



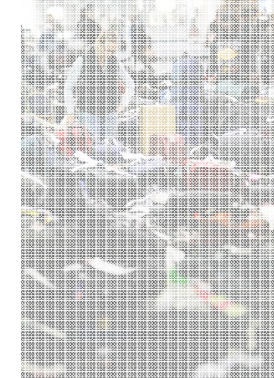
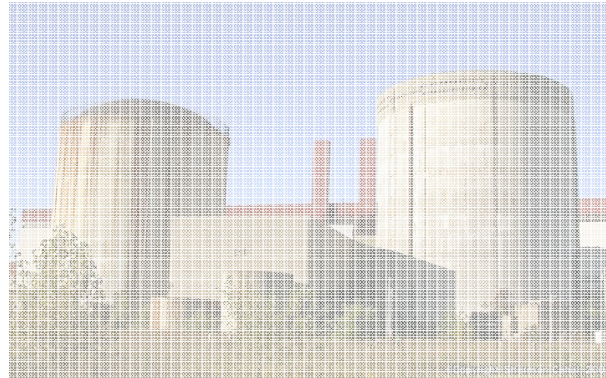
SMW⁺ - a Semantic Wiki for reducing the risk of failed projects

Daniel Hansch, Leipziger Semantic Web Tag, April 29, 2009

hansch@ontoprise.de

Project failure is a common business problem

- ***1 out of 3 project are considered a failure.^[1]***
- ***1 out of 3 companies are unable to make 50% of their projects a success.^[1]***
- ***Cost of project failure across the European Union was estimated €142 billion in 2004.^[2]***



1. Project management study conducted by the German Project Management Association and PA Consulting Group (2006, <http://www.gpm-ipma.de/docs/showsite.php?menu=0101050203>)
2. "A study in project failure" (2004, <http://www.bcs.org/server.php?show=ConWebDoc.19584>)

Famous failed projects

Warship “Vasa” (1625)

Ordered by Swedish king Gustavus Adolphus in 1625.

It sank during the maiden voyage since the ship’s structure was not laid out to carry the weight of the cannons.

Reason for failure:

Intransparent processes: knowledge about project processes and artifacts is not preserved and distributed amongst team members due to unsuitable tools.



Famous failed projects

Marble Hill nuclear plant, Indiana (USA)

Construction started in 1977 and was finally forced by court order to halt in 1979.

Engineers blew the whistle on their company which told them to cover up construction defects.

Reason for failure:

Team members behave independently instead agreeing on rules, values and shared methods; the team enters performance stage late (if ever).



Famous failed projects

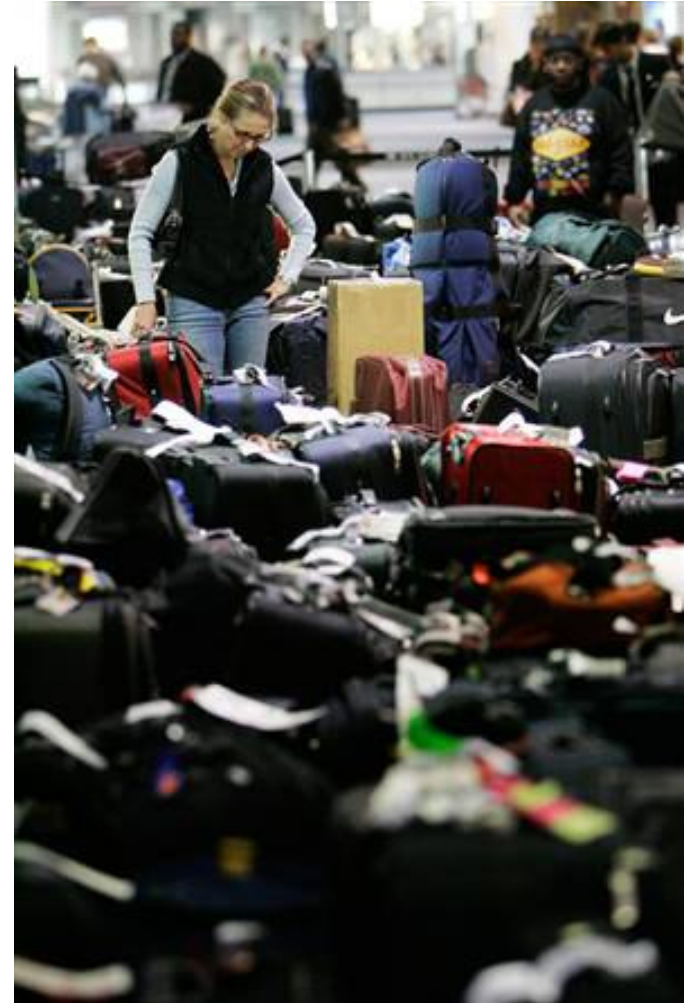
Heathrow Airport Terminal 5 (2008)

