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INFORMATION TECHNOLOGY FOR EUROPEAN ADVANCEMENT

PROJECT RESULTS

Active security for public places

An open, integrated and inexpensive platform

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SERKET prototyped technologies for preventive security of public places and large events such as mass transport, sporting and cultural events, and demonstrations. Through the analysis of information supplied by sensors, SERKET automatically detects risk-prone situations. In future, security supervising operators can focus on their mission since the system reports alarms in case of latent threats. The interest of this approach consists in improving the operators' knowledge of potentially complex field situations by avoiding the tedious and unfeasible analysis of all images supplied to the control room.
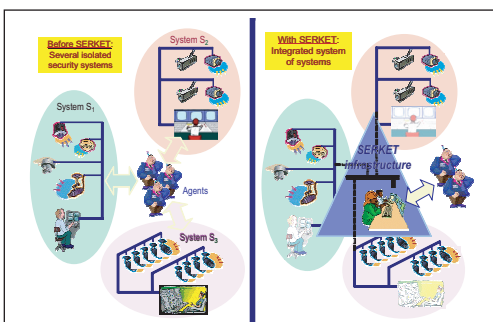
A Police command-and-control (C2) room operator – the contact point for supporting and co-ordinating security forces deployed in the field – has to appreciate all mission-related information and handle it until the end. Usually video is used "by hand" as a visual support when searching one particular item of information or when a suspect situation has been detected. Video itself exceptionally becomes a source of alarm, in addition to the radio reports supplied by security agents. Indeed it is impossible for the operator to visualise in

real time all the relevant images; he/she focuses on those judged as the most informative at a specific moment. The multiplication of images coming from ubiquitous video-surveillance equipment does not simplify the supervision task.

The project objective was to provide security operators with more knowledge relevant for their missions, to enable them to optimise their decisions. Automatically analysing the information supplied by different types of sensors – video-surveillance cameras, intrusion detectors, access control barriers, microphones, … – SERKET detects risk situations; this is the key innovative concept of preventive security: operators can focus on supervision, being alerted by the system as soon as a threat is detected and identified. An operator's knowledge of the situation is enriched, which is of utmost interest when a situation is particularly sensitive in terms of violence, complex because of the risk of interference with other events and subject to concealed threats. The ideal and inapplicable visual analysis of all images, transferred to the control room when interesting, is then avoided.

Software platform managing complex security

SERKET addresses market segments such as mass transport security in ports, airport and railway stations, urban security and road surveillance, as well as the organisation of large cultural or sports events in stadiums, sports grounds, Olympic sites, concert halls and opera houses. Transport companies are now very much concerned with the threat of terrorist attacks in public places.

A global software approach at low cost

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The global improvement of security within buildings and stations is also important to get people to feel safer when taking trains, planes and ships, hence increasing the use of public transport. It is essential to be able to intervene rapidly on large sites and to give information to the central surveillance and on-site security people not only as fast as possible but also relevantly and accurately.

SERKET resulted in a software platform managing a complex security system. This platform is being marketed to system security providers who will incorporate it in their systems offering advanced capabilities – such as threat assessment and information fusion. The security market growth is forecasted at about 10% a year; the SERKET platform is expected to penetrate this market rapidly and deeply beyond this 10% increase.

Open architecture integrating innovative components and services
Major results are the specification and prototyping of a novel software platform dedicated to the security of public places and large events, offering several advantages such as openness, integration and deployment facilities, all very innovative in the security-systems business. To build this platform, the SERKET consortium first adapted existing hardware and software as much as possible: video-

surveillance cameras and other sensors; commercial, off-the-shelf (COTS) mediation middleware; robust video-analysis algorithms for intrusion detection; and standards for dynamic 3D display.

Several innovative functions were then designed to meet the SERKET goals, such as:
▪ The generalised concept of a heterogeneous smart sensor;
▪ The mediation principle applied to the security platform;
▪ Advanced signal-processing algorithms; and
▪ The fusion of their results for an automatic detection of abnormal situations.

The SERKET platform includes up-to-date technologies and standards such as service-oriented architecture (SOA), mediation middleware and complex event processing (CEP) for information fusion that enable this innovative software layer to fit with the requirements of low-level processing algorithms – signal and data processing, e.g., images, sounds, interruptions – as well as of upper-level applications that include information filtering, correlation and combination for threat assessment and situation picture display.

SERKET event-oriented architecture is seen by the industrial partners involved as the sound basis for a new generation of integrated security systems.

Major project outcomes

Dissemination
• 31 communications in conferences
• Seven publications in scientific journals
• 14 communications in business workshops
• Three articles in reviews

Exploitation
• Five new products, six existing products improved
• Six new services, three existing services improved
• Five integrated prototype demonstrators: demonstration supervision and illicit intrusion, private-infrastructure protection, coastal surveillance and single location surveillance point.

Standardisation
• Contribution to several standards in different domains: semantic web, information processing, communication between components, video metadata encoding, alert messaging.

ITEA - Information Technology for European Advancement - is an eight-year strategic pan-European programme for pre-competitive research and development in embedded and distributed software. Our work has major impact on government, academia and business.

ITEA was established in 1999 as a EUREKA strategic cluster programme. We support coordinated national funding submissions, providing the link between those who provide finance, technology and software engineering. We issue annual Calls for Projects, evaluate projects, and help bring research partners together. We are a prominent player in European software development with some 10,000 person-years of R&D invested in the programme so far.

ITEA-labelled projects build crucial middleware and prepare standards, laying the foundations for the next generation of products, systems, appliances and services. Our projects are industry-driven initiatives, involving complementary R&D from at least two companies in two countries. Our programme is open to partners from large industrial companies, small and medium-sized enterprises (SMEs) as well as public research institutes and universities.

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