

IKS Public Report

2009

2010

2011

2012

IKS - Interactive Knowledge Stack is a research project part-funded by the European Commission to provide an open source technology platform for semantically enhanced content management systems.

"The goal of this proof of concept integration demo was to be able to demonstrate to our customers the possibilities to link semantic data with free text content and facilitate document management....The use of Stanbol components helps to organize, visualize, and browse the collection of free text documents structuring it according to the semantic data model. However, we found out that Stanbol components are not yet fully robust and completely suitable for industrial production environment. Because of this, for now we are going to evaluate the suitability of using Stanbol for specific scenarios on a case-by-case basis. With the development progress of Stanbol components, we expect these issues to be fixed within a reasonable time interval."

An IKS Early Adopter

Summary 2012

2012 was the final project year for IKS. This report can only touch on the great work performed in 2012 and throughout the project, so please visit the various IKS sites listed below for the complete picture.

IKS Dissemination Activities

At the core of the IKS web appearance is the main landing page, the development wiki and the IKS blog. There are a number of sites that support the software projects and related application and demo sites. In the development ecosystem multiple sites support the two major IKS software projects: Apache Stanbol and VIE. Summary of the IKS dissemination work:

1. IKS Websites include (30k+ unique visitors):
 1. <http://www.iks-project.eu/>
 2. <http://blog.iks-project.eu/>
 3. http://wiki.iks-project.eu/index.php/Main_Page
 4. <http://stanbol.apache.org/>
 5. <http://viejs.org/>
 6. <http://createjs.org/>
 7. <http://hallojs.org/>
 8. <https://github.com/iks>
2. IKS Mailing Lists: More than 5 000 emails on the IKS development mailing lists of Apache Stanbol and VIE in support of the work.
3. IKS Resources: 154 resources available in the publications repository
4. IKS Twitter account: 1 068 Tweets, 811 Following, 554 Followers
5. IKS Videos: 97 videos on vimeo/iks, views 7 323
6. IKS Academy: 12 Chapters, 15 presentations, 7 exercises with more than 600 slides
7. IKS Publications and Presentations: total of 76 (2012 – 32, 2011 – 17, 2010 – 14 and 2009 – 13)
8. More than 55 Open Source developers helping us building IKS technology
9. IKS in the Media: A total of 169 (30 articles for 2009, 67 for 2010, 43 for 2011, and 29 for 2012).
10. IKS Developing Semantic CMS Applications: The IKS Handbook 2013
11. IKS introduction video <http://vimeo.com/45830874>

IKS Early Adopter Programme

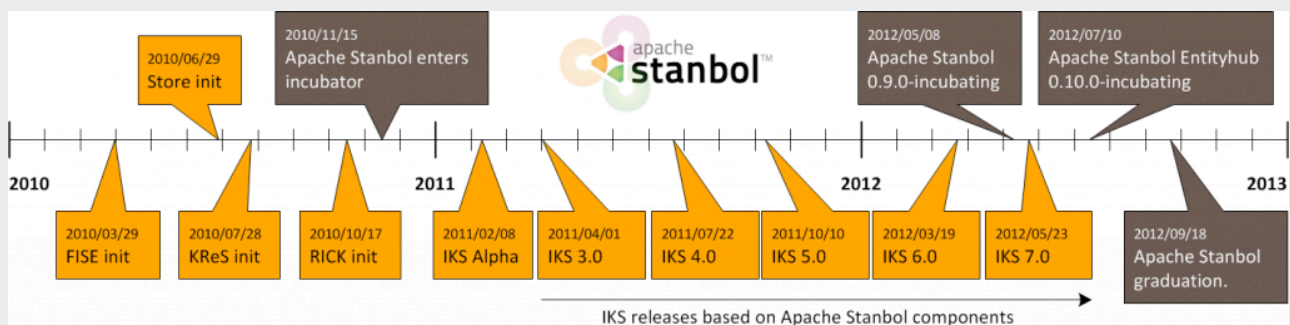
In the final year of IKS there were a total of 16 new early adopter contracts signed. The total number of early adopter contracts signed as part of the IKS Early Adopters Programme amounts to 36 plus the 5 from the UI/X Challenge - this represents a total of 41 IKS early adopters. Of the 16 new early adopter contracts signed in 2012 a great majority of them completed their validation work in the second half of the year. Despite the maturing nature of the IKS technology the challenge for the early adopters of validating a “moving target” continued

Summary 2012

throughout 2012. The great work of the IKS development teams helped to overcome this to a certain extent with individual support and consultation.

