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MERgE consortium

MERgE News

MERgE: Multi-Concerns Interactions System Engineering

From the Project Coordinator's pen

Dear Reader, we are delighted to bring you the first issue of news about our project. We feel that MERgE has reached a sufficient level of momentum and maturity to provide you with interesting updates of our activities every few months. Since the beginning of the project about two years ago, partners have united to expand technological capabilities of tools and advanced concepts across several industrial domains. New collaboration links have been established at both national and international level, harnessing the individual strengths and expertise of partners to create new innovations aimed to benefit society.

In this issue we talk about our joint workshop with the SESAMO consortium regarding safety and security concerns. We also highlight some partner involvement at other conferences related to the success of their collaborations and our input to a university degree course. Later a focus is provided on the current results inside one of our demonstrators - we will cycle through the other three demonstrators in the issues that follow. To finish we mention some of our upcoming public appearances and provide a reminder of our goals.

Thanks for your interest.

Charles Robinson
MERgE Project Coordinator

INSIDE THIS ISSUE:

Recent Inter-project Work

ITEA MERgE and ARTEMIS SESAMO[1] projects have co-organized the ISSE workshop along the SAFECOMP 2014 conference[2] in Italy the 8 September 2014. This workshop was a total success with more than 30 attendees. It was also a real opportunity to share visions on technical approach and ongoing standards on safety and security at international level. A good proportion of questions from the audience related to conflict management of safety and security engineering. Two key points raised being: obsolesce as security policies decay faster than safety ones and integration of S&S policies through disruptive approaches may be difficult in these conservative domains. Another important point is that avionics standards are now introducing requests that security verification to be added to safety evaluation in the design of such systems. For example: the new standard DO-326A and DO-356 is few ago September 2014 .

10-12 September, Firenze, Italy
safeComp 2014
international conference on computer safety, reliability & security

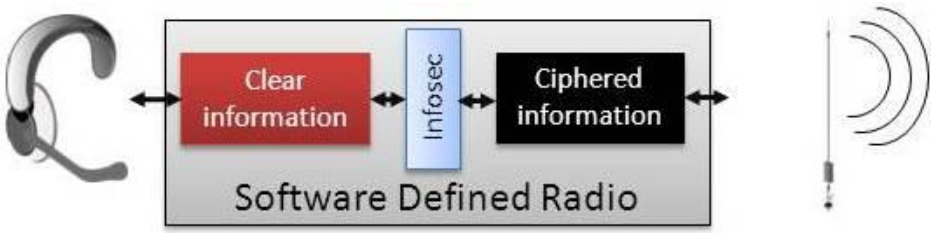
[1] http://sesamo-project.eu/ [2] http://www.safecomp2014.unifi.it/isse-program/

Radio Demonstrator: First results!

There is now a first version of the demonstrator for the Software Defined Radio use case by THALES Communications & Security.

A dysfunctional analysis has been generated with Safety Architect (All4Tec Tool). It has enabled highlighting of the most important failure points to be protected. The pattern technology has been used, it has permitted an easier and correct by construction deployment of the component. Common Variability Language (KCVL) has been integrated in the MERgE platform and drives the application of patterns, allowing the generation of multiple deployments. The Architecture evaluation tool has been tested, and provides evaluation of multiple deployments according to concern such as power consumption, performance, cost.

The next step is to fully integrate all tools into the MERgE platform and test Codenomicon Defensics on our system.



Evaluation of new risk analysis methods based on Engineering models

The article "MERgE avionics use case: Example of an integrated safety toolchain" was co-written by ALL4TEC and Space Applications Services NV. It was presented by ALL4TEC during the LambdaMU19 seminary in DIJON in France (21st - 23rd October 2014). The paper presents the preliminary results of the work undertaken in the context of the MERgE ITEA2 research project on its aerospace use case.

The problem encountered is that the current process and tool chain used to support the development and deployment activities of avionics on-board software for aerospace systems have several limitations that impede the delivery of products ready for qualification.

This article shows how a new tool chain has been introduced in order to cover the current avionics dependability and safety practices, highlighting the integration ease and the benefits of this innovative approach.

Through the project MERgE; ALL4TEC is providing Safety Architect to Space Applications Services NV. Safety architect can be used to perform risk analysis of complex systems using functional or physical architectures from typical modelling languages (for example SysML or UML). It also provides support for the implementation of FMEA/FMECA and automatically deducts the FTA corresponding to the identified feared events. For more information: www.all4tec.net

Managing Variability in the Safety Design of an Automotive Hall Effect Sensor

Florence, Italy, Sept 19, 2014. Joint research between KU Leuven (Belgium), INRIA/IRISA (France) and practitioners of Melexis NV, a market leader in the development and production of Automotive Hall Effect Sensors, was presented at the *18th International Software Product Line Conference* (SPLC). This industry-driven research is conducted in the context of the MERgE project (ITEA2) and focuses on the complexity caused by the concern interplay between Safety, Variability, and Reuse (as analysed in WP1) in the design of Melexis products.

