



The Interactive Knowledge project and Open Cms

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IKS is co-funded by the European Union and develops new technology for intelligent content management



Overview

- | **The Interactive Knowledge Stack – an European integrated research project**
- | **Quick overview: Semantic Web Technologies**
- | **Semantic enhancements for Open Cms**



WHO and WHY? → Six Industrials and seven Research Groups make a start ...














- | IKS has 6 SME CMS technology providers
- | 4 of them are fully based on open source CMS

The CMS Vendors want to introduce knowledge based technologies into their existing software frameworks

- | The research and development will be focussing on extending current CMS technology with:
 - | Intelligent User Interfaces
 - | Knowledge based Systems Modelling
 - | Software Engineering Methodology
 - | Future Internet – Ambient Intelligence applications
 - | Semantic Web Application Building



The IKS Consortium

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<p>Consiglio Nationale delle Ricerche (CNR)</p> 	<p>Software Quality Lab Universität Paderborn</p>   <p>UNIVERSITÄT PADERBORN Die Universität der Informationsgesellschaft</p>
<p>Software Research and Development Consultancy Ltd (SRDC)</p> 	<p>Hochschule Furtwangen</p>  <p>HOCHSCHULE FURTWANGEN UNIVERSITY HFU</p>
<p>Nuxeo Sa.</p>  <p>Open Source ECM</p>	<p>Alkacon Software GmbH</p> 
<p>TXT Polymedia</p> 	<p>Pisano Holding GmbH</p>  <p>Better Travel Technology</p>
<p>Nemein Oy</p> 	<p>Day Software AG</p> 

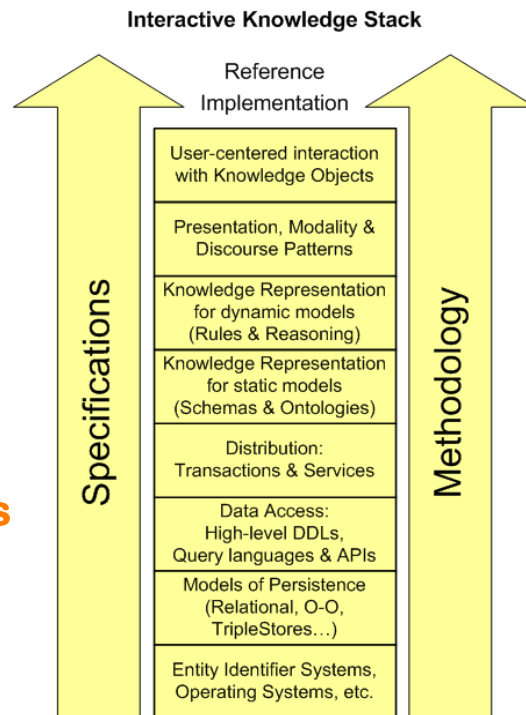




WHAT? → Add Knowledge Technologies to existing CMS

Interactive Knowledge Stack

A Reference Architecture for Semantically Enabled Content Management Systems



Comparison of Technology Stacks LAMP, IKS and JEE

The IKS Stack is a working hypothesis at present ...

LAMP CMS Stack	Interactive Knowledge Stack	JEE-based CMS Stack
Php, HTML	User-centered interaction with Knowledge Objects	AJAX, HTML, ...
XML, CSS, bespoke Code	Presentation, Modality & Discourse Patterns	CSS, XML, forms, Java bespoke code
Php bespoke Code	Knowledge Representation for dynamic models (Rules & Reasoning)	Java bespoke Code
Php bespoke Code	Knowledge Representation for static models (Schemas & Ontologies)	OO Model + Java Code
Apache	Distribution: Transactions & Services	JBOSS
SQL	Data Access: High-level DDLs, Query languages & APIs	SQL, OQL, Java Code
mySQL	Models of Persistence (Relational, O-O, TripleStores...)	RDBMS, OODBMS, JCR
Entity Identifier Systems, Operating Systems, etc.	Entity Identifier Systems, Operating Systems, etc.	Entity Identifier Systems, Operating Systems, etc.