Apache Stanbol

Apache Stanbol was founded in November 2010 by the community initiated by the EU research project IKS. It was the result of an ongoing discussion about how to ensure that the results, especially the developed software, of IKS would be available to vendors of content management systems (CMS) after the project's official funding period ends. With the recent [resolution of the board of directors of the Apache Software Foundation](#) (ASF), the incubating project Apache Stanbol becomes a top-level project at the ASF. This is a big and important step to ensure that the work that has started in the EU IKS project will survive after the projects ends in December 2012. So let's have a look at the history of Apache Stanbol so far.



Vienna IKS Editables / Create.js

VIE/Create.js has seen great adoption by the major open source cms platforms, like Drupal 8, TYPO3 Neos, Midgard, Symfony CMF and OpenCms for their inline editing needs, Create.js is experiencing very strong adoption. Many of these CMSs will be shipping a new major version during 2013. These releases will bring Create.js into millions of sites out there, giving users a friendlier and faster way to edit the web. By being built on the semantic interaction framework of VIE, this also means a significant expansion of the RDFa Linked Data base.

As coordinator, I want to thank all researchers and developers involved, for their contributions and for following a route that has required everybody to leave their "comfort zones". We are confident that IKS has led to a better understanding of what semantic technologies can do for content management and that we are giving the developer communities a platform that makes them fitter, for the challenges of the Future Internet.

Wernher Behrendt
IKS Principal Investigator/Project Manager



Important Areas of Work

IKS Community Workshops & Hackathons

- The IKS Community Workshops provide an open forum for principal developers from respective communities to join the dialogue and development process in IKS.

The workshops are held every six months to bring together CMS industry representatives and experts to learn about and test the latest IKS results.

The goals of the workshops have moved from initially, raising awareness within communities and gathering requirements, to now supporting collaboration between existing networks of open source semantic web communities and IKS.

There are three major development communities that are addressed:

- The IKS RTD Team including the core industrial partners who act as scouts and high-risk early adopters
- The external "early adopter" CMS firms and their developers who are being given the opportunity to test and explore IKS through short contracts.
- The wider open source communities that are doing work to which IKS is complementary.

The seventh IKS community workshop “Semantic Enterprise Technologies in Action” took place 12-13 June 2012 in Salzburg, Austria.

The 7th IKS workshop took place in Salzburg on 12-13 June 2012. More than 100 experts and professionals gathered in Salzburg to discuss and demo semantically enabled technologies for the enterprise. The two-day event took the format of demonstrations on the first day and exploration of the IKS technologies behind the demos on the second day. The demonstrations were predominantly by early adopters of IKS technology; both the back-end enhancement tools of Apache Stanbol and the UI interaction framework VIE & VIE Widgets were on display.

All details available from event wiki page: <http://wiki.iks-project.eu/index.php/Workshops/Salzburg2012>

Important Areas of Work

IKS Community Workshops & Hackathons



Presentations

- Keynote Talk by **Alan Pelz-Sharpe** Research Director at 451 Research “[The Enterprise Search Market – What should be on your Radar?](#)”
- Overview of IKS Technology Stack release version 7.0 presented by **Fabian Christ**
- Zaizi, [Semantic Search Tools on Alfresco](#), presented by **Rafa Haro**
- InsideOut10, [Content discovery and content marketing for the enterprise market with WordPress](#), presented by **Andrea Volpini**
- Alkacon Software GmbH, [OpenCms Acasia-Editor](#), presented by **Tobias Herrmann**
- Netzmuehle, [Product Recommendation – eCommerce Semantic Solution](#), presented by **Martin Mayerhofer**
- Etcware, [Automatic metadata enrichment](#) – SKOSware + Liferay
- NUXEO, [Topic Classification](#) for News Agencies, presented by **Olivier Grisel**
- [VIE & VIE Widgets – Explained](#), presented by **Henri Bergius**
- [Overview of the Apache Stanbol components](#), presented by **Rupert Westenthaler**

Important Areas of Work

Apache Stanbol

■ We are glad to announce that Apache Stanbol is now a full Apache Software Foundation project.

