Real-time decision-support system can save lives

July 26 2006

Making the right decision when you are under pressure can make the difference between success and failure in many safety-critical applications. When you are faced with a major fire for example, it could save lives, as it proved during live demonstrations.

This is the background to the AMIRA IST project, which aimed to develop a more sophisticated version of the platform first seen in the IST project RIMSAT. The partners in AMIRA aimed to develop a decision-support system which responded fast and flexibly enough to be useful in real life when critical decisions need to be made, especially in life-threatening or mission-critical situations.

"AMIRA is a natural successor to RIMSAT," says project coordinator Eric Auriol of Kaidara Software in Paris. "But in AMIRA, our

challenges were how to deliver the right information to the right point as fast as possible, in order to be of genuine assistance in real-life applications. In fact," he says, "the key development within AMIRA is not so much the system itself, but the knowledge base behind it."

The AMIRA system offers voice communication with the user, wireless networking and laptop displays of support information in the form of text, html and even Flash graphics. Information requests from the user are managed by a remote hub server linked by IP protocol with distributed knowledge databases, which can be situated at locations around the world. The knowledge base itself is a multi-layer software system that offers both fast searching and case-based reasoning to find the solution.

AMIRA completed at the end of June 2006 with live demonstrations of the system in action at the national Fire Service College in the UK. "We set light to 1,000 plastic bread delivery crates to simulate a fire at a bakery," says Auriol. "The firefighting team deliberately sprayed the fire with water, knowing that this was the wrong solution to a plastics fire. When the fire spread, they queried the AMIRA system for the correct approach, and the system forwarded these queries to specialist knowledge bases in Paris and Norway. The response arrived within one to two seconds, and the lead firefighter received the advice on his audio headset using the system's text-to-speech capabilities."

A second simulation consisted of a fire in a small van, which turned out to be loaded with explosives. The firefighter tackling the blaze read the symbols on the warning sign affixed to the van, and relayed them to the AMIRA knowledge base asking their meaning. The system warned immediately of an explosion risk, and advised the firefighter to retire to a safe distance of 600 metres. "Of course the van exploded at the end of the demonstration," says Auriol. "It made the simulation more effective."

The AMIRA partners are now commercialising various component parts of the system for the marketplace. "We have signed a worldwide licence with Daimler-Chrysler for the case-based reasoning and speech synthesis aspects of the system," says Auriol. "The company plans to use these components to provide diagnostic support for their dealer showrooms in the US."

And the UK West Midlands Fire Service (one of the project partners) is placing the AMIRA knowledge base on its website to support the service's fire commanders at incident sites. This development, now almost complete, makes the knowledge base contents accessible via a standard Web browser.

Source: IST Results. Based on information from AMIRA.

Citation: Real-time decision-support system can save lives (2006, July 26) retrieved 11 May 2024 from https://phys.org/news/2006-07-real-time-decision-support.html