

# IKS Annual Report 2009



<http://www.iks-project.eu>

**IKS - Interactive Knowledge Stack is an Integrating Project part-funded by the European Commission. It started in January 2009 and will provide an open source technology platform for semantically enhanced content management systems.**

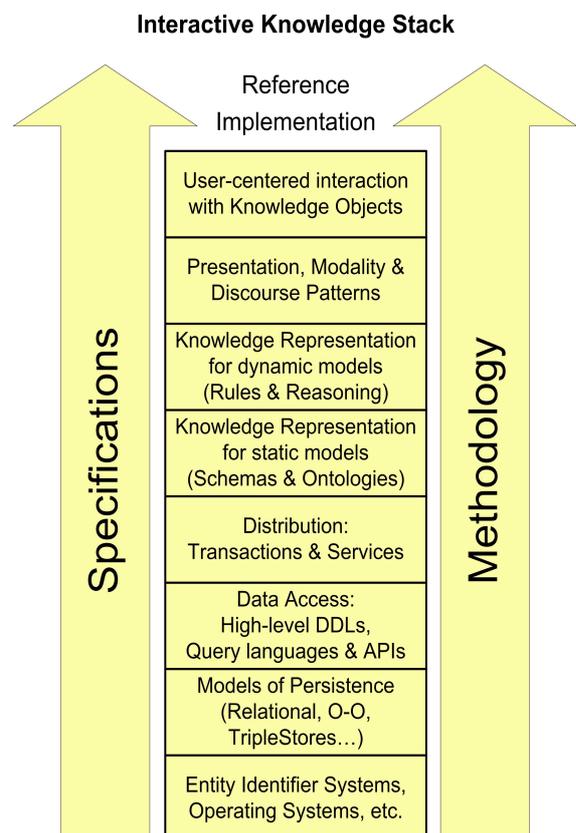
## Summary of Activities

Year one was dedicated to building up a community of external interested parties (CMS technology providers) and to understanding the requirements of CMS in general and of semantic extensions for CMS in particular.

We had over 20 external individuals from different CMS vendors at our first workshop in Salzburg and collected more than 100 high level requirements for semantic CMS. Most delegates viewed “Semantic Search” as a theme with high potential impact and we decided to devote the second workshop in Rome – again attracting over 20 externals – to semantic search. We would like to thank Stephane Crosier from Jahia for organising a competition amongst the semantic search demos, which was judged by the attendees of the workshop and which was won by Zemanta.

On the research side, we published a document on Semantic Benchmarking for the CMS Industry and our industrial partners are currently working on demos which show to what extent they are currently capable of answering the semantic benchmark questions we have posed. On the basis of this we will do an evaluation of the semantic capabilities of current CMS, and we will use our findings to guide the development of semantic enhancements for these systems. A more comprehensive list of requirements is also being compiled in the form of a wiki which will be made publicly available.

In year two, software design and development will start on the reference implementation of IKS - the Interactive Knowledge Stack. Two more open workshops are planned and will be co-located with major events. At least one will be co-located with an industrial conference or fair because IKS is committed to industrial acceptance and impact.



## Important work area

As the first year was devoted to community building and understanding of requirements in the CMS sector, progress was made in five areas:

- Two successful community workshops
- Seven benchmark exercises for CMS providers
- Open Source RTD in Semantic Search accessible on Google Code
- Over 200 high-level application independent requirements for semantic CMS
- A use case description for semantic CMS in ERP and Project Controlling
- A use case description for equipping the “Ambient Bathroom” with semantic CMS

**Community Workshops** – The first workshop in Salzburg yielded over a 100 high level requirements where semantic technologies were considered to be useful. The second workshop in Rome addressed the top requirement “semantic search”. Peter Mika from Yahoo! gave the keynote speech and the workshop yielded 11 demos from providers of semantic search modules. A competition (best demo award) was organised by one of the community members and the semantic desktop tools of Zemanta were picked (by the community) as the winners. Andreas Gruber and Wernher Behrendt from IKS proposed a framework for benchmarking semantic search in CMS which is now being discussed in the CMS community. The presentation of the framework is available at: <http://wiki.iks-project.eu/images/3/33/Iks-manifesto-on-semantic-search-in-cms.pdf>

