

Research Report:

Semantic Web Awareness 2009

A Comparative Study on Approaches to Social Software and the Semantic Web



By
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Vienna, April 3, 2009

An Online Survey was conducted by the



Semantic Web Company
Vienna

www.semantic-web.at



Know Center Graz

www.know-center.at



Corporate Semantic Web
Working Group of Freie
Universität Berlin

www.corporate-semantic-web.de

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The report and the data set can be downloaded from
www.semantic-web.at
www.know-center.at
www.corporate-semantic-web.de

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Executive Summary

The Semantic Web Awareness Barometer 2009 aims at providing the reader with a brief overview over current trends and possible future topics in the fast evolving and dynamic field of web semantics. It also addresses Social Software, since these two areas are expected to condition each other. The data analysed in this survey was primarily collected among Semantic Web specialists from science and industry.

For better orientation we grouped the respondents by their approach to the topic into **Research-oriented** and **Application-oriented**. While the first category consists mainly of stakeholders from the academic or industrial scientific sector, the latter category consists of interested users and decision makers with an industrial background.

In brief the survey produced the following results:

Social Software

- There exist slightly differing application and usage patterns of Social Software between the two groups, but the general trend says: Wikis are king! Social Bookmarking stays behind.
- There exists broad consent about the benefits of Social Software. Both groups say that quick access to information and knowledge is the biggest benefit generated by Social Software, followed by social networking functionalities and ubiquitous access to documents and data.
- There are differing notions about the barriers to Social Software, but consent exists that the amount of time necessary to use and maintain Social Software applications is the biggest obstacle.

Semantic Web

- The overall Semantic Web familiarity is already rather high.
- Most participants, especially from the research-domain, have dealt with the topic for more than three years. Application-oriented users catch up.
- When it comes to Semantic Web education self-study is the general pattern among both groups.
- More than 80 percent of application-oriented and research-oriented participants think that Semantic Web technologies are at least relevant to be used for corporate and business purposes.
- Search is the killer app! Integration costs & data control might be important aspects.
- There exist differing notions about the importance of certain barriers to the Semantic Web. Application-oriented participants believe that the organisational culture, the complexity of the technology, a general lack of experts and a lack of success stories are the biggest obstacles to the application of Semantic Web technologies. On the contrary research-oriented participants believe that the lack of success stories, a general lack of experts, a lack in quality of available software and the problem to quantify the benefits will hinder the broad adoption.
- While just a small minority believes that there won't be any changes at all, most participants expect changes in regard to competencies of the knowledge worker and new forms of collaboration either between or within companies.
- The expected time to market is 2 - 5 years.
- The readiness to implement Semantic Web technologies is relatively high among both groups although the application-oriented participants seem to be a bit more reluctant.
- The last question of the survey reveals that expectations towards the Semantic Web are very high! Especially the application-oriented participants believe that the relevance of Semantic Web technologies in times of crisis is growing.

Motivation & Background

The **Semantic Web Awareness Barometer** is a biannual online survey on the adoption of and expectations towards Semantic Web technologies.¹ The survey is primarily conducted among Semantic Web specialists from science and industry with the aim to provide data on current developments and future trends in the fast evolving and dynamic field of web semantics.

Beside the general interest described above the current survey was based on the hypothesis that the first broad roll out of Semantic Web technologies will happen along the increasing diffusion of Social Software applications. For this reason we included several questions that addressed the adoption of Social Software within organizations and the perceived benefits of and barriers to the use of these systems.

We further grouped the respondents by their approach to the topic into **Research-oriented** and **Application-oriented**. While the first category consists mainly of stakeholders from the academic or industrial scientific sector, the latter category consists of interested users and decision makers with an industrial background.

Methodological Remarks

The current online survey was conducted between November 1, 2008 and January 22, 2009 by the **Semantic Web Company** in cooperation with the **Know Center Graz** and the **Corporate Semantic Web Working Group of Freie Universität Berlin**.

It was distributed among the affiliation networks of the project partners covering a good deal of the Austrian, German and Swiss Semantic Web community but also generating broader international feedback from 22 countries. From the 532 responses a total of **257 valid data sets** were derived from which **96 were from Application-oriented** and **161 from Research-oriented** participants.

Data produced by online surveys generally lack representativeness and validity, why they should be interpreted with caution. Due to the small sample size there has been no hard statistical testing on the data. For further testing interested parties can download the data set from www.semantic-web.at, www.know-center.at and www.corporate-semantic-web.de.

