication with a personal
identifier

Social Network Integration

UP TO US

Customer Acquisition

Use SN for acquisiton strategy, campeigns, Facebook site or/and bridge to WebTV site

Login and Registration

Use Login of SN to reduce barrieres in registration and login process

User Profile

Get from SN: Names, Birthday, SN-Member, Interests, E-Mail Address, Family status

Content Metadata

Get metadata for Program description, Actor database and EPG From IMDB, MyPortal, …

Social Network

Share Informations

Consumers comment and share content and Informations to their friends and the community

Communicate

Consumers invite their friends to events, quizzes and games of the IPTV service

Facebook Service integration

Integrate the Facebook live stream and other apps and information into the IPTV Service

User generated Content

Import user generated content of users and their friends from, Facebook, YouTube, mySpace , ….

Credits: Peter Stadlmann, Psmedai and the myTV project

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UP-TO-US Use Case: Social Media Integration

| Use-case:

    | Mary, a frequent Facebook user and an occasional, yet registered consumer of Youtube clips, has logged into her IPTV system and has given permission to the IPTV platform to permanently connect to her Facebook account "sweet-mary" and to her YouTube account "mary smith 4" in a previous session. Based on Mary's likes and dislikes in Facebook, her participation in certain events, and the tags of her favourite clips in Youtube the IPTV system fetches and updates relevant information for Mary's IPTV profile.

    | When Mary wants to watch TV the system offers a set of recommended channels based on her personal profile. In an alternate recommendation box she is informed about programmes recently viewed by her Facebook friends. Mary selects one channel and starts watching. In configurable intervals a "rating widget" is offered by the IPTV system. If Mary is satisfied by the programme she expresses this by giving a high rating. This results in an update of her profile. When the rating is beyond a certain threshold, the system automatically creates a "like" posting on Mary's Facebook profile and thus informs her friends about what she is just watching amusingly.

Trends and Extensions in Online TV: HbbTV

| Hybrid Broadcast Broadband TV (HbbTV) is a major new pan-European initiative aimed at harmonizing the broadcast and broadband delivery of entertainment to the end consumer through connected TVs and set-top boxes.

| Through the adoption of HbbTV, consumers will be able to access new services from entertainment providers such as broadcasters, online providers and CE manufactures – including catch-up TV, video on demand (VoD), interactive advertising, personalization, voting, games and social networking as well as programme-related services such as digital text and EPGs.   From: http://hbbtv.org/

| HbbTV allows

| Using a common browser interface
| Interlinking and hybrid services

| ETSI standard with broad industry support and adoption.

HbbTV Solutions

Existing HbbTV
applications in
Germany

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Hybrid Business Models
e.g. Public Value Service (Catch Up TV Application)

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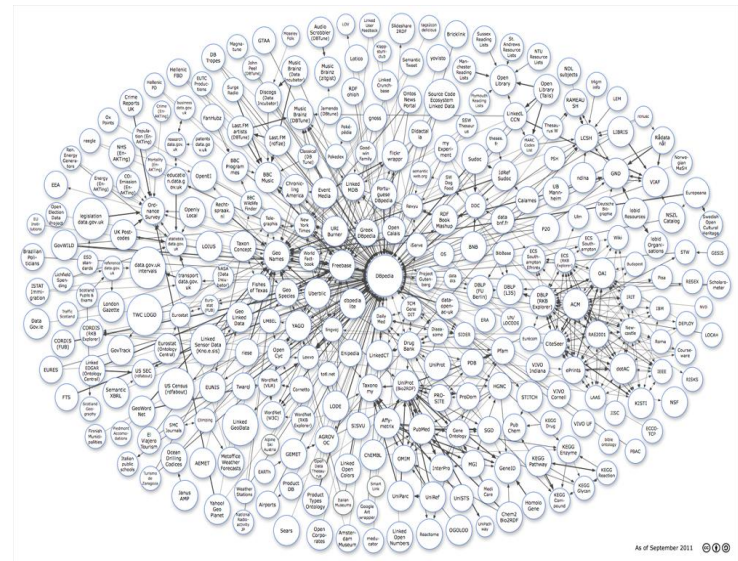
| Salzburg NewMediaLab – The Next Generation (SNML-TNG) is a K-Project in response to the 3rd call of the COMET Programme and builds on 7 years experience from the industrial centre of excellence Salzburg NewMediaLab (2003-2010 - Kind)

| Research on the application of the Linked Data principles as a basis for Enterprise Information Integration