After inauguration by Elizabeth II. operations of T5 lead to 10 days of chaos.

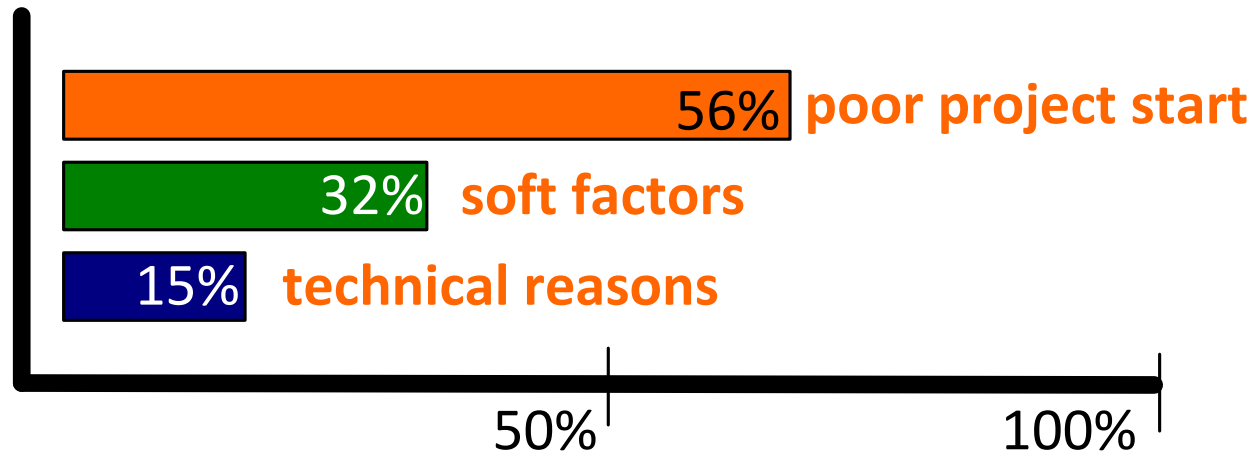
Insufficiently integrated computer systems caused 500 cancelled flights and 28.000 bags failed to travel with their owners.

Reason for failure:

Missing responsibility awareness: project team is unable to meet a unique set of technical requirements in time and budget.



Project failure is mostly caused by a poor start phase^[1]