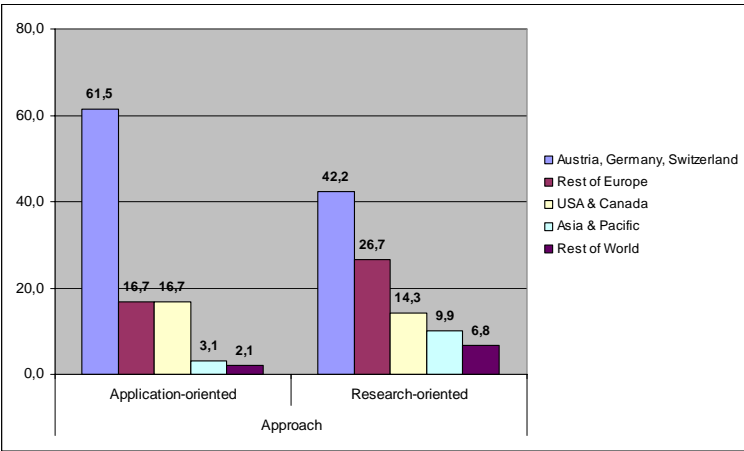
How to read the Report

Due to the methodological constraints described above we recommend to read this report as a **snapshot** on the development of the Semantic Web. It shall give the reader a **brief overview over current trends and possible future topics**. It shall provide **orientation at a broader scale** that helps the reader to compare his/her personal notion of the current development with the aggregated views from other specialists. Beside that, the results of this survey can be used to formulate **further hypotheses** for testing under more advanced empirical circumstances.

¹ The first survey was conducted in 2006 and produced 143 data sets. Due to changes in the research design a comparison between the data from 2006 and 2008 is not reasonable.

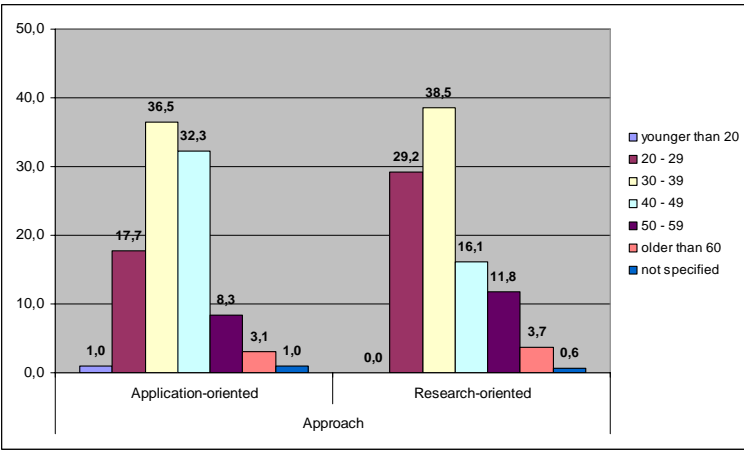
Results (in %): Who participated in the survey?

Region



The survey produced a broad response from Austria, Germany and Switzerland, especially from application-oriented participants.

Age

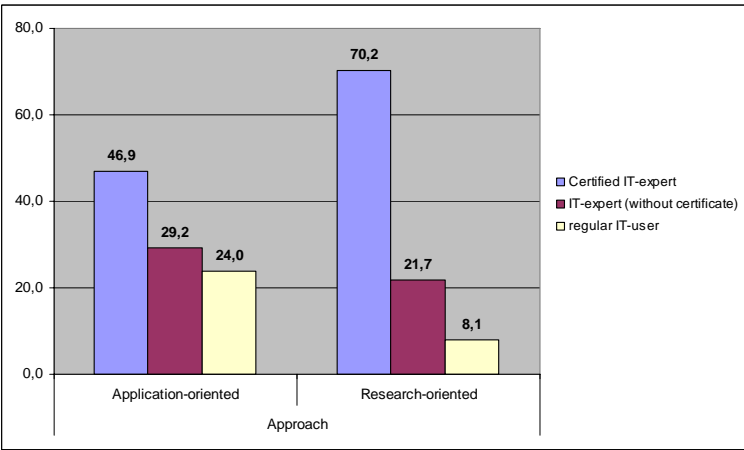


Generally speaking, the participants are in their 30s.

On the one hand the age distribution among research-oriented participants shows that the topic is a relatively young research field.

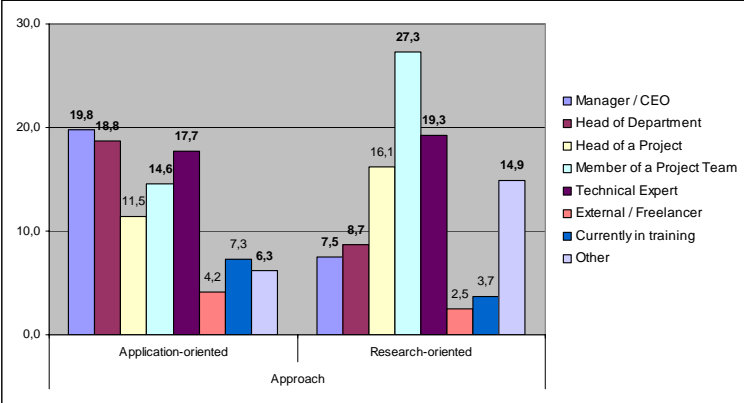
On the other hand the high amount of 40+ age group among the application-oriented participants suggests that the technology has arrived in the corporate / commercial sphere.

IT Competence



Both groups have a high level of IT competence either as certified experts with a formal degree in engineering arts or similar or experts that are not formally certified but see themselves as users with above average IT-skills.

