5G-SMART NEWSLETTER YEAR 2
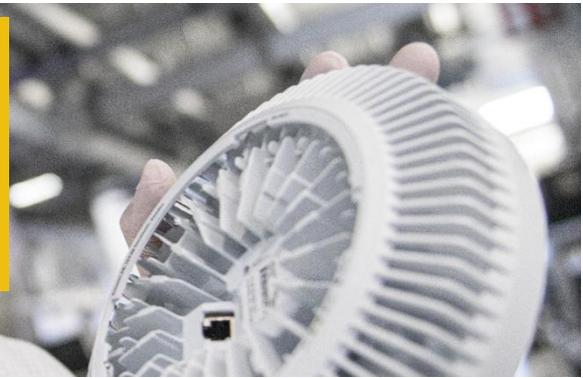
Dear Reader,

During the second year of the project, 5G-SMART has continued its work on a wide range of challenges within the smart manufacturing sector, including business models, the evaluation of deployment options, use case development and the investigations on new 5G features targeting the manufacturing sector. In this issue, you will find out more about:

- Milestones achieved
- Published 5G-SMART deliverables
- Upcoming events

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Milestones and Results

The 5G networks are now installed at all trial sites and ready to support the execution of the use cases. The work at the trial sites has been impacted by Covid-19 restrictions, but the use case development is progressing at all three trial sites (D2.1, D3.3, D4.3), with several demos and proof-points achieved in the second year of the project. All three 5G-SMART testbeds have been recently endorsed by 5G-ACIA, demonstrating the relevance of the trials.

An important milestone has been the execution and evaluation of the Electromagnetic Compatibility (EMC) tests and the channel measurement campaign at the Reutlingen trial site (see D4.2).

Building on the thorough gap analysis between the state of the art and the smart manufacturing use cases specified during the first year of the project, 5G-SMART has started the evaluation of important 5G features, such as integration of 5G with Time-Sensitive Networking (TSN), 5G end-to-end time synchronization and 5G positioning.

The project's work on business value creation enabled by 5G and operator business models has resulted in the development of two deliverables and a calculation tool (D1.2, D1.3). A framework and methodology for business value creation has been elaborated and applied to a 5G-SMART use case. Furthermore, the project has investigated business models focusing on the value proposition a mobile network operator can bring to the new ecosystem.

In this newsletter, we only give short insights into the project progress, the interested reader is referred to the intermediate project report, deliverable D7.3, for more details.

KEY FACTS

Project start: 2019-06-01

Duration: 30 months

EU funding: 10,200,413.75 €

Abstract

5G-SMART unlocks the value of 5G for smart manufacturing through demonstrating, validating and evaluating its potential in real manufacturing environments. 5G-SMART trials will test the most advanced 5G integrated manufacturing applications such as digital twin, industrial robotics and machine vision based remote operations. 5G-SMART will undertake the first ever evaluation of Electromagnetic Compatibility (EMC), channel measurements and co-existence between public and private industrial networks in real manufacturing environments easing the integration of 5G. The new 5G features, developed in 5G-SMART such as time synchronization and positioning for manufacturing use cases represent a technological leap.

Use case development at the trial sites

Below a short progress update for the use case development is given. Introductory videos for all trials can be found on YouTube. The validation phases are planned to start in autumn 2021.

- The testbed under development for the Kista trial site has been populated with two stationary YuMi robots, a mobile robot platform, a machine vision system, and an edge node that hosts the robot control software, all now operational at ABB premises. 5G is fully operational at the trial site. Prototypes for the three use cases are almost finalized, namely on vision-assisted robot collaboration, real-time human-robot interaction, and AR-based visualization.
- At the Aachen trial site, the 5G deployment has been extended with an outdoor network, allowing now also studies to evaluate and validate coexistence between indoor-outdoor transmitters. A wireless acoustic emission sensor system and a multi-sensor platform have been developed (D3.3) ready to be exploited in machining trials.
- For the cloud-based mobile robotics use case at the Reutlingen trial site, 5G-SMART has succeeded in building a 5G-enhanced research mobile robot for which in principle the entire intelligence is moved to the edge cloud. For the TSN/Industrial LAN over 5G use case, control units have been integrated in the 5G network and programmed to mimic realistic applications with various transfer intervals to validate the controller-to-controller communication over 5G. The latest status of the use development for the Reutlingen trial site is documented in D4.3.

Get in touch

5G-SMART has shown to create impact with publications, keynotes, contributions to standards and demos, highlighting the relevance of the project at international fora. Here, some of the upcoming events that 5G-SMART is organizing/participating in are listed. We are looking forward to meeting and interacting with you in one or several of these.

- PIMRC 13th–16th September 2021, 5G-SMART workshop.
- Open Day in Kista
- Webinar series by 5G-SMART

Please visit our News and Events page, to stay informed.

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www.youtube.com/channel/UCdhRYuUuSfT97tIivMGLRIg www.5gsmart.eu

FIELD TRIALS

5G for enhanced industrial robotics applications

Kista, Ericsson
smart factory

5G URLLC, eMBB services

5G for enhanced industrial manufacturing processes

Aachen, Fraunhofer IPT shop floor

5G URLLC, eMBB, mMTC services

5G for enhanced factory automation

Reutlingen, Bosch semiconductor factory

5G URLLC, eMBB services EMC & Channel measurement