- | on the socio-economic level
- | on the technological-conceptual level
- | on the technological development level

| for the content and media industries.

| Based on a public-private funding Public funding organisations: BMWFJ, BMVIT, Province of Salzburg

| Duration: July 2010 – June 2013

| The consortium comprises 7 company partners and 3 research organisations coordinated by Salzburg Research

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www.newmedialab.at

The Linked Media Framework

| Core technology platform developed at Salzburg NewMediaLab

| Available under BSD license (permissive open source license) at www.newmedialab.at/LMF (Google Code)

| A one-click-install software framework including a Linked Data server

| Recently integrated with the Apache Stanbol project (in incubation), developed by the IKS project http://incubator.apache.org/stanbol/

A Framework for the Semantic Integration of Social Media Platforms and TV Content

Linked Media Framework

| Based on the W3C Linked Data Principles, but extending them in answer to the following challenges:

   | Linked Data is „**read-only**": LMF allows updates using the REST Web services approach (GET, POST, PUT, DELETE), realizing (part of) recent W3C notes on "Read Write Web of Data" (http://www.w3c.org/wiki/WriteWebOfData)

   | Linked Data is "**data-only**": LMF allows handling of content and metadata in a uniform way

| Connecting your resources transparently to other servers in the Linked Data Cloud (like the IMDB, programme schedules, geo-locations, etc.)

| Making available content and metadata (also media fragments) instantly for customizable Semantic Search

| Providing a set of useful features to support the content and metadata life cycle: transactions, versioning, security, transparent cashing, SPARQL 1.1 endpoint, rule-based reasoning, content enhancement

Architecture of the LMF Core
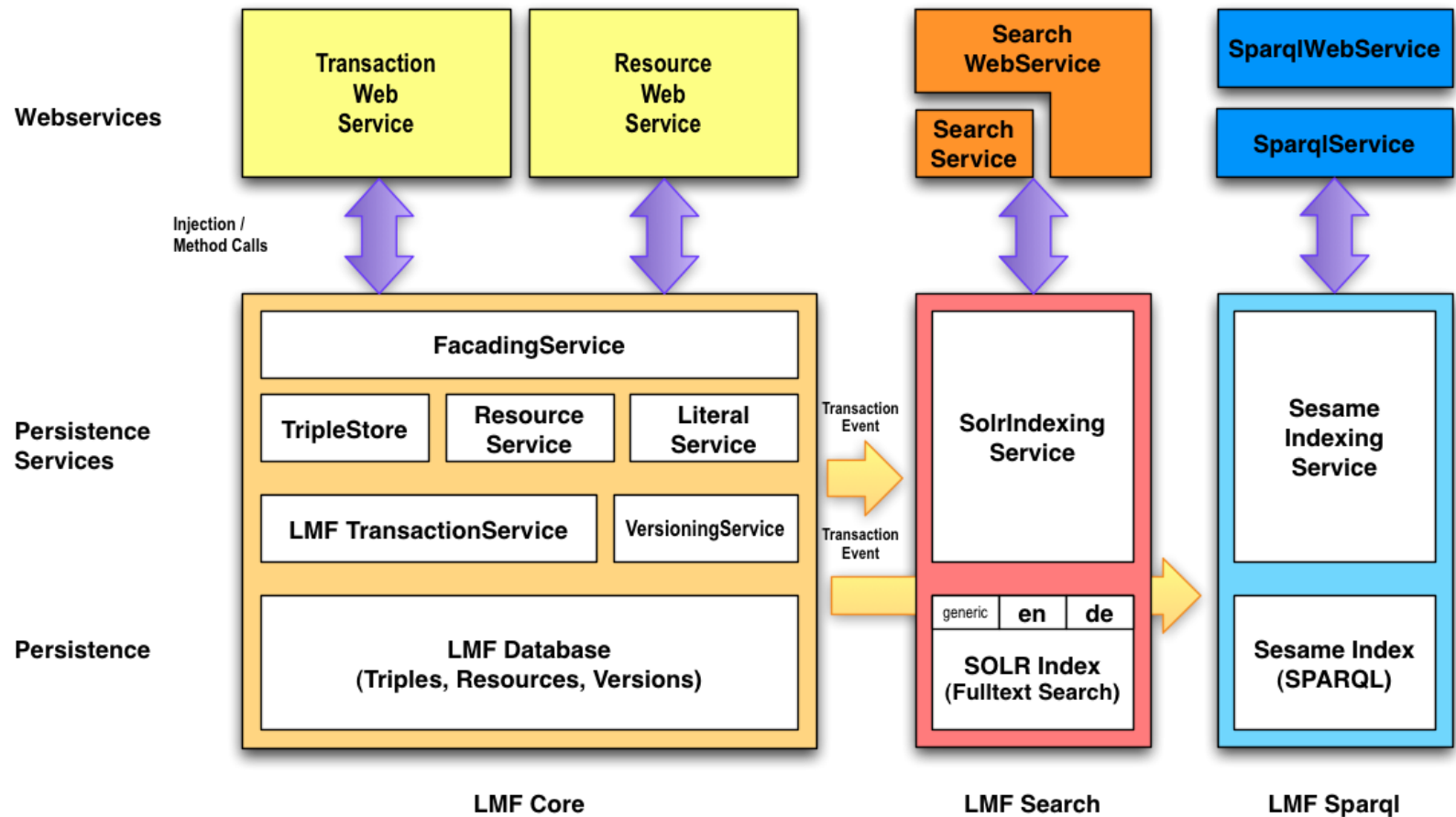
LMF Modules