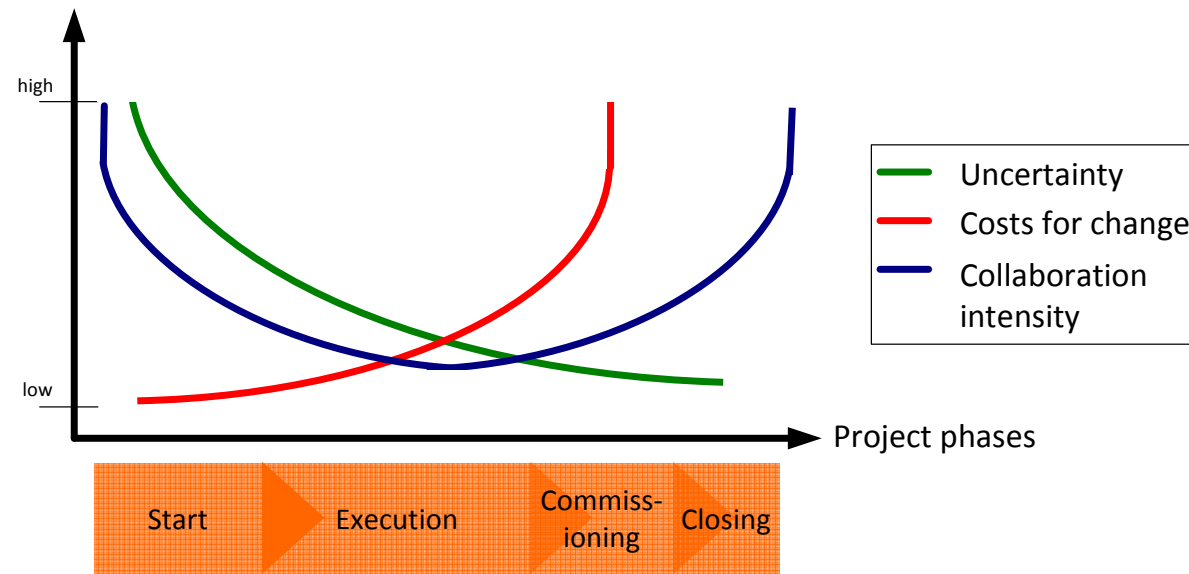


The project start phase determines basic parameters for the subsequent execution phase:

- Hierarchy of project goals,
- Determination of project environment, stakeholders and communication plan,
- Methods to lift project team from forming phase into performance stage,
- Project organisation, methods and tools,
- Technical design and risk inventory and
- Work breakdown structure, cost plan and time plan

1. Study conducted by the German Project Management Association and PA Consulting Group (2006, <http://www.gpm-ipma.de/docs/showsite.php?menu=0101050203>)

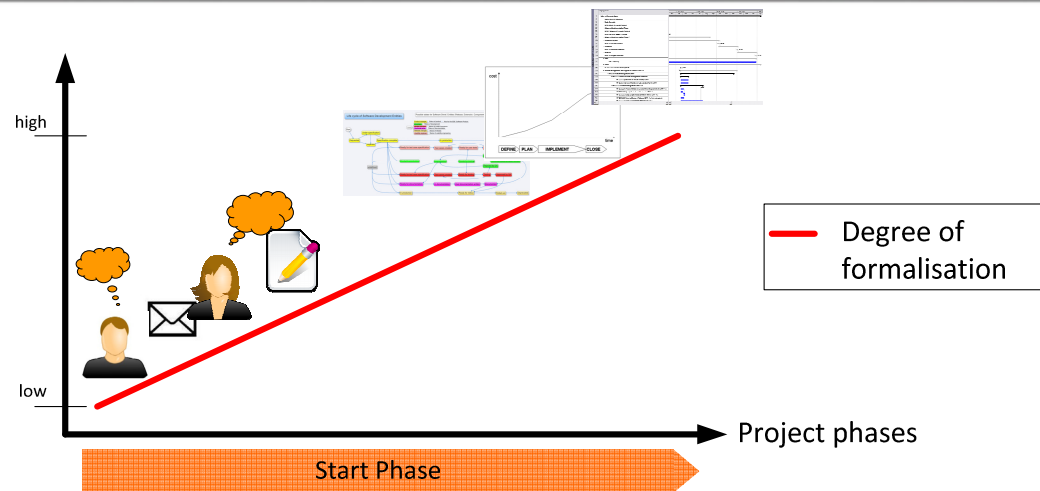
What makes the start phase such critical?