Professional Role

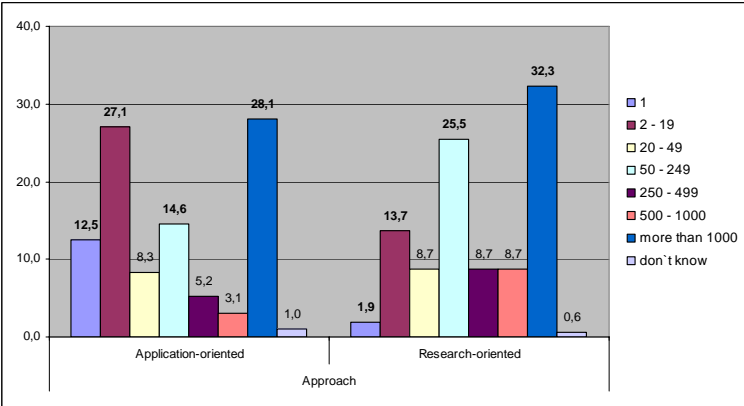


The Web has reached the decision makers among the application-oriented participants.

Among the research-oriented participants we can witness a higher concentration among project teams (heads and members).

In both cases a high number of people dealing with the web describe themselves as **technical experts**, which might indicate that the web as a horizontal medium is touching multiple working areas and domains.

Size of Organization

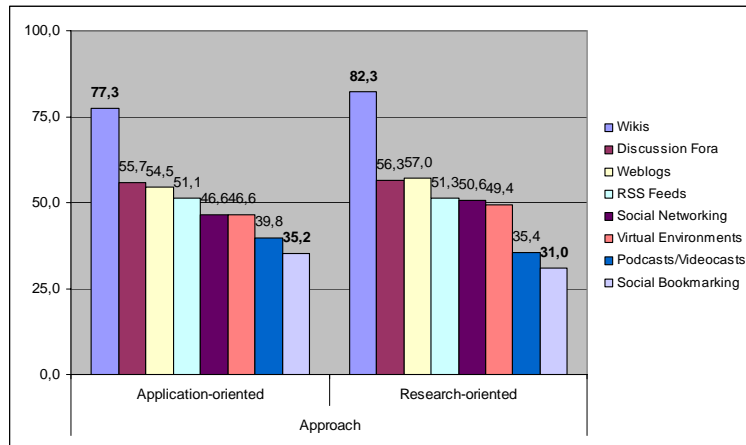


There is a fairly **uneven distribution of organization size** between the two groups.

While application-oriented participants come either from small or large organizations, the distribution among the research-oriented participants is slightly more balanced.

Results (in %): Social Software - Awareness & Use

Social Software already introduced to the Organization

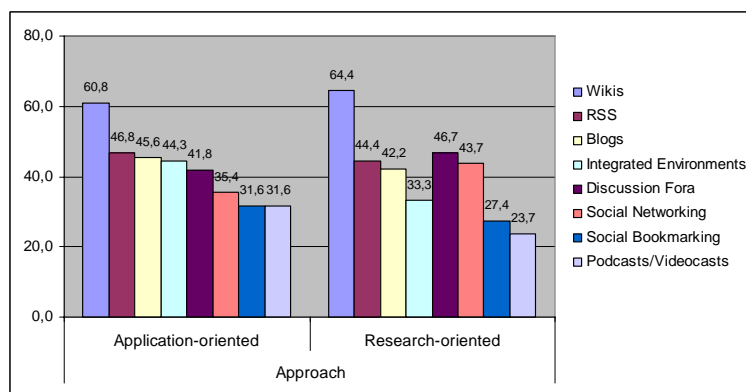


Wikis are king! Social Bookmarking stays behind.

The data clearly indicates that Wikis are so far the most popular Social Software application already in use.

Except of Podcasting/Videocasting and Social Bookmarking the Social Software applications seem to be rather common tools.