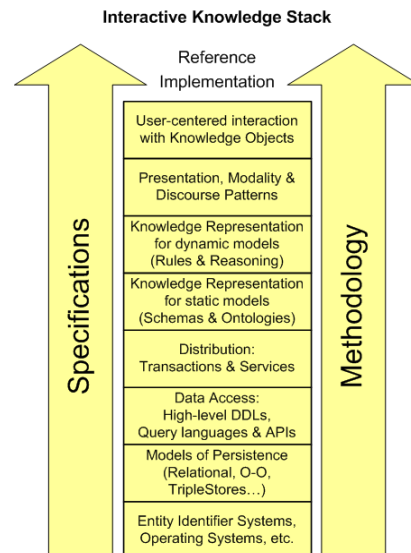
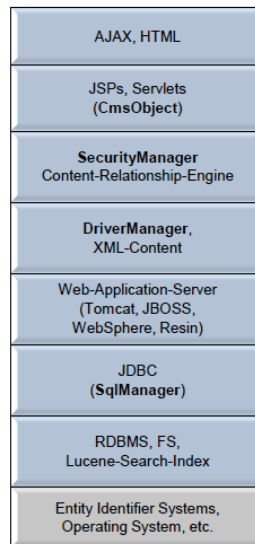


The Interactive Knowledge Stack must live alongside a real architectural stack!

Here is the Open Cms Stack ...

IKS components must be usable from within ...

IKS must offer value to every CMS technology provider who wants to move into „semantics“



HOW? → Benchmark the state of the art, Build IKS, validate it with 50 CMS SMEs

Give Industrial Partners semantic CMS Challenges

- | See where the current technology “breaks” or fails
- | Develop requirements for more effective CMS functionalities

Develop the Interactive Knowledge Stack

- | Take the challenge to the open source developer communities!
- | (1) Requirements for advanced, semantic CMS
- | (2) Specification of the Interactive Knowledge Stack
- | (3) alpha-, beta-, and final implementation of the Stack

Validate the Stack with 50 external CMS providers

- | Show the early adopters how to use IKS modules
- | They bring their business problem to the party
- | They try IKS and tell us whether it worked for them

DEMO, DEMO, DEMO, As soon as possible

- | An early demo will be about semantic search!



Plan: 48 Months for Building a Technology Basis for Semantically enabled Content Management

