



Semantic CMS Community

## **D.6.2 Validation Report 2**

### **Industrial Use Cases**

|                           |                                                 |
|---------------------------|-------------------------------------------------|
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## IKS in a Nutshell

Interactive Knowledge (IKS) is an integrating project targeting small to medium CMS providers in Europe providing technology platforms for content and knowledge management to thousands of end user organisations. Current CMS technology platforms lack the capability for semantic web enabled, intelligent content, and therefore lack the capacity for users to interact with the content at the user's knowledge level. The objective of IKS therefore, is to bring semantic capabilities to current CMS frameworks. IKS puts forward the "Semantic CMS Technology Stack" which merges the advances in semantic web infrastructure and services with CMS industry needs of coherent architectures that fit into existing technology landscapes. IKS will provide the specifications and at least one Open Source Reference Implementation of the full IKS Stack. To validate the IKS Stack prototype solutions for industrial use cases ranging from ambient intelligence infotainment, project management and controlling to an online holiday booking system will be developed.

# 1 Introduction

On this page, the results of IKS Task 6.2 "Validation of IKS through industrial use case application developers" are reported. The overall objective of this task is described in the Description of Work (p. 76) as follows: "To produce a robust and scalable architecture, the reference implementation of the Interactive Knowledge Stack will be tested through large scale real life field studies. In order to guarantee that an industry-strength Semantic CMS Stack is created, the IKS components will be tested and validated through industrial use case applications. The use cases will be selected among the ones which can be operated by knowledge workers with clear organisational needs and goals but without sophisticated knowledge of advanced formalisms or technologies."

As a result of the current developments within IKS, the project has brought up several reusable components with clearly defined objectives. Details can be found in the following four public IKS deliverables (cf. <http://wiki.iks-project.eu/index.php/Deliverables>):

1. D5.1 Presentation & Interaction Environment - Design and Implementation
2. D5.2 Business Logic Modelling Environment - Design and Implementation
3. D5.3 Semantic CMS wrappers - Design and Implementation
4. D5.4 Semantic CMS reasoning and data persistence components

Next, the methodology of the validation procedure is described before an exemplary integration and validation story is presented. Then, the aggregated validation results of six CMS companies are provided. Afterwards, the results are discussed and finally, an outlook is provided with regard to the next steps of IKS component development.

## 2 Method and Validation Instrument

In order to validate the IKS stack, industry partners have been encouraged to send their feedback on their integration approaches and experience with selected IKS components, i.e. components that were relevant to them at the time of validation. The following components were target of evaluation:

- **Stanbol Enhancer and Enhancement Engines**  
See <http://incubator.apache.org/stanbol/docs/trunk/enhancer.html>  
and <http://incubator.apache.org/stanbol/docs/trunk/engines.html>
- **Stanbol EntityHub**  
See <http://incubator.apache.org/stanbol/docs/trunk/entityhub.html>
- **Stanbol Ontology Manager**  
See <http://wiki.iks-project.eu/index.php/KReS> or <http://localhost:8080/ontonet>
- **Stanbol Rules**  
See local instance <http://localhost:8080/rules>
- **Stanbol Reengineer**
- **Stanbol Reasoning**
- **Stanbol Factstore**  
See local instance <http://localhost:8080/factstore>
- **Stanbol Contenthub**  
See <http://incubator.apache.org/stanbol/docs/trunk/contenthub.html> or  
on local instance <http://localhost:8080/contenthub>
- **VIE Vienna IKS Editables**  
See <https://github.com/IKS/VIE>
- **annotate.js - Annotation frontend widget**  
See <https://github.com/IKS/annotate.js>

Any form of validation feedback was allowed with regard to those components. However, the questions as depicted in Table 1 were given as a help to write the feedback and to structure the validation results.

**Table 1. Component-related questionnaire items of the validation instrument.**

| #  | Item Statement                                                                                   |
|----|--------------------------------------------------------------------------------------------------|
| 1  | Do I understand the goal of this component?                                                      |
| 2a | Does the website describe this component and its benefits in a way I understand properly?        |
| 2b | Is the documentation on how to use this component easy to understand?                            |
| 3a | Does this component add value to my product?                                                     |
| 3b | If this component does not add value, why not?                                                   |
| 3c | Is the added value demonstrable / sellable to my customers?                                      |
| 3d | If this added value is demonstrable / sellable, please provide a simple use case.                |
| 4  | Is the impact of this component on runtime infrastructure requirements acceptable?               |
| 5  | Can this component be easily integrated with my product?                                         |
| 6  | Is this component robust and functional enough to be used in production at the enterprise level? |

## Deliverable 6.2 Validation Report 2 – Industrial Use Case

| #  | Item Statement                                                                                                                    |
|----|-----------------------------------------------------------------------------------------------------------------------------------|
| 7  | Is the component's test suite good enough as a functionality and non-regression “quality gate”?                                   |
| 8  | Can I participate in the development of this component and influence it in a fair and balanced way?                               |
| 9  | Do I know who I should talk to for support and future development of this component?                                              |
| 10 | Am I confident that this component is still going to be available and maintained once the IKS funding period (Dec. 2012) is over? |

In addition to those component-related questionnaire items, the following two questions were added in order to get feedback regarding the perceived acceptance of licenses used by the validated components, i.e. about details of copyright and patents:

Is the license of the Apache Stanbol components (both copyright and patents) acceptable to me?