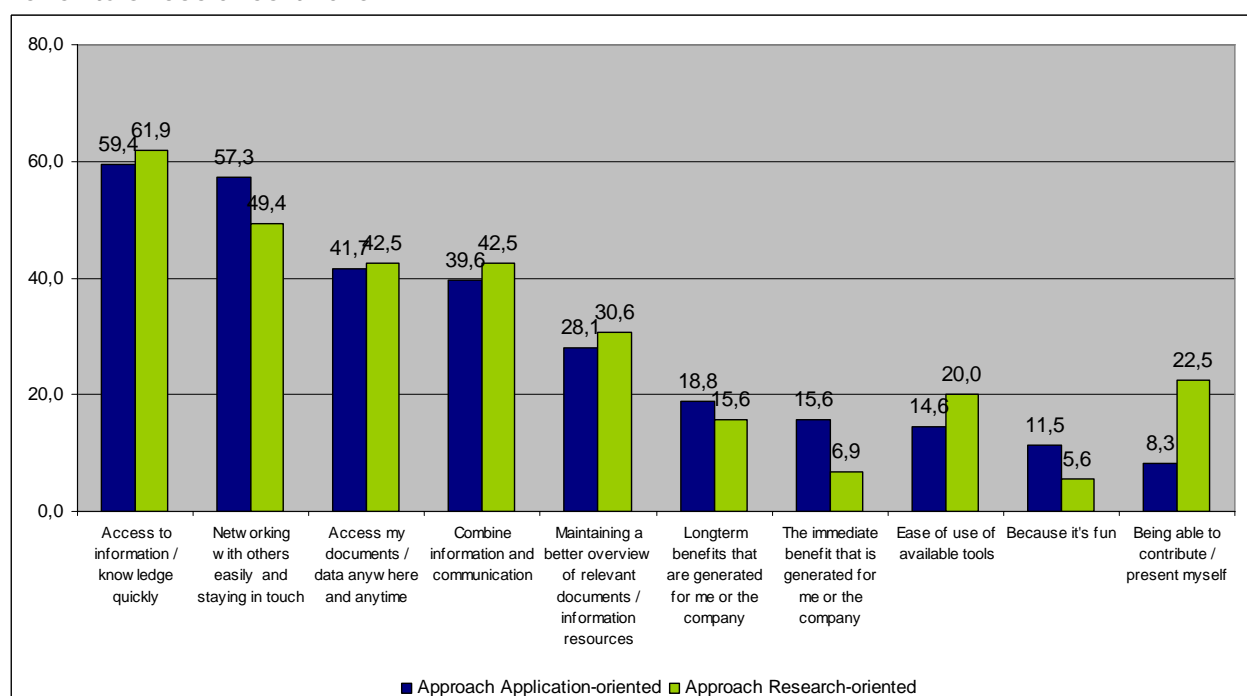
Intense Use of Social Software



There exist slightly differing application and usage patterns between the two groups.

Although Wikis are popular among both groups, application-oriented participants make more use of integrated enviroments (applications that integrate two or more Social Software applications) and Casts, while research-oriented participants are more familiar with Discussion Fora and Social Networking sites.

Benefits of Social Software

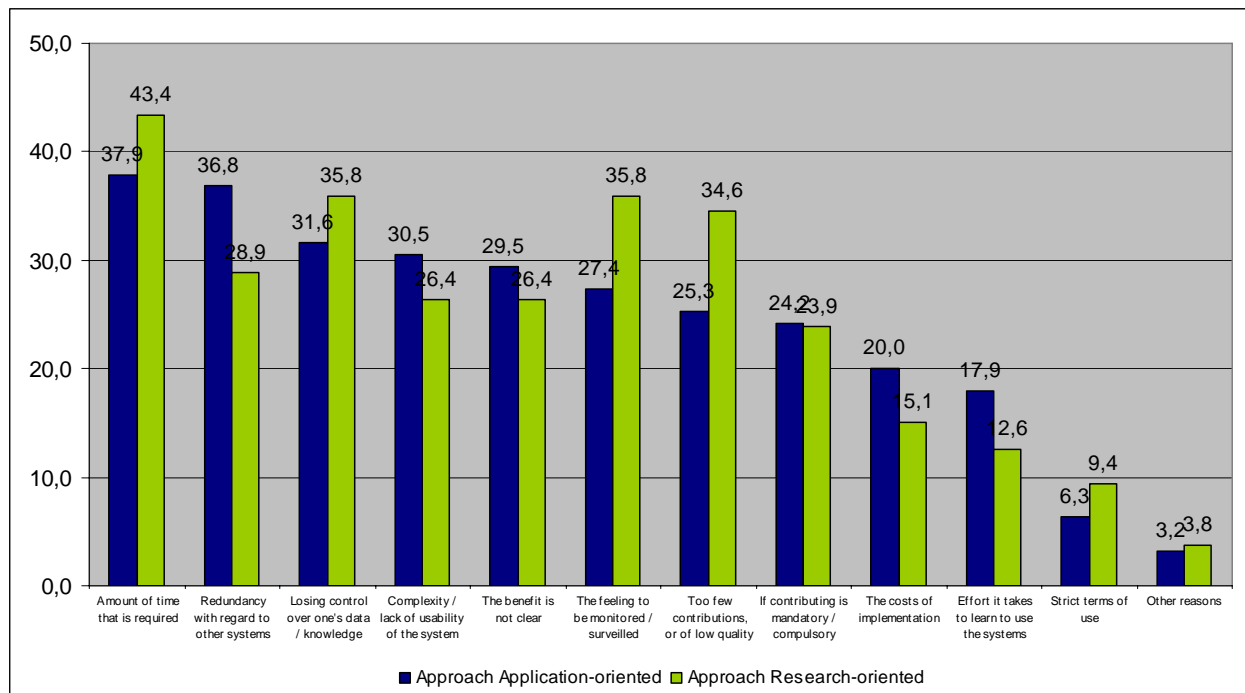


There exists a rather even distribution of motives among both groups for the use of Social Software. Both groups say that **quick access to information and knowledge** is the biggest benefit generated by Social Software, followed by **social networking functionalities** and **ubiquitous access to documents and data**.