**Benchmark exercises for CMS providers** – We looked at the state of the art in benchmarking of CMS. As current CMS offer a wide range of functionalities accordingly, benchmarks are varied, and cover qualitative judgements over different categories with little standardisation across the various benchmarks. Another observation we made was that the benchmarks tended to reflect the technologists’ perspective of features provided by the various CMS, whereas the users’ perspective would rather be: “which business problems does the system support and how well does it do this?” For example, the listing of file formats supported by the CMS may be indicative for a business value, but the business question would start at a higher level. We are proposing seven high level benchmarks:

1. Finding relevant information fast, in different (business) usage contexts
2. Intelligent authoring and aggregation of content
3. Combining content services with work processes
4. Customising content services for customer groups or distribution channels
5. Supporting complex content aggregation for product configuration
6. Making events visible in ambient environments (e.g. for CRM)
7. Building up business intelligence about the customer base

The CMS providers in IKS are currently implementing these functionalities using their existing frameworks and the purpose of the exercise is to find out where semantic technologies are likely to improve the capabilities of the systems thus built. The benchmark design is a public document available at <http://www.iks-project.eu/iks-story/documentation>.

**Open Source RTD in Semantic Search** – This is an example for community-led RTD as foreseen in IKS: we had specified that there shall be RTD concerning the persistence layer of CMS because there is a well-known impedance mismatch between CMS repositories and RDF triple stores. After discussions between CMS developers and Semantic Web researchers we decided to develop a method which allows the CMS providers to carry on using JCR (Java content repository) and at the same time, organise the JCR trees in such a way that they encode ontological design patterns. In other words, we are exploring the use of a standard structure in order maintain ontological knowledge in a traditional content store. The prototype is being developed as open source on Google code (<http://code.google.com/p/iks-project/>).

**Application independent requirements for semantic CMS** – We are approaching requirements from different angles and one of them is to look identify horizontal i.e. application independent requirements. Work in this area is expected to have results in 2010, but we are already well under way having gathered over 200 high level requirements for CMS and these are currently grouped under 11 headings:

1. Interoperability (e.g. CMIS support – an OASIS standardisation issue)
2. Enrichment of content (using various approaches, e.g. micro formats)
3. Enhanced search functionality
4. Intuitive user interface (to allow interaction with content/knowledge objects)
5. Performance issues across the CMS
6. Personalisation facilities
7. Flexible Data Models
8. Flexible Modelling of workflows
9. Support for content creation
10. Multi-Channel access to content
11. Offline work support

