5GSC
5G for Smart Communities

5G for Smart Communities Support Platform

Capacity Building session #2
Smart Communities health care use cases

22 June 2023 - Online

Frederic Pujol – 5GSC SP Project Manager

European Commission

www.5GSC.eu

Agenda

SESSION 2 – 22 June 2023	
Smart Communities health care use cases	
10:00 – 10:05	**Welcome & Introduction** Frederic Pujol, Project Manager, 5GSC Support Platform
10:05– 10:15	**Use case: Frankfurt University Hospital – brief overview** Speaker: Frederic Pujol, Project Manager, 5GSC Support Platform
10:15 – 10:40	**Use case: Flanders regional health care coverage** Speakers: Caroline Ghevsen, Director of Innovation, Jan Yperman hospital and Tim Clevs, Manager Healthcare Integration Services, Helicus
10:40 – 11:05	**Use case: 5G for a Smart Sicilian Academic Campus & Hospital** Speakers: Valentina Di Cristo, Program Manager, Vodafone and Prof. Salvatore Vitabile, University of Palermo
11:05– 11:30	**Q&A** The session will be moderated by the 5GSC SP

5GSC SP Capacity building workshops

Online workshops 2023

The overall objective is twofold:

- Share good practices and examples among the 5GSC community
- Empower potential applicants in the project plan and application writing process

60-90-minute online sessions on selected Thursdays of the upcoming months at 10:00 CET

Session	Date	Content
1	1 June 2023	Exploring 5G Use Cases
2	22 June 2023	Smart Communities health care use cases
3	6 July 2023	Introduction to Campus Networks for Smart Communities
4	7 September 2023	5G Infrastructure sharing for CEF 5G Smart Community Projects
5	5 October 2023	Consortium Planning and Management for Smart Community Projects
6	19 October 2023	Co-funding and Procurement Obligations for contractors
7	7 December 2023	Bid writing process for CEF 5GSC

Contact us

5G for Smart Communities Support Platform

Connect with us

community@5GSC.eu
frederic.pujol@5GSC.eu

+32 22 82 09 18

#5G4SC #connectivity4EU

5GSC
5G for Smart Communities

5GSC Call#1 projects

5GSC Support Platform

European Commission

5GSC Call #1 projects

CEF CALL 1 - 5G FOR SMART COMMUNITIES PROJECTS

≈ 4.00 MM €

5G for a Smart Academic Campus in Sicily

≈ 3.34 MM €

5G for the Frankfurt University Hospital

≈ 4.00 MM €

A 5G network for Disaster Relief & Public Protection along Hungary-Ukraine border

≈ 0.4 MM €

A 5G network in a Mosonmagyaróvár farm

≈ 2.8 MM €

5G Connectivity for Smart City Services in Toulouse

≈ 2.98 MM €

A 5G Network for Emergency Responses in Wavre

≈ 4.13 MM €

5G Coverage for Healthcare & Education in Flanders Fields

5GSC Call #1 projects

	5G4ASSAC	5G4UH	5GAGRIHUB	CONNECTOW	Flanders Smart Fields	Hi5	PPDR 5G
Project	5G for a Smart Sicilian Academic Campus	5G for University Hospital	5G MPN AgriTech HUB	5G Connectivity for Wavre	5G rural coverage for innovative healthcare services in the Westhoek	High Connectivity via 5G	5G based PPDR broadband services
Country	Italy	Germany	Hungary	Belgium	Belgium	France	Hungary
Coverage area	Campus	Hospital	Farm	City (Wavre)	Rural area	City (Toulouse)	EU external Schengen border
Vertical	Education Health	Health	Agriculture	Emergency services + Energy	Connectivity for healthcare and education	Connectivity to public services, smart city	Emergency services
Private network	Yes	Yes?	Yes	Yes	No	?	Yes

PPDR: Public Protection and Disaster Relief

5G4UH: 5G for University Hospital (Germany)

Vodafone (MNO) together with Frankfurt University hospital will deploy a leading-edge 5G infrastructure.

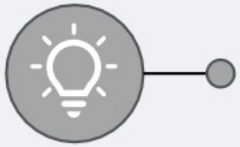
6 use cases enabled:

- ✓ mobile ultrasound examinations
- ✓ telemedical concept for Covid-19 diagnosis
- ✓ digital health records
- ✓ optimising internal and external logistic processes
- ✓ comprehensive alarm systems
- ✓ wearable biosensors that allows healthcare providers to monitor patients in the hospital and at home

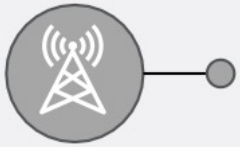
Funded by the European Union

5G4UH: 5G for University Hospital (Germany)

Overview I 5G for University Hospital, Project Goals



It is the vision of this project, to make 5G-based technologies and their far-reaching advantages generally available for organizations and actors within the health sector and facilitate ground-breaking changes in how medical services are performed to the public and the individual patient.



With the implementation of 5G for University Hospital (5G4UH), **Vodafone GmbH will deploy a leading-edge 5G infrastructure at the Frankfurt University Hospital in Germany**, thus enabling innovative 5G use cases and improving the provision of public health services.