Nevertheless, there are indicators for differences too. Application-oriented users value the immediate benefit that is generated by Social Software higher than research-oriented participants. On the other hand research personnel favors the possibilities to contribute and present him-/herself much higher than the application-oriented participants.

Finally it is interesting to observe that application-oriented participants seem to have more “fun” with Social Software than research-oriented participants.

Barriers to Social Software



There exist differing notions about barriers to Social Software between both groups. Generally both groups perceive the **amount of time** to use and maintain Social Software applications as the biggest obstacle.

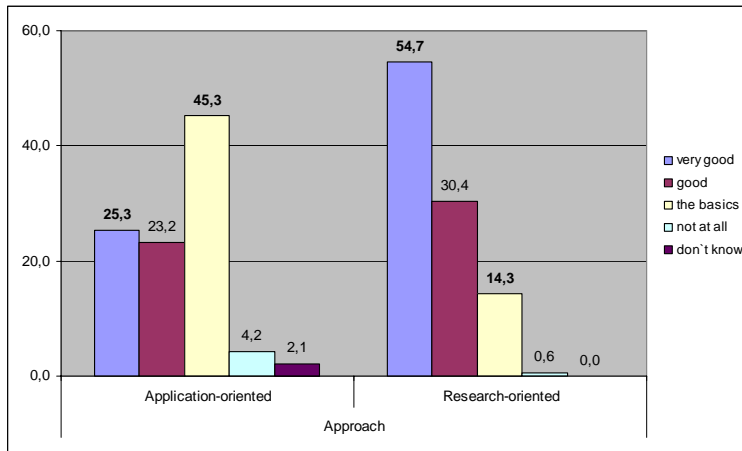
Additionally application-oriented participants see the **redundancy to other systems**, the danger to lose control over data and knowledge, as well as the bad usability as most relevant obstacles to its use.

On the contrary research-oriented participants believe that **losing control over data and knowledge**, the feeling to be monitored and surveilled, as well as the low amount or quality of contributions are the biggest barriers to Social Software.

Interestingly, strict terms of use are widely accepted by the respondents.

Results (in %): Semantic Web - Experience, Expectations & Readiness

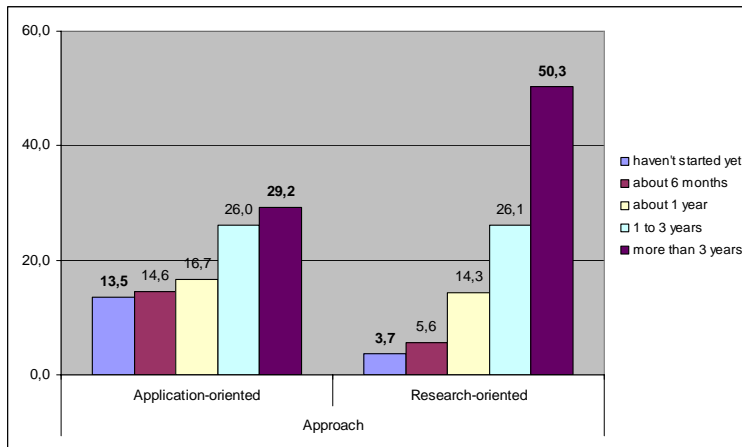
Familiarity with Semantic Web



Drawing from the fact that the survey was mainly conducted under web specialists, it is not surprising that the overall Semantic Web familiarity is already rather high.

Generally, research-oriented respondents are more familiar with the Semantic Web than application-oriented respondents.

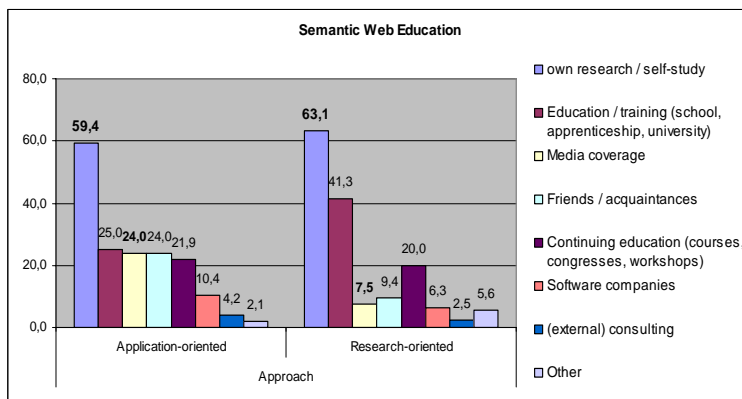
Experience with Semantic Web since ...



Correspondingly, most participants, especially from the research-domain, have dealt with the topic for more than three years.

But comparing both groups application-oriented participants experience a higher growth rate than research-oriented participants.