See <http://www.apache.org/licenses/LICENSE-2.0>

Is the license of the VIE components (both copyright and patents) acceptable to me? See

<https://github.com/IKS/VIE/blob/master/LICENSE>

All questions were made available on the IKS website as a reference for the industrial partners (cf. the Adoption Questionnaire: <http://wiki.iks-project.eu/index.php/Adoption-Questionare>). The validation period started in November 2011 and lasted until the mid of February 2012. During this period, the following industrial CMS companies have participated:

1. Adobe, USA / Switzerland
2. Alkacon, Germany
3. Nuxeo, France
4. Pisano / CIC, Germany
5. Polymedia, Italy
6. InsideOut10, Italy

With the exception of InsideOut10, where the IKS team conducted a phone interview, the validation feedback was received electronically. The interview with InsideOut10 is made available in the next section as an exemplary integration story of IKS components. The feedback was aggregated by component and discussed in detail (cf. Section 4 “Validation Feedback”).

### 3 An Integration Story

The following validation interview with Andrea Volpini from InsideOut10 (cf. <http://blog.iks-project.eu/tag/insideout10/>) describes the integration of the Stanbol Enhancer with default engines and the Refactor Component of Stanbol Rules on the WordLift project, a WordPress plugin (cf. <http://www.slideshare.net/cyberandy/wordlift-20-pitch-at-jboye11-in-aarhus>). The interview was conducted by Reto Bachmann-Gmür in February 2012 and exemplifies the application of the validation instrument above.

- **Reto:** Do you understand what the Stanbol Enhancer is?
- **Andrea:** Yes
- **Reto:** Does the Stanbol Enhancer add value to your product?
- **Andrea:** Yes, definitively. However we couldn't really compare the results with commercial products like AlchemyAPI or OpenCalais, most of the results from the Stanbol enhancer are based on DBpedia while the commercial services rely on other dataset other than DBpedia. We tried using using OpenCalais and Zemanta within the Stanbol Enhancer: the processing takes significantly longer, and we saw no competitive advantage in using them in the enhancement chain rather than using them directly. The performance using the Enhancer without OpenCalais and Zemanta is quite good. Requests are often handled in less than a second. We are wondering if the Enhancement Engines could be improved by getting terms other than from DBpedia (Freebase for instance). It would be valuable to get related concepts using an open index of the web or an existing corpus of documents as source. For example, if I enter David's name (David Riccitelli) AlchemyAPI will also find Rupert as we appear together on some Websites, since there are no DBpedia pages about us the Stanbol Enhancer will not suggests this association (and this deeply impact the overall service). An option might be to integrate CommonCrawl (or Freebase). This could be an additional source alongside DBpedia and make the result of the enhancer more comparable with ones of commercial services.
- **Reto:** Is that added value demonstrable/sellable to your customers?
- **Andrea:** Yes, to a certain extent. We sold our configuration of WordLift (WordPress plugin adding schema.org to post and pages) to the Italian energy provider Enel. We must say that Enel has been an extremely supportive customer with a strong interest in fostering an open source initiative and they have been helping us in the whole project.
- **Reto:** Can you run the Stanbol Enhancer alongside with or inside my product?
- **Andrea:** The Enhancer runs alongside our product that interacts with it using the REST API. However we had to add other OSGi components to extend the REST API and to fit our needs.
- **Reto:** Is the impact of Stanbol Enhancer on runtime infrastructure requirements acceptable?
- **Andrea:** We had to get a quite large machine. A bit higher than our usual standards but still reasonable; our production instance of Stanbol runs on RackSpace.
- **Reto:** How good is the Stanbol Enhancer API when it comes to integrating with your product?
- **Andrea:** There are two levels: The Stanbol OSGi infrastructure is very flexible; you can tailor almost everything and use the very latest features. It is easy to create components inside the OSGi infrastructure. The REST API is harder, you cannot choose another chain, you have to submit text and no URL is supported, so we had to add our components. The REST API is easy to use but less powerful. Practical example: The kinds of responses from REST are not optimized for a production environment. We run tests with news article pages with a wide number of comments. Through the REST API you would get roughly 1MB of results. It will return more than one annotation for the same entity, it just isn't optimized to be fast and with good performance. By adding an OSGi component we could tailor the response to suit our needs, we just select the triples that matters to us – a 1MB response for a news page (including comments) is not acceptable.

- **Reto:** Is the Stanbol Enhancer robust and functional enough to be used in production at the enterprise level?
- **Andrea:** We had to work on it especially from a security point of view. We are running a Stanbol instance on the cloud that interacts with the infrastructure of our customer, for this we had to secure our Stanbol instance. We experienced stability issues related to DBpedia: running the same query multiple times yield different results. We are now using the Entityhub with a local index which solved the problem, but it was a nasty problem as it occurred in production and with the client's editorial team working on it and getting different results or no results at all.
- **Reto:** Is the Stanbol Enhancer test suite good enough as a functionality and non-regression "quality gate"? In other words: Are you confident that as long as the bar is green the functionality is still there?
- **Andrea:** The tests are not always up to date so we have to do testing when deploying updates. Recently we found that enhancer wasn't working and we were surprised to be the first to find this out. So we rely on our final integration test as the test that comes with Stanbol are incomplete. Passing the Stanbol tests is a preliminary achievement and further tests are needed to guarantee that things work as we expect them to. When we find an issue we mail it to the list. If it takes longer than half a day we roll back, that's what we have our version management of binaries for.
- **Reto:** Is the Apache Stanbol licence (both copyright and patents) acceptable to you?
- **Andrea:** Most flexible license ever. Its nice to work in an open source project where people are contributing without boundaries of bureaucracy and license, everybody is working towards a common objective. Our Wordlift 2.0 plugin will be MIT licensed.
- **Reto:** Can you participate in Enhancers's development and influence it in a fair and balanced way?
- **Andrea:** Yes absolutely.
- **Reto:** Do you know to whom to talk to for support and future development of Stanbol Enhancer?
- **Andrea:** We always talk to Rupert and he talks to himself ;) Kidding aside Rupert's support is literally amazing and we are really thankful for his endless effort in supporting our project.
- **Reto:** Are you confident that the Enhancer is still going to be available and maintained once the IKS funding period is over?
- **Andrea:** This depends on the involvement within the Apache Foundation. The process of getting out of the borders is still incomplete to make us feel confident. None of the industrial partner has yet taken the lead of building a sustainable community. It is yet to be seen how the project develops within Apache. We will certainly be involved in the future development but we are afraid that the IKS core team will not be fully replaced by others.
- **Reto:** What about the Refactor Engine?
- **Andrea:** Same as above apart from the use case. Here, WordLift calls the Stanbol Enhancer, the triples are then refactored to the schema.org ontology using the Refactor Engine.
- **Reto:** What about stability and performance?
- **Andrea:** We had a bit more stability issues and the CNR team is currently working to enhance the performance of the refactor ensuring it will not degrade the overall performances; we recently opened a ticket and we're directly working with the CNR team to fix the issues.
- **Reto:** ... and support?
- **Andrea:** We also have direct interaction with CNR.
- **Reto:** Any final thoughts?
- **Andrea:** We would really like the mentioned functionality of guessing relations from unstructured knowledge on the web. CommonCrawl might be part of a solution for this; Freebase also could bring a great advantage. The performance of the Enhancer is already valid but results are too narrow. Using the web (or LOD) would be a great improvement compared with using just the DBpedia index.

