Press Release
Vienna, 23 November 2020

INDUSTRY 4.0: MAJOR LEAD PROJECT IOT4CPS STRENGTHENS THE LOCATION

Development of secure systems for digital vehicles and Industry 4.0 - IoT4CPS closing event in cooperation with Platform "Industry 4.0" on 10 December 2020

Since December 2017, 16 high-level partners from the domestic industry and science have developed guidelines, methods, tools and components for secure IoT-based applications in the innovation areas of automated driving and Industry 4.0. The innovations realised within the scope of the Austrian lighthouse initiative IoT4CPS (funded in the "Industry of the Future" programme of the FFG) sustainably strengthen Austria as an Industrie 4.0 location. The project with a total budget of around 5 million Euros was funded by the FFG with around 3 million Euros as part of the BMK initiative "ICT of the Future".

The AIT Austrian Institute of Technology as the consortium leader of "IoT4CPS" and its project partners will present the extensive project results to a broad professional audience in the afternoon at the "5th SUMMIT INDUSTRY 4.0 Austria", which will be held this year on 10 December 2020 in virtual space and organised by Platform Industry 4.0.

In the IoT4CPS project, the challenges arising from the use of information and communication technologies (ICT) in real industrial environments have been addressed over the past three years. Since in this context, in addition to cybersecurity issues, aspects of availability and (physical) safety must also be addressed from the design to the operation of the system, methods for a joint consideration of safety and security over the entire life cycle were developed in the project. In doing so, the topic of safety was considered at all levels, i.e. from the sensor to the communication interfaces and all the way to networked systems. The suitability of the innovative project results for use in networked industrial production facilities, as well as in the area of networked vehicles, was evaluated through various industrial demonstrators.

"We are convinced that with IoT4CPS we did extensive scientific groundwork with a high level of practical relevance, so that next year we will be able to bring the topic of security in the context of IoT (Industrial Internet of Things) and the increasingly rapid development of autonomous vehicles to the European stage as part of the new European research programme "Horizon Europe"," says project leader Dr. Mario Drobics, Head of Competence Unit Cooperative Digital Technologies at the AIT Austrian Institute of Technology. „Our project results very clearly reflect the united technological competence of Austria's leading industrial companies and research partners."

Technical aspects of secure IoT
In order to fully exploit the potential of applications for automated driving with connected vehicles and of trustworthy, robust and cost-efficient Industrie 4.0 concepts, a high level of trust between the system components involved must be ensured. This includes the integrity, authenticity and confidentiality of information as well as the adequate protection of production data and the

safeguarding of intellectual property. Whereas in the past industrial plants were hardly adapted after commissioning, networked digital plants today require a much more comprehensive examination of the topic of security. End-to-end security of IoT in cyber-physical constellations (interactions of digital devices with their physical environment) requires the use of combined safety & security approaches already in the design and development across all levels of the system architecture, from the physical, network and platform level to the applications. In addition, comprehensive verification and safety analysis during operation as well as IoT lifecycle management are necessary in order to ensure safety over the long operating period of industrial plants.

Industry 4.0 demonstrators
In order to demonstrate the technical achievements from the project and the advantages of the IoT4CPS developments in design and reference architecture in a showcase, two Industrie 4.0 demonstrators were developed that integrated various technical components resulting from the research work. On the one hand, these prototypes make the high degree of possible reuse of the IoT4CPS solution approaches found in smart industrial environments visible and also make clear how the efficiency of industrial processes can be increased through trustworthy connectivity and, more generally, how the time-to-market along the entire product life cycle can be accelerated through digitalisation. The first demonstrator enables bidirectional connectivity for industrial testing of components in vehicle production, thus facilitating process automation, optimising productivity and supporting predictive maintenance. The second demonstrator uses virtualisation technologies to securely integrate existing equipment into a networked production environment. In addition to innovative concepts, special devices developed in the project are used to enable a secure connection of industrial equipment (machines, robots, production lines). This leads to the concept of a virtual factory under the title "Security by Isolation".

Knowledge pooling of industry and science enables European connectivity
The project partners from IoT4CPS agree that holistically considered IoT security in cyber-physical systems will also be a "living" scientific-industrial focus topic in the coming year. The extensive project results are now available to the Austrian economy for an accelerated time-to-market of real Industry 4.0 applications, of developments in the field of "autonomous driving" and for many other application scenarios in order to sustainably strengthen Austria as a technology location.

The partnership between industry and science in the project should now also pave the way for targeted follow-up projects, with which theoretical knowledge gains in IoT security will lead to concrete IoT implementations. The expansion of the topic into the European research arena is another core objective of the IoT4CPS project partners. In the area of Digital Twinning, the expertise acquired in the national project has already demonstrated European connectivity. TTTech is a consortium member of "Change2Twin", a project within the framework of the EU initiative "I4MS" (ICT Innovation for Manufacturing SMEs), which aims to support small and medium-sized manufacturing companies in their digitalisation processes through Digital Innovation Hubs as technology providers. "Change2Twin" will be presented at SUMMIT INDUSTRIE 4.0 Austria in a parallel session to IoT4CPS.

The IoT4CPS Consortium

Austrian industry partners: AVL List GmbH, Infineon Technologies Austria AG, Nokia Solutions and Networks Austria GmbH, NXP Semiconductors Austria GmbH, Siemens Austria AG, TTTech Computertechnik AG, X-Net Services GmbH

Austrian scientific partners: AIT Austrian Institute of Technology GmbH (consortium leader), Danube University Krems, Johannes Kepler University Linz/Institute for Pervasive Computing, Joanneum Research Forschungsgesellschaft mbH, SBA Research GmbH, Salzburg Research Forschungsgesellschaft, Software Competence Center Hagenberg GmbH, TU Graz/Institute for Applied Information Processing and Communications, TU Graz/Institute for Technical Informatics, TU Wien/Institute of Computer Engineering.

Further information: https://iot4cps.at/
Registration for the SUMMIT INDUSTRIE 4.0 Austria: http://www.einladung.cc/industrie40/summit-industrie-40-2020?adminview=1

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