Deploying a high-performance, state-of-the-art 5G mobile network with high data rate and capacity, low latency, high resilience and data security enables the Frankfurt University Hospital to adopt new methods and ways of working in diverse fields of application. This is intended to realize, among other things, an improvement in patient care, a reduction in the workload of staff due to a high level of digitalization, improved resource utilization, competitiveness, and implementation of legal requirements (e.g., E-Health Act, Digital Care Act (DVG), Digital Care and Nursing Modernization Act (DVPMG)).

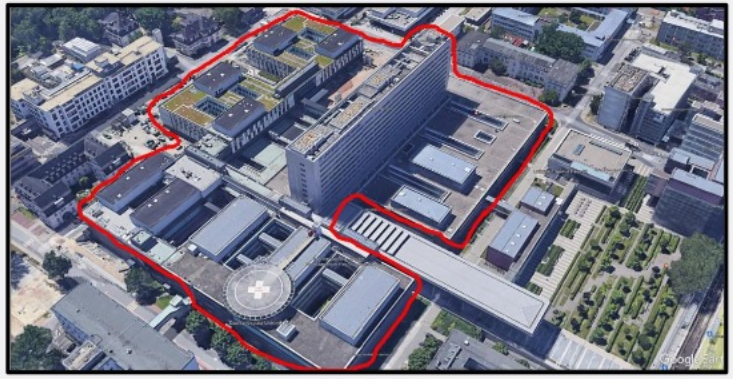
In addition to setting up an adapted 5G infrastructure, **the project will establish and evaluate new types of work processes that are only made possible by the new technologies**. The 5G4UH project therefore promises to be a best practice with supraregional and European added value. **Various 5G-based use cases have already been prepared by the University hospital in order to be applied in daily hospital operations**. There will be teleultrasound devices as well as innovative monitoring solutions and new solution to organize hospital logistics – all of which contribute to better care, to more efficient processes and to better use of resources and medical skill. Projects that were previously inhibited by data transmission limitations, especially real-time data transmission from device diagnostics such as ultrasound or vital function monitoring, will benefit from this technological leap.

Funded by the European Union

5G4UH: 5G for University Hospital (Germany)

Overview I 5G for University Hospital, addt'l info

Campus University Hospital Frankfurt, Germany


Building 23

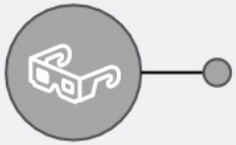
Project duration: 30 Months I 01.01.2023 – 30.06.2023

Consortium: University Hospital Frankfurt & Vodafone [Beneficiary]

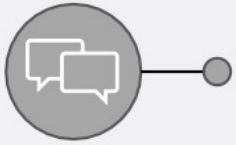
Funded by the European Union

5G4UH: 5G for University Hospital (Germany)

Deep Dive I 5G for University Hospital, Use Case Examples



Mobile ultrasound examinations I Medical data can be transmitted securely in real time from diagnostic equipment such as e.g. ultrasound, even between different hospital departments or to other hospitals or even from emergency operations. → Significant improvement in diagnostics, e.g. obtaining a second opinion in teleconsultation; specialized professionals located outside the clinic can thus be involved in diagnostics in real time.



Famedly Messenger I Famedly Messenger is a chat with the highest level of security. The digital communication tool enables secure messaging between practitioners/doctors and patients; additional applications such as appointment booking or data exchange can be combined with it. Chat histories of clinic staff can be transferred directly to the electronic patient record, eliminating duplication of effort.

Digital Patient Monitoring I Digital patient monitoring includes a wireless, secure connection to the electronic patient record. Devices and staff send important data from the treatment site to the control center. Vital signs are captured and displayed such as blood pressure (NIBP), oxygen saturation (SpO2), pulse rate and temperature, blood pressure averages, spot check, interval monitoring and custom assessments for all patient populations. Patient monitoring improves vital sign measurement accuracy and performance for neonatal as well as adult patients and supports resident list workflows for long-term care.

Funded by the European Union

5GSC
5G for Smart Communities

Annex

5GSC Support Platform

European Commission

Introduction

5GSC
5G for Smart Communities

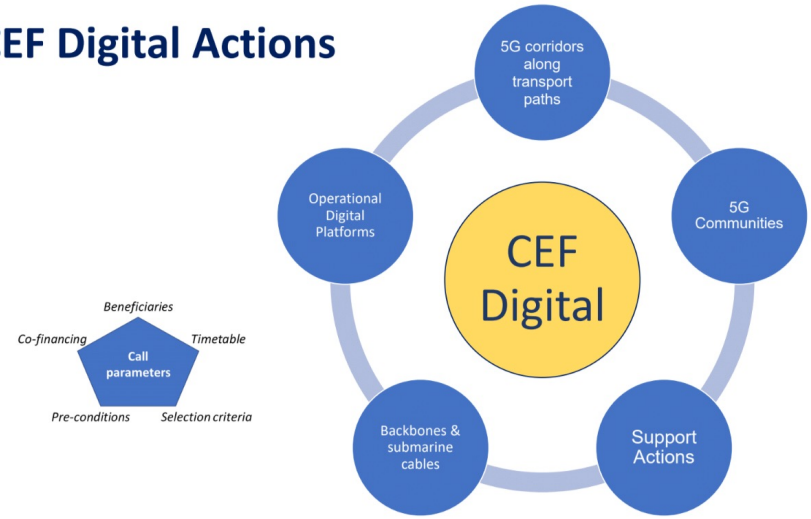
5G for Smart Communities is part of the Connecting Europe Facility (CEF) Digital programme

