# InSecTT Newsletter May 2021

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# Welcome!

This is the **May 2021 edition** of the InSecTT newsletter, highlighting news & achievements from InSecTT during Q1 2021.

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


Enjoy the reading!

# New Research: Quality of Service Based Minimal Latency Routing for Wireless Networks

Apr 26, 2021

Minimized and nearly deterministic end-to-end latency facilitates real-time data acquisition and actuator control. In addition, defined latency is an integral part of quality oriented service in order to get closer to the reliability of wired networks and at the same time take advantage of wireless networking. This paper introduces a QoS routing protocol capable of balancing power consumption between wireless sensor and actuator nodes while minimizing end-to-end latency. We introduce a TDMA scheme in the routed wireless network to enable defined latency and in addition it improves the energy efficiency by avoiding collisions which eliminates time and energy consuming retries. Our novel routing method allows latency and round-trip times to be calculated in advance. We implemented a demonstrator and show experimental results of a wireless sensor network with our proposed routing scheme.
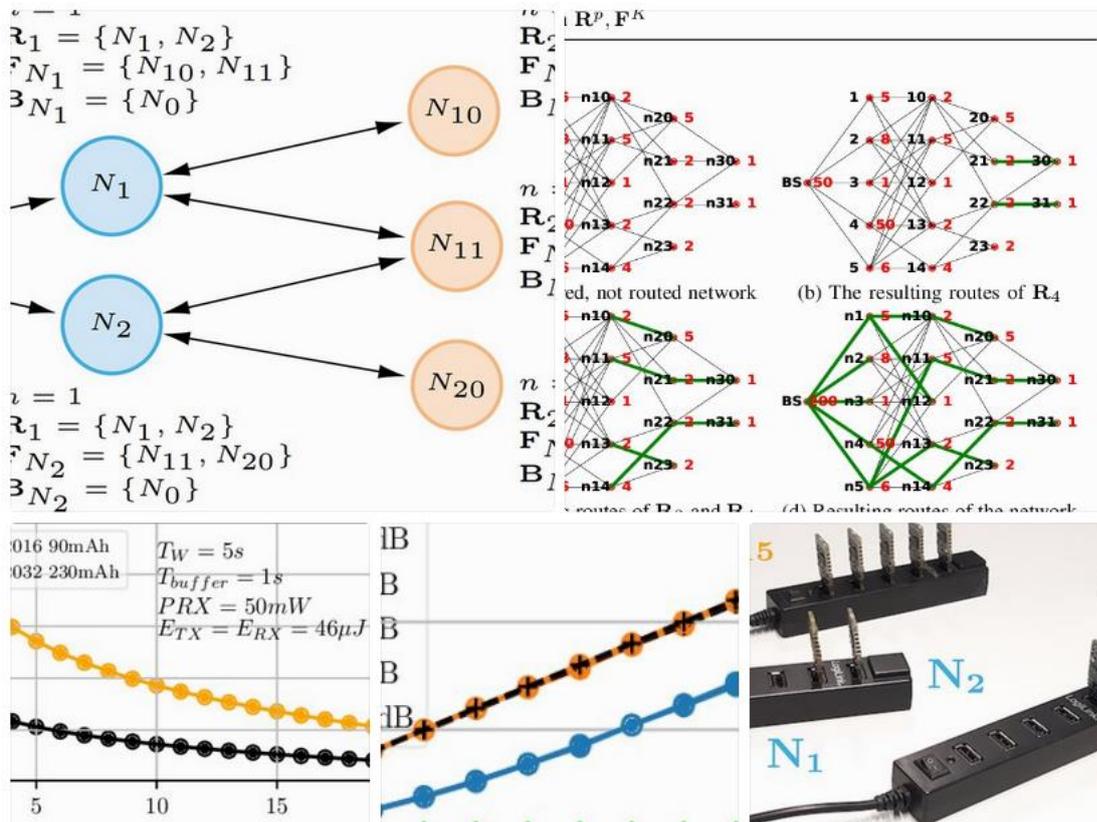
# New Research: Relay-aided Wireless Sensor Network Discovery Algorithm for Dense Industrial IoT utilizing ESPAR Antennas

