CETIC PROJECT PORTFOLIO 2014

	ACRONYM	TITLE	APPLICATION DOMAIN	COLLABORATION
1	CE-IQS	Expertise centre for engineering and quality of systems	Computer security and trust	Wallonia
2	CELLaVI	Center of Expertise in Open Source Software	Software industry	Wallonia
3	goCloud	Helping SMEs go to the Cloud	Software industry	Wallonia
4	EAM-SDI	Private Enterprise Application Marketplace	Software industry	Wallonia
5	QualIHM	A Requirement Engineering Toolkit for Efficient User Interface Design	Software industry	Wallonia
6	PaaSage	Model-based Cloud Platform Upperware	Software industry	Europe
7	POLCA	Programming Large Scale Heterogeneous Infrastructures	Software industry	Europe
8	DeciWeb	Taking better decisions with Web data	Software industry	Wallonia
9	eHealth for Citizens	ICT serving patients	Health	Wallonia
10	SEAMPAT	Towards an Interactive Medication Reconciliation Platform	Health	Wallonia
11	e-Patch	Development of an Electronic Patch for Geolocation and Fall Detection of People with Mental Deterioration	Health	Wallonia
12	DapCare	Patient Dosimetry eBook	Health	Wallonia
13	SPES	Support Patients through E-Service Solutions	Health	Europe
14	PIPAS	Adaptative Piloting of Hospital Processes	Health	Wallonia
15	AMACS	Automatic Monitoring of Activities Using Contactless Sensors	Health	Europe
16	INOGRAMS	INnOvations for a Global RAil Management System	Transport & logistics	Wallonia
17	NweRIDE	North West Europe Dynamic Ridesharing	Transport & logistics	Europe
18	Numericanal	Using technology for more efficient management of inland waterways	Transport & logistics	Europe
19	LOCOTRAC	Low cost train automatic control	Transport & logistics	Wallonia
20	GIR	Integrated Risk Management of Supply Chain	Transport & logistics	Wallonia
21	SimQRi	Simulative quantification of procurement induced risk consequences and treatment impact in complex process chains	Manufacturing	Europe
22	SaaS-WMS	Migrating a Warehouse Management System software onto the cloud	Manufacturing	Wallonia
23	I2MSTEEL	Intelligent Integrated Manufacturing for Steel	Manufacturing	Europe
24	ASCETiC	Adapting Service lifeCycle towards EfficienT Clouds	Energy	Europe
25	SAVE	Embedded Vision Autonomous System	Energy	Wallonia
26	SAT	Smarter Airborne Technologies	Aerospace	Wallonia
27	MidFlex	A flexible middleware for IPv6-based low-power embedded systems	Telecommunications	Wallonia
28	EVIDENCE	European Informatics Data Exchange Framework for Court and Evidence	Computer security and trust	Europe
29	REDIRNET	Emergency Responder Data Interoperability Network	Computer security and trust	Europe
30	Living Lab	by Creative Wallonia	Digital and co-creation	Wallonia
31	Bubble Hub	Creative Hub Charleroi-Sud Hainaut	Digital and co-creation	Wallonia

EXPERTISE CENTRE FOR ENGINEERING AND QUALITY OF SYSTEMS

The CE-IQS project encompasses several topics in the field of system engineering. Activities are grouped in 5 topics dedicated to methodologies, quality and certification with a technology focus on embedded and distributed systems.

OBJECTIVES

The purpose of the Centre of Expertise in Engineering and Quality of Systems is to help enterprises successfully anticipate the rapid evolution of the ICT sector through Research and Development (R&D) actions based on strong research topics but also aligned according to the programmatic requirement of enterprises.
CE-IQS covers 5 main topics:

1. Methodologies for Development and Evolution of systems
2. Verification, Validation and Quality assessment
3. Certification
4. Embedded and Distributed Systems
5. Intelligent Content and Semantics

RESULTS

The evolution of ICT systems will be studied through the strengthening of methodologies for the complete life-cycle and the integration of Software Product Line engineering. CE-IQS will provide enterprises with methods and tools for improving the control of their systems for the whole lifespan.
Embedded and distributed systems evolve according to the new paradigms induced by the Internet of Things (IoT) and consequently by the technological developments in the areas of intelligent objects, networks, Cloud and Big Data.

ADDED VALUE

The project is finely attuned to the ICT enterprises that are encouraged to propose their own Use Cases. The technologies are then implemented and demonstrated on this basis in order to validate their level of maturity and their accuracy in view of practical requirements in the field. Enterprises can then integrate these technologies with better confidence. They can also rely on CETIC and their partners to support and reduce the time-to-market of their products.

■ EMBEDDED SOFTWARE ■ SOFTWARE DEVELOPMENT SIZING ■ SAFETY ■ TRAITEMENT INTELLIGENT DE L'INFORMATION ■ SEMANTIC TECHNOLOGIESS ■ SEARCH AND INDEXATION ■ STANDARDS

Partners : UNAMUR-PRECISE, UNAMUR - CRIDS, UCL-ICTEAM, Cenaero, UMONS - inforTech, UCL-INGI, ULB-BEAMS
Type of project : Convergence Programmes 2007-2013
CETIC budget : €7.131.576,00
Start date : 01 July 2007
Duration : 90 months
Contact : Philippe Drugmand

CENTER OF EXPERTISE IN OPEN SOURCE SOFTWARE

More and more IT solutions are using open source software at some stage. However, the path to successful adoption is not straightforward due to technological, economic and licensing reasons. On the other side, there are also good practices emerging from open source communities that can suit the needs of local IT companies.

OBJECTIVES

The CELLAVI project supports the specific needs of companies that want to make business use of Open Source software. Indeed, more and more IT solutions are using open source software at some stage. Many companies are interested in open source, from both the technological and economic perspectives, but the path to successful adoption is not straightforward, as the Open Source paradigm involves new licensing schemes and requires that clear economic choices be made.

RESULTS

CELLAVI enables CETIC to develop the required expertise, aligned with local business needs. On the technological side, the project focuses on middleware and "frameworks", as well as the IT infrastructure (software management, deployment, data management,...). The project also takes into account open formats and interoperability and emerging fields, such as open hardware and automated software analysis.
The project also operates a proof-of-concept software forge tailored to the needs of typical SMEs, called Pallavi.
As regards dissemination, contributions are made to events, such as Les Jeudis du Libre and the Rencontres Mondiales du Logiciel Libre'.

ADDED VALUE

CELLAVI allows companies to assess the potential benefits of free software, including the technical economic and legal aspects. The experience gained from operating a forge suited to the needs of SMEs has drawn significant interest from companies inspiring them to enhance their development and collaboration processes. CETIC can also provide software quality insurance, based on open source tools and methodologies.

■ OPEN SOURCE ■ STANDARDS ■ METHODOLOGY ■ SOFTWARE TOOLS AND ENVIRONMENTS

Partners : UNAMUR - CRIDS, Multitel
Type of project : Convergence Programmes 2007-2013
CETIC budget : €3.056.390,00
Start date : 01 July 2007
Duration : 90 months
Contact : Philippe Drugmand

GOCLOUD - HELPING SMES GO TO THE CLOUD

The goCloud project aims to help enterprises in the IT field benefit from Cloud Computing by allowing them to offer their solutions, more easily, faster and with reduced legal risks.

OBJECTIVES

SMEs in the IT sector should be able to exploit the opportunities offered by Cloud Computing in order to offer their online services faster, more efficiently and to a larger audience. However, use of the Cloud requires specific skills which are insufficiently mastered by SMEs. On the technological side, enterprises willing to put their software online, with a pay-per-use basis while maintaining levels of service, must gain expertise to adapt their software to the Cloud, handle lack of standardisation among Cloud providers, and manage Cloud infrastructures or platforms. On the legal side, lack of knowledge of the rights and obligations of the parties involved which results in legal uncertainty is slowing the adoption of the Cloud. The goCloud project aims to helps IT companies to handle the problem globally, in relation to both technical and legal aspects.

