SCOTT Newsletter December 2019

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Welcome!

This is the December 2019 edition of the SCOTT newsletter, highlighting news & achievements from SCOTT during Q4 2019.

Please distribute this newsletter to all interested parties in your organization. We appreciate your feedback, please send comments or requests to scott@v2c2.at.

Enjoy the reading!

Smart Train Composition Coupling with SCOTT

December 20, 2019

SCOTT UC19 (Smart Train Composition Coupling) aims to develop and test in a real environment a solution focused on the management and control of multiple compositions via remote control from only one of them. It means to implement effectively secure and safe

wireless technology for the communications between trains.

The currently coupling system available at the railway industry is based on a mechanical and physical joint between two or more compositions. One of the problem of this system is the needs of works for creating the physical composition (slow maneuvers in depots and shunting yards). The second problem of this system is the limitation for traction long and heavy compositions, with one or several locomotives.

The virtual coupling developed in the UC19 ensures a safety maneuver avoiding the physical connection, as well as reduce the traction needs for long and heavy compositions. The solution also enables the communication between the trains (V2V communications), allowing them to automatically accelerate and brake together as well as manage them to follow each other at a closer distance. This means an improvement in the line capacity, which nowadays is limited, as a result on the reduction of the distance between compositions.

During the second year of the SCOTT project, the V2V communications have been tested in a real environment at INDRA installations achieving successful results. Moreover, the solution obtained from the UC19 will be tested in a real scenario in Germany.

New Video on SCOTT YouTube Channel: Spatial-based authorization and authentication

December 10, 2019

GUT and Vemco work together in SCOTT's Use Case on solutions that can increase users' comfort as well as their safety and security in facility areas. The main developed concept is spatial-based authorization and authentication, i.e. use of information about user's or asset's location as an additional factor in the authorization and authentication process. This

mechanism can be used, for example, to detect the user's presence in a forbidden zone, monitor expensive assets or help in an emergency evacuation. Watch it now on YouTube: https://youtu.be/j9uTYYycRk4
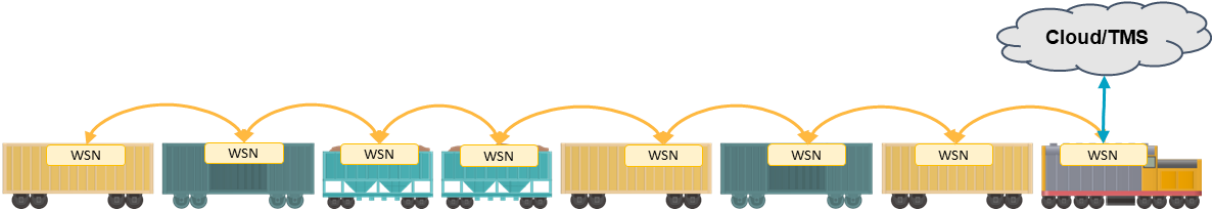

Presenting Autonomous Wireless Network for Rail Logistics and Maintenance
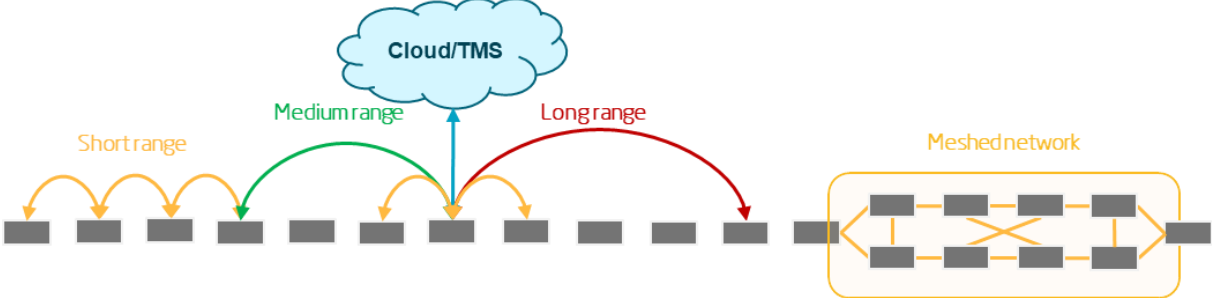
December 5, 2019

SCOTT UC18 (Autonomous Wireless Network for Rail Logistics and Maintenance) aims to develop and test in a real environment an autonomous wireless network on the railways tracks as well as on the trains, to increase the efficiency on the management due to the cargo and rolling stock monitoring for Logistics and Maintenance purposes.

Nowadays, in the railway domain, the means for managing infrastructure and the rolling stock is expensive to install and maintain. It requires long wired installations, which increase costs. Furthermore, these systems are based on human supervision, including procedures as the wagon identification, the confirmation of the composition or the maintenance needs for infrastructure devices.

To minimize the need of an operator and increase the security and safety in the railway domain, the UC18 implement and demonstrate wireless sensor networks along the tracks and on the trains, including the required communication systems, to establish a wireless connection between the sensors and the cloud platform (V2X communications).

The system also incorporates sensors for monitoring transported cargo and other information about the wagon content. This allows the logistics companies to perform tracking of the cargo through the end-user application.

During the second year of the SCOTT project, the V2V communications have been tested in a real environment at INDRA installations, achieving successful results. Moreover, the solution obtained from the UC18 will be tested in a real scenario in Germany.