## 4 Validation Feedback

An overview summarizing all validation answers is presented in Table 2 (Stanbol Enhancer and Enhancement Engines, Stanbol EntityHub and Stanbol Ontology Manager), Table 3 (Stanbol Rules, Stanbol Reengineer and Stanbol Reasoning) and Table 4 (Stanbol Factstore, Stanbol ContentHub, VIE and Annotate.js).

**Table 2. Validation results for Stanbol Enhancer and Enhancement Engines, Stanbol EntityHub and Stanbol Ontology Manager. Note: 1 = Adobe, 2 = Alkacon, 3 = Nuxeo, 4 = Polymedia, 5 = InsideOut10, 6 = Pisano**

| Question                                                                                      | Stanbol Enhancer and Enhancement Engines                                                                    | Stanbol EntityHub                                                                                                    | Stanbol Ontology Manager                                                                                                 |
|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| 1. Do I understand the goal of this component?                                                | 1. Yes<br>2. Yes<br>3. Yes<br>4. Yes<br>5. Yes<br>6. Yes                                                    | 1. Yes<br>2. Partially<br>3. Yes<br>4. n/a<br>5. n/a<br>6. Yes                                                       | 1. Partially<br>2. Yes<br>3. Yes<br>4. n/a<br>5. n/a<br>6. Yes                                                           |
| 2a. Does the website describe this component and its benefits in a way I understand properly? | 1. Somehow<br>2. No<br>3. Partially<br>4. Yes<br>5. n/a<br>6. Yes, more examples could be helpful           | 1. No<br>2. Partially<br>3. Yes, partially complicated<br>4. n/a<br>5. n/a<br>6. Yes, more examples could be helpful | 1. Partially<br>2. n/a<br>3. Partially<br>4. n/a<br>5. n/a<br>6. Partially, needs more examples                          |
| 2b. Is the documentation on how to use this component easy to understand?                     | 1. Somehow<br>2. Yes<br>3. Yes<br>4. Definitely<br>5. n/a<br>6. Yes, more examples could be helpful         | 1. No<br>2. No<br>3. Good enough to get started<br>4. n/a<br>5. n/a<br>6. Yes, more examples could be helpful        | 1. No, too difficult<br>2. n/a<br>3. Yes, but incomplete<br>4. n/a<br>5. n/a<br>6. Partially                             |
| 3a. Does this component add value to my product?                                              | 1. It will<br>2. Not yet<br>3. Yes<br>4. Yes<br>5. Yes<br>6. Yes, partially                                 | 1. With enhancement engines<br>2. Not yet<br>3. Yes<br>4. Potentially<br>5. n/a<br>6. n/a                            | 1. Not yet<br>2. n/a<br>3. Potentially<br>4. n/a<br>5. n/a<br>6. no                                                      |
| 3b. If this component does not add value, why not?                                            | 1. n/a<br>2. Data format / Compatibility<br>3. n/a<br>4. n/a<br>5. n/a<br>6. Quality, complex configuration | 1. Lack of documentation<br>2. Documentation / Compatibility<br>3. n/a<br>4. n/a<br>5. n/a<br>6. n/a                 | 1. Steep learning curve<br>2. Too dependent on standards<br>3. Not enough time yet<br>4. n/a<br>5. n/a<br>6. No use case |

