Is it e-government's saviour? An automatic knowledge filter

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(PhysOrg.com) -- An innovative new knowledge management concept has the potential to revolutionise the way government administrators work.

The SAKE research project was established to find a solution to the information overload facing many public administrators, particularly in newer Member States, where local and national governments are rapidly updating legislation and processes in line with their changing economies and European Union expectations.

The huge volume of information and changes - major and minor - make it difficult for administrators to maintain their productivity and to ensure they have taken all current factors into account when making decisions.

SAKE set out to create a knowledge management system that would proactively update public administrators on developments concerning their jobs, and explain any changes to data and documents with contextual background.

"We follow an ontology-based approach for modelling information resources, context and preferences, implemented on an event-driven architecture," says Dr Nenad Stojanovic from FZI, and scientific coordinator of the SAKE research team.

"The architecture supports the processing of events that relate to changes in information resources and the working context of the user, increasing

the system's responsiveness. Action is taken on 'relevant' events - relevance is decided via ontology-based preference rules."

The SAKE Knowledge Management System includes conventional tools, such as a content management system for the creation, sharing and editing of documents, and a groupware system with discussion forums, messaging tools, shared calendars, and a workflow system. Adding to these, the SAKE team has developed a novel Attention Management System (AMS) that semantically filters and retrieves data especially matching the user's needs - an automatic 'knowledge filter' of sorts.

Putting it in context

The AMS creates 'context' by combining information on the user's current focus of attention and goals, and some relevant aspects of their current environment.

This semantically contextualised data from all three systems is integrated in an 'information bus', enabling the SAKE system to generate a richer picture of what is happening for the public administrator.

"The context is not just a description of what people are working on or what business processes they are using, or what sort of documents they are using in their job," says Dr Konstantinos Samiotis, a consultant with Planet SA in Greece and SAKE's project manager. "It is something more holistic. We view context as something that brings users closer to information and closer to actions."

"The integration adds real value," says Samiotis. "We have three integration options: data exchange, process integration, and what we call integrated actions. The combination of these three occurs within our information bus and everything communicates and runs through this information bus.

"All these technologies are transparent to the end user. For instance, [s]he will see any annotations or changes saved by colleagues or the state of documents… previously worked with. There is continuous monitoring and exchange of information whenever it is updated."

According to Stojanovic, the main contribution of the approach is "a unified, event-based representation and processing of changes in information resources, contexts of work and collaboration, which alleviates the process of defining and detecting relevant changes and increases the system responsiveness."

Reasoning, too

"AMS plays a central role in proactively delivering the right information in the right context," says Stojanovic. Proactivity is driven by complex events, starting from the user's preferences entered in the 'Preference Editor'. SAKE utilises basic event processing to detect events. Because proactivity requires an immediate and intelligent response to changing circumstances, a form of reactive reasoning is needed - implemented in the 'Reasoning' component - based on so-called event-condition-action (ECA) rules.

The research consortium on this EU-funded project included universities and institutes from Germany, Greece and newer EU members. The coordinating organisation, Planet SA, a management and information technology consultancy, carries strong experience in project management and among others is deeply engaged with e-government initiatives in Greece and neighbouring countries.

"From the start, the SAKE project focused on the pragmatic needs of public administrators, as reflected by our users from three new Member States of the European Union - Hungary, Slovakia and Poland," says Samiotis. "We promised them a platform that would facilitate their jobs.

In this respect, the deployment of innovative technologies in SAKE was transparent to the end users ensuring meaningfulness and user-friendliness."

Proven to work, but what next?

SAKE proved that the highly innovative concept of attention management can work, although it is not yet ready for commercialisation. The reasoner, in particular, needs further development work.

"In its current state, SAKE has managed to implement almost all functionalities up to a certain level. We have a fully working prototype integrating content management, groupware, workflow and context-based aspects relating to attention management, all running properly." Open source versions of the SAKE tools are available at www.sake-project.org.

What is needed is a system that can be replicated, says Samiotis.

"We are faced with the challenge of creating a generic domain ontology for all public administrations. Without an established domain ontology, we cannot replicate the system from one public administration to another."

Now that the concepts have been proven, however, the next steps are a matter of time, he suggests. "The concept of attention management is out there. It will evolve."

More information: www.sake-project.org/

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