RESULTS

The project aims to guide enterprises at each step of their adoption of the Cloud and to help them build their own software toolbox for Cloud migration. To this goal, the project is defining a methodology, backed by tools, allowing to provide software, either new or legacy, more easily in SaaS mode, without imposing a specific technology.

ADDED VALUE

Tools and recommendations issued from the project will allow companies:

- to reduce uncertainty and risk by validating legal constraints both from software providers to their customers and on the link between the software provider and Infrastructure (IaaS) or platform (Paas) Cloud providers,
- to obtain a new revenue channel by efficiently adapting existing software for use on the Cloud,
- to increase productivity by preparing their software for automatic deployment on the Cloud,
- to increase reliability and availability of provided services by being able to automate management of redundant Cloud environments used to run their software.

■ CLOUD COMPUTING ■ WEB SERVICES ■ METHODOLOGY

Partners : UNAMUR - CRIDS
Type of project : Collective Research
CETIC budget : €413.029,40
Start date : 01 July 2013
Duration : 24 months
Contact : Stéphane Mouton

PRIVATE ENTERPRISE APPLICATION MARKETPLACE

EAM-SDI is a research project in the specific field of automatic management of infrastructure. The project objective is to automate the monitoring and configuration of the infrastructure and the management of an application marketplace for enterprises.

OBJECTIVES

The objective of EAM-SDI is to extend the existing software ComodIT with a monitoring tool that collects large amounts of data based on existing probes, an analysis engine of the collected data, an orchestrator which allows executing configurable workflows including on the basis of data collected and a management mechanism of an application marketplace for enterprises.
The platform will then be able to offer its customers the ability to describe typical scenarios encountered in companies (Disaster Recovery, Scalability, ...) and benefit from monitoring and analysis tools. It also will make available applications and revenue in the market place.

RESULTS

The expected outcomes are:

- A methodology to manage the marketplace, that facilitates application delivery.
- A monitoring tool that collects and centralizes large amounts of data from sensors, and facilitates access to configure the orchestration.
- An orchestrator running configurable workflows.
- A data analysis tool that implements data mining techniques to analyse the behaviour of applications and infrastructure.

ADDED VALUE

The company Guardis will increase the capabilities of its platform ComodIT, on significant and high added value aspects. This will also benefit to customers of the platform.
The project team is also willing to make available open source components which could be used by other companies.

■ CLOUD COMPUTING ■ BIG DATA

Partners : Guardis
Type of project : CWALity
CETIC budget : €286077,45
Start date : 01 October 2014
Duration : 24 months
Contact : Nicolas Devos

A REQUIREMENT ENGINEERING TOOLKIT FOR EFFICIENT USER INTERFACE DESIGN

The QualIHM project aims to help UI developers design their user interfaces as dynamic and evolving prototypes integrating the collection, discussion and validation of UI related requirements. The resulting QualiHM toolkit also complies with essential consistency and usability criteria.

OBJECTIVES

An effective User Interface (UI) is a key success factor for interactive systems. Hence, particular attention should be paid to the UI design during the Requirement Engineering (RE) process. In this context, the QualIHM project aims to develop a LGPL3 and multi-platform toolkit for efficient UI Design. The toolkit deals with the limitations of the existing RE tools by supporting the description of requirements in different formats. In addition, QualIHM facilitates the UI design by transforming requirement formats from one to another, generating the UI code and providing feedback about the consistency and usability and of the UI.

RESULTS

The intensive collaboration of CETIC, LILAB and Defimedia, as industrial sponsor of the project, led to the development of the first version of the QualIHM toolkit. This version integrates several modules that enable:

- The description of requirements in different formats to ensure the completeness of UI requirements;
- The management of the traceability between these different requirements formats to strengthen the consistency of UI requirements;
- The evaluation of the quality of UIs by providing feedback regarding their aesthetics.

A demonstration video of the QualiHM solution is available online

ADDED VALUE

The QualIHM toolkit ensures the completeness and consistency of UI requirements as well as the quality of the UI. It answers a need the majority of ICT enterprises faces, helping them to improve the quality of their requirements specifications and the resulting UIs. This project will have a significant impact as the User Interface is the most visible part of an application the end user faces.
The resulting tool, with its LGPL3 license, will help ICT enterprises to increase their competitiveness, and potentially avoid unnecessary complex combinations of non-interoperable tools.

■ MODEL DRIVEN ENGINEERING ■ REQUIREMENTS ENGINEERING ■ USER INTERFACES ■ SOFTWARE DEVELOPEMENT LIFE CYCLE

Partners : UCL-LILab
Type of project : Collective Research
CETIC budget : €421.590,00
Start date : 01 September 2012
Duration : 30 months
Contact : Mohamed Boukhebouze

MODEL-BASED CLOUD PLATFORM UPPERWARE

To avoid situations of vendor lock-in in Cloud Computing, PaaSage is developing a methodology and tools to support model-based development of software applications independently of the characteristics of the target Cloud infrastructures. It also offers support for their optimized deployment in a multi-Cloud environment.

OBJECTIVES

Currently, developers benefit from the savings derived from the use of Cloud Computing Computing but are not able to take full advantage of its flexibility because, clouds, so far, work in silos. In this context, the developer's dream is "develop once, deploy many times on various Clouds". PaaSage will make this dream come true.
In order to fulfil this vision, the project aims to develop a modelling language, CAMEL, capable of describing the components of an application and the targets or constraints formulated by the developer for its deployment and execution. PaaSage is working on a dedicated platform offering the tools for the development and modelling of applications independently of cloud characteristics as well as the selection of an optimized multi-cloud deployment solution corresponding to the goals set (costs, availability, location of data,..). For optimized deployment across various Clouds, the platform will benefit from information gathered by the users, describing their own deployment scenarios.

RESULTS

The project will deliver an integrated platform, embedding the PaaSage methodology, language and tools. The first prototype will be released in October 2014. It will be under Open Source license and supported by a community of users.

ADDED VALUE

PaaSage will break the silos in which clouds are currently running. The platform will give the power back to the developers by offering tools for writing and describing applications that can run on various clouds without being rewritten and for deploying them optimally in cross-cloud scenarios. The platform will drastically increase flexibility and reduce costs of implementation and migration.

■ REQUIREMENTS ENGINEERING ■ CLOUD COMPUTING ■ WEB SERVICES ■ PROOF OF CONCEPT ■ DESIGN AND PROGRAMMING LANGUAGES

Partners : HLRS, INRIA, ERCIM, Flexiant, Lufthansa Systems, be.wan, FORTH, STFC, SINTEF, UiO, UCY, University of Ulm, Sysfera, Evry, ASCS, GWDG, AGH, IBSCY
Type of project : European Commission - FP7 - ICT
CETIC budget : €694.960,00
Start date : 01 October 2012
Duration : 42 months
Contact : Stéphane Waha

PROGRAMMING LARGE SCALE HETEROGENEOUS INFRASTRUCTURES

POLCA project aims to develop a new approach to address programmability concerns in embedded systems and high-performance computing. Based on mathematical transformations, POLCA will defines annotations and develop a tool chain to transform source code efficient execution on the target architecture.

OBJECTIVES

Specialized processor and reconfigurable architectures such as FPGAs and networks of dataflow-based micro-kernels are difficult to program. However, no programming model or language fully answers the needs of developers. Hence, they usually mix different programming models or use specific frameworks that try to provide the necessary functionalities, but do so at the expense of performance.
With POLCA, a first attempt will be made to jointly address the programmability challenges of embedded and high-performance computing infrastructures. POLCA aims to develop a mathematically-based approach, coupled with a toolchain that supports the right compilation, deployment, and execution configuration on the target architecture optimally exploiting its heterogeneous resources.

