

Semantic desktop paves the way for the semantic web

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(PhysOrg.com) -- European researchers have developed innovative software to make finding information on your computer and sharing it with others considerably easier. In the process, they may have solved the chicken and egg problem that has held back development of the semantic web.

Annotating information with semantic data so that its meaning is understood by machines as well as humans has been heralded as the next evolution of the internet – giving more meaningful structure to the jumbled and disjointed results of web searches. However, the vision of the semantic web has largely failed to materialise because there is little incentive to create semantic content when there are few services that use it. And there are few services that use it because there is so little semantic content.

Rather than getting stuck in this vicious circle, the researchers behind the Nepomuk project sought to bring semantic information closer to the user, focusing not on how it could be used on the web but on how it can help people find and structure information on their personal computers and share it with others in a network. The result is what the Nepomuk team calls a ‘social semantic desktop’ and it could be the key stepping stone to realising the vision of the semantic web.

“In making data and connections between data easy to find and identify, the semantic desktop gives people a very personal motivation to start annotating their information. The next logical step is for that information

to be shared, and you therefore have a starting point for the semantic web,” explains Ansgar Bernardi, the coordinator of the EU-funded Nepomuk.

Giving meaning to information

Nepomuk’s desktop solution offers plenty of incentives for people to get to grips with semantic information. By giving meaning to documents, contact details, pictures, videos and all manner of other data stored on a user’s computer, regardless of file format, application or language, the semantic desktop makes it easier and faster to retrieve information and to identify connections between different information items.

“For example, I was taking notes at a summer school we recently held in Malta and I was writing the information into a wiki application on my computer. With Nepomuk installed, each time I mentioned a speaker’s name I was given the opportunity to link to contact details and other data about that person I already had stored on the computer,” Bernardi, a researcher at the German Research Centre for Artificial Intelligence (DFKI), explains.

The need to identify connections between a person and information and between different people was one of the key inspirations of the project.

"The idea of building a semantic desktop arose from the fact that one of our colleagues could not keep track of the girlfriends of his friends because they kept changing," Bernardi says. "Social networking sites such as Facebook only go half way towards solving the problem because they do not provide an actual assessment of relations between people based on all the information available to you and your interpretation of it... Much of that information is hidden on your computer in files, emails, contact books, pictures, in the names and structures of your folders. Nepomuk provides a more efficient way of managing that

information."

When information is added, the Nepomuk software, which consists of independent applications and plug-ins for third-party programs, prompts users to annotate it so that it can be correctly situated in what Bernardi describes as their "personal information view of the world."

What's more, when the Nepomuk software is installed it crawls the user's computer in search of information and then begins to establish connections between different information items.

Users can decide what information to share with others by setting access permissions for individual information elements. Using a peer-to-peer architecture or a direct connection, the Nepomuk software then establishes semantic connections between data stored on different users' computers, creating a semantic network that is only one step away from the vision of the semantic web.

The benefits of the technology are being highlighted in four case studies.

At the Institut Pasteur in Paris, the software is being used to create an electronic lab book to help researchers document experiments in the bio-science laboratory and link references to the original sources.

At software developer SAP, it is being used as a task management solution, allowing developers to collectively organise their time.

At TMI group, it is being used to network the organisation's consultancies in different European countries, helping one consultant use the experiences of others to provide solutions for clients.

And at Mandriva, a project partner and distributor of the Linux open source operating system, the software is being used to power its

knowledge base.

Open source interest and commercial applications

The Nepomuk project, which is due to end in December, has already elicited widespread interest from the open source development community. New applications and software plug-ins are being worked on by developers outside of the project consortium. These allow Nepomuk to function with third-party programs, such as the Firefox open source web browser and email readers, such as Thunderbird and Microsoft Outlook.

Nepomuk's semantic annotating and tagging system has been incorporated into the K Desktop Environment 4 (KDE) that is distributed with some versions of Linux, while a pure Java implementation, based on the Eclipse platform, is also published by the consortium.

One spin-off company from coordinating partner DFKI is in the process of being established, and Bernardi says others may follow.

In the meantime, the consortium plans to establish the Open Semantic Collaboration Architecture Foundation to support the Nepomuk results after the project ends. They are actively seeking industrial and academic partners to help in that goal, offering them, in exchange, the chance to participate in what could be the key software breakthrough that turns the semantic web from a vision into reality.

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