## Deliverable 6.2 Validation Report 2 – Industrial Use Case

| Question                                                                                            | Stanbol Enhancer and Enhancement Engines                                                                                                                                                                  | Stanbol EntityHub                                                                         | Stanbol Ontology Manager                                                                 |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| 3c. Is the added value demonstrable / sellable to my customers?                                     | 1. n/a<br>2. n/a<br>3. Demo: Yes, Sell: Not yet<br>4. Demos: yes, Sell: Not yet<br>5. Yes, Customer: Enel<br>6. Yes, partially                                                                            | 1. n/a<br>2. n/a<br>3. Demo: partially<br>4. n/a<br>5. n/a<br>6. Sell: Not yet, Demo: yes | 1. n/a<br>2. n/a<br>3. Not yet<br>4. n/a<br>5. n/a<br>6. No                              |
| 3d. If this added value is demonstrable / sellable, please provide a simple use case.               | 1. Suggest links and images<br>2. n/a<br>3. <a href="#">Demo</a><br>4. Enriching authored content<br>5. Adding annotations to posts and pages<br>6. Reducing effort of product manager thanks to Enhancer | 1. n/a<br>2. n/a<br>3. <a href="#">Demo</a><br>4. n/a<br>5. n/a<br>6. n/a                 | 1. n/a<br>2. n/a<br>3. n/a<br>4. n/a<br>5. n/a<br>6. n/a                                 |
| 4. Is the impact of this component on runtime infrastructure requirements acceptable?               | 1. Yes<br>2. Problematic<br>3. Yes, except for very large documents<br>4. Not for Production<br>5. High but acceptable<br>6. Yes                                                                          | 1. Yes<br>2. Problematic<br>3. Yes<br>4. n/a<br>5. n/a<br>6. Yes                          | 1. Unknown<br>2. Problematic<br>3. n/a<br>4. n/a<br>5. n/a<br>6. n/a                     |
| 5. Can this component be easily integrated with my product?                                         | 1. Yes<br>2. Problematic data format<br>3. Yes<br>4. Yes<br>5. Yes, used alongside<br>6. Yes                                                                                                              | 1. Yes<br>2. Problematic data format<br>3. Yes<br>4. n/a<br>5. n/a<br>6. Yes              | 1. Probably<br>2. n/a<br>3. Probably<br>4. n/a<br>5. n/a<br>6. n/a                       |
| 6. Is this component robust and functional enough to be used in production at the enterprise level? | 1. Performance is an issue<br>2. "Incubation" is discouraging<br>3. Not yet<br>4. Probably<br>5. Needed some security tweaks<br>6. n/a                                                                    | 1. n/a<br>2. "Incubation" is discouraging<br>3. Yes<br>4. n/a<br>5. n/a<br>6. n/a         | 1. Don't know<br>2. "Incubation" is discouraging<br>3. n/a<br>4. n/a<br>5. n/a<br>6. n/a |
| 7. Is the component's test suite good enough as a functionality and non-regression "quality gate"?  | 1. Don't know<br>2. n/a<br>3. Not fully<br>4. n/a<br>5. Not fully<br>6. n/a                                                                                                                               | 1. n/a<br>2. n/a<br>3. Yes<br>4. n/a<br>5. n/a<br>6. n/a                                  | 1. n/a<br>2. n/a<br>3. n/a<br>4. n/a<br>5. n/a<br>6. n/a                                 |

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| Question                                                                                                                              | Stanbol Enhancer and Enhancement Engines                                              | Stanbol EntityHub                                                            | Stanbol Ontology Manager                                               |
|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------|
| 8. Can I participate in the development of this component and influence it in a fair and balanced way?                                | 1. Yes<br>2. No<br>3. Yes<br>4. No, because of lack of expertise<br>5. Yes<br>6. Yes  | 1. Yes<br>2. No<br>3. n/a<br>4. n/a<br>5. n/a<br>6. Yes                      | 1. Probably<br>2. No<br>3. Yes<br>4. n/a<br>5. n/a<br>6. No            |
| 9. Do I know who I should talk to for support and future development of this component?                                               | 1. Yes<br>2. Yes<br>3. Yes<br>4. Yes<br>5. Yes<br>6. Yes                              | 1. Yes<br>2. Yes<br>3. n/a<br>4. n/a<br>5. n/a<br>6. Yes                     | 1. Yes<br>2. Yes<br>3. n/a<br>4. n/a<br>5. n/a<br>6. Yes               |
| 10. Am I confident that this component is still going to be available and maintained once the IKS funding period (Dec. 2012) is over? | 1. Rather yes<br>2. Don't know<br>3. Yes<br>4. Yes<br>5. Questionable<br>6. Hopefully | 1. Rather yes<br>2. Don't know<br>3. n/a<br>4. n/a<br>5. n/a<br>6. Hopefully | 1. Don't know<br>2. Don't know<br>3. Yes<br>4. n/a<br>5. n/a<br>6. n/a |

**Table 3. Validation results for Stanbol Rules, Stanbol Reengineer and Stanbol Reasoning. Note: 1 = Adobe, 2 = Alkacon, 3 = Nuxeo, 4 = Polymedia, 5 = InsideOut10, 6 = Pisano**

| Question                                                                                      | Stanbol Rules                                                                                                                            | Stanbol Reengineer                                                       | Stanbol Reasoning                                                                                 |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| 1. Do I understand the goal of this component?                                                | 1. Partially<br>2. No<br>3. Yes<br>4. n/a<br>5. Yes<br>6. Yes                                                                            | 1. No<br>2. No<br>3. Yes<br>4. n/a<br>5. n/a<br>6. n/a                   | 1. Yes<br>2. No<br>3. Yes<br>4. n/a<br>5. n/a<br>6. Yes                                           |
| 2a. Does the website describe this component and its benefits in a way I understand properly? | 1. Yes<br>2. n/a<br>3. Partially<br>4. n/a<br>5. n/a<br>6. Partially                                                                     | 1. n/a<br>2. n/a<br>3. Partially<br>4. n/a<br>5. n/a<br>6. n/a           | 1. Describes usage, not benefits<br>2. n/a<br>3. Yes<br>4. n/a<br>5. n/a<br>6. Partially          |
| 2b. Is the documentation on how to use this component easy to understand?                     | 1. Not to use / implement the functionality described on website<br>2. n/a<br>3. Yes, but incomplete<br>4. n/a<br>5. n/a<br>6. Partially | 1. n/a<br>2. n/a<br>3. Yes, but incomplete<br>4. n/a<br>5. n/a<br>6. n/a | 1. Yes (the documentation on the website)<br>2. n/a<br>3. Yes<br>4. n/a<br>5. n/a<br>6. Partially |