Watch new video on YouTube: WP15 Vehicle as a Sensor within Smart Infrastructure

November 21, 2019

GUT, FEV, and Vemco work together in one of SCOTT's Use Cases on comprehensive solutions related to vehicle-as-a-sensor within a smart infrastructure. This video presents three scenarios: Entering the facility, speeding detection and entering the forbidden zone. The first scenario presents the authorization and authentication process of both the driver and their vehicle using V2X communications and a mobile app. The latter scenarios present how real-time processing of the vehicle data like speed or position can improve safety and security at the facility. Check it out on SCOTT YouTube Channel: https://youtu.be/t2ZqlSyGNvE

SCOTT @EFECS 2019

November 19, 2019

SCOTT is at booth @ECEFS 2019 in Helsinki. We will inform you how to realize the full potential of IoT and how to build trust in wireless solutions and increase their social acceptance.

SCOTT F2F Meeting, Madrid, Spain

October 23, 2019

Representatives from SCOTT Project met in Madrid, Spain. It was hosted by our project partner Indra. All core members took advantage of this fruitful live meeting by clarifying as many topics as possible. After more than two years of highly motivated project work the experts from industry and research discussed the progress made and defined next steps to reach the project goals. Throughout the event, the beneficiaries were updated on the current "status quo" and worked intensely on their joint vision of the SCOTT project. Several topic-specific sessions and workshops offered enough room for interesting discussion. A big thank to our team from Indra for organizing this 3-day event.

UpKit: an open-source, portable, and lightweight update framework for constrained IoT devices

October 22, 2019

SCOTT's partner TU Graz has developed an open-source, portable, and lightweight update framework for constrained IoT devices named UpKit. This framework encompasses all phases of the software update process: from the generation and signature of a new firmware, to the transmission of the latter to an IoT device, its verification and installation. UpKit employs a novel update architecture that is agnostic to how new firmware images are distributed and that introduces a double-signature process to guarantee the freshness of a new firmware.

Curious? Check out the implementation for several operating systems, off-the-shelf hardware platforms, as well as cryptographic libraries at https://github.com/updatekit/upkit

A paper describing UpKit in detail was also recently published at the 39th IEEE International Conference on Distributed Computing Systems (ICDCS), and can be downloaded from http://www.carloalbertoboano.com/documents/langiu19upkit.pdf

Successful Y2 Review

October 16, 2019

We are happy and proud to report a very successful 2nd review (Y2) which took place in Brussels on October 10th (accompanied by a prep meeting the day before). Efficient and rigid time management allowed to provide a concise overview of one year of work for 31 (!) work packages.

Several life table-top demonstrations as well as videos of larger demonstrators provided a good indication on what was achieved. Thanks to our project officer, our reviewers and all presenters, as well as ECSEL hosting us in the White Atrium!

SCOTT's workshop at ETFA2019: big success!

October 9, 2019

We are proud to report that the workshop "WS01: Workshop on Secure and Trustable Wirelessly Connected Industrial IoT" took place very successfully on September 10th 2019 at ETFA-2019 in Zaragoza, Spain.

After almost a year of preparation by a dedicated SCOTT team, and a CfP which drew lots of attention and papers, a dense and highly interesting program took place on the first day at ETFA. First very good overview on SCOTT and its main ideas was given by Hans-Peter Bernhard from Johannes Kepler University (JKU). This was complemented by Martin Kubisch's highly motivating keynote "IoT in aerospace: The challenge of long device lifetime". The rest of the day was packed with 13 great presentations of research in the IIoT domain from both external researchers and project-partners. The Agenda and papers presented can be found here: http://www.etfa2019.org/ws01-workshop-on-secure-and-trustable-wirelessly-connected-industrial-iot/ . Thanks all for organizing and managing this event!

FH Hagenberg students won SCOTT Vehicle Data Hackathon

October 3, 2019

At the SCOTT Vehicle Data Hackathon, the team of the University of Applied Sciences - Campus Hagenberg could win the final. With their idea to use the vehicle data of several drivers provided by the SCOTT partner VIRTUAL VEHICLE (Graz) (which is freely available here: https://zenodo.org/record/2661316#.XZSJbGZS9PY) such as speed, rpm, GPS data, steering wheel angle, acceleration sensor values in all directions, temperature of the engine, outside temperature, etc., the team was able to calculate meaningful predictions about the condition of the vehicle or the driving environment, e.g. show where strong brakes happen. They also proposed an algorithm idea to authenticate a driver just by its individual acceleration behavior. Thereby they convinced the top-class jury with representatives from ACCIONA, AVL List, JKU Linz, INDRA, Technical University of Graz, Philips Lighting, GUT, SmartIO, NXP, Nokia, VIRTUAL VEHICLE, and the University of Oslo. As a reward, the three students Lukas Rogl, Alina Kuttler and Simon Krög of the Automotive Computing Studies at the Campus Hagenberg won 1.250 Euro. Congratulations!

The success was also reported in the media, among other things there was a report in the 2 different editions of the local newspaper "Tips" (https://www.tips.at/nachrichten/waldneukirchen/wirtschaft-politik/475801-fh-trio-gewinnt-internationalen-hackathon) and reports on the accounts of the University of Applied Sciences, which mention project SCOTT as well.