The CEF2 Digital programme grants funds for the rapid deployment and take up of 5G for smart communities and innovative applications

The 5GSC programme finances the 5G infrastructure for Services of General Interest (SGI)

Use cases in such fields as health, education and other services of general interest

CEF Digital Actions



…what is a Smart Community?

By offering enhanced, smart, digital services, « 5G for Smart Communities » aim at the well-being of citizens, businesses, organisations and public administrations. Smart services, for example, can help make public services more easily accessible, provide more effective emergency response mechanisms, automate the agricultural and food value chain, improve healthcare services or monitor and streamline local mobility.

Healthcare

Main applications in the Healthcare industry

Application	Description	Current adoption	Potential game changer
Smart Medical Device  	• Real time patient state reporting and monitoring • Real time alert and nurse visit prioritisation	▪ Low adoption due to several factors: - Need for very low error margin in the healthcare environment - Usually low budget in the healthcare sector ▪ But the equipment rate is gaining momentum due to high savings opportunity.	• Automated patient vital constants monitoring • Interoperability between the solutions
Chronic Diseases 	• Remote monitoring of patient health condition • Easier medical record constitution • A suited application for each type of disease	Adoption varies between regions. Highest adoption rates are in Europe and North America where chronic diseases problem is tackled by governments.	• More affordable solutions • Effective business model
Remote robotic surgery	• Added precision, vision, and motion possibilities • Perform long-distance surgery	- High costs thus low adoption and mainly in research hospitals - Adopted in either low risk or experimental surgery rooms	• Emerging technologies like virtual reality are expected to enable more immersive applications of remote surgeries.

Drivers and barriers in the healthcare industry

- ▪Wide range of IT and telecom companies involved:
  - ALU, AT&T, DOCOMO, DT, FT, Telefónica, Verizon, Vodafone
- ▪Reduce human error, and provide faster, reliable information
- ▪Less time spent waiting at the doctor's practice or waiting room
- ▪Reduced OPEX due to reallocation of human capital to non-automatable tasks

- ▪The business model: cost-effectiveness is unclear, and also who pays?
- ▪High risk with a large responsibilities
- ▪Consumer acceptance (barrier to technology use)
- ▪Harsh regulatory constraints results in a longer time-to-market

Use case: Remote robotic surgery

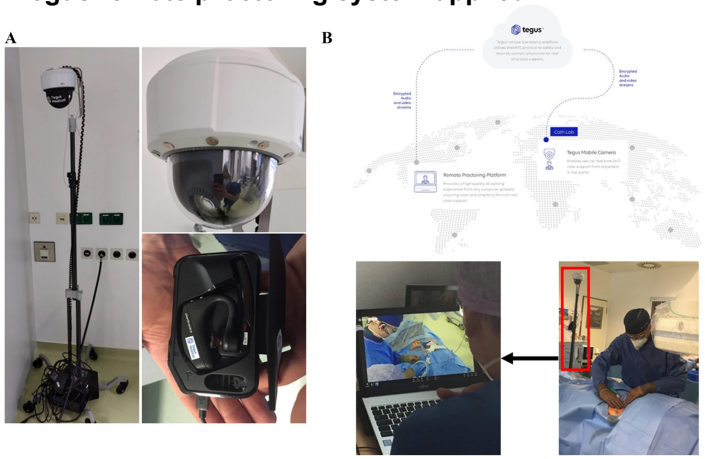
Relying on 5G also as a back-up solution

First European clinical trial of remote proctoring technology for invasive heart surgery using 5G

State: Trial
Vertical: Healthcare
Network type: Private

Description: Under remote proctoring, a medical device expert remotely guides the correct implantation of medical devices into the human body. The system employs advanced technology such as Multi-access Edge Computing, Augmented Reality (AR) visors, and the 5G network. This facilitates real-time access to patient data and a patient-specific holographic heart model, enabling the expert to provide surgical instructions without delay. Moreover, the surgeon can interact with the 3D model to convey procedural complexities.

Tegus remote proctoring system applied



Source: Woitek, F.J., Haussig, S., Mierke, J. et al.

Stakeholders involved

I.R.C.C.S. Ospedale San Raffaele
vodafone
ARTINESS® THE NEW WAY TO LOOK INSIDE

Use cases

- **Real-time access to patient data**
- **Big data analytics:** Leveraging big data analytics to apply an optimal quantity of fertilizer or animal food
- **Surgeon task automation**
- **Image recognition using ML**
- **3D modeling of human organs**

Key performance indicators

- Stable and high-quality video and audio
- The integrated 5G mobile router maintained a stable connection between the proctor and operator
- Reduce the amount of irrigation water by 30%