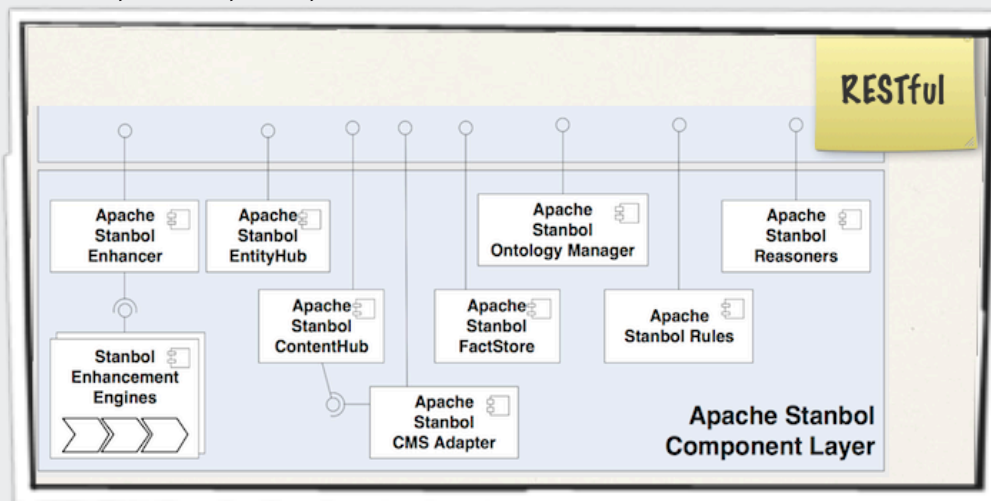
Here is a summary of the project.

The major components of the IKS Semantic CMS Technology Stack are implemented through IKS foundational components, such as Apache Stanbol, its software components and services. Apache Stanbol is designed to extend existing CMSs with semantic services. It can be also used to tag extraction/suggestion, text completion in search fields, smart content workflows, email routing based on extracted entities, topics, etc. Apache Stanbol is built as a modular set of components [see figure below]. Each component is accessible via its own RESTful web interface. All components are implemented as OSGi bundles, components and services. By default Apache Stanbol uses the Apache Felix OSGi environment. For deployment, it uses the Apache Sling launcher, and can be run as a standalone application or as a web application that is deployable in servlet containers such as Apache Tomcat.



The main features of Apache Stanbol are:

- **Content Enhancement:** Services that add semantic information to “non-semantic” pieces of content;
- **Reasoning: Services** that are able to retrieve additional semantic information about the content based on the semantic information retrieved via content enhancement;
- **Knowledge Models:** Services that are used to define and manipulate the data models (e.g. ontologies) that are used to store the semantic information;
- **Persistence: Services** that store (or cache) semantic information, i.e. enhanced content, entities, facts, and make it searchable.



Important Areas of Work

VIE - Making semantic entities interactive on the Web



VIE.js (also known as Vienna IKS Editables) is a JavaScript library that implements decoupled CMSs and semantic interaction in web applications. VIE bridges Backbone.js and Semantic Web technologies. It also enables easy interaction with RDFa annotated content and a connection with various semantic services, such as Apache Stanbol and DBpedia. VIE supports dealing with namespaces, relations between entities, content type system. It is also used as a basis for a wide variety of tools ranging from content

annotators to full front-end editing interfaces and semantic browser extensions. In the following, we list several VIE widgets:

- **Form generator:** it generates Backbone Forms schemas;
- **Autocomplete:** it uses VIE.find service method to make autocomplete suggestions. In addition, VIE.find method can query different backend and frontend data sources;
- **Create.js** content editing (c.f. <http://createjs.org/>): It is a comprehensive web editing interface for CMSs, designed to provide a modern, HTML5-based environment for managing content. It can be adapted to work on almost any CMS backend;
- **Image Search:** This widget uses Flickr API for image search;
- **Autotagger:** It displays a list of found entities in a tag cloud;
- **Annotate.js:** It is semi-automatic annotation editor developed to support rich HTML editors.

