

FUSE-IT

Enhanced connectivity and security for building management at lower costs



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Imagine a malicious hacker taking over the heating, ventilation and air conditioning system of a hospital. With all of the equipment and facilities becoming more and more connected in order to make the systems smart and save energy, this has become a serious threat. Luckily cyber security is also becoming increasingly successful in addressing these issues. And one of these success stories can be found in the FUSE-IT project.

FUSE-IT, gathering 20 strong partners from France, Belgium, Portugal and Turkey, addressed the need for sustainable, reliable, user-friendly, efficient, safe and secure Building Management Systems in the context of smart critical sites, like hospitals. From a site management perspective, it solves the dilemma of efficiency and security in intelligent buildings. At the user level, a smart unified building management interface enables the daily monitoring and control of a building, while a full security management interface enables the supervision of both physical and logical security throughout the premises. And at the end-user level, this can save both energy and lives.

Impact highlights

- > A new (and misunderstood) topic when the project idea was first introduced back in 2013 was the protection of smart infrastructures against combined cyber and physical threats. This now appears in the top three areas of investment by public and private actors. From this perspective, FUSE-IT has been a pioneer project, enabling the consortium members to take a strategic lead.
- > Since 2017, about €48 million in revenue has been reported in direct relation to the project results. The most striking commercial successes include:
 - 17 system integration operation contracts in the field of smart building management and optimisation
 - 25 contracts won in the field of critical infrastructure protection against cyber and physical threats
 - the successful market introduction of a start-up company delivering SaaS platform services for enhanced control and management of sensitive building information
- > The project has led to the acceptance of four patents.
- > Airbus CyberSecurity has been awarded a €740,000 contract to fulfil risk assessment surveys on 14 sites of Airbus Defence and Space in Spain, France, the UK and Germany and a contract worth €500,000 to secure a data centre organisation against cyber and physical threats. In addition, Airbus CyberSecurity has been awarded a multimillion-euro contract with an important gas transportation company, an integration contract for the protection of a large data centre's infrastructure and several contracts with large energy production utilities and distribution system operators in the UK, France and Germany.
- > The FUSE-IT project allowed Niko to grow faster and to become more attractive to other companies. The team is still growing and has had double-digit growth during the last five years.

Project results

To achieve this, the project developed a Smart Secured Building System resulting from cross-domain innovation between energy and security activities that are traditionally very segmented. The system can be deployed as standalone components, as a fully-integrated system or as a service. The innovation proposal of FUSE-IT resides in five key capacities:

- 1 - Secure shared sensors, effectors and devices
- 2 - Trusted, federated energy and information networks
- 3 - Core building data processing and analysis
- 4 - Smart unified building management interface
- 5 - Full security management interface

Exploitation

On the back of the project results, Airbus CyberSecurity has successfully filed a patent on a method for securing and authenticating telecommunication. Overall, the project has led to the acceptance of four patents. Next to this patent, Airbus has been awarded with several multi-million euro contracts, both inside and outside its organisation.

In Q2 2018, the French SME VTREEM launched a new SaaS product named 'BIMValue' to enhance, control and manage sensitive data using semantic BIM (Building Information Modelling). Thanks to this development, VTREEM was acquired by Catenda in 2019. This Norwegian software editor is specialised in BIM.

For the Belgian consortium, Niko has created the nextgeneration Niko Home Control platform NHC 2.0 , which now has more open API interfaces . Additionally, all of their new wireless products will be based on the open standard Zigbee instead of only proprietary protocols. All of these changes will make Niko Home Control more open and available for fast and smooth integration by third parties. The FUSE-IT project has helped Niko to create a new architecture and move to said open standards, allowing them to grow faster and to become more attractive to other companies.

Using the knowledge and developments of FUSE-IT, the Portuguese consortium was able to create a new solution for intelligent building management focused on a

semanticbased approach to fault detection in cyber-physical environments. The C2C (Click to Control) solution is now entering TRL 8 after having been demonstrated in an operational environment. Moreover, the alarm and warning mechanisms developed in FUSE-IT were integrated in a commercial product by IPBRICK targeting critical buildings. EVOLEO developed a middleware solution that allowed it to interface with the legacy control systems of the building, including HVAC, oxygen and room pressure, thanks to upto-date IT systems to implement new functionalities and optimisations. These developments are of great important for EVOLEO as several legacy systems can be turned into smart systems without the need for replacements or very demanding customisations or retrofits.

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PROJECT LEADER

Adrien Bécue, Airbus CyberSecurity

PROJECT START

October 2014

PROJECT END

December 2017

PROJECT WEBSITE

<https://itea4.org/project/fuse-it.html>

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