



6G

FLAGSHIP
UNIVERSITY
OF OULU

Tutkimuksesta käytännön kokeiluihin

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 **ACADEMY
OF FINLAND**
6GFLAGSHIP.COM


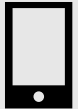


 **FLAGSHIP PROGRAMME**
#6GFLAGSHIP

The Finnish 6G Flagship 2018-2026



6G Flagship vision for 2030:
Data-driven sustainable future society enabled by near-instant, unlimited wireless connectivity

Strategic Research Areas (SRAs)

- 
1 Wireless connectivity solutions
- 
2 Device and circuit technologies
- 
3 Distributed intelligent wireless computing
- 
4 Sustainable human-centric services and applications





Goals for phase 2

- 6G technology enablers
- 6GTest Network (6GTN)
- 6G vertical applications
- 6G vision leadership

Impact Actions

A 6G-enabled Sustainable Society 

B Strategic Vertical Areas (SVAs)

- Health 
- Industry 
- Vehicular 
- Energy 

C Global 6G Collaboration 

D Research infra-structures – 6GTN 

Test Network - key tool for co-creation



First open test network
(<https://services.5gtn.fi/>).

5G mmW trials in Olympics
with ETRI and Nokia

Operator grade
live 5G micro-
operator network

Selection to AoF
FIRI roadmap

Selection to ESFRI
FIRI roadmap

First 6G
PoC devices

First 6G
"network"

6G Standardization
begins

2015

2018

2019

2020

2021

2023

2025

2026

5GTN

4G-LTE

5G PoC

5G NR

5G+

5G+

...