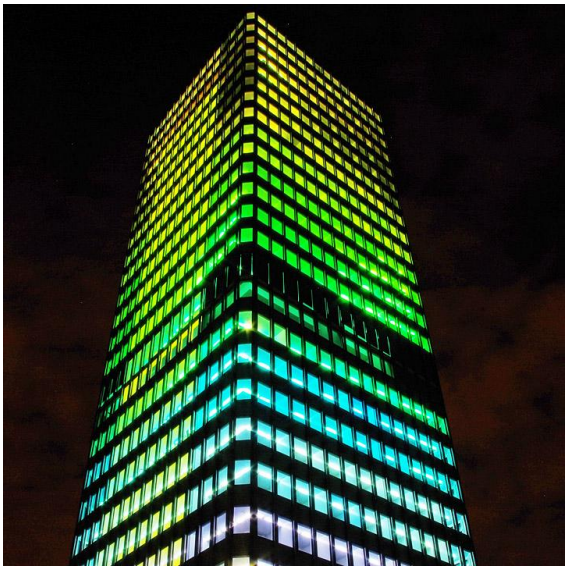
A tailored, model-driven and generative Software Product Line Engineering (SPLE) method was presented, the building blocks of which method have been defined and tested in the context of WP3. Advanced, integrated tool support is being created in the context of WP2 and further validation of this method is being done by assessing how it affects Melexis Key Performance Indicators (KPIs), such as the required time to market new product variants, the degree of reuse, and the quality of documentation.

Using MERgE platform to teach modelling in Paris

Modelling concepts are uncommon in university courses. With help of MERgE Partners, LIP6 of Université Pierre et Marie CURIE wished to have a training session for their students in advanced modelling concepts. For example, how domain specific modelling (DSM) could be applied in order to create a drone programming system.

On behalf of the MERgE Project, Obeo prepared a course about the creation of a modeller from an existing domain. After a two hour auditorium presentation, showing DSM principles and tooling, the MERgE project provided a platform integrating all modelling components needed for an industry inspired exercise: a relational database modelling tool. In two hours, helped by Obeo, the majority of students were able to create a tool with features considered high-tech a few years ago. This included support for table definition, indexes and relationships between tables.

The students thought Sirius was a very good way to define new software. The ease of graphical creation was highly motivating: having an initial result so quickly makes student feel very confident about the approach.



Zamansky Tower in UPMC, Paris

Visiting Leuven - MERgE plenary in September

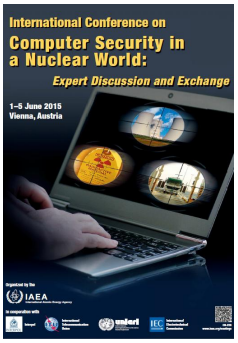
A moment of respite

The MERgE consortium gathers together regularly to advance planned and ongoing deliverables, to review completed work products and prepare for major milestones. The previous plenary was hosted by the Belgium partners in Leuven. A couple of long and intensive days were spent on information sharing regarding developed tools, demonstrator status and conducted research. An important objective of this plenary was preparation for the mid-project review. Each partner discussed their current contributions to the demonstrators and points to strengthen were considered.

Even though the meeting days tend to get long, one should not belittle the social side of the events. Since food is one of the basic needs a human has, the hosts had decided to take care of that with style. They kindly took the participants to a traditional restaurant serving local specialties.

Upcoming IAEA computer security conference

Agency (IAEA) is organizing an International Conference on Computer Security in a Nuclear World: Expert Discussion and Exchange in IAEA Headquarters (Vienna, Austria) between 1-5 June 2015. STUK chairs Program Committee of this conference. This conference is being convened to review the international community's experience and achievements to date in strengthening computer security as a component of nuclear security. This is to enhance understanding of current approaches for computer security worldwide within nuclear regimes, and identify trends, and to provide a global forum for competent authorities, operators and other entities engaged in computer security activities relevant to nuclear security. There will be several hundred participators from different countries and organizations. In the main plenary a demonstration event is planned. Codenomicon is planning to demonstrate their tools developed within MERgE-project. STUK will present several research papers made with the funding provided by MERgE. More information about the event and other meetings: http://www-pub.iaea.org/iaeameetings/



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Contact sanja.aaramaa@oulu.fi for more information about the articles above or potential joint dissemination activities.

Contact charles.robinson@ thalesgroup.com for other MERgE matters.

Check out
http://www.merge-project.eu/

Within the "Engineering support" theme of ITEA2 roadmap, the purpose of this project is to develop innovative concepts and design tools for multi-concern engineering when designing complex systems. The applicability and benefits of these innovations will be demonstrated in particular with "safety" and "security". Other concerns such as performance, reliability and traceability will also be considered. Four concrete use cases from different domains are provided as suitable test environments: radio communication, automotive, aerospace and industrial control.

MERgE SAFETY & SECURITY

Multi-Concerns Interactions Systems Engineering

Meet us @ ITEA-ARTEMIS co-summit 10 & 11 March 2015

ITEA and ARTEMIS organises the joint co-summit to give an opportunity for projects to communicate results to interested parties. The co-summit event is also an important place to identify co-operation possibilities for future R&D directions. The MERgE project was presented in the previous co-summit as it will be in the forthcoming one too. Last time the concept of the project was explained including the plans for demonstrating conducted research and developed tools. Now it is time to give a floor to the four use cases to demonstrate achievements in multi-concern engineering. We invite you to stop by, to hear the latest news, see the capabilities of the developed tools and learn what research results we have to offer. See you in Berlin!