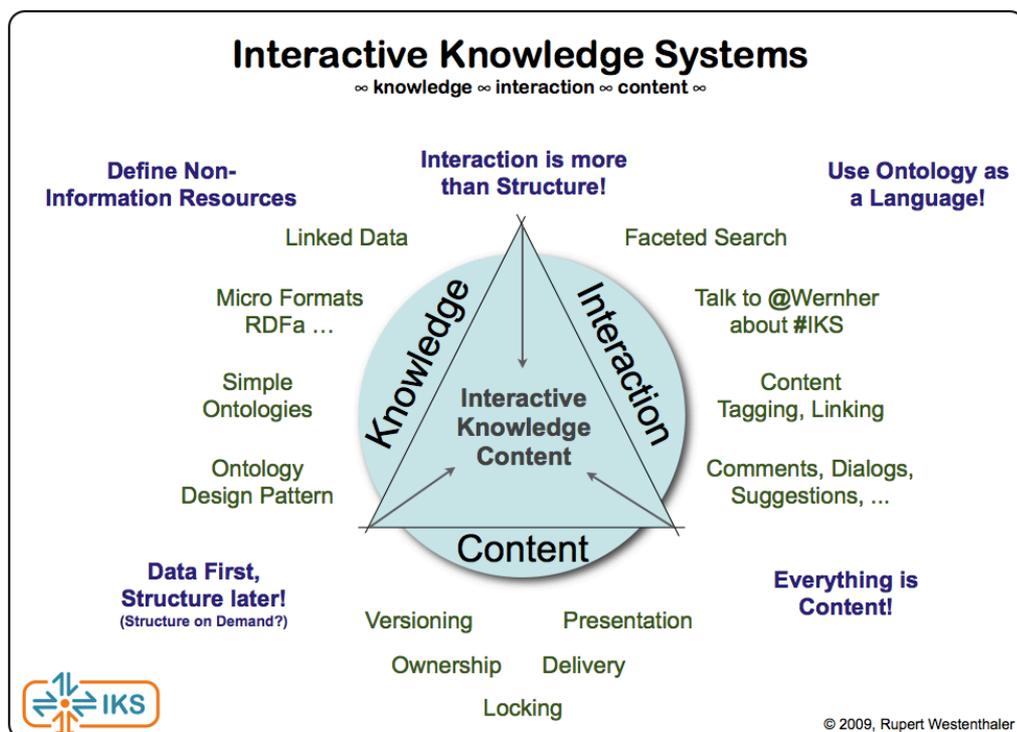
The requirements are being discussed and prioritised in a dialogue with the industrial partners including those external parties which have already shown an interest in taking part in the evaluation of IKS. By joining the IKS community, interested parties are invited to contribute to the public results of this task. There is a wiki for short “user stories” which describe typical requirements at <http://wiki.iks-project.eu/index.php/User-stories>.

**Use case: semantic CMS in ERP and Project Controlling** – we are investigating a specific use case where a user organisation with strong content management needs wishes to combine ERP and controlling activities with semantic CMS. For example, the ISO 9001 compliant reporting on quality management and the financial controlling should be highly automated and consistent with enterprise planning data. Current project management tools are very poorly integrated with CMS and cross-application semantic modelling is practically non-existing. Our approach to the modelling of this use case is to use the “Capability Maturity Model Integration” (CMMI) as the conceptual foundation and to specify activities and the attendant data models at application level. A prototype is being developed using logic programming for rapid prototyping of the underlying knowledge models. A report will be available publicly in early 2010.

**Use case: the Bathroom of the Future using Ambient Intelligence technologies** – inspired by the business case of a major producer of high-end sanitary equipment we are investigating ambient content technologies in buildings (e.g. the music moves with you, rather than staying in the living room where the HiFi resides). The research groups have gathered a number of user scenarios focusing on the bathroom where one can either be informed or entertained. In an initial survey 46 subjects from four European regions were asked to rank and rate 12 preliminary situations that were identified during a workshop with the industry partner. This use case is also contributing to the requirements collection. This use case will be developed further during the project and a fully equipped show room should be available by the end of 2010. That showroom will then be developed further to demonstrate semantic features of IKS.

## Future Work

In the first quarter of 2010 we will shift our emphasis from requirements to specifications and prototype implementations. There will be prototypes for specific use cases – the one about project controlling will be demonstrated first. Then, there will be development of specific value adding components, e.g. the semantic indexing component for JCR. The third important line of work will be specifications and implementations of IKS as a stack of services that enable semantics-based interoperation between existing systems. The reason for this approach is that the industrial partners already have highly developed CMS frameworks and IKS needs to prove that it can add (semantic) value to existing systems as well as being a specification from which novel semantic CMS can be developed. In the second half of 2010 the “alpha” version of the Interactive Knowledge Stack will become available for evaluation.



We will continue to recruit external CMS firms as early adopters. At present we have approximately one third of the targeted 50 external CMS providers on board as interested parties having taken part in the two workshops so far. There will be two more workshops in 2010 with the focus shifting from requirements and search, to design specifications and to achieving basic semantic interoperation. We will shift more of our work directly into the public space and we intend to address the industrial sector more than the academic communities, in order to keep delivering on the major promise of IKS: Semantic technologies making an impact on CMS providers in Europe.

Please keep visiting us at: [www.iks-project.eu](http://www.iks-project.eu) or better, join the community!