Semantic User Interaction: VIE Editor

The VIE Editor is a result of interaction pattern analysis supporting web-applications development. The API now offers a DSL to handle different namespaces seamlessly, maintain ontological hierarchies (including fully-typed, multiple inheritances) and access semantic backend services such as:

- **VIE.analyze():** It analyzes DOM elements depending on the registered engines (e.g., RDFaparsing, Apache Stanbol Enhancer, Zemanta) and returns an array of found entities.
- **VIE.load():** It loads all properties for the given entity from external services into VIE.
- **VIE.save():** It saves knowledge about an entity to a service. This service can be the entityhub of Apache Stanbol, but also the local storage of the browser.
- **VIE.find():** It queries semantic services, e.g., all Persons whose names start with "Bar".

By default, VIE comes with the ontology, which is provided by <http://schema.org>. However, VIE is ontology-agnostic and allows to easily extend, remove or change the ontology.

Important Areas of Work

IKS Early Adopters Programme

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Early Adopter Type	Nr
CMS Vendors	7
CMS Integrators	13
CMS Tool providers	12
CMS End-User Organisations	4
IKS UI/X Challenge Adopters	5
Total	41

As part of the validation work all early adopters were asked to complete a simple questionnaire consisting of 19 questions. All questionnaires are available on the public wiki: <http://wiki.iks-project.eu/index.php/Validation>

The 19 questions can be grouped into the 7 main themes:

- Do I understand the IKS technology?
- Does the IKS technology add value to my technology stack?
- Is the IKS technology robust for implementation?
- Is the License acceptable?
- Can I get involved? Level of community support
- Am I confident about the sustainability of IKS technology?
- Does IKS technology add direct value to my clients?

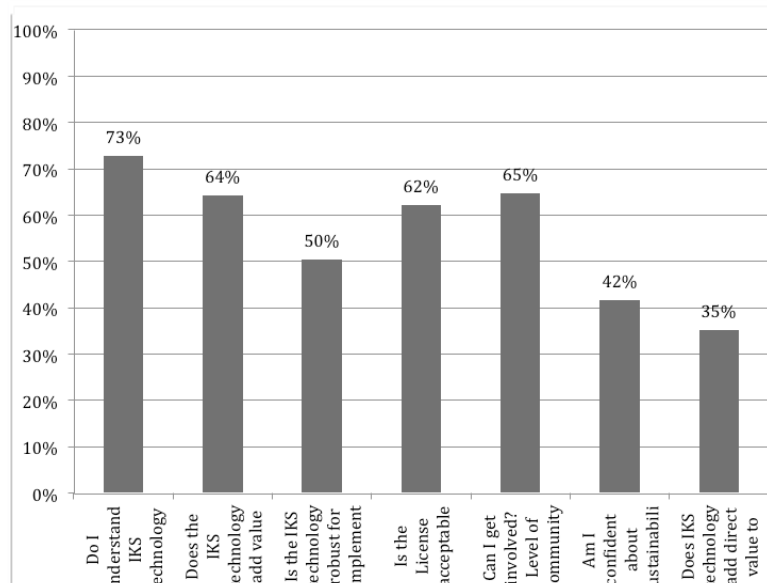
Important Areas of Work

IKS Early Adopters Programme

The results of the questionnaire grouped according to the 7 themes above are provided in the chart below. A majority of the IKS early adopters (73%) indicated that they were confident about their understanding of the IKS technology. They also felt confident about the level of community support and ability to participate in the community development process (65%).

There was also strong support for the permissive software license chosen (62%). 64% agreed that the IKS technology added to their own technology stack.

There was however concern about the maturity of the technology for immediate application (50%), and only 42% were confident about the long-term sustainability of the technology. These figures improved, especially in terms of sustainability with the graduation of the Apache Stanbol project and rapid take-up of Create.js in major open source content management systems such as TYPO3 and Drupal.



The early adopters were less confident about the immediate value of IKS technology to their current client base. Although it must be said that most of the adopters listed the questions of whether the technology improves customer retention (loyalty) or help manage business processes as not applicable for their adoption use case. Most of the adoption use cases were motivated by a need to expose themselves to semantic technologies rather than develop new down-stream applications. So it can be said that the adoption helped the companies bring incremental improvements to their current products rather than launch new downstream semantically enabled products.