RESULTS

Project started in September 2013 with a first focus on the elaboration of the mathematical foundations and the requirements for the targeted use cases. CETIC will build up on the results and experience acquired from the PSOPP project, to develop relevant use cases that can benefit from FPGA based parallelization and acceleration. Signal processing and bioinformatics applications are primarily foreseen.

ADDED VALUES

For CETIC, the development of POLCA approach is oriented toward improving the design process for complex and hybrid FPGA-based embedded systems. The benefits consist of a better design space exploration for those architectures, better management of the complexity and a quicker development cycle.

■ EMBEDDED SOFTWARE ■ FPGA ■ METHODOLOGY

Partners : University of Ulm, University of Stuttgart, MAXELER Technologies, University of Twente, RECORE Systems, IMDEA Software Institute, Universidad Politécnica de Madrid
Type of project : FP7
CETIC budget : €710.015,00
Start date : 01 September 2013
Duration : 36 months
Contact : Lotfi Guedria

DeciWeb

TAKING BETTER DECISIONS WITH WEB DATA

DeciWeb aims at enhancing traditional Business Intelligence analyses by retrieving and integrating relevant data from the Web.

OBJECTIVES

Business intelligence (BI) is a discipline that provides support to decision- makers, based on the analysis of large datasets. This process can detect new trends, predict the emergence of new competitors or compare information from various data sources. These data sources are internal to the company, i.e. the data are produced, controlled and mastered internally. At the same time, data available on the web have dramatically increased and represent an interesting data source for companies to enrich their own data.
DECIWEB's objective is to propose an approach to allow companies to perform BI analyses such as Online Analytical Processing (OLAP) on corporate but also on external data sources available on the web.

RESULTS

The integration of web data into the corporate data warehouse is time and effort-consuming. To tackle this challenge, the proposed approach applies technologies of distributed databases to data warehousing, thus considering web data sources as part of the federation (i.e. combination).
CETIC produced a report on the state-of-the-art in the integration of web data inside corporate data warehouses. CETIC also designed a language to express the schema of this federated/augmented data warehouse.

ADDED VALUE

SMEs will be able to enhance their business intelligence in a simple and powerful way thanks to the service-oriented Cloud API developed by CETIC which facilitates the integration of web data into their business analyses.

■ TRAITEMENT INTELLIGENT DE L'INFORMATION ■ SEARCH AND INDEXATION ■ OPEN DATA ■ SEMANTIC TECHNOLOGIESS ■ LINKED DATA

Partners : ULB - CODE, UPC-ESSI
Type of project : First DOCA
CETIC budget : €212.800,00
Start date : 01 January 2013
Duration : 24 months
Contact : Frédéric Fleurial Monfils

eHealth for Citizens

ICT SERVING PATIENTS

In response to the ageing of society, the increase in chronic illnesses and the shortage of caregivers, this project is developing innovative IT-based services designed to respond to the needs of patients, healthcare professionals and IT providers in this sector.

OBJECTIVE

In response to the challenges posed by the evolution of healthcare, eHealth for Citizens project is aimed at designing and implementing a service-oriented platform capable of combining and supporting innovative eHealth services. The services designed during the project aim to improve the quality of life of patients at home. Several specific research topics are addressed by the project team: user Interface usability, dynamic service composition, data interoperability and security.
The designed technologies are integrated and being validated through pilot projects realized in collaboration with healthcare professionals.

RESULTS

In 2013, the focus was on finalizing the first pilot project started in 2012 and analysing its results. The first version of eHealth platform developed by CETIC integrates the following key features: health telemonitoring service with automatic alert generation, communication and entertainment services for elderly persons and specific decision support services for the Caregivers. The prototype is connected to Walloon Health Network (RSW) to enable easy and direct access to telemonitoring data by healthcare professionals.
The positive results of the pilot project allowed the CETIC team to design new components that will be added and tested in 2014.

ADDED VALUE

The technologies developed by this project can be used to build new and innovative eHealth applications. CETIC has also developed extensive experience in the creation of applications that call for multidisciplinary expertise: various profiles in the health sector, providers of technological solutions, etc.

■ WEB SERVICES ■ STANDARDS

Partners : UNAMUR-PRECISE, UNAMUR - CRIDS, Immunehealth, UCL - ILSM
Type of project : Convergence Programmes 2007-2013
CETIC budget : €1.205.509,00
Start date : 27 October 2009
Duration : 72 months
Contact : Philippe Drugmand

SEAM PAT

SEAMPAT - TOWARDS AN INTERACTIVE MEDICATION RECONCILIATION PLATFORM

SEAMPAT aims to improve the continuity of medication between home and hospital by developing a medication reconciliation platform promoting active patient involvement.

OBJECTIVES

The transition between healthcare environments, especially between home and hospital, is a critical period, notably regarding the continuity of medication. Potentially harmful discordances can appear between the treatments followed at the patient's home and the prescriptions established at the hospital.
The goal of the SEAMPAT project is to define an electronic process to manage medication reconciliation, with the active participation of the patient. This reconciliation aims to ensure that no medication was added, omitted or modified by inadvertence during the transition between healthcare environments.

RESULTS

CETIC is in charge of specifying, conceiving and developing the prototype of the SEAMPAT platform, which will consist of:

- treatment, within and outside the hospital. It will also manage the reception of the treatments prescribed on departure from the hospital.
- a conciliator designed to compare treatments encoded by the patient and healthcare practitioners (general practitioners, specialists, pharmacists), and identify possible discordances. The platform will be evaluated with different groups of patients of CHU UCL Mont-Godinne and CHU Charleroi.

ADDED VALUE

SEAMPAT will benefit to enterprises developing medical software for hospitals or private practice (functional improvement of the medication prescription modules) or telemonitoring solutions for patients.
As regards hospitals, the results will help to improve the quality of healthcare and reduce dramatic consequences of treatment discontinuity. They will also help to make processes more efficient and to improve the communication between patients and practitioners.
More generally, all Walloon patients, and in particular elder and/or polymedicated chronic patients, will benefit from the correct management of their treatment, without unnecessary modifications. Healthcare practitioners and organisms will also be able to save time and money regarding the management and follow-up of the patients (records).

■ SERVICE ORIENTED ARCHITECTURE ■ PROOF OF CONCEPT

Partners : UNAMUR-PRECISE, UNAMUR - CRIDS, MIMS, FRATEM, UCL - CLIP, Alliance Nationale des Mutualités Chrétiennes
Type of project : WB Health
CETIC budget : €409.429,00
Start date : 01 June 2014
Duration : 36 months
Contact : Valery Ramon

DEVELOPMENT OF AN ELECTRONIC PATCH FOR GEOLOCATION AND FALL DETECTION OF PEOPLE WITH MENTAL DETERIORATION

The e-Patch project aims to study and develop an electronic patch equipped with long-range wireless communication allowing for geolocation and fall detection. E-Patch will be designed to improve the tele-monitoring of people with mental deterioration and to optimise their support in case of critical incidents like fall or loss.

OBJECTIVES

In the current context of an ageing population with an increase of the number of people with mental deterioration (memory impairment, dementia, Alzheimer's disease, cognitive disorders, etc.), the need is more and more stressed for monitoring and supporting services with appropriate handling of the specific demands of this category of persons.
To address this problem, the e-Patch project aims to provide an innovative technological tool consisting of an intelligent electronic patch that can detect falls reliably, locate the wearer and then provide remote and automatic messaging for quick and effective support to the affected person.

RESULTS

The project partners are designing an electronic patch, optimizing the resource usage - lowest cost, lowest electric consumption -, and providing the best comfort for the wearer. To achieve these goals, flexible printed circuits are used. The project also focuses on integrating electronics in a medical grade patch, and solving the corresponding manufacturing issues. A proof of concept is currently being tested.
CETIC is primarily responsible for the design and prototyping of the electronic component of the patch.