- The LMF Modules extend the capabilities of the LMF Core
  - Social Module
    - Tagging, Comments, Rating, etc.
    - User administration
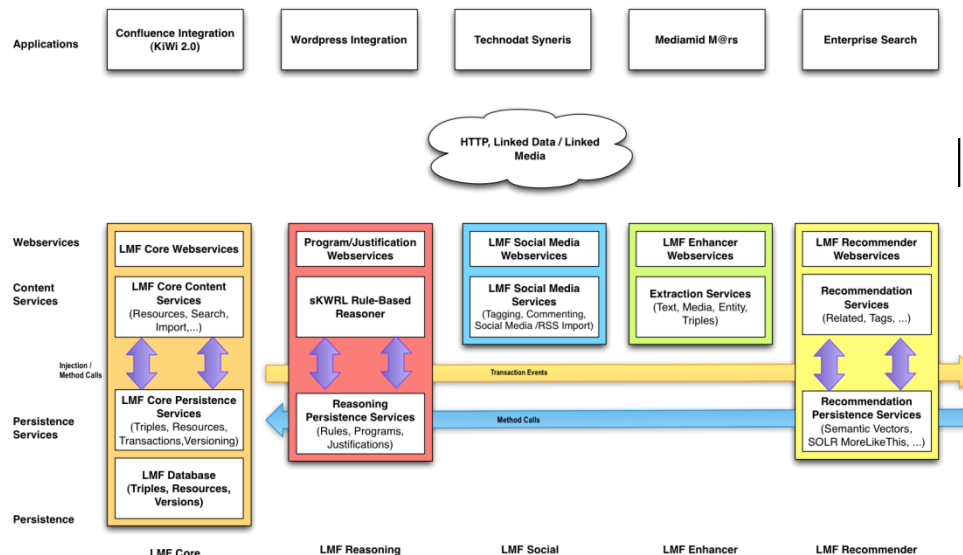   - Social network integration