Semantic Web Education

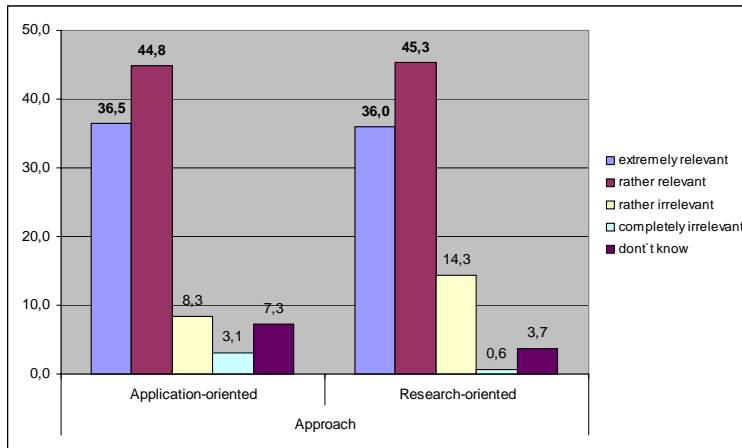


„I taught myself about the Semantic Web“ is the general pattern among both groups.

For obvious reasons participants from the research-domain have a stronger emphasis on formal education.

On the other hand application-oriented participants are acquiring more information from the media and friends and acquaintances.

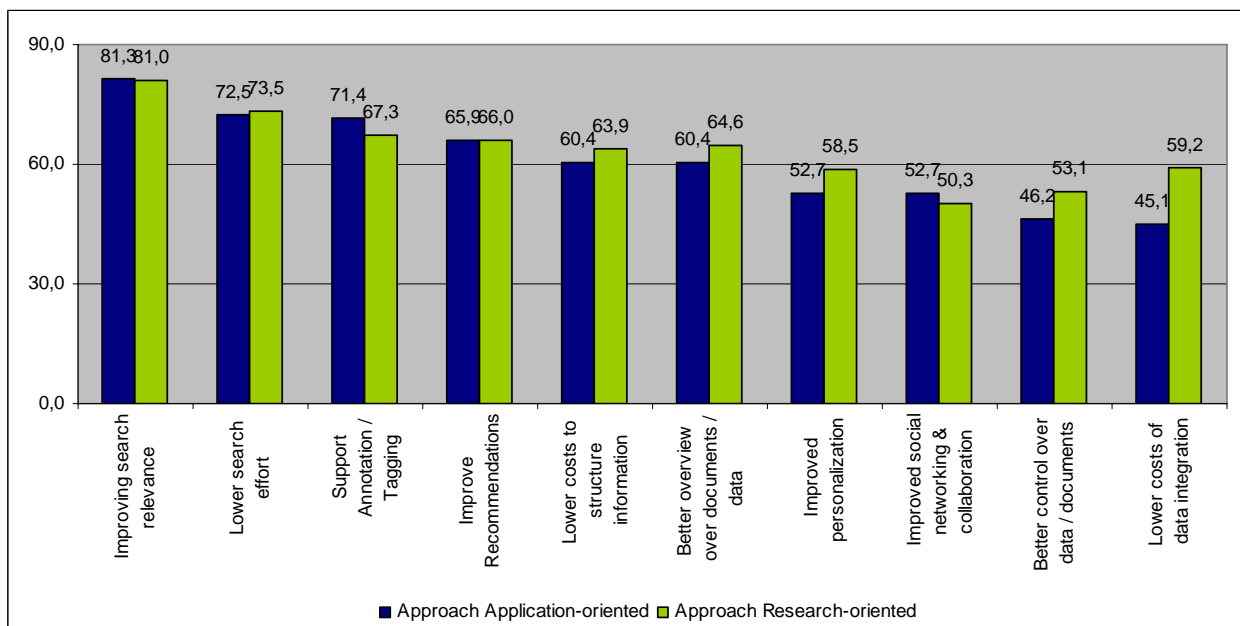
Corporate Relevance of the Semantic Web



There exists no doubt among all participants that Semantic Web has a corporate relevance.

More than 80 percent of application-oriented and research-oriented participants think that Semantic Web technologies are at least relevant to be used for corporate and/or business purposes.