Apr 26, 2021

Industrial Internet of Things (IIoT) applications require reliable and efficient wireless communication. Assuming dense Wireless Sensor Networks (WSNs) operating in a harsh environment, a concept of a Time Division Multiple Access (TDMA) based WSN enriched with Electronically Steerable Parasitic Array Radiator (ESPAR) antennas is proposed and examined in this work. The utilized antenna provides one omnidirectional and 12 directional radiation patterns that can be electronically switched by the sensor node. We introduce a relay discovery algorithm which selects those sensor nodes with an ESPAR antenna capable to act as relay. The selection of the relay nodes is based on a certain link quality threshold that algorithm uses as input. The outcome is a reduction in number of layers or hops with a guaranteed Quality of Service (QoS). To emphasize the physical aspect of the wireless propagation, we introduce the measured antenna radiation patterns and consider two different path loss propagation models representing blockage-free and blockage-prone industrial environments. A number of network simulations were performed and Signal-to-Noise Ratio (SNR) as a link quality measure was examined with respect to the network density and different measured radiation pattern settings. The main outcomes show a trade-off between SNR per link and the percentage of nodes that can serve as relays. As a result, we propose network design guidelines that take under consideration the QoS range with respect to SNR together with an optimal number of antenna radiation patterns that should be selected as a trade-off between latency, energy consumption and reliability in a network.
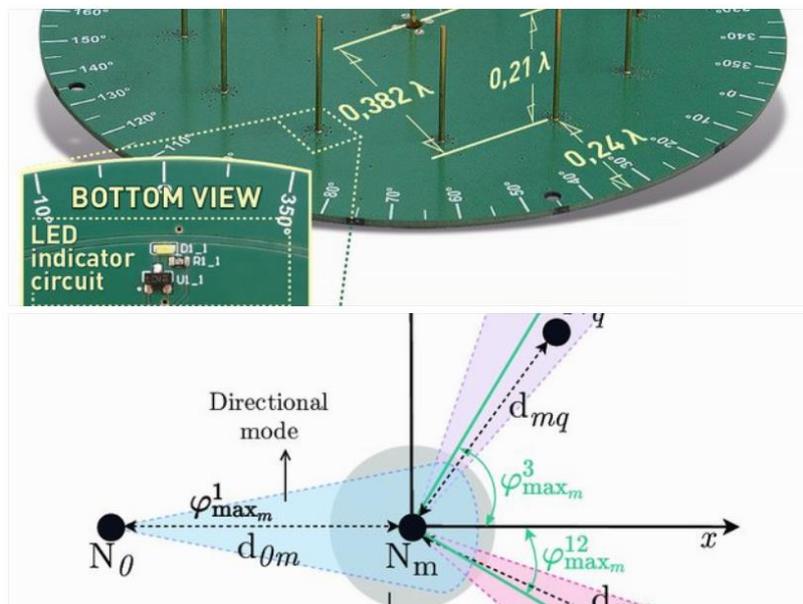
# Cybersecurity in Industrial Manufacturing

Apr 16, 2021

The manufacturing and industrial robotics systems getting more connected everyday to increase the productivity. The use case will address the use of AI-enhanced secure and reliable communication technologies to enhance the security, safety, reliability in the manufacturing and production plants. The use of AI-integrated communication technologies will improve the reliability and security, for the two major goals, avoiding interrupts and mass damages due to the cyber attacks and providing a trusted system with high quality production.

Arçelik Global is one of the partners in the InSecTT Project from manufacturing domain and provides a use case which aims to develop secure and reliable communication solutions for production Shopfloor.



# Behind the curtains of InSecTT – a pan-European joint effort to create trust in AI

Mar 30, 2020

Read the very interesting and informative interview with Michael Karner from Virtual Vehicle Research GmbH (VIF) and Fjolla Ademaj from Silicon Austria Labs (SAL) about InSecTT project. They talk about the basic idea and aim of the project, how to deal with the pandemic, their roles within the project and what will come next! Enjoy reading here

https://www.silicon-alps.at/blog/behind-the-curtains-of-insectt-a-pan-european-joint-effort-to-create-trust-in-ai/

# Altran, part of Capgemini, is proud to be one of the partners in the EU-funded InSecTT Project

Mar 26, 2021

Altran, part of Capgemini, is proud to be one of the partners in the EU-funded InSecTT Project.