The project start phase is a challenge because:

- the project team is not yet in performing stage,
- the team suffers highest uncertainty about project goals, parameters stakeholders,
- the team members must collaborate intensively to reduce uncertainty and
- wrongly determined project parameters will cause high change costs in later phases.

Collaboration and knowledge formalisation challenge



The start phase requires a Semantic Wiki supporting collaboration and incremental knowledge formalisation:

- **Collection of initial project artifacts** *Wikis are the perfect tool to collect and publish documents, write ups, emails etc*
- **Accel consensus process in team** *The Wiki-paradigm enables users to actively participate in a (community) consensus process.*
- **Knowledge formalisation** *Users tag data sitting in texts, transform data into process artifacts and process data within the Wiki.*

A real world scenario with SMW⁺

A project team is in charge of identifying the risk inventory for a new software integration project.

Steps:

- **Collect informal knowledge:** each team member enters an informal assessment of risks and attaches documents/images to it.
- **Formalize knowledge:** each team member tags the data contained in the informal assessment and, thus, makes it machine processible.
- **Automatically process the formalized knowledge:** the project manager query the Wiki for the individual risk assessments to generate a consolidated view.
- **Re-use formalized knowledge:** provide the team with a consolidated view onto the current risk inventory.
- **Embed formalized knowledge into MS Office software:** query the Wiki from within MS Excel to embed data into project reports.

Capture informal risk assessments

Enter text/media/docs into the Wiki using a WYSIWYG editor.

The screenshot shows a web browser window displaying a MediaWiki page in WYSIWYG editing mode. The browser's address bar shows the URL: `.../index.php?title=Data_integration_risk&action=edit&mode=wysiwyg`. The page title is "Editing Data integration risk".

The left sidebar contains a navigation menu with categories like "Navigation", "Projects", "Meetings", "Software Engineering", "Data", "Feature Requests", and "Toolbox".

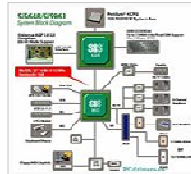
The main editing area includes a rich text toolbar with options for text formatting (bold, italic, underline, strikethrough), alignment, bulleted and numbered lists, indentation, and image insertion. The content of the page is as follows:

INTRODUCTION

This section provides an overview of the information system and includes any additional information that may be appropriate.

System Overview

This section provides a brief overview of the system to be integrated, including a description of the system and its organization. Describe the environment/infrastructure and how this unit or system will integrate into it. Include any risk involved and the mitigating procedures to reduce or eliminate that risk.



Description of risks

I envisage the integration of sub systems X.1 and X.2 risky.

Following assessment:

- Both subsystem X.1 and X.2 are new to us; we are not aware of any integration attempts in the past
- Likelihood of failure: 50%
- Expected damage in case of a failure: 25000 USD
- I expect that we will not be able to deliver WP 2 (worth: 25000 USD)
- Mitigation: We need an early feasibility study

The bottom of the editor shows a status bar with the text "The WYSIWYG editor neither supports auto completion nor the" and a "Fertig" button.

Formalize data contained in the assessment

Tag the data about this risk using the annotation mode.

The screenshot shows a Mozilla Firefox browser window displaying a MediaWiki page titled "Data integration risk". The page content includes an introduction, a system overview, and a section titled "Description of risks".

Introduction: The integration document defines the activities necessary to integrate the software units X and software components Y into the software item. The integration document contains an overview of the system, a brief description of the major risks involved in the integration.

INTRODUCTION

This section provides an overview of the information system and includes any additional information that may be appropriate.

System Overview

This section provides a brief overview of the system to be integrated, including a description of the system and its organization. Describe the environment/infrastructure and how this unit or system will integrate into it. Include any risk involved and the mitigating procedures to reduce or eliminate that risk.