6G

6GTN



LTE small cell
@2.1 and 2.6 GHz



5G PoC/5G NR



5G Macros at 3.5GHz
For IoT - NB IoT/LTE-M



Cloud RAN based 5G
@3.5GHz
5G NR @24 GHz

Vertical Experimentations



Campus Data from 400+ IoT Sensors



5G sustainability research



Smart excavator

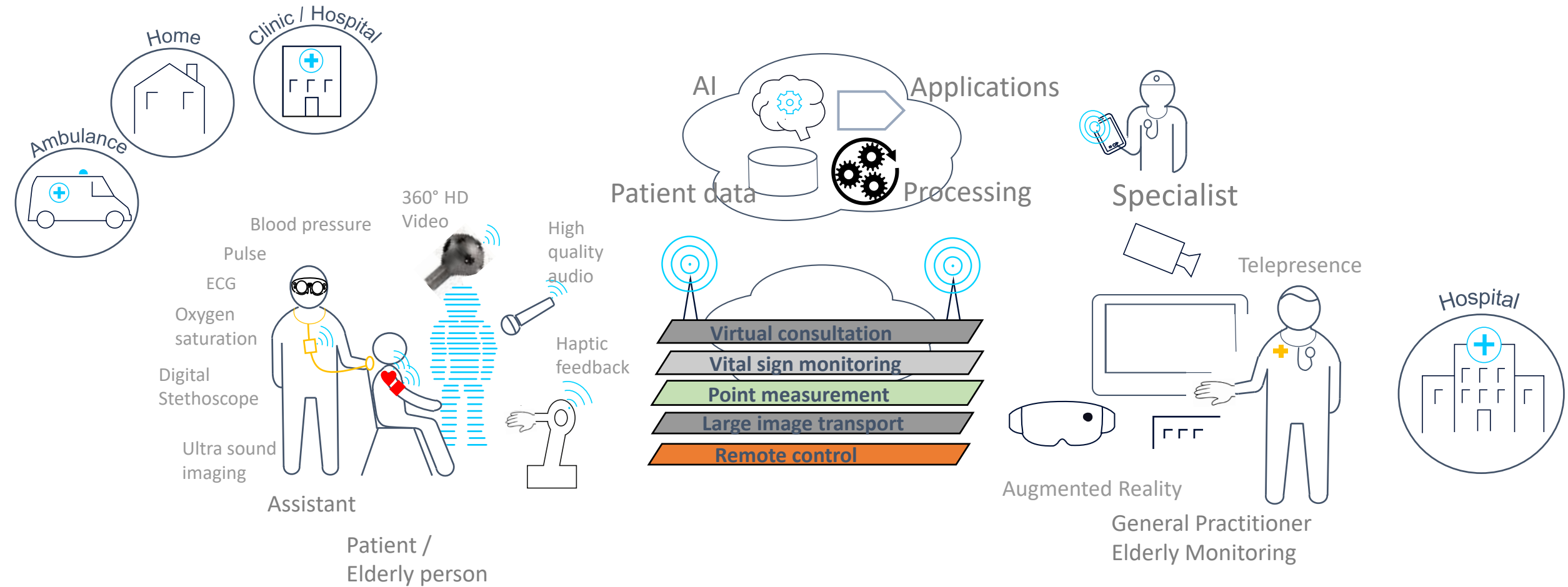


Connected Vehicles



5G-Connected Drones

Plenty of Options for eHealth Already Now



eHealth Demo Example



Doctor's view + patient's biosignals



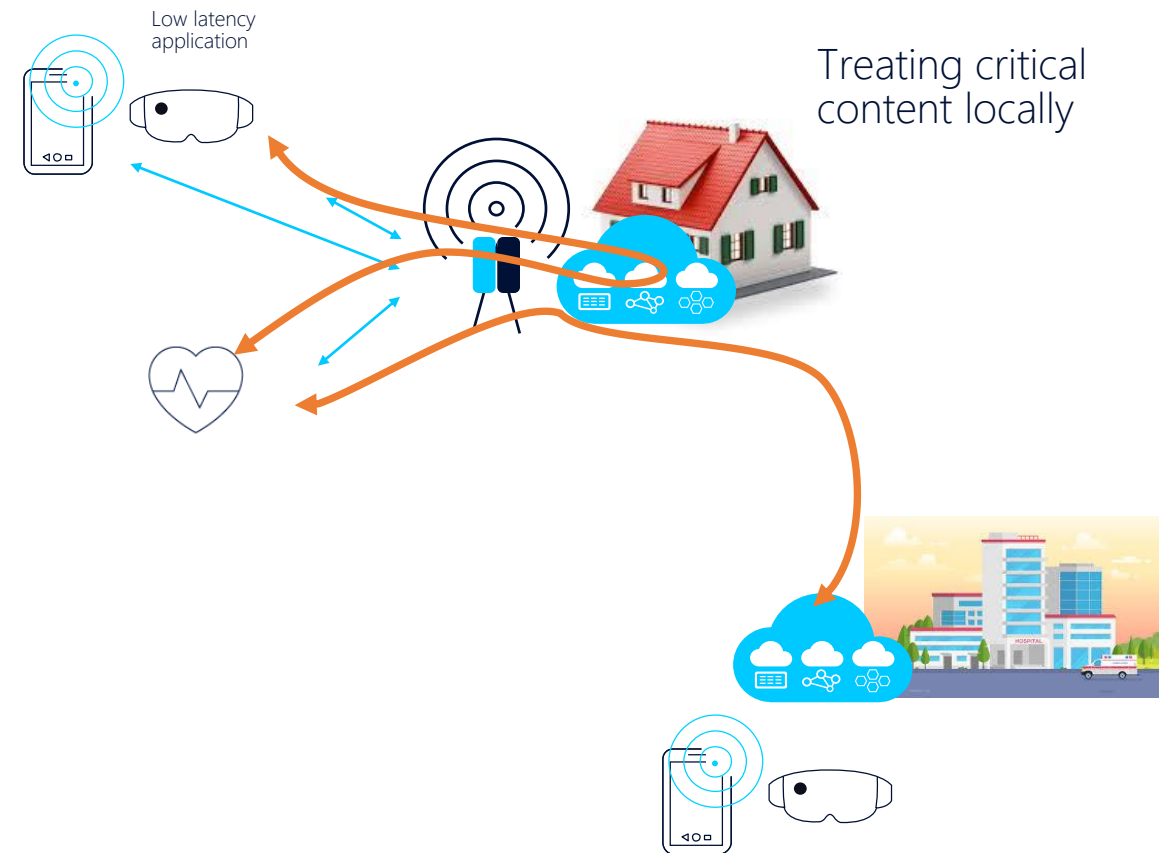
- Remote
 - Expert consultation
 - Teaching
 - Patient Monitoring

See video in Youtube: 6GFlagship demos

Offer From 6GFlagship



- Test infrastructure available for experiments
- Plenty of existing technology assets already available. No need to wait for 6G.
 - IoT-sensing, wearables, AI algorithms,
 - indoor-/outdoor positioning
 - wireless technologies: 4G, 5G, WiFi, Bluetooth
- Optimal 5G provides currently 1Gbit/s downlink, 100Mbit/s uplink. Isn't that enough ?
- For demanding cases early experimentation is needed of to gain eperience about
 - Data transmission needs
 - Applicable and required user interfaces
 - Value of mobility
 - Optimal architecture for data processing
 - Security
 - Business potential



Thank you!