ADDED VALUE

CETIC ensures technology transfer to the industrial partners of the project that will further push the project results through the industrialization and commercialization of the prototype. An advisory committee, made up of health professionals and industrials has been established to oversee the research.
The project will also help CETIC deepen its expertise in design of Ultra Low-Power embedded systems which will apply and benefit to many application domains beyond the project.

■ DESIGN ÉLECTRONIQUE ■ SANS-FIL ■ EMBEDDED SOFTWARE

Partners : Nomics, Centexbel, SIOEN
Type of project : Pole MecaTech
CETIC budget : €325.469,00
Start date : 01 March 2013
Duration : 36 months
Contact : Gerard Florence

PATIENT DOSIMETRY EBOOK

DAPCARE is aimed at developing the Patient Dosimetry eBook, a standardised solution for archiving and sharing dosimetric data for patients receiving medical ionising radiation delivered in various departments of healthcare institutions.

OBJECTIVES

As medical practices frequently use ionising radiation for diagnostic and therapeutic purposes, this project is developing tools for collecting, archiving and optimising patient dosimetry data. The goals are to propose practical solutions to specific problems encountered in the radiation protection domain and to promote the exchange of standardised data.
While the safety of healthcare professionals exposed to the dangers of ionizing radiation has long since been regulated, the monitoring of patient dosimetry is still in its infancy and is an emerging problem due to the rapid development of medical imaging techniques.

RESULTS

The software solution produced by CETIC embodies the following key features; a state-of-the-art dosimetric data exchange to enable access to dosimetry harvested locally at individual institutions and those stored at other institutions via web services and a comparative analysis of Belgian and French and international standards, KMEHR-Bis and IHE-REM and DICOM RDSR (Radiation Dose Structured Report) respectively. Hospital practices for managing dosimetric data have also been collected and analysed in the light of these standards, to identify shortcomings with the aim of improving the interoperability of dosimetric data within Belgium and France. For Belgium, the software necessary to manage dosimetries and an application server exchange between sites to integrate the standards and technologies in Walloon Health Network, is being implemented. For France, the Patient Dosimetry eBook will be used to exchange patient dosimetric data.

ADDED VALUE

The DAPCare software for healthcare institutions enables the exchange of standardised patient dosimetry at both national and international levels.

■ SEMANTIC TECHNOLOGIESS ■ STANDARDS

Partners : Centre Oscar Lambret, CIGES, CCML, CHBM, ISLOG
Type of project : ERANET LEAD ERA
CETIC budget : €164.394,00
Start date : 01 October 2011
Duration : 36 months
Contact : Annick Majchrowski

SPES - SUPPORT PATIENTS THROUGH E-SERVICE SOLUTIONS

SPES aims at transferring the approach and results achieved in the implementation of OLDES project to support patients from four European locations through e-service solutions, especially tailored to manage respiratory problems, dementia, handicapped people and social exclusion.

OBJECTIVES

For people who already encounter difficulties in their daily life (cognitive, func- tional, financial,...), the evolution of Information and Communication Technologies (ICT) may initially appear as a contributing factor to their isolation. However, these technologies can also enable them to increase their autonomy and social interaction and to safely stay as long as possible in their familiar environment.
The objective of the OLDES project was to develop and evaluate a tele-care and entertainment platform prototype involving patients and their caregivers. SPES has also allowed to transfer and extend the results achieved in OLDES.
SPES was designed around four pilots: the province of Ferrara (Italy), the city of Vienna (Austria), the city of Brno (Czech Republic) and the city of Kosice (Slovakia), focusing respectively on the following: respiratory problems, dementia, handicapped people and social exclusion.

RESULTS

CETIC has specified, designed and developed the SPES platform prototype. This mainly consists of an intuitive software solution for the patients of the different target groups that can be used on a touch screen computer, a classical laptop or a tablet. The SPES platform also includes a web portal to enable the patients' monitoring by their caregivers (physicians, social workers in day-care centers,...).
The positive patient feedback was a major result of the project. In addition, some services, like the geo-location and tracking by authorized operators of seniors with dementia, will continue to be used and evolve following the end of the project.

ADDED VALUE

Telemedicine favours the emergence of a new market of healthcare service providers that can support the delivery of health and social care at home. SPES has demonstrated ICT-based solutions that are replicable and generalizable by other actors.
The involvement of CETIC allows one to transfer these results to Wallonia where telemedicine and eHealth are also emerging: this field is open to innovative enterprises proposing adapted solutions that are an answer to the economic pressure on the healthcare costs.

■ EMBEDDED SOFTWARE ■ SANS-FIL ■ WEB SERVICES

Partners :	ENEA, CVUT, CUP 2000, AUSL, Universität Wien, Kosice, Technical University of Košice, ProDeep, Provincia di Ferrara, Vienna Social Fund
Type of project :	Central Europe
CETIC budget :	€275.875,00
Start date :	01 April 2011
Duration :	39 months
Contact :	Valery Ramon

ADAPTATIVE PILOTING OF HOSPITAL PROCESSES

The PIPAS project aims at developing a software solution to help in modelling, piloting and supervising healthcare processes for treating patients, in the area of cancer care.

OBJECTIVES

The hospital world is facing increasing challenges regarding care quality, notably in the cancer domain, where patients suffering from multiples pathologies have to follow complex treatments, and rely on shared infrastructure. The modelling of clinical pathways is increasingly used to explicit the key steps of those treatments and contribute to answer their inherent challenges.
The objective of the project is to support the implementation of process management systems for driving clinical pathways, and overcome the limitations of current systems. Current systems are based on imperative workflows which are unable to take into account the interferences between workflows. The proposed approach is based on mixed imperative-declarative models, operators enabling the engineering of complex workflows and tools for the optimal process enactment wrt. declarative constraints such as timing constraints.

RESULTS

PIPAS project produced a toolset supporting:

- the definition definition of imperative and declarative models of care processes;
- the execution of models to pilot the care team and manage resource conflicts occurring at runtime, based on the OscaR.CBLS engine;
- The monitoring of executing processes using indicators derived from the model and dashboards views.

ADDED VALUE

The produced software meets real needs faced by hospitals to ensure care quality with limited resources and clinical processes growing in number and complexity. The principles and tool developed by PIPAS for piloting hospital processes and clinical pathways can be exploited by medical software editors addressing this domain or directly by large hospitals which are managing the integration of IT innovation themselves.
The underlying principles are reusable by hospitals managing their IT infrastructure and support themselves, as well as by broader workflow management system editors.

■ OPTIMISATION DE SYSTÈMES COMPLEXES ■ MODEL DRIVEN ENGINEERING

Partners :	UCL-INGI, Centre du Cancer
Type of project :	WIST 3.0
CETIC budget :	€274.505,00
Start date :	01 April 2011
Duration :	36 months
Contact :	Christophe Ponsard

AUTOMATIC MONITORING OF ACTIVITIES USING CONTACTLESS SENSORS

AMACS in an EraSME project whose goal is to develop and evaluate in real-life situations an ICT-based system that can automatically monitor the activities of daily living (ADLs) (sleeping, cooking, making a phone call,...) of elderly people living alone at home.

OBJECTIVES

AMACS develops and evaluates in real-life situations an ICT-based system that can automatically monitor the activities of daily living (ADLs) of elderly people living alone at home. Some examples of such activities are: sleeping, cooking, making a phone call, visiting the toilets, washing... The monitoring is based on measurements of various contactless sensors that are installed in the elderly person's home environment: home security sensors (presence or motion detectors), sensors that measure the consumption of public utilities (electricity, water, gas) and video cameras. The goal of this project is to allow elderly people presenting age-related risks or pathologies (e.g. risk of fall, cognitive decline) to remain safely in their home environment for as long as possible.

