PROJECT FACTSHEET

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5G-PLANET

A decision support and awareness raising platform to plan and design 5G networks for cooperative, connected and automated mobility applications.



Inspiration

Using network connectivity between vehicles to provide intelligent transport systems is of tremendous interest to the Luxembourg and European ecosystems. Traffic light management, prevention of road incidents, cooperation between vehicles and the development of autonomous functions are all applications that can benefit from it. However, there are still many challenges ahead, starting with the adoption and deployment of communication technologies to support these applications – with 5G as key candidate. Deploying an intelligent transport system, or a connected mobility application, requires relying on network architectures that may involve one or more network communication technologies, with different architectures and capabilities depending on the situation. This is where research and innovation is key.

Innovation

5G-PLANET will build on LIST's expertise to propose a decision support system to plan and design 5G networks for cooperative, connected and automated (CCAM) mobility applications. This system will be the subject of demonstrations to raise public awareness about the interest of these technologies. To do so, LIST will rely on a Digital Twin approach, by creating a digital replica of Luxembourg's 5G infrastructure. The objective is first and foremost to offer a visual and attractive showcase to raise the public awareness about:

- 1. System architecture: how 5G networks can be used and deployed for connected mobility applications, with a focus on vehicular communications.
- 2. Connected mobility sector: what is the impact of 5G on mobility performance compared to other communication technologies: is it better and how much? We will include as many use-cases as we can (depending on data availability and stakeholder support).
- 3. Decision support for Luxembourg: what would be the interest of developing a 5G network digital twin for Luxembourg?

The project will be broken down into two phases. The first phase will target the Connecting Tomorrow: 5G, Broadband and Beyond conference in October, where three activities will be covered by LIST (i.e., live presentation, workshop, presence as exhibitor). The second phase will be after the conference and will include further dissemination activities. 5G-PLANET will rely on a combination of simulation and emulation components to operate. In addition to the pure software part, the project will also build an open 5G antenna, developed in Laboratory mode, so as to allow anyone equipped with a 5G phone to experiment the real capabilities of a 5G network, and interact with LIST' software solutions.

Impact

5G-PLANET primarily intends to share LIST's experience on the planning and design of new 5G networks, by taking Luxembourg as a practical example. We will specifically target connected mobility applications and intelligent transport systems, which are among the most promising uses of 5G on a socio-economic level - but still requiring a few years before advanced implementation.
Our objective is to propose an awareness-raising platform that makes complex 5G-mobility concepts accessible to the greatest number of people in the long run. This requires further development and validation steps, as well as close collaboration with SMC and the stakeholders involved in the development of the 5G strategy in Luxembourg.
In addition to the Connecting Tomorrow conference, 5-7 of October in Luxembourg, the project's outcomes will be showcased during at least the following events:

Event name	Location	Date
LIST Tech Day	Esch-sur-Alzette, Luxembourg	22/09/2021
Smart City Expo World Congress	Barcelona, Spain	16-18/11/2021
Scientific conference (IEEE or ACM)	Europe	11/2021 - 02/2022
5G Network Digital Twin for Luxembourg	Luxembourg city, Luxembourg	02/2022 (half-day)

This project will end in February 2022 with a half-day workshop organised in Luxembourg City, and targeting at least 30 participants from the Luxembourg ecosystem working on 5G-PLANET's topics. The objective will be to present a first advanced concept of a 5G Network Digital Twin and to co-design a roadmap for this strategic axis of interest for Luxembourg.
The dissemination of the project to the general public will be guaranteed through several complementary channels. After the project, we would like to re-use the outcome of 5G-PLANET for regular dissemination activities.

Financial Support

Service des médias, des communications et du numérique - SMC (LU)

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