In cooperation with other organizations and research centers, Altran is leading a Use Case that aims to investigate the use of AI algorithms in a large vehicle platoon scenario with hundreds of other platoons interacting in a representative urban scenario, such as a Manhattan network 🚗

More about…

InSecTT Project 👉 http://www.insectt.eu

Altran, part of Capgemini 👉 http://www.insectt.eu/partners

# Call for Book Chapters: "Wireless Mesh Networks - Technologies and Applications"

Mar 24 2021

Our InSecTT Partners from Italy from the University of Parma are editing the book: "Wireless Mesh Networks - Technologies and Applications".

InSecTT partners are invited to contribute a chapter on various topics. It will be published in print and electronic. For more information contact Luca Davoli (luca.davoli@unipr.it) directly!



# Published article on CORDIS

Mar 22, 2021

Very interesting article about SCOTT, the predecessor project of InSecTT: results in brief are available in six languages (DE, EN, ES, FR, IT, PL) at:
https://cordis.europa.eu/article/id/429392-new-methods-secure-and-verify-iot-for-european-industry?WT.mc_id=exp

Work started in SCOTT will continue in the InSecTT project. This project will further develop IoT trustworthiness, using AI, for the benefit of Europe's industry and citizens.

# AI in physical security systems

Mar 11,2021

Something is clustering in here...

Security and safety systems like physical access control system or real-time positioning system can produce massive amount of data. Is it possible to use Machine Learning algorithms to analyze this data to support safety and security at facilities keeping users' privacy at a high level? Vemco believes it is and intends to prove it in InSecTT.

The first stab at understanding the data streams was taken. Now, it is time for the next steps.

Stay tuned!
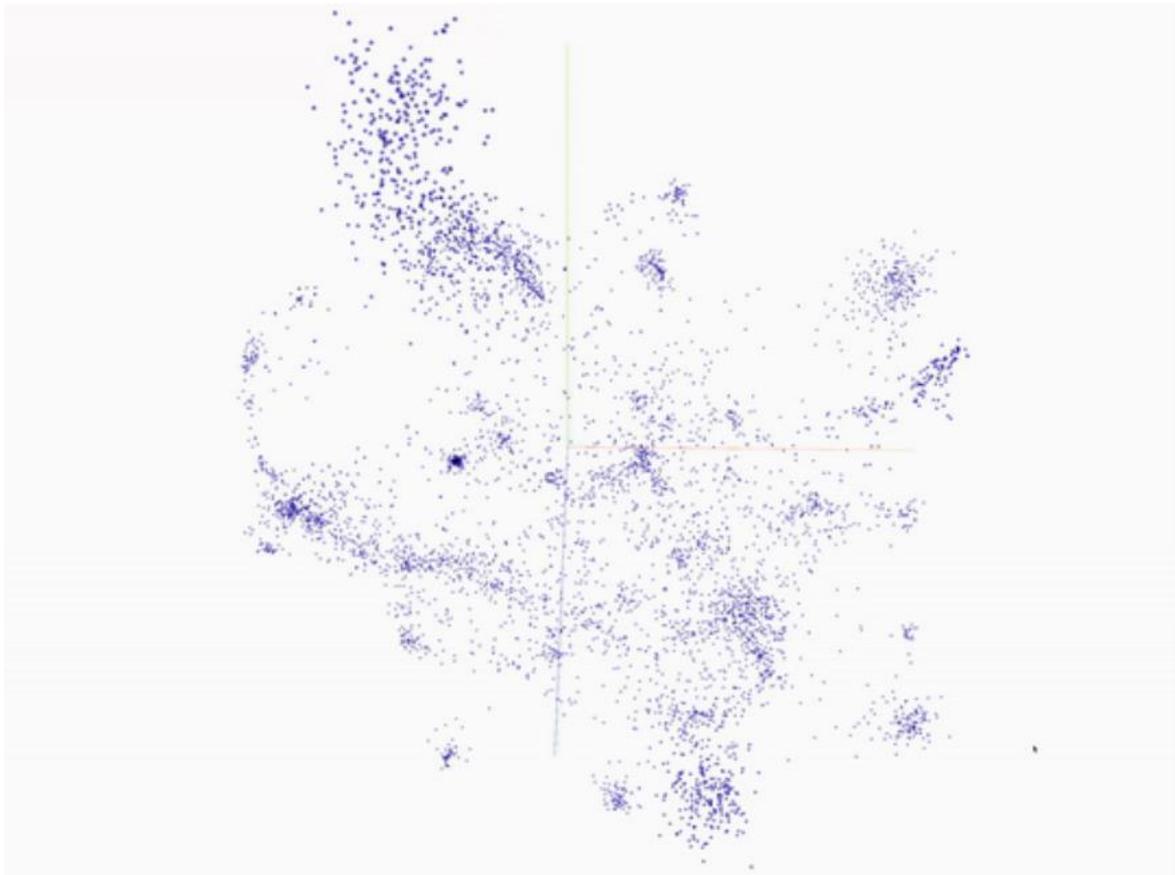
# InSecTT project in the ARTEMIS Newsletter of March 2021