Description of risks

I envisage the integration of sub systems X.1 and X.2 risk

Following assessment:

- Both subsystem X.1 and X.2 are new to us
- Likelihood of failure: 50%
- Expected damage in case of a failure: 25000 USD
- I expect that we will not be able to deliver VMP 2 (worth: 25000 USD)
- Mitigation: We need an early feasibility study

An annotation dialog box is open over the text "Both subsystem X.1 and X.2 are new to us". The dialog has the following fields:

- Property: (empty)
- Page: Mitigation: We need an early feasibility study
- Annotated page/value: Mitigation: We need an early feasibility study
- Show: Mitigation: We need an early feasibility study

The dialog also includes a "Specify this property" section with a red error message: "This input field must not be empty." and a "Annotate a category" button.

The "Annotations & Help" sidebar on the right shows the following information:

- Categories: Risk
- Properties: Create, Has part
- Description of risk: Both subsystem X.1 and X.2 are new to us. We are not aware of any integration attempts in the past.
- Probability: 50
- Description of damage: I expect that we will not be able to deliver VMP 2 (worth: 25000 USD)
- Help: Annotation hints
- Don't forget to save your work!
- Buttons: Save annotations, Save & exit

Query the Wiki for risk assessments

Query the data using the community-generated data model.

The screenshot shows the 'Query Interface' in a Mozilla Firefox browser window. The page title is 'Query Interface - DMWiki - Mozilla Firefox'. The browser address bar shows the URL 'http://dmwiki.ontoprise.com:8888/dmwiki/index.php/Special:QueryInterface'. The page header includes the 'ontoprise' logo and the tagline 'know how to use Know-How'. The user 'Daniel' is logged in, with links for 'My talk', 'My preferences', 'My watchlist', 'My contributions', and 'Log out'. A search bar is also present.

The main content area is titled 'Query Interface' and features a 'Query Tree Navigation' section on the left. This section is circled in orange and contains a tree structure with 'Main Query' expanded to show 'Categories: Risk', 'Description of risk' (with 'String = *'), and 'Probability' (with 'Number = *').

To the right of the navigation tree is a configuration panel, also circled in orange. It includes buttons for 'Add Category', 'Add Instance', and 'Add Property'. The 'Property name' field is set to 'Mitig'. The 'Show in results' dropdown is set to 'Mitigation'. The 'Value must be set' checkbox is unchecked. There is a 'Page' dropdown and an 'Insert subquery' checkbox. 'Add' and 'Cancel' buttons are at the bottom of this panel.

Below the configuration panel is a 'Table Column Preview' section. At the bottom of the interface is a 'Query Layout Manager' section with buttons for 'Preview Results', 'Copy to clipboard', 'Show full query', and 'Reset Query'.

A yellow 'Help' box on the right side of the page contains the following text: 'What is the query interface? How do I ask for specific properties of an object in the wiki? How can I find close matches? How can I identify errors in the knowledge base? What can I do with the query interface? (more) Ask your own question'.

Query the Wiki for risk assessments

Inspect the query results.

The screenshot shows the 'Query Interface' page in a Mozilla Firefox browser. The page title is 'Query Interface - DMWiki - Mozilla Firefox'. The URL is 'http://dmwiki.ontoprise.com:8888/dmwiki/index.php/Special:QueryInterface'. The user is logged in as 'Daniel'. The page content includes a navigation sidebar on the left with sections like 'Navigation', 'Projects', 'Meetings', and 'Software Engineering'. The main content area is titled 'Query Interface' and displays a table of risk assessments. The table has columns for 'Description of risk', 'Probability', 'Mitigation', and 'Damage'. The table contains three rows of data. Below the table, there is a 'Table Column Preview' section and a 'Query Layout Manager' section with buttons for 'Preview Results', 'Copy to clipboard', 'Show full query', and 'Reset Query'.