RESULTS

Together with the other Walloon partners, CETIC is in charge of the definition, design and development of the exchange platform which collects the information about ADLs and changes in seniors' behaviour and adequately communicates this information to the senior citizens, their medical records and their caregivers (including the general practitioner and the visiting nurse). They also implement the adaptations of software solutions used by the general practitioner and the nurse to take into account this extra information.
The prototype is evaluated in real-life situations, i.e. based on the measurements done in the living quarters of a few senior citizens.

ADDED VALUE

The project results can be of interest for companies providing ICT services in the healthcare sector and in particular those proposing health telemonitoring systems.

■ SANS-FIL ■ STANDARDS

Partners : Smolinfo, Intersysto, PCsol, KHK-Mobilab, Fontys, WENK, KU Leuven
Type of project : ERANET-ERA-SME
CETIC budget : €149.800,00
Start date : 01 October 2010
Duration : 33 months
Contact : Philippe Drugmand

INOGRAMS - INNOVATIONS FOR A GLOBAL RAIL MANAGEMENT SYSTEM

The INOGRAMS project aims to study new technologies to increase the competitiveness of rail operators in the face of transportation means such as aircraft and road transport. This technology exploration is realized in the context of rail interoperability and internationalization.

PROJECT OBJECTIVES

The project objectives target different areas:

- Engineering and Information Processing
  - Optimizing engineering and interlocking systems
  - Formalization of the development process using formal methods
  - Development and integration of analysis tools for large volumes of event data (Big Data Theme)
- Control-command system for infrastructure: Design of an autonomous distributed power system along the railway.
- Development of a passive real-time surveillance system for railway with multipoint optical fibre sensors
- Embedded control-command system
  - A solution of absolute location based in particular on the hybridization of a satellite systems (GNSS), Inertial sensors, video processing and embedded mapping.
  - Development of advanced functionalities for automatic train operation (ATO) in the context of "Mainline".

CETIC research within the project relates to the optimization of engineering and interlocking systems, formalization of the development process by using formal methods, the development and integration of analysis tools for large volume of event data and the development of advanced functionalities for automatic train operation (ATO) in the context of "Mainline"

RESULTS

The project is in its starting phase, so there are no results yet. In the scope of the CETIC activities, the project should lead to develop new optimization algorithms, a formal method tool chain and big data analysis tools.

ADDED VALUE

For the railway sector, technologies developed within the project will increase the competitiveness of the rail operators.
Outside of the railway sector, companies will benefits of technologies and methods developed within the project to

- Achieve greater control of their software engineering while reducing associated costs
- Develop optimization solution
- Analyse large volumes of data

■ MODEL DRIVEN ENGINEERING ■ OPTIMISATION DE SYSTÈMES COMPLEXES ■ BIG DATA

Partners : UNAMUR-PRECISE, Multitel, UCL-ICTEAM, Alstom, ACIC, CE+T, Q3S, M3 Systems Belgium
Type of project : Logistics in Wallonia
CETIC budget : €938.724,00
Start date : 01 April 2014
Duration : 36 months
Contact : Gautier Dallons

NORTH WEST EUROPE DYNAMIC RIDESHARING

Today, carpooling platforms have a very tight supply in terms of information, number of users and journeys, especially across borders. NweRIDE proposes to improve the adoption of carpooling via an exchange platform for carpool operators.

OBJECTIVES

NweRIDE aims to interconnect carpool and public transport operators in order to increase the relevance of carpooling offers, hence promoting ridesharing. This interconnection is done thanks to an IT platform that is focused on dynamic carpooling, i.e. for non-scheduled trips, especially for cross-border journeys (Netherlands, Belgium, UK, France, Germany).

RESULTS

CETIC implements the interconnection platform using the RDEX standard. This standard enables carpooling systems to share carpooling offers in a secure way via Web services.
CETIC also participates in the development of high value-added services using semantic web data sources promoting Open Data.
Finally, CETIC leads a pilot project that aims to foster carpooling among companies located in the same business park thanks to the sharing of their business events agendas.

ADDED VALUE

The project aims to offer a new one-stop-shop solution for carpooling based on mobile technologies, using web data sources, able to adapt itself to the users needs, updated in real time, and able to offer alternatives based on public transport when needed.
The expertise acquired during the project will allow CETIC to better support SMEs as regards advanced problems related to the interconnection of web-based IT systems, in order to provide new value-added services.

■ WEB SERVICES ■ TRAITEMENT INTELLIGENT DE L'INFORMATION ■ OPEN DATA ■ SEMANTIC TECHNOLOGIESS ■ BIG DATA

Partners :	Interreg IV B, VIM, SESTran, Sellmark, Stellwerk, Taxistop, Staffordshire County Council
Type of project :	InterReg IV B NWE
CETIC budget :	€279.099,00
Start date :	28 June 2013
Duration :	27 months
Contact :	Frédéric Fleurial Monfils

USING TECHNOLOGY FOR MORE EFFICIENT MANAGEMENT OF INLAND WATERWAYS

The Numericanal project aims at connecting regional and national strengths, knowledge and experience of 7 organizations active in the field of ICT and waterways management to create a transnational strategy for the development of e-services along waterways.

OBJECTIVES

Numericanal aims at developing innovative approaches using ICT in order to improve sustainable modes of transport and tourism along waterways. The project will help to strengthen waterways management systems through use of ICT and e-services. In addition, the project will help strengthen the economic influence of the waterway within the territory. CETIC is the ICT partner of the project. Its role is to recommend, validate and coordinate the ICT solutions of the project.

RESULTS

Several ICT solutions will be developed during the project, including:

- A transnational framework in North West Europe in relation to mobile access and Internet connectivity in rural and urban areas;
- A series of model approaches for online services and information (geolocalisation of the place of interest, online booking...);
- A series of model approaches of Intelligent Transport Systems (management of the stopover and nautical ports, management of traffic and bottlenecks...);
- Local pilot actions to implement the above approaches and to increase the potential of commercial and leisure along the waterways, and waterways as a tourism destination.

ADDED VALUE

The project will provide innovative tools to effectively manage waterways while respecting their social, economic and environmental needs. These innovative tools will help strengthen the water-based economies of and water-side industries e.g. leisure, industry and therefore of local areas. In addition, the project will help to reinforce the boating potential and the tourism economy by offering innovative e-services along waterways.
The expertise acquired during the project will allow CETIC to better support SMEs to develop interconnected e-services that allow data exchange, especially in areas where communication technologies are less available.

■ RÉSEAUX ■ REQUIREMENTS ENGINEERING ■ WEB SERVICES

Partners :	Interreg IV B, Canal & River Trust, Voies Navigables de France, Gemeente Eijsden-Margraten, Midland Regional Authority, SRN, Gemeente Eindhoven
Type of project :	InterReg IV B NWE
CETIC budget :	€116.580,00
Start date :	01 February 2013
Duration :	35 months
Contact :	Mohamed Boukhebouze

LOCOTRAC - LOW COST TRAIN AUTOMATIC CONTROL

Locotrac project aims to develop low-cost technologies to secure regional and local railway lines including mechanisms of ATP (Automated Train Protection). The project will integrate these new technologies into onboard products, track products and telecoms specially adapted to these lines.

OBJECTIVES

The project objectives are:

- Better understanding of the specific market needs of European regional and local railway lines (but also worldwide due to the standard ERTMS);
- The search for new system concepts that aim to meet their needs with a low cost LCC (Life Cycle Cost);
- Integration of new technologies (security architecture, localization technique, new telecom technology,...) in the specification and development of new products;
- Finding the highest level of compatibility with the ERTMS standard ensuring a level of interoperability between these lines and trunks;
- To prepare adequately the development of new standards, prerequisite to actually open market (harmonization of specifications and developed by European industrial solutions);
- Demonstrate these new concepts through a mock-up of the new systems, subsystems and produce a full-scale experiment on the railway site;
- To validate these new concepts by taking into account performance level, RAMS (Reliability, Availability, Maintainability, Safety) level and ERTMS interoperability level. The research undertaken by the CETIC in this project concerns software hardening. This technique makes possible to reach a high level of safety for software-executing security function.