Mar 10, 2021

In this newsletter, three innovative projects InSecTT, SECREDAS and BRAINE are presented. Their collaborations cover a vast range of topics and domains which touch every corner of our lives among other things: efficiency, connectivity & trustablity. Read the very interesting article here:

https://artemis-ia.eu/news/efficiency-connectivity-trustability-three-projects-in-the-spotlight.html

# InSecTT project featured in new issue from Virtual Vehicle Magazine

Mar 9, 2021

In the new issue "Building Trust" of the Virtual Vehicle Magazine (VVM) an article giving insight about InSecTT is published and Michael Wiesmüller (Head, Department Key Technologies for Industrial Innovation: ICT, Production and Nanotechnology) explains where Austria stands in the field of IoT on international/European level and to what extent DEWI, SCOTT and InSecTT made a contribution to that: "These projects are examples of the existing innovative culture in Austria, which can only be maintained with international cooperation and knowledge exchange."

Read more here: https://www.v2c2.at/wp-content/uploads/2021/03/VIRTUAL-VEHICLE-Magazine-30_v16-FINAL-WEB.pdf

**Building Trust**

- InSecTT: Bringing together IoT and AI
- Virtualisation and Simulation: Railway Vehicle-Track Interaction
- HADRIAN: Defining the Driver's Role for Automated Vehicles
- TrustVehicle: Improved Trustworthiness of Automated Vehicles
- Energy Efficiency: The $CO_2$ Heat Pump
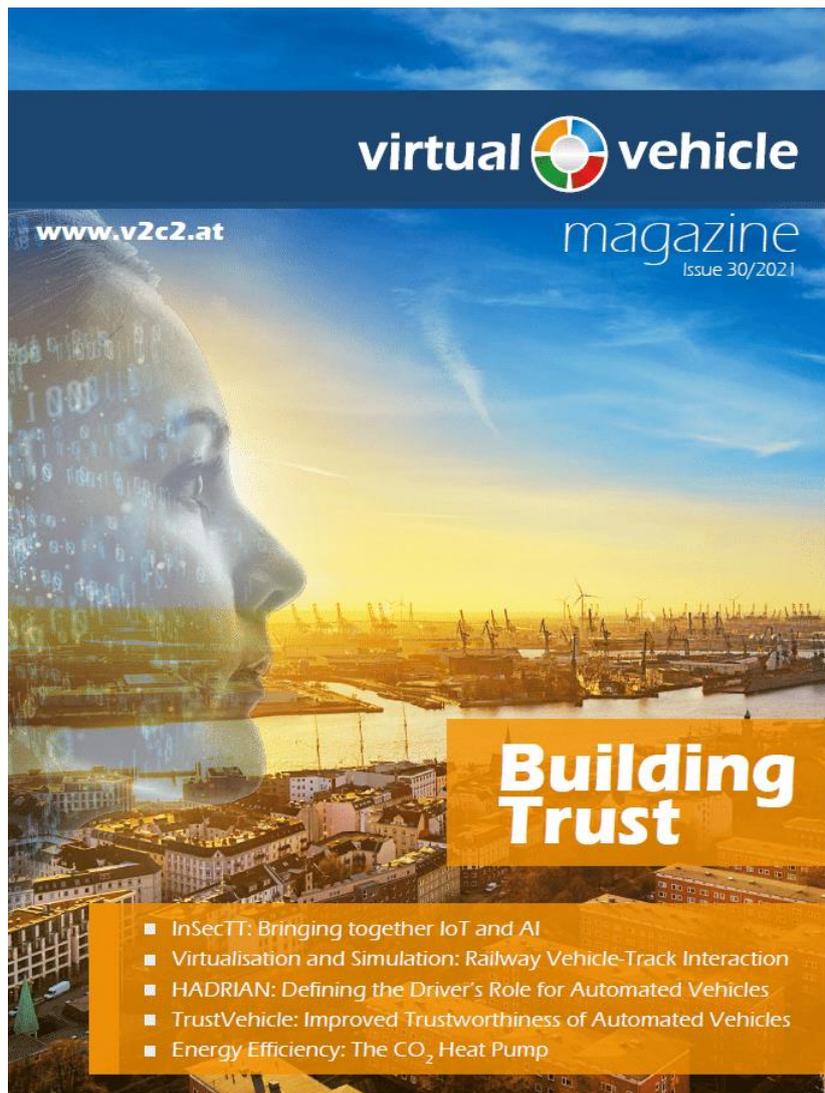
InSecTT

