

# ITEA2 Roadmap

ITEA2 is a EUREKA Cluster programme dedicated to R&D projects focused on software-intensive systems and services. ITEA2 has shown its ability and flexibility to organise projects over the past ten years. As an industrial bottom-up programme, we do not intend to define fixed themes for each call for projects; it is the responsibility of the companies involved to choose the research orientations of their projects. Nevertheless, thanks to the editing team composed of 17 very high skill experts representing major European industry led by former ITEA vice chairman Jean-Pierre Lacotte, ITEA2 is about to publish its third Roadmap describing the different research directions covered by the ITEA programme. This note will give you some general views on the questions covered by the ITEA2 Roadmap.

The ITEA2 Roadmap 3 try to modelize the software intensive system surrounding world by splitting applications and services in five domains : Me – person, device or software, identity, profile and context awareness; Group – ubiquity, self-organisation, sharing and interacting with rich multimedia content; Society – privacy, virtualisation, scalability, dependability and interoperability; Services, Systems and Software Creation – software as a service (SaS), com-

plexity, composition, open source, development and testing productivity; and Infrastructures and Basic Services – convergence of IT and telecommunications, service- or web-oriented architecture (SOA/WOA), interoperable 3D worlds, dynamic access anywhere and anytime, and content and knowledge as key resources.

To build such applications and services domains basic Technologies are requested and should be in sync with some external input called "rendez-vous" . Those basic technologies are also clustered into four basic categories: Content and knowledge – intelligent sensing, confidence, automating the building of trustable knowledge from multitudes of sources, efficient retrieving of appropriate content, managing in the long term (maintenance); Network and computing – ubiquitous interoperable heterogeneous infrastructures, increased bandwidth, quality, range and mobility support, pervasive computing, ambient and opportunistic networks, global energy management, security, privacy, trust and dependability, agility, dynamism, self-optimisation, self-learning, semantics handling and context-aware services, multi-provider dynamic services, distributed autonomous agents, virtualisation and service-oriented technologies; Interaction – interaction with everyday objects, dele-

gate, system learning and safety; Engineering – software/hardware co-design, open and dynamic product lines, co-operation across company borders; and some proposed vision for possible technologies of the future – quantum computing, low energy computing, bio systems and brain simulation.

Furthermore, the team concludes that the world could be closer and closer to the limits of Moore's law, not only assuming technical limitation but also industrial security concern which leads to new programming models: parallel with multi- and many-cores. This threat needs new software technology and many well-trained people, but it is an opportunity for Europe as the rules are changing. We were used to developing rather large systems but the future is in systems of systems to provide infrastructure and services fulfilling 'ilities'. The main requirements to be solved are: evolution, scalability, maintenance and long life cycles, as well as ubiquity, scalability, interoperability and self-adaptive connectivity, without forgetting certification and validation of very large systems. These systems of systems have a tremendous number of interacting subsystems mixing up complex embedded systems and web-based services in the 'Web of objects', which will have to be dynamically

configured on the field. This dynamism means autonomic systems. Such complexity is a critical design issue to be solved. The team suggest also that the ITEA 2 community should consider and propose solution to the huge need for all categories of software specialists needed for European industries in a very near future.

The ITEA2 Roadmap 3 will cover in detail these different topics and draw a global vision of future research needed to cope with software-intensive systems and services. The NEM community can take advantage of this programme and of the results of ITEA2 projects to develop new Networked Electronic Media systems. The NEM community is welcome to propose new projects in the next ITEA2 call for projects (Call 4) for 9 April 2009. For those who are interested, the ITEA2 project outline (PO) days in Istanbul on 16 and 17 February offer the opportunity to meet the ITEA2 community and to exchange ideas to prepare winning proposals.

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