RESULTS

Hardening algorithms have been specified and a development compatible with a critical use (SIL4) is under development.

ADDED VALUE

The hardening algorithms will allow ALSTOM to deliver low-cost equipments and so to increase his competitiveness on the international market.

■ SAFETY

Partners : UCL-ICTEAM, Alstom, UMONS - inforTech, ACIC, CE+T, Q3S, Logiplus, MITRA Innovations, SEE, STIB, Infrabel
Type of project : Logistics in Wallonia
CETIC budget : €383.255,00
Start date : 01 April 2011
Duration : 48 months
Contact : Gautier Dallons

INTEGRATED RISK MANAGEMENT OF SUPPLY CHAIN

The GIR project aims to provide an effective ICT solution to improve the security of hazardous goods transport. The software tool developed during the project will assist safety advisers in managing compliance with transport regulations and also exploiting information related to transported goods, the communication of which can be extremely useful in the event of an accident. This information will be communicated by modules embedded in transport containers.

OBJECTIVES

The massive volume of regulations applying to different means of transport of hazardous goods (road, rail, maritime, waterways) and various national adaptations and amendments to these regulations makes the tasks of safety advisers extremely difficult.
The main objective of the project is to assist safety advisers in their management of hazardous goods transport by automating protocols monitoring, conformity checking, reports generations, products compatibility verification, and critical events handling (accident).
CETIC is mainly responsible for developing the embedded alert module and its integration with the overall solution.

RESULTS

CETIC elaborated a survey on the embedded alert systems detailing their characteristics and respective usage context. In addition, a study on the traceability techniques applicable to hazardous goods transport was conducted with special focus on systems and solutions related to RFID technology.
In addition, the specifications of the embedded application were elaborated and a comparative analysis of various generic hardware platforms allowed the selection of the module to be used for the alert.
The development of the different building blocks of the alert system is in progress.

ADDED VALUE

The GIR solution will have a positive impact on work of the safety advisers responsible for ensuring compliance with regulations in companies which transport hazardous goods. The tool will help them to save time by automating tedious and human-error-prone tasks such as checking, monitoring, protocols validations, report generation, etc. The automatic alert module will also allow quicker response and better management of serious incidents like transport accidents.

■ EMBEDDED SOFTWARE

Partners : Océ Software Laboratories, DN&T, PRAYON, Beyers Transport, Joassin sa, ULg - ANAST
Type of project : Logistics in Wallonia
CETIC budget : €321.572,22
Start date : 01 April 2012
Duration : 36 months
Contact : Lotfi Guedria

SIMULATIVE QUANTIFICATION OF PROCUREMENT INDUCED RISK CONSEQUENCES AND TREATMENT IMPACT IN COMPLEX PROCESS CHAINS

SimQRi is a CORNET project also involving the Fraunhoffer Institute and which aims at quantifying the procurement induced risk and manage its impact in complex process chains.

PROJECT OBJECTIVES

Companies have to face increasing procurement risks especially in the globalisation context. The Project SimQRi aims at providing a holistic approach to conduct and obtain procurement-specified risk assessments including internal risk treatment, with a specific focus on small and medium enterprises in the field of Mechanical Engineering. The goal is to produce an user-friendly tooled methodology that will guide the user through the whole process of risk assessment.

EXPECTED RESULTS

The project fill produce a tooled methodology for the risk assessment and management of the procurement process. The tool will be able to calculate the probabilities of different scenarios defective (late deliveries, defective parts, poor quality ...). The impact will be evaluated using simulation of production processes through the open source toolkit OscaR to which CETIC is contributing.

ADDED VALUE

This project will enable companies to fulfill strategic goals, minimize financial, reputational and productivity losses and an improved overall productivity and reliability. It will specifically support the competitiveness of the MecaTech pole by providing their companies with a toolbox for managing risks associated their increasing dependence on subcontractors and also their internal structure. It will among other help them anticipating problems of supply failures.
The results will also be applicable in a wider industrial scope, in particular for the logistics domain.

■ OPTIMISATION DE SYSTÈMES COMPLEXES

Partners : Fraunhofer IPT, RWT Aachen - Institute Cluster IMA/ZLW & IfU, RWTH Aachen University
Type of project : ERANET CORNET
CETIC budget : €321.033,00
Start date : 01 June 2014
Duration : 36 months
Contact : Christophe Ponsard

MIGRATING A WAREHOUSE MANAGEMENT SYSTEM SOFTWARE ONTO THE CLOUD

Industrial legacy software sometimes comes with responsiveness and availability constraints that is barely compatible with the cloud SaaS model. SaaS-WMS aims to demonstrate how such an application can be adapted to a cloud usage through a Warehouse Management Software usage case.

OBJECTIVES

INGRIF is releasing a warehouse management and supply chains software (WMS). Such software comes with response time and availability constraints, which could only be fulfilled by installing the computer server within the customer's infrastructure. However, user expectations have changed, and are turning towards online software in the cloud.
The project aims to demonstrate the technical feasibility of adapting such a demanding application into an SaaS mode. However, the Internet network comes with no guarantee about response time. The application will then be adapted to compensate for the lack of responsiveness guarantee, and its virtual infrastructure auto-adapts itself to keep the same performance level.

RESULTS

At the end of the project, our partner INGRIF will benefit from a software tool in SaaS mode so that cloud VMs can be automatically adjusted according to the workload while respecting responsiveness requirements. Meanwhile, CETIC will have implemented an infrastructure management and auto-adaptive framework. Moreover, CETIC will improve its methodology in assisting SMEs to port their software to the cloud, and will enhance its expertise in orchestration and optimization of services.

ADDED VALUE

Such a proof of concept responds to an actual demand:

- either because the solution aims to a new market, made of SMEs which are reluctant to invest in an overly expensive solution;
- or because it offers an answer to companies looking for a turnkey solution, freeing them from the constraints of IT management.

■ CLOUD COMPUTING

Partners : INGRIF
Type of project : CWALity
CETIC budget : €127.226,80
Start date : 01 October 2013
Duration : 18 months
Contact : Stéphane Mouton

I2MSteel

INTELLIGENT INTEGRATED MANUFACTURING FOR STEEL

To remain competitive, the European steel industry requires improvement of its processes. The project aims to develop a new paradigm where software agents, at each step of the steel manufacturing chain, negotiate between them and dynamically optimize production.

OBJECTIVES

A completely new paradigm of automation and information technology systems for intelligent and integrated manufacturing in steel production (I2MSteel) is envisioned to overcome the current production challenge, which is to combine the large variety of existing processes and plants into a single, highly interlinked process chain. The suggested solution is the application of holonic agent technology to build this new paradigm. A holonic agent is an autonomous and flexible computational system operating in a particular environment. Agents have 'social' abilities, allowing them to engage with other components through communication and coordination. Two other technologies are also required: a Service-Oriented Architecture (SOA) to create an underlying framework to provide the agents with all the necessary information; and semantic techniques (ontologies, in this case) to give the agents an 'understanding' of their environment and of the data coming from the SOA.

RESULTS

In I2MSteel, CETIC is identifying shortcomings in data exchanges and SOA deployment in an industrial environment, while exercising semantic skills in a new domain (the steel industry). The experience gained can be directly applied to help solve problems of local SMEs, especially subcontractors, in the industrial sector.