## Deliverable 6.2 Validation Report 2 – Industrial Use Case

| Question                                                                                            | Stanbol Rules                                                                                              | Stanbol Reengineer                                                                         | Stanbol Reasoning                                                                                                      |
|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| 3a. Does this component add value to my product?                                                    | 1. Not yet<br>2. n/a<br>3. Potentially<br>4. n/a<br>5. Yes (refactoring module)<br>6. No                   | 1. n/a<br>2. n/a<br>3. Potentially<br>4. n/a<br>5. n/a<br>6. No                            | 1. Currently not<br>2. n/a<br>3. Not yet<br>4. n/a<br>5. n/a<br>6. No                                                  |
| 3b. If this component does not add value, why not?                                                  | 1. No use case<br>2. Lack of documentation<br>3. Not enough time yet<br>4. n/a<br>5. n/a<br>6. No use case | 1. n/a<br>2. Lack of documentation<br>3. Not enough time yet<br>4. n/a<br>5. n/a<br>6. n/a | 1. No use case<br>2. Lack of documentation<br>3. Needs integration in ContentHub<br>4. n/a<br>5. n/a<br>6. No use case |
| 3c. Is the added value demonstrable / sellable to my customers?                                     | 1. n/a<br>2. n/a<br>3. Not yet<br>4. n/a<br>5. Yes, Customer: Enel<br>6. No                                | 1. n/a<br>2. n/a<br>3. No yet<br>4. n/a<br>5. n/a<br>6. n/a                                | 1. n/a<br>2. n/a<br>3. Not yet<br>4. n/a<br>5. n/a<br>6. No                                                            |
| 3d. If this added value is demonstrable / sellable, please provide a simple use case.               | 1. n/a<br>2. n/a<br>3. n/a<br>4. n/a<br>5. Translation to schema.org ontology<br>6. n/a                    | 1. n/a<br>2. n/a<br>3. n/a<br>4. n/a<br>5. n/a<br>6. n/a                                   | 1. n/a<br>2. n/a<br>3. n/a<br>4. n/a<br>5. n/a<br>6. n/a                                                               |
| 4. Is the impact of this component on runtime infrastructure requirements acceptable?               | 1. Probably<br>2. Problematic<br>3. n/a<br>4. n/a<br>5. High but acceptable<br>6. n/a                      | 1. n/a<br>2. Problematic<br>3. Unknown<br>4. n/a<br>5. n/a<br>6. n/a                       | 1. Unknown<br>2. Problematic<br>3. Unknown<br>4. n/a<br>5. n/a<br>6. n/a                                               |
| 5. Can this component be easily integrated with my product?                                         | 1. Probably<br>2. n/a<br>3. Probably<br>4. Yes, used alongside<br>5. n/a<br>6. n/a                         | 1. n/a<br>2. n/a<br>3. Probably<br>4. n/a<br>5. n/a<br>6. n/a                              | 1. n/a<br>2. n/a<br>3. Not yet<br>4. n/a<br>5. n/a<br>6. n/a                                                           |
| 6. Is this component robust and functional enough to be used in production at the enterprise level? | 1. Don't know<br>2. n/a<br>3. n/a<br>4. n/a<br>5. Performance issue, open ticket<br>6. n/a                 | 1. n/a<br>2. "Incubation" is discouraging<br>3. Unknown<br>4. n/a<br>5. n/a<br>6. n/a      | 1. n/a<br>2. "Incubation" is discouraging<br>3. Unknown<br>4. n/a<br>5. n/a<br>6. n/a                                  |

## Deliverable 6.2 Validation Report 2 – Industrial Use Case

| Question                                                                                                                              | Stanbol Rules                                                          | Stanbol Reengineer                                                     | Stanbol Reasoning                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|------------------------------------------------------------------------|------------------------------------------------------------------------|
| 7. Is the component's test suite good enough as a functionality and non-regression “quality gate”?                                    | 1. n/a<br>2. n/a<br>3. n/a<br>4. n/a<br>5. Not fully<br>6. n/a         | 1. n/a<br>2. n/a<br>3. n/a<br>4. n/a<br>5. n/a<br>6. n/a               | 1. n/a<br>2. n/a<br>3. n/a<br>4. n/a<br>5. n/a<br>6. n/a               |
| 8. Can I participate in the development of this component and influence it in a fair and balanced way?                                | 1. Probably<br>2. No<br>3. Yes<br>4. n/a<br>5. Yes<br>6. No            | 1. Probably<br>2. No<br>3. Yes<br>4. n/a<br>5. n/a<br>6. n/a           | 1. Probably<br>2. No<br>3. Yes<br>4. n/a<br>5. n/a<br>6. No            |
| 9. Do I know who I should talk to for support and future development of this component?                                               | 1. Yes<br>2. Yes<br>3. n/a<br>4. n/a<br>5. Yes<br>6. n/a               | 1. Yes<br>2. Yes<br>3. n/a<br>4. n/a<br>5. n/a<br>6. n/a               | 1. Yes<br>2. Yes<br>3. Yes<br>4. n/a<br>5. n/a<br>6. n/a               |
| 10. Am I confident that this component is still going to be available and maintained once the IKS funding period (Dec. 2012) is over? | 1. Don't know<br>2. Don't know<br>3. Yes<br>4. n/a<br>5. n/a<br>6. n/a | 1. Don't know<br>2. Don't know<br>3. Yes<br>4. n/a<br>5. n/a<br>6. n/a | 1. Don't know<br>2. Don't know<br>3. Yes<br>4. n/a<br>5. n/a<br>6. n/a |