Interactive Knowledge Overview	Y101	Y102	Y103	Y104	Y201	Y202	Y203	Y204	Y301	Y302	Y303	Y304	Y401	Y402	Y403	Y404	Distrib
1.0 VP: Benchmarking industrial software capabilities																	42.0
1.1 Task: Design the benchmarking experiment	4.0	3.0															7.0
1.2 Task: Industrial benchmark exercise				8.0													23.0
1.3 Task: Validating the results and capturing requirements				5.0	4.0												12.0
2.0 VP: Understanding IS Requirements Capture through Use Cases																	68.0
2.1 Task: Use Case Analysis and Specifications	5.0	4.0															15.0
2.2 Task: Historical industrial case: Analysis and Specifications				5.0	5.0												20.0
2.3 Task: Vertical industrial case: Analysis and Specifications				5.0	5.0												12.0
2.4 Task: Intelligent project planning tool: Analysis and Specifications				4.0	4.0												10.0
3.0 VP: Research into Requirements of the Interactive Knowledge Stack																	108.0
3.1 Task: IS Requirements for Knowledge-based Interaction and Presentation	4.0	6.0	6.0	6.0	6.0												28.0
3.2 Task: IS Requirements for Knowledge Representation and Reasoning	5.0	5.0	5.0	6.0	6.0												28.0
3.3 Task: IS Requirements for Semantic Lifting Components for traditional content resources	5.0	5.0	5.0	3.0	3.0												23.0
3.4 Task: IS Requirements for Semantic data access and persistence	4.0	4.0	4.0	4.0	4.0												27.0
4.0 VP: Design and Implementation of the Use Cases																	108.0
4.1 Task: Use Case Design and Implementation				5.0	5.0												18.0
4.2 Task: Historical industrial case: Design and Implementation				5.0	5.0												35.0
4.3 Task: Vertical industrial case: Design and Implementation				5.0	5.0												19.0
4.4 Task: Intelligent project planning tool: Design and Implementation				2.0	2.0	2.0	3.0	3.0	3.0	4.0	4.0	4.0					15.0
5.0 VP: Design and Implementation of the Interactive Knowledge Stack																	122.0
5.1 Task: IS Design and Implementation of generation and interaction components				4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0					47.0
5.2 Task: IS Design and Implementation of IR and reasoning components				2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0					22.0
5.3 Task: IS Design and Implementation of Semantic Lifting Components for traditional content resources				2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0					27.0
5.4 Task: IS Design and Implementation of semantic data access and persistence components				2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0					31.0
6.0 VP: Validating the Interactive Knowledge Stack																	80.0
6.1 Task: Validation of IS through internal use case application developers					6.0	6.0											12.0
6.2 Task: Validation of IS through industrial use case application developers					14.0	14.0											42.0
6.3 Task: Empirical validation of IS through "early adopters"									12.0	12.0	6.0						36.0
6.4 Task: Empirical studies with end users									1.0	2.0	2.0						7.0
6.5 Task: Performance benchmarks for IKS										2.0	2.0						2.0
7.0 VP: Methodology																	16.0
7.1 Task: Semantic Technologies in CMS					1.0	2.0	2.0	2.0									10.0
7.2 Task: Handbook for developing semantic CMS applications										2.0	2.0	2.0	2.0	2.0	2.0	2.0	17.0
7.3 Task: Curriculum and training material for university teaching										2.0	2.0	2.0	2.0	2.0	2.0	2.0	19.0
7.4 Task: Curriculum and training material for industrial training										2.0	2.0	2.0	2.0	2.0	2.0	2.0	19.0
8.0 VP: Dissemination, Activation, "Semantic, Olive Europe"																	88.0
8.1 Task: IS project dissemination	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0	20.0
8.2 Task: Working with open source communities	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	1.0	1.0	1.0	7.0
8.3 Task: Working with W3C and standards bodies	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	1.0	1.0	1.0	7.0
8.4 Task: Ensuring industrial uptake through training													1.0	1.0	2.0	2.0	8.0
8.5 Task: Ensuring academic diffusion in IR-related studies													1.0	1.0	1.0	1.0	6.0
8.6 Task: Open Source semantic CMS-gate software				0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	6.0
8.7 Task: Recruiting, selection and training of "early adopters"	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.5	1.0	1.0	0.5	0.5	0.5	0.5	6.0
8.8 Task: Semantic CMS technology Roadshow										1.0	1.0	2.0	4.0	4.0	4.0	4.0	20.0
8.9 Task: Impact monitoring													1.0	1.0	1.0	2.0	5.0
9.0 VP: Industrial Application Building and Demo																	38.0
9.1 Task: Showcasing AMI																	12.0
9.2 Task: Showcasing horizontal semantic CMS application																	7.0
9.3 Task: Showcasing vertical semantic CMS application																	4.0
9.4 Task: Showcasing intelligent project planning application																	4.0
9.5 Task: Showcasing domain specific applications																	11.0
10.0 VP: Project Management																	44.0
10.1 Task: Coordination and Financial Administration	1.5	0.5	0.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	2.5	23.0
10.2 Task: Technical Coordination & Contingency Planning	1.0	1.0	1.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	18.5
10.3 Task: Quality Management & Self-Assessment	1.0	1.0	1.0	2.0	1.0	1.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	1.0	2.0	2.5	22.5
0																	
Σ	36.0	42.0	60.0	60.0	67.0	66.0	43.0	61.0	62.0	41.0	55.0	48.0	41.0	41.0	35.0	42.0	770

18.06.2009

www.iks-project.eu



Major Expected Results of IKS

- | 06/2009: First Community Workshop (29/05/2009)
- | 12/2009: Scenarios; IKS Stack Spec.; 1st Demos
- | 06/2010: Alpha-prototype of the IKS Stack
- | 12/2010: Validation Results of IKS Stack Alpha
- | 06/2011: Beta-Version of the IKS Stack
- | 12/2011: Final Version of the IKS Stack
- | 06/2012: Early Adopter Success Stories
- | 12/2012: Impact Assessment of IKS on CMS Market