ADDED VALUE

In I2MSteel, CETIC is identifying shortcomings in data exchanges and SOA deployment in an industrial environment, while exercising semantic skills in a new domain (the steel industry). The experience gained can be directly applied to help solve problems of local IT companies, especially subcontractors, in the industrial sector.

■ SERVICE ORIENTED ARCHITECTURE ■ CLOUD COMPUTING ■ WEB SERVICES ■ SEMANTIC TECHNOLOGIESS

Partners : ArcelorMittal Research (France), Centro Sviluppo Materiali, VDEh-Betriebsforschungsinstitut (BFI), Siemens, RFCS
Type of project : RFCS
CETIC budget : €412.886,00
Start date : 01 July 2012
Duration : 42 months
Contact : Stéphane Mouton

ASCETIC

ADAPTING SERVICE LIFECYCLE TOWARDS EFFICIENT CLOUDS

The ASCETIC project is focused on providing novel methods and tools to support software developers aiming to optimise energy efficiency and minimise the carbon footprint resulting from designing, developing, deploying, and running software in Clouds.

OBJECTIVES

The project has the following main objectives:

- Development of models for green and efficient software design, supporting sustainability and high quality of service levels;
- Development of methods for measuring, analysing, and evaluating energy use in software development and execution, complementing quality measures;
- Energy and quality efficiency integration into service construction, deployment, and operation leading to an Energy Efficiency Embedded Service Lifecycle.

RESULTS

ASCETIC will result in the implementation of an open-source Cloud stack providing energy efficiency at software, platform, and infrastructure levels. The project will provide incremental versions of its solution, with respect to energy efficiency, and demonstrate its use in two commercial use cases.

ADDED VALUE

ASCETIC results will enable software service providers to operate their services with a lower energy footprint. Transitively, this reduction will translate in cheaper operation costs. Furthermore, developers will benefit from the ASCETIC development environment plugins to produce software services with reduced energy needs while maintaining other quality services at the desired level.

■ CLOUD COMPUTING

Partners : Atos Research & Innovation, TUBerlin, University of Leeds, Hewlett Packard - Italy Innovation Center, BSC, ATC, GPF, AUEB
Type of project : FP7
CETIC budget : €493.230,00
Start date : 01 October 2013
Duration : 36 months
Contact : Jean-Christophe Deprez

EMBEDDED VISION AUTONOMOUS SYSTEM

SAVE aims at studying new autonomous vision systems for the Internet of Things. Indeed, new versatile applications require smart objects able to transmit pictures and videos but having long lasting autonomy. The purpose is to develop vision systems with an electric consumption of a few µW, similar to the one of simple sensors (temperature, smoke detection,..).

OBJECTIVES

The SAVE project (Système autonome de vision embarquée) will develop an intelligent vision system targeting embedded and autonomous applications. The envisioned domains encompass home automation, transport, traffic supervision, urban life monitoring, industrial manufacturing, environmental monitoring or eHealth. Functionally, the system will encompass the picture/video capture, treatment and communication. As regards energy, the project targets months or years of autonomy, up to perpetual functioning thanks to energy harvesting or renewable energy. The technical requirements will range from picture capture for smart metering to frame rate over 2fps with a mean consumption of about 50 µW in continuous mode. The consortium will globally optimise such systems by co-design techniques covering different technologies: electronics, algorithms and micro-electronics (development of Ultra Low Power CMOS image sensors).

PROJECT RESULTS

Apart of technological studies, the project will focus on the specific Use Case for demonstration:

- optical reading of energy meter
- traffic monitoring

ADDED VALUES

The valuable outcomes of the project are twofold: the Ultra Low Power sensor developed by the partners will tackle with needs of specific applications that are not covered at this time, and the demonstrators are expected to lead to new versatile vision systems for Internet of Things.

■ DESIGN ÉLECTRONIQUE ■ EMBEDDED SOFTWARE ■ RÉSEAUX ■ INTERNET OF THINGS

Partners : UCL-ICTEAM, ACIC, RVC, Deltatec, nSilition
Type of project : Logistics in Wallonia
CETIC budget : €236.730,00
Start date : 01 March 2014
Duration : 36 months
Contact : Gerard Florence

SMARTER AIRBORNE TECHNOLOGIES

The SAT project is developing new technologies for aircraft and smarter airborne systems. This project puts CETIC at the forefront of innovative research to support incremental and recertification processes, with a view to reducing the high costs of complying with the safety-critical aeronautics standards.

OBJECTIVES

The goal of the SAT project, coordinated by Thales Communications Belgium, is to develop new technologies for smarter aircraft systems. The project is composed of five parts. CETIC is coordinating the Certif_2 sub-project which aims to improve certification following the critical embedded software standards RTCA DO-178B (or 178C) and equipment (RTCA DO-254) systems. The focus of research is on incremental certification in a product line context using models-oriented techniques both in terms of process and variability modelling.

RESULTS

CETIC's work is focused on coordination, requirements gathering, integration and validation of the Certif_2 sub-project. A process model of incremental certification was produced and articulated on three key aspects: a variability model, certification process workflow and safety objectives. A tool has been developed to effectively support the incremental certification process. It is deployable in both commercial and open source tool chains.

ADDED VALUE

Certification costs for enforcing safety standards applicable in aeronautics are very high and can increase development costs by up to 150%. Moreover, this extra cost does not decrease when the system needs to be recertified to address the needs of new clients. The incremental process proposed will help Walloon companies to develop efficient reuse strategies and result in substantial savings, in turn improving competitiveness and providing better access to key markets.

■ SOFTWARE CERTIFICATION ■ SOFTWARE PRODUCT LINES

Partners : UNAMUR-PRECISE, Multitel, UCL-ICTEAM, Gillam FEI, Thales Alenia Space, CISSOID, M3 Systems Belgium, Thales Communications Belgium, Dardenne, Barco Silex, ULg IPNAS
Type of project : Skywin
CETIC budget : €321.033,00
Start date : 01 September 2010
Duration : 48 months
Contact : Christophe Ponsard

MIDFLEX

A FLEXIBLE MIDDLEWARE FOR IPV6-BASED LOW-POWER EMBEDDED SYSTEMS

MidFlex aims to develop a middleware to facilitate the design and deployment of IPv6-based sensor network applications in the scope of the Internet of Things.

OBJECTIVES

This PhD thesis aims to provide a middleware harnessing the flexibility and configurability of underlying technologies and protocols to achieve end goals such as minimal energy consumption of a network, or the support for device mobility. Furthermore, in light of the Future Internet initiatives and the upcoming Internet of Things, this thesis has a strong focus on the interconnection of networked objects to the Internet and common consumer devices such as smartphones and tablets.

RESULTS

CETIC studied the implementation and deployment of WSN application based on technologies currently in standardisation, such as 6LoWPAN and RPL, IETF's IPv6 Routing Protocol for Low Power and Lossy Networks. These studies rely on three distinct test environments: a software time-accurate simulator for wireless sensor networks (COOJA), physical sensor platforms part of CETIC's Wireless Lab, and large-scale academic wireless sensor testbeds open for experimentation. In particular, tests on the SensLAB testbed of INRIA Lille and the TWIST testbed of TU-Berlin validated the stability of RPL and the embedded IPv6 stack of Contiki.
The middleware components were made available in the public domain, with CETIC as an enabler for technological transfer. It mainly concerns an implementation of a 6LoWPAN Border Router, the 6LBR component.

ADDED-VALUE

This research project has a direct impact for local Walloon companies keen to integrate Internet of Things solutions in their products. As of today, CETIC's expertise is already guiding companies in design choices for sensor network hardware and software.

■ INTERNET OF THINGS ■ RÉSEAUX ■ EMBEDDED SOFTWARE

Partners : SICS, IP Networking Lab
Type of project : First DOCA
CETIC budget : €170.240,00
Start date : 01 January 2011
Duration : months
Contact : ?

