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PREPARING THE FUTURE

European Research Project Proposals at CETIC

CETIC is rapidly becoming a strategic player in the European ICT Research Area. In order to prepare future research activities at CETIC several research proposals have been prepared and submitted in CETIC's three areas of competence: Distributed Systems, Software Engineering and Electronic Systems. CETIC's activities in the different proposals have been selected so that they are relevant to the european research objectives and contribute to innovation activities at CETIC targeted to meet market needs.

Distributed Systems

Project proposals have been submitted to reinforce research in two complementary directions: (1) semantic-based knowledge and content systems (FP6 strategic objective 2.4.7) and (2) distributed systems based on peer to peer approaches. Project proposals DocumentMagnet and KnowledgeDistillery are aimed at improving expertise in semantic based knowledge systems. Project proposal DESSERT is aimed at improving existing applied research at CETIC on peer to peer for decentralized scalable secure resilient systems.

The DocumentMagnet FP6 proposal aims to deal with the fact that human activity has gone from the search for food to the search for new information, and that the search process involves a lot of manual intervention. DocumentMagnet will combine recent natural language processing advances, semantic technologies, agent-based tools and web crawling techniques with Semantic Grid principles to provide for knowledge extraction in a fully automated and user-friendly manner, using the document as the means for interfacing the knowledge sources throughout the Internet.

The KnowledgeDistillery FP6 proposal aims to develop an open, scalable framework to enable the semantic integration of heterogeneous information resources and to enhance knowledge sharing between services and applications in the semantic grid. The main aim of Knowledge Distillery is to provide software developers with useful, dynamic views of a continuously updated Unified Knowledge Model, which are specific to one or multiple application domains and which developers can incorporate into their applications in a seamless fashion.

The ITEA DESSERT proposal aims to develop a soft middleware system ensuring the highest level of resilience, dependability and availability of data, applications, computing resources across networked infrastructures. It will be based upon peeer to peer technologies.

Software Engineering

Submitted proposals are aimed at improving our expertise in (1) software quality and (2) use of formal methods in the design of hardware/software components for embedded systems. The proposal related to software quality is called QSMS, and is aimed at defining security code-level metrics. Another proposal called RELIEF aims to provide support for product release management. The latter two proposals, called SPICES and TWINS are a collaboration with the electronic systems group, and are aimed at building bridges between software and electronic systems engineering techniques.

The FP6 QSMS proposal deals with quality and security monitoring of software. The objective of the project is to develop a methodology and tool for assessing security and dependability of software systems. Today software dependability and security assurance

relies on testing and code review. These are highly human intensive, costly and therefore often neglected. The proposal is to build a decision aid tool embedding a source code measurement tool and statistical models expressing the relationships between code measures and defects presence. This will enable the automatic security assurance of projects under development.

The ITEA RELIEF aims to improve release definition for software intensive systems in a market driven environment. Release management - in particular the definition of upcoming releases in a product roadmap - fulfills a strategic role. Making incorrect choices for a release definition may significantly impact the competitiveness of the software intensive company in a market driven environment. The aims of the proposal are (1) to define a generic decision framework for release definition, (2) to define on a formal level a computational model for release definition, and (3) to provide on the operational level dedicated tools for release definition

The ITEA SPICES proposal aims to provide support for predictable integration of mission critical embedded systems. Several domains are facing today the issue of developing mission-critical embedded computer-based systems with increasing complexity, dependability requirements and economical pressure (cost and time-to-market). Today, those domains (e.g., Avionics, Automotive, Communications...) are rather segmented and are prone to study and promote dedicated solutions, where cross-fertilisation could be of benefit. The general goal of the project is therefore to definitively propose a 'reconciled' approach, by means of new methods and tools to derive from extended architecture descriptions, component-based predictable implementations of mission-critical embedded systems associated with certification issues.

The ITEA TWINS proposal aims to optimize hardware-software co-design for software intensive system development. The general goal is to design, implement and experiment with better hardware / software engineering and management methods, techniques and tools. The sub-goals are to improve requirements co-specification and allocation, co-optimisation of software and hardware architecture, hardware and software change management, configuration management of evolving components (hardware or software), and improve testing of multidisciplinary products.

Electronic Systems

Proposals in this area are aimed at gaining experience in modelling the security aspects of the design of (1) interoperable services to open application platforms for mobile users over heterogeneous broadcasting and communication networks, and (2) mobile systems based on natural interaction between humans and digital devices embedded in their environment (smart objects). The two proposals in this area are called Smart Touch and WASD.

The aim of the ITEA SmartTouch proposal is to conceive, design, construct, and trial full business chains of the SmartTouch. The general goals for the project are to conceive SmartTouch business concepts, promote SmartTouch technology, create SmartTouch building blocks for markets by investigating standardization needs and supporting for standardization, and propose and define applications for SmartTouch environment and implement SmartTouch products with real content and case environment.

The ITEA WASD proposal deals with wireless automated service delivery. The aim of the proposal is to facilitate the provision of interoperable services to open application platforms for mobile users over heterogeneous broadcasting and communication networks. The goals of the WASD project are (1) to allow different kind of service provides's (SP's) to ensure automated seamless delivery of their services in a secure, personalized, context-aware, and transparent way to mobile users, (2) to provide flexible middleware and open API's to ensure automated seamless service delivery over different access networks, (3) to enable full interworking between mobile and WLAN networks, (4) develop key technology bricks solving current bottlenecks in interworking, and (5) demonstrate soundness of the approach through real case demonstrators.

Conclusions

The role of CETIC in the different project proposals is aimed at bolstering the innovation related activities in CETIC's three areas of competence. These innovation related activities are aimed at providing concrete results in the form of products/prototypes to open problems in industry. *Philippe Massonet, CETIC*