- Enhancement Module
  - UIMA pipeline for textual and non-textual content
  - Enhancers for text, image, video, audio etc.
- Video Module
  - User interactions with (LMF) video content
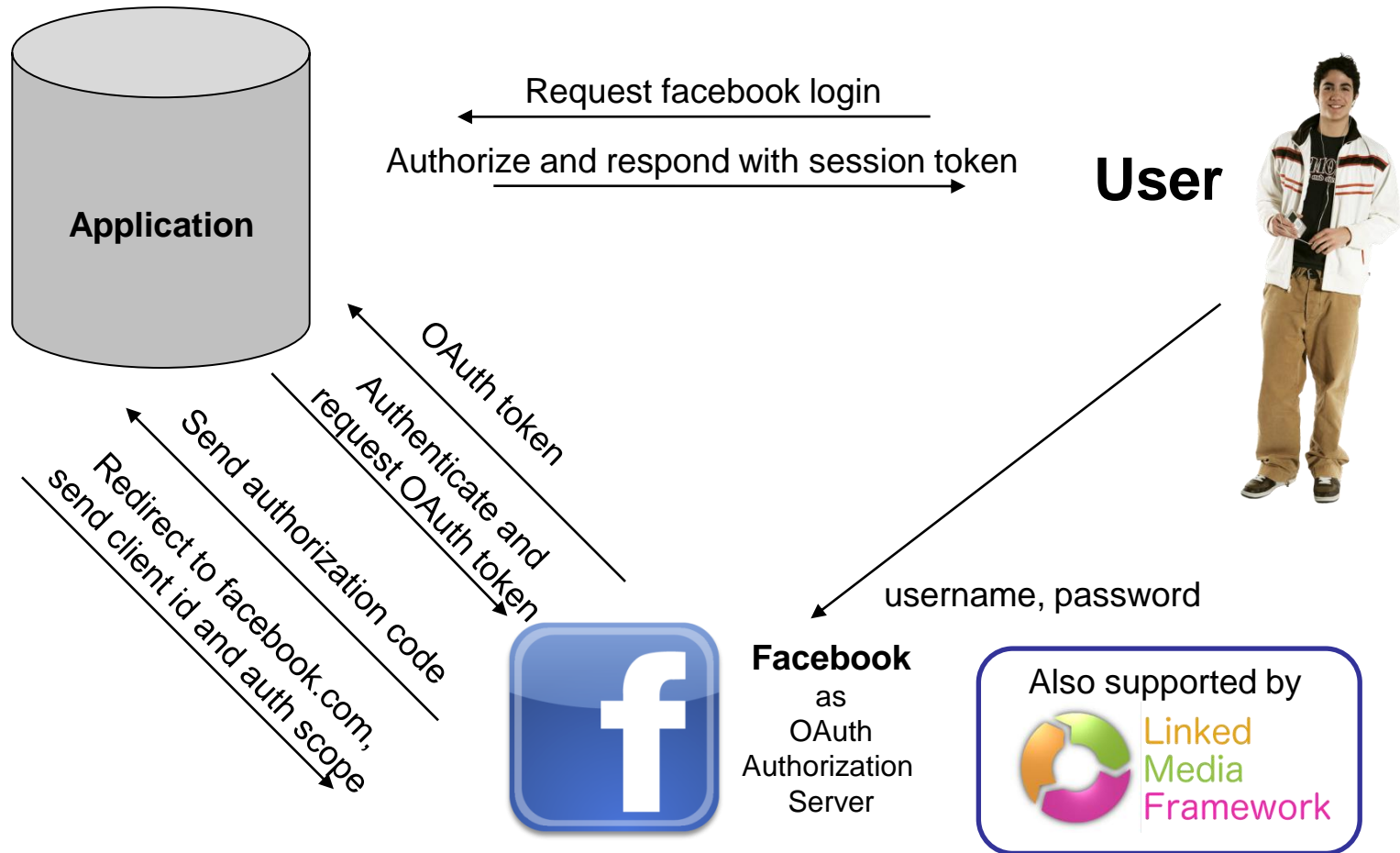 - Video player and video metadata delivery
- Security Module
  - WebID, WebACL, Facebook Login, ...

Server-side OAuth 2.0 Authorization with Facebook

Request facebook login

Authorize and respond with session token

Application

User

OAuth token

Authenticate and request OAuth token

Send authorization code

Redirect to facebook.com, send client id and auth scope

username, password

Facebook
as
OAuth
Authorization
Server

Also supported by

Linked
Media
Framework

Cf. http://developers.facebook.com/docs/authentication/

Outlook: Video Annotation and Player

| HTML5 video framework
| Annotation follows the Open Annotation Collaboration (OAC) model
| PopCorn.js event framework to display video content and annotation in parallel
   | http://popcornjs.org/
   | http://popcornjs.org/code/demos/semantic_video/ (Mozilla Drumbeat)
| Soon at
   | http://labs.newmedialab.at/

Available with LMF soon

Linked Media Framework

While watching the demo you will see related data dynamically appear in the boxes surrounding the remix, triggered by the video's time code. If you click on any red text it will link you back to source materials in their original context. (1) Displays the current visual clip info. (2) Displays the current audio clip info. (3) Displays relevant wikipedia articles. (4) Displays production and factual notes.

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Conclusions

| The existing TV services and systems show certain limitations at the level of TV service personalization, user profiling, social and community aspects.

- | e.g. user profiles can be generated out of data pools on the social networks (under the users' control!) and facilitate personalized recommendations and a personalized viewing experience

| Semantic Social Web technologies can improve the current situation.

- | „Inherent" promise of (semantic) interoperability,
- | Advanced open interfaces foster embedding of content in other contexts (TV content on social media sites, and "other content" in TV services)
- | Revealing local knowledge to professional content creators by members of hyper-local social communities

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