EVIDENCE

EUROPEAN INFORMATICS DATA EXCHANGE FRAMEWORK FOR COURTS AND EVIDENCE

EUROPEAN INFORMATICS DATA EXCHANGE FRAMEWORK FOR COURT AND EVIDENCE

EVIDENCE aims at producing a roadmap for a Common European Framework for systematic and uniform acquisition, use and exchange of digital evidence in courts of EU member states. The resulting guidelines and recommendations will explore the application of new technologies in the judicial process.

OBJECTIVES

The project has the following main objectives:

- Develop a common and shared understanding on what electronic evidence is, the relevant related concepts in related fields (digital forensic, criminal law, criminal procedure, criminal international cooperation)
- Identify current rules and criteria utilized for acquiring, processing and exchanging electronic evidence in EU Member States
- Review and improve technical standards for guaranteeing reliability, integrity and chain of custody requirement of electronic evidence in the EU Member States.
- Define operational and ethical implications for Law Enforcement Agencies all over Europe
- Specify technological functionalities for a Common European Framework in acquiring and exchanging electronic evidence
- Size the EVIDENCE market

RESULTS

EVIDENCE will provide a roadmap and framework for designing new relationship among all actors involved in the electronic evidence process at European and international level by setting common rules for acquiring and sharing evidence in full trust and security, and in compliance with data protection and fundamental rights. The resulting proof of concept will propose a software platform developed by CETIC for guiding law enforcement agents in following the proper procedures when acquiring and exchanging digital evidence.

ADDED VALUE

Enterprise make extensive use of workflow engine to define their business processes and thus will benefit from CETIC's expertise and technology on workflows further developed during EVIDENCE.

■ STANDARDS

Partners : CNR-ITTIG, RUG, INTERPOL, LU-Hannover, LCS, UMalta, CCBE, LIF
Type of project : FP7
CETIC budget : €203.400,00
Start date : 01 March 2014
Duration : 30 months
Contact : Jean-Christophe Deprez

REDIRNET

EMERGENCY RESPONDER DATA INTEROPERABILITY NETWORK

REDIRNET aims at providing a decentralized framework of interoperability between agencies of emergency responders. In addition to communications, REDIRNET will enable interoperability of agencies' IT infrastructures such as databases, sensor systems and cameras.

OBJECTIVES

REDIRNET consortium is aware that often it is non-technical issues that hinder agency interoperability regardless of the quality of technical solutions. Consequently user engagement across a range of agencies EU-wide will be ongoing throughout the project duration. This will lead to a quality repository of user identified interoperability issues and proposals for their resolution.
Another element of REDIRNET will be technology. The REDIRNET project will provide technical means to improve the integration, interconnectivity and interoperability possibilities of command and control systems for emergency responders in EU member and associated countries.

RESULTS

REDIRNET will provide a decentralized framework for interoperability for first responders' systems based on a public meta-data gateway controlled by the agencies themselves via a REDIRNET socio-professional web. To help build this web of linked-up agencies REDIRNET will be enhanced with semantic web methods in accordance with the vocabulary and processes of the user community.
An additional benefit for the agencies will be the compilation of guidelines and recommendations that will be gathered from several EU member states along the project duration.

ADDED VALUE FOR INDUSTRY

REDIRNET will address the interoperability in a wider sense allowing first responders to interconnect their data stores and surveillance system outputs in a seamless way. They will be able to link up to partner agencies of their operational need and manage the scope of such interoperability.
CETIC will provide a semantic interoperability solution for C&C centres by producing a domain model for each agency type (knowledge engineering) and by building services that put into practice semantic web technologies and research.

■ SEMANTIC TECHNOLOGIESS

Partners : Nextel-Spain, PRAMACOM, ARDACO, BAPCO, ULux-SnT, JSI, UI-SAV, VERDE
Type of project : FP7 - SEC-2013
CETIC budget : €536.707,00
Start date : 01 March 2014
Duration : 30 months
Contact : Jean-Christophe Deprez

Creative Wallonia

LIVING LAB - BY CREATIVE WALLONIA

The Creative Wallonia initiative places creativity and innovation at the heart of Wallonia's economic development. In this context, the Living Lab concept is a laboratory for open innovation. Beyond the simple validation of concepts by mere consumers for new products and services, the Living Lab is a place for the appropriation of new technologies and the emergence of new usage scenarios where users/citizens become actors and contributors.

OBJECTIVES

As part of the Creative Wallonia initiative, CETIC has been appointed to coordinate the implementation of two Living Lab pilot projects, the first of their kind in Wallonia.
The Living Lab places the user at the heart of the co-creation concept to design and develop products and/or innovative services in order to better meet society's needs and expectations.

RESULTS

The positive outcome from different Living Lab initiatives around the world led to a reflection on the value of implementing such dynamics in Wallonia and raise the region's innovation capacity.
In 2013, CETIC launched a call for proposals to fund two Living Lab pilot pro- jects. These two pilots will be centred either on the eHealth theme or on the Open Domain one. On the one hand, eHealth is key to addressing Wallonia's upcoming societal challenges. The focus is on telemedicine, on technologies and process enhancing the autonomy of elderly people, and on the sharing of medical data. On the other hand, Open Domain aims at experimenting with usage scenarios for new standards, practices or innovative technologies.

ADDED VALUE

Through the deployment of the two Living Lab pilot projects, CETIC will enhance its expertise in open innovative technologies and co-creation methodologies. CETIC will ensure the knowledge transfer towards local businesses for integration of co-creative concepts and technological innovations into their process.

■ PROOF OF CONCEPT ■ METHODOLOGY

Partners : UNAMUR - CRIDS, WSL, BioWin, MecaTech, i-Cube, ULg Gembloux Agro-Bio Tech, Generation W, ULg Spiral, BEP, ULg LUCID, Réseau Santé Wallon, KIKK
Type of project : Creative Wallonia
CETIC budget : €1.250.000,00
Start date : 01 January 2013
Duration : 48 months
Contact : Nicolas Devos

CREATIVE HUB CHARLEROI-SUD HAINAUT

Leveraging its expertise in co-creation and ICT, CETIC contributes to the initiative Creative Wallonia which aims at creating new sources of value creation through open innovation. In this context, CETIC is a partner of Bubble Hub, the Creative Hub from the region Charleroi-Sud Hainaut.

OBJECTIVES

The Bubble Hub forms an ecosystem which aims at developing a multidisciplinary collaboration between local stakeholders (citizens, researchers, business owners, public authorities, designers, hackers, etc). This collaboration favours the emergence of innovative projects on the territory covered by the Hub.
This project breaks down the barriers found in our society, and ensures a transition from the traditional economy to a creative economy, where users are not only consumers, but also co-developers of the products.

RESULTS

Within Bubble Hub, CETIC builds relations between its know-how on digital technologies and the end-users. In order to do that, workshops will be organised with people having different backgrounds, around a common thematic. From this group, new creative ideas will emerge, which may lead to several new projects, business, associations... Via a close follow-up of these ideas, the stakeholders will try to define new solutions (product, service, business model) and identify their business potential.

ADDED VALUE

The Creative Hub will cover the whole region, not only city centres, establish new collaborative networks and practices, involve citizens and users, and generate specific (business) projects.
The Creative Hub will generate returns for the local players through the generation of value added partnerships, the sale of new and improved products leading to jobs creation and a better attractiveness of the area.

■ INTERNET OF THINGS ■ PROOF OF CONCEPT ■ METHODOLOGY

Partners :	IGRETEC, Innovatech, ULB, Héraclès, Switch Coworking Charleroi, Design Innovation, Fondation Chimay-Wartoise, Technofutur TIC
Type of project :	Creative Walloia
CETIC budget :	€12.500,00
Start date :	01 July 2014
Duration :	14 months
Contact :	Nicolas Devos