**Table 4. Validation results for Stanbol Factstore, Stanbol ContentHub, VIE and Annotate.js.****Note: 1 = Adobe, 2 = Alkacon, 3 = Nuxeo, 4 = Polymedia, 5 = InsideOut10, 6 = Pisano**

| Question                                                                                      | Stanbol Factstore                                                    | Stanbol ContentHub                                                                                                                             | VIE                                                                                        | Annotate.js                                                                        |
|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| 1. Do I understand the goal of this component?                                                | 1. No<br>2. Partially<br>3. Not really<br>4. n/a<br>5. n/a<br>6. Yes | 1. Yes<br>2. Yes<br>3. Yes mostly<br>4. n/a<br>5. n/a<br>6. Yes                                                                                | 1. Partially<br>2. Yes<br>3. Yes<br>4. Yes<br>5. n/a<br>6. Yes                             | 1. Yes<br>2. Yes<br>3. Yes<br>4. n/a<br>5. n/a<br>6. Yes                           |
| 2a. Does the website describe this component and its benefits in a way I understand properly? | 1. n/a<br>2. n/a<br>3. No<br>4. n/a<br>5. n/a<br>6. Partially        | 1. Usage rather than benefits<br>2. n/a<br>3. Partially<br>4. n/a<br>5. n/a<br>6. Yes                                                          | 1. Yes<br>2. Yes<br>3. Yes<br>4. Yes<br>5. n/a<br>6. Partially                             | 1. Yes<br>2. Yes<br>3. Yes<br>4. n/a<br>5. n/a<br>6. Yes                           |
| 2b. Is the documentation on how to use this component easy to understand?                     | 1. n/a<br>2. n/a<br>3. No<br>4. n/a<br>5. n/a<br>6. Partially        | 1. Yes, but it doesn't seem to reflect the current state<br>2. No, needs examples and better structure<br>3. n/a<br>4. n/a<br>5. n/a<br>6. Yes | 1. Yes<br>2. Partially<br>3. Yes<br>4. Yes<br>5. n/a<br>6. Yes                             | 1. Missing tutorial, but example<br>2. Yes<br>3. Yes<br>4. n/a<br>5. n/a<br>6. Yes |
| 3a. Does this component add value to my product?                                              | 1. n/a<br>2. n/a<br>3. No<br>4. n/a<br>5. n/a<br>6. No               | 1. Still evaluating<br>2. n/a<br>3. Not yet<br>4. n/a<br>5. n/a<br>6. Yes, partially                                                           | 1. Questionable<br>2. Yes<br>3. Not yet<br>4. Yes<br>5. n/a<br>6. Yes, as part of a widget | 1. It probably will<br>2. Not yet<br>3. Not yet<br>4. n/a<br>5. n/a<br>6. Yes      |
| 3b. If this component does not add value, why not?                                            | 1. n/a<br>2. n/a<br>3. No integrated<br>4. n/a<br>5. n/a<br>6. n/a   | 1. n/a<br>2. Lack of features<br>3. No integrated<br>4. n/a<br>5. n/a<br>6. n/a                                                                | 1. n/a<br>2. n/a<br>3. No use case yet<br>4. n/a<br>5. n/a<br>6. n/a                       | 1. n/a<br>2. n/a<br>3. No use case yet<br>4. n/a<br>5. n/a<br>6. n/a               |

## Deliverable 6.2 Validation Report 2 – Industrial Use Case

| Question                                                                                            | Stanbol Factstore                                                                 | Stanbol ContentHub                                                                                               | VIE                                                                                                                              | Annotate.js                                                                                           |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| 3c. Is the added value demonstrable / sellable to my customers?                                     | 1. n/a<br>2. n/a<br>3. No<br>4. n/a<br>5. n/a<br>6. No                            | 1. In combination with CMS adapter (faceted search)<br>2. n/a<br>3. n/a<br>4. n/a<br>5. n/a<br>6. Yes, partially | 1. VIE itself not, widgets yes<br>2. Demos: yes, Sellable: not yet<br>3. Not yet<br>4. n/a<br>5. n/a<br>6. only with annotate.js | 1. Demos: yes / Sell: not yet<br>2. n/a<br>3. Not yet<br>4. n/a<br>5. n/a<br>6. Demos: yes / Sell: no |
| 3d. If this added value is demonstrable / sellable, please provide a simple use case.               | 1. n/a<br>2. n/a<br>3. n/a<br>4. n/a<br>5. n/a<br>6. n/a                          | 1. n/a<br>2. n/a<br>3. n/a<br>4. n/a<br>5. n/a<br>6. Search functionality on website                             | 1. n/a<br>2. Blog.iks-project.eu<br>3. n/a<br>4. n/a<br>5. n/a<br>6. n/a                                                         | 1. n/a<br>2. n/a<br>3. n/a<br>4. n/a<br>5. n/a<br>6. Product Manager can annotate changed information |
| 4. Is the impact of this component on runtime infrastructure requirements acceptable?               | 1. n/a<br>2. Problematic<br>3. n/a<br>4. n/a<br>5. n/a<br>6. n/a                  | 1. Yes<br>2. Problematic<br>3. n/a<br>4. n/a<br>5. n/a<br>6. Yes                                                 | 1. Yes<br>2. Yes<br>3. Probably<br>4. n/a<br>5. n/a<br>6. Yes                                                                    | 1. Yes<br>2. Yes<br>3. Probably<br>4. n/a<br>5. n/a<br>6. Yes                                         |
| 5. Can this component be easily integrated with my product?                                         | 1. n/a<br>2. n/a<br>3. No<br>4. n/a<br>5. n/a<br>6. n/a                           | 1. Yes<br>2. Problematic data format<br>3. n/a<br>4. n/a<br>5. n/a<br>6. Yes                                     | 1. Questionable<br>2. Somehow<br>3. Probably<br>4. Probably<br>5. n/a<br>6. Yes                                                  | 1. Yes<br>2. Somehow<br>3. Probably<br>4. n/a<br>5. n/a<br>6. Yes                                     |
| 6. Is this component robust and functional enough to be used in production at the enterprise level? | 1. n/a<br>2. "Incubation" is discouraging<br>3. n/a<br>4. n/a<br>5. n/a<br>6. n/a | 1. Still testing<br>2. Incubation" is discouraging<br>3. n/a<br>4. n/a<br>5. n/a<br>6. n/a                       | 1. Probably<br>2. Yes<br>3. Probably<br>4. n/a<br>5. n/a<br>6. Yes                                                               | 1. Massive recent improvements<br>2. Unknown<br>3. Probably<br>4. n/a<br>5. n/a<br>6. Yes             |
| 7. Is the component's test suite good enough as a functionality and non-regression "quality gate"?  | 1. n/a<br>2. n/a<br>3. n/a<br>4. n/a<br>5. n/a<br>6. n/a                          | 1. n/a<br>2. n/a<br>3. n/a<br>4. n/a<br>5. n/a<br>6. n/a                                                         | 1. n/a<br>2. n/a<br>3. n/a<br>4. n/a<br>5. n/a<br>6. Yes                                                                         | 1. n/a<br>2. n/a<br>3. n/a<br>4. n/a<br>5. n/a<br>6. Yes                                              |