# InSecTT Use case for the Construction Sector

Mar 2, 2021

How can Artificial Intelligence of Things help to improve productivity and safety during the construction of large civil infrastructures? ACCIONA is leading a use case in the InSecTT project to answer this question 😎

The objective is to leverage the potential of Artificial Intelligence of Things (AIoT) for increasing the productivity and improving the safety of the construction sector, focusing on construction projects for the development of large civil infrastructures (e.g. construction of tunnels, highways, railways, etc.)

Find more about InSecTT at www.insectt.eu 👈
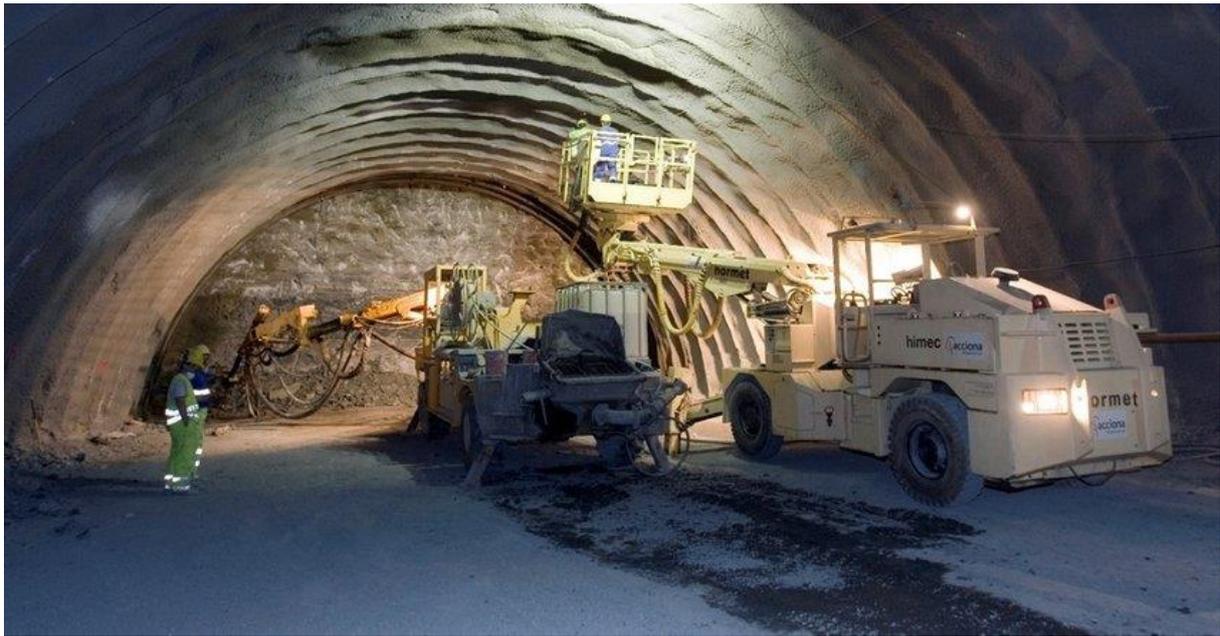
# AI-enhanced situational awareness

Feb 25, 2021

What is it like to be responsible for safety and security of a large facility? It involves continuous monitoring of events produced by multiple safety and security systems like access control system, CCTV, intrusion detection system and more. Wouldn't it be reasonable to have all the necessary data in one place? This is the main goal of Physical Information Management Systems (PSIM) and Vemco has just started developing one!