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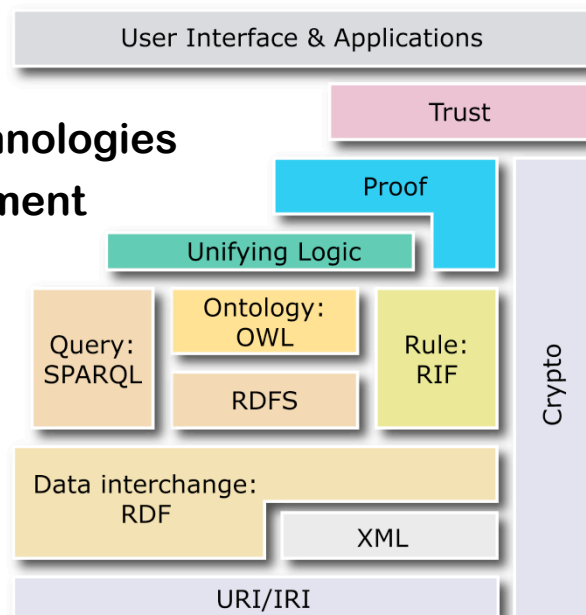
First expected results of IKS

- | **Semantic search prototype**
 - | validate semantic “capability” of WCMS
 - | show new search paradigms (LATCH, faceted search)
- | **Semantic WYSIWYG editor**
 - | help authors with semantic annotations
 - | use context to improve recommendations
 - | link to Open data
- | **Usability**
 - | user interfaces and interactions with graphs
 - | large data sets



What are Semantic Web technologies ?

- | **A Stack of web technologies**
- | **Bottom up development**
- | **Mature**
 - | URI
 - | RDF/S
 - | (Sparql)
- | **In development**
 - | OWL, Rules ...



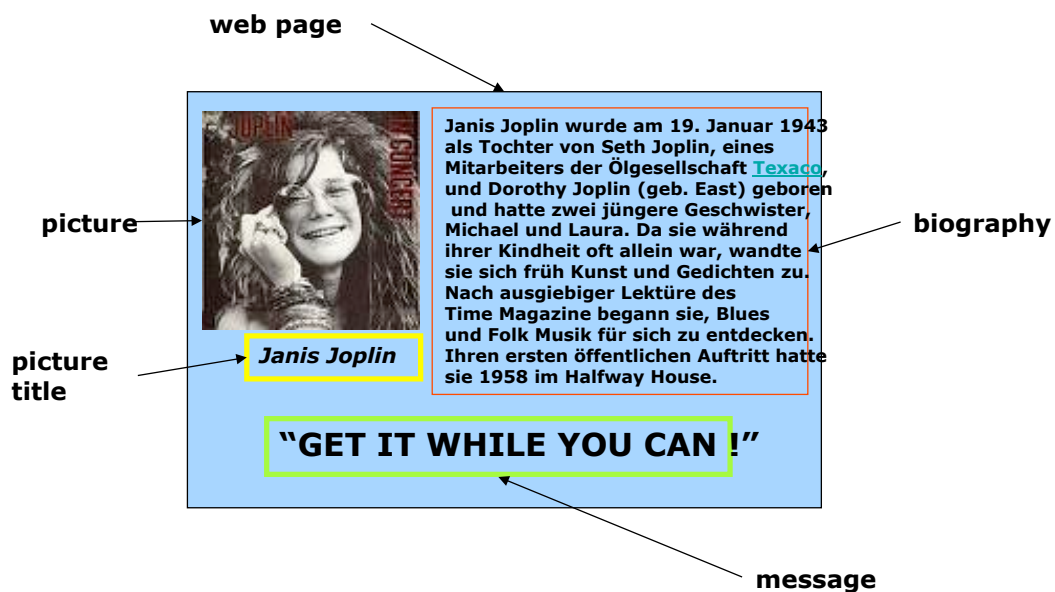


Why should you pay attention to semantic web technologies ?