Benefits of the Semantic Web

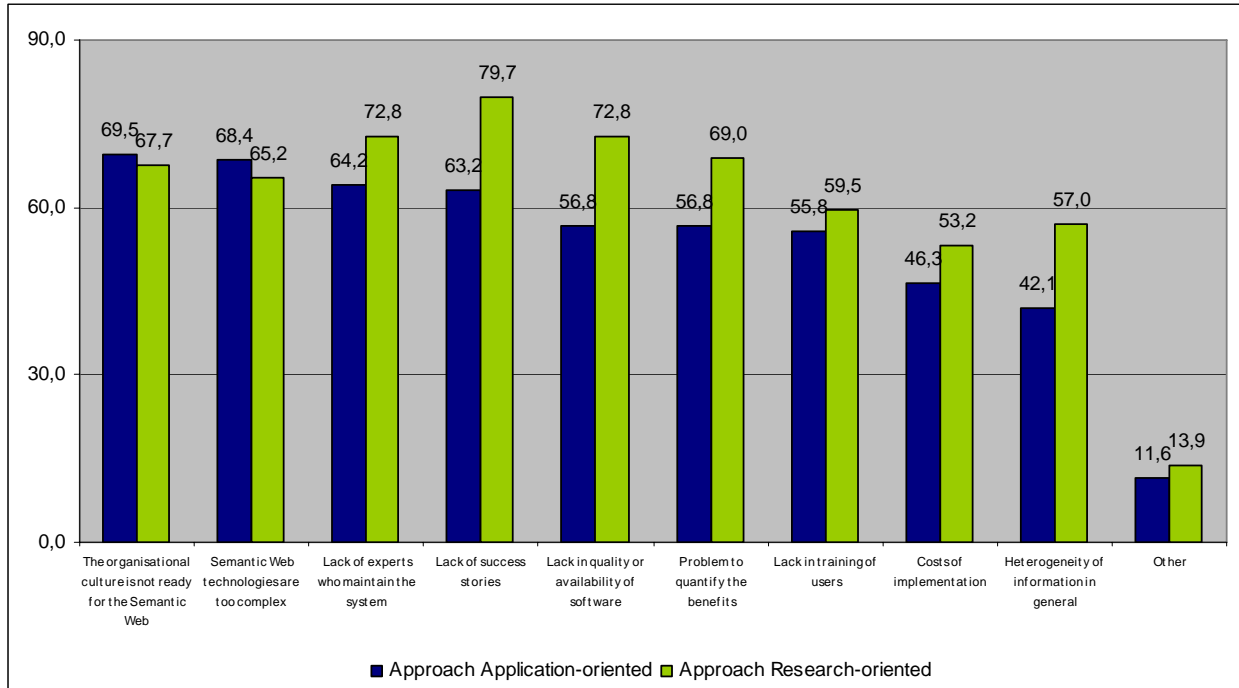


Among both groups exists minor difference about the view on benefits of the Semantic Web.

Improved search and lower search effort will be the primary benefits generated by Semantic Web technologies, followed by improved tagging / annotation quality and recommendations.

Attention should also be paid to the aspect of lower integration costs. Awareness about this topic is slightly higher among research oriented participants than among application-oriented participants.

Barriers to the Semantic Web

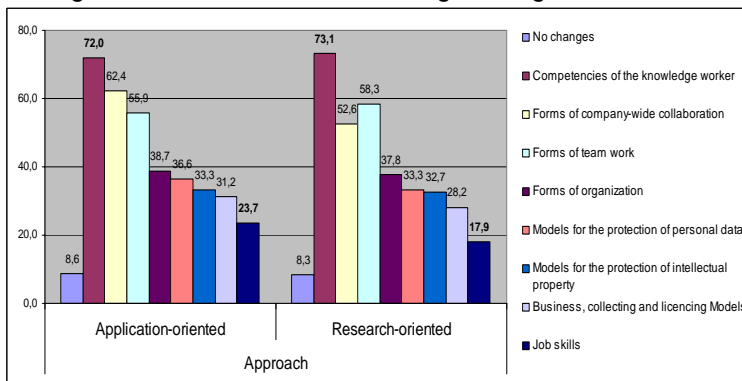


The data reveals differing notions in the importance of certain barriers to the Semantic Web!

Application-oriented participants believe that the **organisational culture**, the **complexity of the technology**, a general **lack of experts** and a **lack of success stories** are the biggest obstacles to the application of Semantic Web technologies.

On the contrary research-oriented participants believe that the **lack of success stories**, a general **lack of experts**, a **lack in quality of available software** and the **problem to quantify the benefits** will hinder the broad adoption.

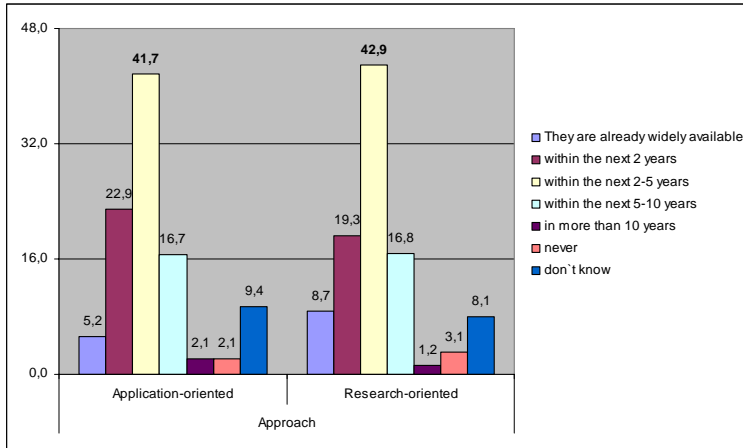
Changes the Semantic Web brings along



A fairly even distribution among both groups exists in respect to the changes the Semantic Web brings along.

