



5G-SAFE-PLUS

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Closure date: 31 May 2023

Partners:

BEIA Consult International S.R.L., Romania

Destia Oy, Finland

Finnish Meteorological Institute, Finland

HITEC Luxembourg S.A., Luxembourg

InfoTripla Oy, Finland

Micro Engineering Tech. Inc., Canada

Post Luxembourg, Luxembourg

Sitowise Oy, Finland

Teconer Oy, Finland

Unikie Oy, Finland

Vaisala, Finland

VTT Technical Research Centre of Finland Ltd., Finland

Wedge Networks Inc., Canada

Co-ordinator:

Pekka Eloranta

Sitowise Oy

E-Mail: pekka.eloranta@sitowise.com

Project Website

www.celticnext.eu/project-5g-safe-plus

<https://5gsafeplus.fmi.fi/>

5G Enabled Road Safety Services

The project aimed to prevent accidents & avoid casualties with 5G-enabled road safety services to vehicles & targeted road maintenance planning service.

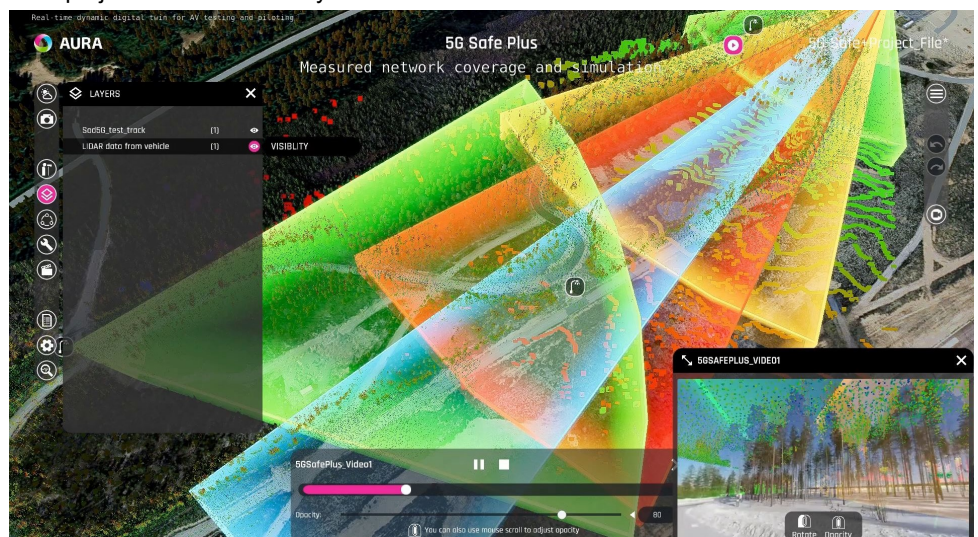
Achievements

The 5G-SAFE-PLUS project successfully aimed at developing 5G-enabled time-critical road safety services to vehicles thus helping to prevent traffic accidents and avoid casualties by delivering 5G-enabled time-critical road safety services to vehicles. Here, accurate road weather, safety, road condition and navigation information play important roles together with direct incident/accident event information. The 5G-SAFE-PLUS services are based on automatic measurements and detections carried out by advanced sensor systems, both fixed and mobile. The services are thus objective, reliable and based on real measurements. This real-time information has been used for instance optimized snow ploughing services, road maintenance activities, location based meteorological forecasting & warning, automatic safety warnings. The collected data has been visualized in a digital twin that has been developed in the project. Naturally it is important to underline that the project has studied hybrid network

environments, including in addition to 5G, also 4G/LTE, ITS-G5 and satellite communication. These issues and their co-operation and compatibility are among the important issues to be studied now and in the future.

5G-SAFE-PLUS has had ambitious impact objectives. The main future goal for the developed services and solutions could be summarised briefly in one sentence “we want to save your lives”. For instance, in Finland there have been severe accidents where several people have died. In one of these accidents in 2004 23 young people lost their lives, when bus and truck with paper rolls crashed. One of the main reasons was the unexpected and sudden change in the road weather and conditions in the middle of the night on a road, where no other traffic existed. This unfortunate accident could not have been avoided with mere human observation data, since the weather conditions changed very quickly because of many issues that could not be detected by human eyes. But with services that have been developed in 5G-SAFE-PLUS things might have been different.

It is important to underline that operative meteorological and safety systems cannot rely only on crowdsourcing, which can





naturally be used as supporting data. Verified measurements are the mainframe of data. Only sensor-based measurements, advanced analysis and forecasting system to provide warnings to the vehicles could have help to avoid this accident. Thus, the ultimate

goal of 5G-SAFE-PLUS has been to develop and deliver a reliable and scientific way to provide forecasts and warnings of changes to come, before they actually happen. The conventional ("old slow") solutions provide information of what was the situation, when the

observation was done. One can go out and see what the weather is like and also based on one's personal views try to make up, what is the weather going to be like, whereas partners in 5G-SAFE-PLUS have been scientifically and successfully measuring, modelling, calculating and forecasting the weather with super computers.

About Celtic-Plus

Celtic-Plus is an industry-driven European research initiative to define, perform and finance through public and private funding common research projects in the area of telecommunications, new media, future Internet, and applications & services focusing on a new „Smart Connected World“ paradigm. Celtic-Plus is a EUREKA ICT cluster and belongs to the inter-governmental EUREKA network. Celtic-Plus is open to any type of company covering the Celtic-Plus research areas, large industry as well as small companies

or universities and research organisations. Even companies outside the EUREKA countries may get some possibilities to join a Celtic-Plus project under certain conditions.

Celtic Office

c/o Eurescom, Wieblinger Weg 19/4
69123 Heidelberg, Germany
Phone: +49 6221 989 138
E-mail: office@celticnext.eu
www.celticnext.eu

Conclusion/Outlook

5G-SAFE-PLUS has successfully studying and refining novel 5G-inspired use cases for the automotive vertical sector and to analyse the resulting requirements and business models for connectivity and services in participating countries. Based on the use cases and requirements 5G-SAFE-PLUS has designed, developed and used best possible tools (sensors, measurements, communications, Mobile Edge Computing, Machine Learning, Artificial Intelligence, algorithms, digital twin etc.) to increase safety by providing reliable, measured, scientifically correct real-time information, forecasts and warnings.