- | Is already adopted / partly supported by major industry players
 - | Adobe, Oracle, IBM, HP, Software AG, GE, Northrop Gruman, Altova, Microsoft, Dow Jones,
 - | Yahoo, Google (recently)
- | Early adopters still welcome ;-) Technological and methodological hurdles still there, who masters them first, will be leading edge.
- | Usecases for semantic web:
<http://www.w3.org/2001/sw/UseCases/>



Example: Description of web content

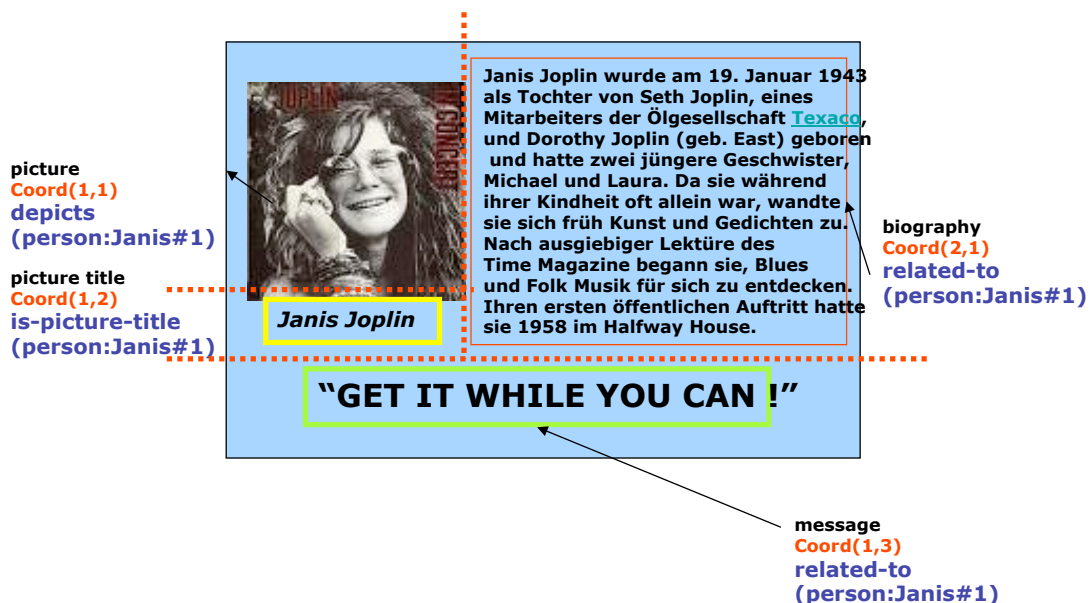




Description of layout and presentation



Relations and Annotations





Current technical approaches ...

- | microformats
 - | community, small set of patterns/formats
- | RDFa
 - | W3C draft recommendation, provides the link to RDF
- | microdata
 - | newly proposed for HTML5 draft

Tools to read microformats and RDF

- | Operator for Firefox, Oomph for Internet Explorer



What are Microformats?

- | small patterns of HTML
- | to represent commonly published things
- | like people, events, blog posts, reviews and tags in web pages.

What can you do with microformats?

„With Microformats, you can send & publish things like events, business cards, and product reviews as meaningful XHTML that a person can read in a browser, but a program can import, index and remix as native data.“

(Michael McCracken)

<http://microformats.org/wiki/what-can-you-do-with-microformats>



Example: A hCalendar event

```
<div id="hcalendar-Open-Cms-Days-2009" class="vevent">  
<a href="http://www.opencms-days.org/en/index.html"  
  class="url">  
<abbr title="2009-06-15" class="dtstart">June 15th</abbr> :  
<abbr title="2009-06-16" class="dtend">17th, 2009</abbr>  
<span class="summary">Open Cms Days 2009</span> at  
<span class="location">Cologne, Germany</span></a>  
<div class="description">OpenCms Days 2009 will focus on  
  how OpenCms can be used to deliver top notch web  
  projects and help to successfully overcome shrinking IT  
  and marketing budgets. </div>
```

This hCalendar event brought to you by the hCalendar Creator
(<http://microformats.org/code/hcalendar/creator>)



Join the IKS Community at www.iks-project.eu



**IKS Kick-off Meeting in January
2009**



**First Community Workshop on IKS
Requirements in May 2009**

**IKS invites „governance by stakeholders“ → more than 20 people
from CMS communities joined us for the first workshop in 2009!**