Important Areas of Work

Developing Semantic CMS Applications: The IKS Handbook

Developing Semantic CMS Applications: The IKS Handbook

Editors: Wernher Behrendt and Violeta Damjanovic, Salzburg Research

Publisher: Salzburg Research, Salzburg, Austria

ISBN: 978-3-902448-35-4 (1st Edition. 124 p. 23 illus)

Year: March, 2013

Download: <http://www.iks-project.eu/resources/developing-semantic-cms-applications-iks-handbook-2013>



Abstract: This book is intended for developers and CTOs who need to deal with Content Management Systems (CMS) and with any kind of "smart" applications that combine web-based information sources with some Information System that is being built or adapted, for their own organization or for a customer. The book summarizes the results of four years of collaborative technology development between CMS providers and research organizations in Europe, plus the input from 40 early adopter organizations, worldwide. The book does not give you

academic depth: we have opted for enough detail for readers to understand the system and its components, and we have tried to satisfy the practitioner's interest in IKS technology. The book has six sections: Initial concepts - to acquaint you with different notions of the term "semantics"; Knowledge Representation and examples of "Semantic Web" applications; Building Semantic Components and making them usable in a customer CMS Using Apache Stanbol and VIE as semantic components for real-world use; Showcases of IKS semantic technologies in use; IKS, Semantic Web, Linked Data, Artificial Intelligence – A critical appraisal. The book is based on several pieces of open source software, in particular: on Apache Stanbol, a set of "semantic engines" that help software developers to lift textual information to structured, computable representations; on the VIE libraries for connecting HTML5 based web interfaces with semantic engines, be they from Stanbol or from elsewhere; on other open source software such as Apache Tika, Apache Chemistry or jQuery. The IKS software is available under permissive licensing on Apache and on github.

Contents

CHAPTER 1: Initial Concepts
CHAPTER 2: Knowledge Representation Methods and Techniques
CHAPTER 3: IKS Methodology for Building Semantic Components into CMS
CHAPTER 4: Apache Stanbol and VIE in a
CHAPTER 5: Showcases
CHAPTER 6: Beyond CMS with semantic Extensions.

IKS Facts

Strategic Positioning of IKS and Main Elements

Our starting point was that many organisations already have CMSs, ranging from corporate document management to global web content management. Some CMS providers have even got close relationships with eBusiness system providers. In other words, CMS providers often have a foot in the door when it comes to their customer base and they may be in a position to extend their business by adding services to their current portfolio. At the same time, there is a danger particularly for SMEs that their technology base is becoming inadequate. This is due to the fact that many CMS started off as simple aggregations of web-management functionality, quickly built upon the so-called LAMP Stack (Linux, Apache, MySQL, PHP). These smaller organisations cannot handle a complete system overhaul and significant R&D unless they get some assistance from outside. IKS is an attempt to redress the economic balance again, in order to give customers more choice by keeping more technology players in the game. Better even, if those technology players get additional tools in order to access more niche markets with well-suited solutions then the danger of content-monopolies or customer-access monopolies can be abated to some degree.

We therefore designed the IKS technology project as follows:

- It is addressed primarily at European SME CMS technology providers
- It delivers software components which are organised as a well-defined technology stack
- It focuses on functionality which enables knowledge-based interaction with content
- It does not advocate semantic web technology per se, but focuses on utility gained from enhancing existing CMSs with semantic features
- It contributes to moving from one-of-a-kind design to a reference architecture as a means of fostering standardisation and governance within the CMS industry
- It uses RESTful services as a safe way of ensuring integration with existing CMSs
- It uses a strict, BSD-based open source approach to ensure re-use without constraints

Quick Facts

Duration: January 2009 - December 2012
Project website: www.iks-project.eu
European Commission Grant: 6.580.00 Euro

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Quick Links

- IKS Blog: <http://blog.iks-project.eu/>
- IKS Wiki: <http://wiki.iks-project.eu>
- IKS Dev Server: <http://dev.iks-project.eu/>
- IKS Demos: <http://www.iks-project.eu/Demos>
- IKS EU Consortium: <http://www.iks-project.eu/community/partners?keys=&tid=24>
- IKS Community: <http://www.iks-project.eu/community/partners?keys=&tid=29>
- IKS Early Adopters: <http://www.iks-project.eu/community/partners?keys=&tid=25>
- Apache Stanbol: <http://incubator.apache.org/stanbol/>
- IKS Stack Code: <http://code.google.com/p/iks-project/>
- VIE.js: <http://viejs.org/>
- Create.js: <http://createjs.org/>

**Join the
IKS Semantic CMS
Community**

www.iks-project.eu