## Deliverable 6.2 Validation Report 2 – Industrial Use Case

| Question                                                                                                                              | Stanbol Factstore                                                      | Stanbol ContentHub                                                     | VIE                                                                                 | Annotate.js                                                                        |
|---------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| 8. Can I participate in the development of this component and influence it in a fair and balanced way?                                | 1. n/a<br>2. No<br>3. Yes<br>4. n/a<br>5. n/a<br>6. No                 | 1. Probably<br>2. No<br>3. Yes<br>4. n/a<br>5. n/a<br>6. Yes           | 1. Lack of process / mailing list<br>2. Yes<br>3. Yes<br>4. Yes<br>5. n/a<br>6. Yes | 1. Lack of process / mailing list<br>2. No<br>3. Yes<br>4. n/a<br>5. n/a<br>6. Yes |
| 9. Do I know who I should talk to for support and future development of this component?                                               | 1. n/a<br>2. Yes<br>3. Yes<br>4. n/a<br>5. n/a<br>6. n/a               | 1. Yes<br>2. n/a<br>3. Yes<br>4. n/a<br>5. n/a<br>6. n/a               | 1. Yes<br>2. Yes<br>3. Yes<br>4. Yes<br>5. n/a<br>6. Yes                            | 1. Yes<br>2. Yes<br>3. Yes<br>4. n/a<br>5. n/a<br>6. Yes                           |
| 10. Am I confident that this component is still going to be available and maintained once the IKS funding period (Dec. 2012) is over? | 1. Don't know<br>2. Don't know<br>3. Yes<br>4. n/a<br>5. n/a<br>6. n/a | 1. Don't know<br>2. Don't know<br>3. Yes<br>4. n/a<br>5. n/a<br>6. n/a | 1. Don't know<br>2. Don't know<br>3. Yes<br>4. n/a<br>5. n/a<br>6. n/a              | 1. Don't know<br>2. Don't know<br>3. Yes<br>4. n/a<br>5. n/a<br>6. n/a             |

Most use cases that were mentioned in the feedback use the Stanbol Enhancer and Enhancement Engines. In one case, VIE is used without Stanbol components. The three most relevant use cases are as follows (cf. also the list of business needs from IKS Deliverable 1.3 “Validation Report of Semantic Benchmark”):

- **Support for content creation:** That is, use cases that cover CMS features that help to create content. For example: suggesting related links, documents, images, video clips etc. to the author of a CMS customer.
- **Enrichment of content:** That is, use cases that cover semantic lifting of content. For example: semi-automated or automated named entity recognition, adding tags semi-automated or automated to a blog entry.
- **Enhanced Search Functionality:** That is, use cases that cover the challenge to find content fast and efficiently. For example: faceted search or – more generally – adding annotation data for search engine optimization (by using Stanbol Rules for conversions to schema.org Ontology)

Looking at the adoption there are two Stanbol components with results that are notably different from the others. On the one hand, we have the Stanbol Enhancer that is the most understood component with the highest number of use cases. On the other hand, we have the Stanbol Factstore that is neither understood nor adopted. The GUI components are also described as bringing value to the products or as being expected to bring value.

All components got positive results in terms of support, all adopters know whom to contact for getting support and influence the development of the component. As for the ability to participate in the development and influence it in a fair and balanced way a phone enquiry helped clarify Alkacon's negative answer to the respective question for all Stanbol components. The reason for the inability to participate lies in their development focus on GUI aspects and on the lack of possibility to have Stanbol in action as customers are not yet willing to adopt the additional infrastructure required. So if Question 8 is to

evaluation the absence of barriers to participate to the development the answers are exclusively positive for all Stanbol components and mostly positive for the Javascript components.

## 4.1 General Feedback on Documentation

There is a general challenge regarding the documentation. That is, the webpages for the Stanbol components are written from a very technical point of view, which makes it hard to get a picture of what a single component does. Thus, IKS developers understand the goals of those components. However, regarding business use cases and their benefits, the documentation lacks a comprehensive general overview and selling arguments. Several industrial partners also criticize the documentation because relevant terms are used but not introduced and described adequately. Overall, some components lack examples or tutorials, others lack high-level descriptions of the components' benefits.