Description of risk	Probability	Mitigation	Damage
Data integration risk	50	Mitigation: We need an early feasibility study	25,000
State regulations		Can someone check this??	5,000
User acceptance of user interface	25	The end user must be involved early!	5,000

Provide the team with the current risk inventory

Embed the query into any article and present data tabular or graphically

The screenshot shows a web browser window displaying a page titled "Risk inventory project Z". The page content includes a navigation sidebar on the left, a main heading "Risk inventory project Z", a paragraph stating "This is the current risk inventory. Please navigate to the individual articles to adjust the data according to your knowledge.", a note "Please note: this list is automatically updated!!", and a table with three rows of risk data. Below the table is a 3D pie chart with three segments labeled "risk", "User", and "State".

Description of risk	Probability	Mitigation	Damage
Data integration risk	50	Mitigation: We need an early feasibility study	25,000
State regulations		Can someone check this??	5,000
User acceptance of user interface	25	The end user must be involved early!	5,000

The pie chart is a 3D representation with three segments. The largest segment is labeled "risk", the medium segment is labeled "User", and the smallest segment is labeled "State".

Embed the risk inventory in work sheets

Embed the risk inventory into excel work sheets with the MS Excel bridge

Overall project status: **orange**

Current phase: **Start Phase**

Cost situation: **in plan**

Work accomplished: Risk inventory defined

Risk Inventory as of May 8th 2009:

	Probability	Damage	Mitigation
Data integration risk	50%	25.000,00 USD	Mitigation: We need an early feasibility study (unclear/WIP)
State regulations		5.000,00 USD	
User acceptance of user interface	25%	5.000,00 USD	The end user must be involved early!
total		35.000,00 USD	

The 'Ask SMW+' dialog box shows a query: `[[Category:Chemical elements]][[Atomic number::+]]? Atomic number`. The results table is as follows:

	A	B	C	D
1		Atomic number		
2	Actinium	89		
3	Aluminium	13		
4	Americium	95		
5	Antimony	51		
6	Argon	18		
7	Arsenic	33		
8	Astatine	85		

SMW⁺ reduces the risk of a poor project start



SMW⁺ is an open source **semantic enterprise wiki** that lets you create and share knowledge with your team.

SMW+ combines a wiki's social authoring approach with proven semantic technology. Project teams which need a flexible tool to acquire and share knowledge in critical project phases benefit from using SMW⁺:

- **Transparent processes:** *easy authoring and tagging of articles leverages sharing process knowledge amongst individuals.*
- **Boost consensus:** *SMW+ makes knowledge transparent and helps teams to generate a consensus.*
- **Responsibility awareness:** *knowledge is explicitly assigned to individuals and is reusable for team mates.*
- **Open up knowledge:** *powerful search engine and query builder reveals knowledge for the benefit of all team mates.*

Who is using SMW⁺ ?

We are advertising streamlined applications for the following user groups:

- **Knowledge managers:**

- *Ready-to-use as knowledge management portal*
- *Leverages the expertise of people across your organization*
- *Easy to learn API - allows adapting templates and forms within minutes to the needs of your enterprise*
- *Web service connector tabs data residing in legacy systems*

- **Project managers:**

- *Ready-to-use as project management portal for a team*
- *Blend project data and informal content to capture hard facts about projects and knowledge contained in unstructured content*
- *Flexible metadata - gives your team the freedom and responsibility to organize project knowledge as they are needing it*

- **Terminologists:**

- *instantly supports terminology management with the standardized SKOS meta data model*
- *saves ramp up time by providing interfaces to take in existing vocabularies and taxonomies*
- *gives individuals web-based access to the terminology repository to get precise advise*

SMW⁺: one of the most successful SemanticWeb Applications

„We selected a European team – led by ontoprise GmbH – because that's where the best expertise is in web-scale social semantics“

Mark Greaves, Vulcan Inc.



- > 9.000 Downloads of SMW⁺ since October 2007

More information about SMW⁺

- Product home page: <http://wiki.ontoprise.com>
- User forum: <http://smwforum.ontoprise.com>
- Get a copy: <http://shop.ontoprise.com>