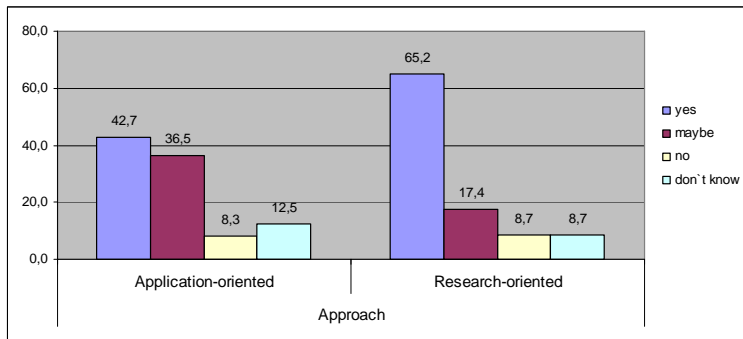
While just a small minority believes that there won't be any changes at all, most participants expect changes in regard to **competencies of the knowledge worker** and **new forms of collaboration** - either between or within companies.

Time to Market of Semantic Web Technologies



The majority of both groups expects a broad commercial availability of Semantic Web technologies within the next **two to five years**.

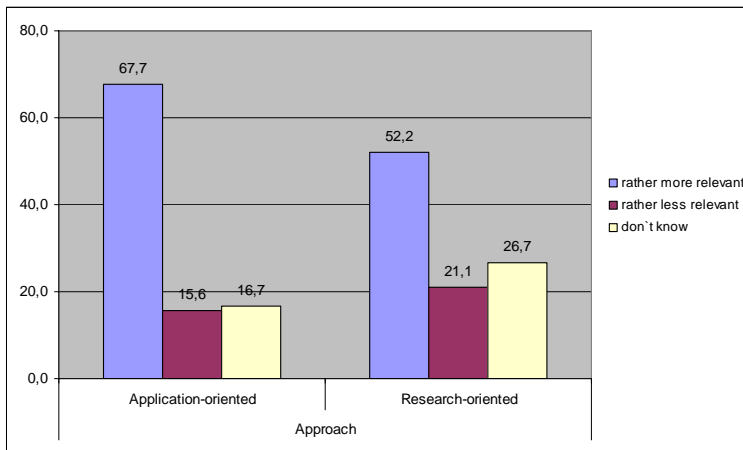
Readiness to implement Semantic Web Technologies



The readiness to implement Semantic Web technologies is relatively **high among both groups** although the application-oriented participants seem to be a more reluctant.

Nevertheless just eight percent of both groups feel that they are not prepared yet to take this step.

Relevance of the Semantic Web in Times of Crisis



The last question of the survey reveals that **expectations towards the Semantic Web are very high!**

Especially the application-oriented participants believe that the **relevance of Semantic Web technologies in times of crisis, where scarcer resources require increased efficiency, is growing.**

Conclusion

The report provides a good insight into the awareness of and expectations towards the development of the Semantic Web as disclosed by the participants of this survey. Taking into account that over 50 percent of all participants have dealt with the topic for more than a year and nearly 70 percent say that they are at least well familiar with the topic, the survey results should be read as an expert's view on current developments and future trends.

From a technical perspective the report indicates that there are smaller differences between application- and research-oriented participants than the general notion might suggest.

Wikis are the most popular Social Software application and have found there way into organizations. Quick access to information and knowledge is the most important argument for the use of Social Software, while the amount of time spent to use and maintain such systems is seen as the biggest obstacle.

Correspondingly, the practical value of the Semantic Web is seen in search-related aspects like improved relevance of search results, lower search effort, well structured annotations and better recommendations. Over 80 percent of the participants think that Semantic Web technologies are relevant for corporate use, while organizational changes will occur with respect to competencies of the knowledge worker and new forms of collaboration.

Beside the commonalities of the two groups a look at the differences reveals some interesting aspects that might need further discussion.

First of all not all people dealing with the Semantic Web are certified IT experts. Although the general IT literacy is generally high it should be paid respect to the fact that a lot of people do not necessarily approach the topic from an engineering perspective especially when it comes to communicating the benefits and risks of Semantic Web technologies. This is especially important from an education / knowledge transfer perspective as the data indicates that nearly a quarter of application-oriented participants get there information from the media while this is the case for just 7,5 percent from research-oriented participants. But the knowledge of the media discourse is an important precondition for a sustainable technological roll out especially as the media tends to simplify complex issues and developments. Hence researchers should follow the media discourse closely and take a more active role in informing the public about the challenges and risks of Semantic Web technologies.

Close attention should also be paid to the differing notions about the barriers to the Semantic Web. While research-oriented participants think that the lack of success stories is the biggest obstacle, application-oriented participants perceive the technology-induced organisational changes to be the biggest challenge to the broad adoption of Semantic Web technologies. This is a major gap in the notion of both groups and indicates that more attention should be paid to the non-technological aspects of Semantic Web technologies with respect to organizational effects and emerging governance issues.

Finally the data indicates that the expectations in Semantic Web technologies are very high in both groups. Over 50 percent of the research-oriented participants and nearly 70 percent of the application-oriented participants perceive a growing relevance especially in times of crisis. To avoid a rude awakening it is necessary to bring the expectations down to a realistic level, which is best achieved by a balanced discourse about Semantic Web technologies and the economic, social and cultural changes they might bring along.