The Vemco's PSIM will increase situational awareness of the security operators. It will provide them with prioritized events from the integrated systems and present them with a spatial context.

The key to every PSIM's success is the set of systems it integrates. Participation in InSecTT gives Vemco a unique opportunity to work with authors of multiple AI-enhanced IoT systems, including Gdańsk University of Technology, ISS RFID, Linz Center of Mechatronics, Kaitotek, Wapice, and Marmara University.

Learn more about it by visiting [www.insectt.eu](www.insectt.eu)

# Biometric and sensing technologies at airport passenger terminals

Feb 24, 2021

Biometric and sensing technologies at airport passenger terminals can be combined with other ordinary solutions to help meet the challenges of security, quality levels of service and sustainable growth. EU-funded InSecTT Project will develop a specific use case, related to the structured and unstructured people flow in airports.

Find out more about InSecTT Project: www.insectt.eu

Read about Aeroporti di Puglia company's profile: www.insectt.eu/partners

# ABB AB is proud to be one of the partners in the ambitious InSecTT project

Feb 22, 2021

ABB AB is proud to be one of the partners in the ambitious InSecTT project – Intelligent Secure Trustable Things, bringing Artificial Intelligence and Internet of Things together, providing industrial applications with trustworthy connectivity, end-to-end security and intelligent solutions to the market. In collaboration with Mälardalens Högskola along with RISE and CEA, Björn Leander - industrial PhD student at ABB is leading a use case with purpose to demonstrate novel levels of access control mechanisms in modular automation applications.

www.insectt.eu

# Digital Technologies in the Construction Sector

Feb 19, 2021

The construction sector has traditionally lagged behind other industry domains in the adoption of innovative digital technologies. Are you curious about how InSecTT will help this sector to transform the execution construction projects? 😕

Find more at https://www.insectt.eu/





# Modular Automation is the future for flexible process plant production and a key element for industrial IoT and Industry 4.0

Feb 18, 2021

ABB AB launched the world's first commercial modular enabled process automation solution. As a partner in the InSecTT project, it is time to break new grounds applying the latest technology within access control mechanisms in order to sustain highest level of security in flexible process applications.

To learn more about modular automation, please visit:

https://new.abb.com/control-systems/modular-automation

To read about ABB's contribution to the InSecTT project, please refer to Secure and Resilient Collaborative Manufacturing Environments at: https://www.insectt.eu/use-cases/

## Could Internet of Things and AI improve efficient care delivery while reducing healthcare costs?

Jan 20, 2021

Could Internet of Things and AI improve efficient care delivery while reducing healthcare costs?

InSecTT will handle that!

Find out more about InSecTT at https://www.insectt.eu/

Could Internet of Things and AI improve efficient care delivery while reducing healthcare costs?

InSecTT will handle that.
www.insectt.eu

# Do we want to trust technology blindly?

Jan 18, 2021

Under this title, a German article has been published in the press about the InSecTT project - very worth reading either via the paid link on the website: https://www.diepresse.com/5907286/wollen-wir-der-technologie-blind-vertrauen or via the press reader: https://www.pressreader.com/austria/die-presse/20201205/282209423426904more via https://www.insectt.eu/.

More information on what's planned in InSecTT can be found on https://www.insectt.eu/



# Going to the edge - Bringing IoT and AI together

Jan 13, 2021

Interested in "Going to the edge - Bringing IoT and AI together"?

Michael Karner, InSecTT Coordinator from Virtual Vehicle, will give a talk on this at the virtual "Beyond IoT 4.0" conference (https://beyondiot.ie/) on January 25th, organized by Nimbus Research Centre, Ireland (https://www.facebook.com/nimbusresearchcentre).