## 4.2 An Aggregated View on the Components

To provide another perspective of the validation results, the components were grouped into the following three categories:

- Annotation Backend Components

- Extended Semantic Components

- Front-end Components

### 4.2.1 Annotation Backend Components

Stanbol EntityHub and Stanbol Enhancer are mostly used together. The results for the Stanbol EntityHub are mostly similar except for the documentation that is considered significantly worse. This is consistent with the fact that in common usage scenarios the client code interacts with the enhancer and then the EntityHub is only used indirectly. Problems mentioned also include the data format. RDF formats cannot yet be easily integrated due to the lack of CMS support.

Multiple time limitations of the REST API were criticized because they do not offer enough features, namely the inability to filter the results. The Java API offers more features so that InsideOut10 could work around the limitation of the REST API by adding OSGi components to the framework and extending the REST API with them.

Another limitation lies in the DBpedia index. DBpedia data is considered to be more or less useless for most customer projects (Alkacon). The documentation on how to create and use custom indexes is considered to be hard to understand. InsideOut10 also considers the DBpedia basis as too narrow, they suggest that CommonCrawl should be part of a solution for this; Freebase could provide a great advantage, too. They consider the web (or LOD) to relate and extract entities to be a great improvement compared with just using the DBpedia index.

### 4.2.2 Extended Semantic Components

Stanbol Ontology Manager, Stanbol Rules, Stanbol Reengineering and Stanbol Reasoning provide the capabilities to further process, enhance and modify RDF data. Use cases are currently not needed. They might be of use once we have more semantic data in a CMS.

### 4.2.3 Front-End Components

VIE and Annotate.js are components focused on presenting the result and on direct interaction with the user. Annotate.js is used to enhance content typically in combination with an editor. The content en-

hanced with `annotate.js` contains RDFa annotations providing metadata about the entities mentioned in the text. This opens the following possibilities:

- Entity-Centric Applications: The CMS can offer features based on the knowledge about the entities, for example it can automatically add links to the respective product page for any mentioned product.
- Search-Engine optimization: By exposing the semantics using RDFa the presentation of the page in search engine results is improved by allowing meaningful structured summaries including direct links to the searched sub-section. This can be used in combination with Stanbol Rules to translate the annotation into the vocabulary preferred by the major search engines, i.e. `schema.org`
- Linked-Data: An HTML Document with RDFa annotations encodes RDF triples and is thus part of the Linked Data Web.

VIE is a library for implementing semantic interaction in web applications. It allows interaction with a semantic aware CMS system.

Various demos show the integration of `vie` and `annotate.js`, namely:

- <http://blog.iks-project.eu/viegwt-hackathon-at-alkacon/>
- <https://github.com/IKS/sling-stanbol>
- <https://github.com/alkacon/vie-related>
- <http://iks.alkacon.com/> (available starting in week 11)

These demos address the following identified IKS Business needs:

- Support for Content Creation
- Enrichment of Content.

As a library VIE cannot be a directly visible part of a demo. What can be demoed are widgets based on VIE. The direct benefit of the library however isn't clear in all cases, while not yet being yet a VIE widget `annotate.js` is sometime shown as an alleged demo for VIE.

Alkacon has integrated VIE with GWT creating the openly released Acaia Editor. Alkacon integrates the Acacia Editor into Version 8.5 of OpenCms which will be released before the end of this year. This represents a successful integration of VIE providing a high degree of integration in an environment abstracting away the JavaScript layer allowing Java-developers to directly integrate VIE and VIE-based widgets into their applications.

Polymedia integrated VIE and `annotate.js` in its open source version. The only encountered difficulties were related to the integration with their WYSIWYG editor. To avoid these problems Polymedia has chosen to integrate the Halo-Editor for it to be used as a replacement for their editor.

The website and the documentation of both VIE and `annotate.js` are considered to be easy to understand and to clearly explain the benefits of these components. A closer look however raises question about the documentation being comprehensive and exact enough for the library aspects. The documentation provides good tutorial style examples but if one wants to go beyond this analysing the unit tests is required. While this makes sense during a phase of intensive development and change a more comprehensive documentation is desirable for released versions.

While Stanbol is part of Apache and thus adopted established community processes VIE is being developed in a more decentralized fashion on Github. This has been considered as a hindrance for a open and low barrier discussion. The recent creation of a mailing list for VIE addresses this problem.

The aggregated feedback can be found in Table 2, Table 3 and Table 4.

## 5 Discussion

The understanding and the adoption of the Enhancer as well as the GUI components is quite high. They are considered to add value to several products even though being only demonstrable but not sellable yet. So the integration is considered promising but still in progress. This interpretation explains the smaller adoption and understanding of the extended semantic components as they presuppose existing RDF data and address issues resulting from dealing with especially larger sets of such data.

The Factstore is a small component that wasn't undergoing development in recent times. As no other component seems to be depending on the Factstore discontinuing this module should be evaluated. While also having no positive estimate for the on-going development after the funding period, the situation for the Stanbol ContentHub is different than for the Factstore. The Stanbol ContentHub is being used by the CMS Adapter that was not yet available when starting the evaluation and thus, not part of the questionnaire. Nevertheless, Nuxeo and Pisano gave a feedback on that component as well. The component is also now integrated in the Adobe integration demo SlingStanbol. It is possible that the Stanbol ContentHub will be in use mainly as a backend component similarly to the Stanbol EntityHub, i.e. a component that is needed even though it is not typically directly accessed by the client code.

The Javascript components have shown to be useful as Frontend for the Stanbol components and that they can also be used separately without Stanbol. This is an indication of a successful layering of the components of the stack.

## 6 Summary

Four industrial members of the consortium and one industrial early adopter have given feedback to the software developed by IKS. Most industrial partners embrace the enhancement facilities of Stanbol and the client-side semantic library VIE. The feedback provides some concrete improvement suggestions both to increase competitiveness of the components as well as for improving accessibility and documentation.

As a next step the concrete suggestions should be converted into issues added to the issue tracking systems of the respective software modules.