# Introduction

## 1 Why are we here?

- What is Horizon Europe?

- What is the SNS JU" and the 6G 'Call Topics'?

- What are the key finance and legal considerations?

- Who (UK and international) is interested in collaborating?

- What support is there to help me start building a Horizon Europe project consortium?

UK RI Innovate UK

# Introduction

## 2 Agenda

**09.30.** **Introduction and aims of the day**
Dr Jane Watkins Regional Lead – Europe

**09.35.** **Introduction to Smart Networks and Services Joint Undertaking (SNS JU) and an overview of SNS Calls**
Dr Alexandros Kaloxylos, Executive Director. 6G Smart Networks and Services .
Craig Sharp UK National Contact Point for Horizon Europe – Digital

**10.05.** **Finance and Legal Considerations**
UK National Contact Point for Horizon Europe – Finance & Legal

**10.15.** **Country Strategy & Innovation Landscape Overview – 6G**
Professor Ari Pouttu – Uiversity of Oulu - Finland
Lars Gustafsson – Vinnova Sweden
Tom Kirkham  - Innovate UK UK

**10.45** **BREAK**

**10..50** **Case Study**
Dan Warren Samsung Research UK
Craig Sharp UK National Contact Point for Horizon Europe – Digital

**11.10** **Company Pitches**

**11.30** **Q&A**
**11.45** **Close**

UK
RI Innovate UK

# Introduction

## 3 House Keeping

- **Microphone off** unless speaking please.

- Please post Q using the **Q&A FUNCTION.**

- **Save the zoom chat** – we will not be sharing this.

- Please message **Michael Foster** in the Zoom chat if you are having technical issues.

- **The webinar is being recorded** and will be shared with the slides afterwards.

UKRI **Innovate UK**
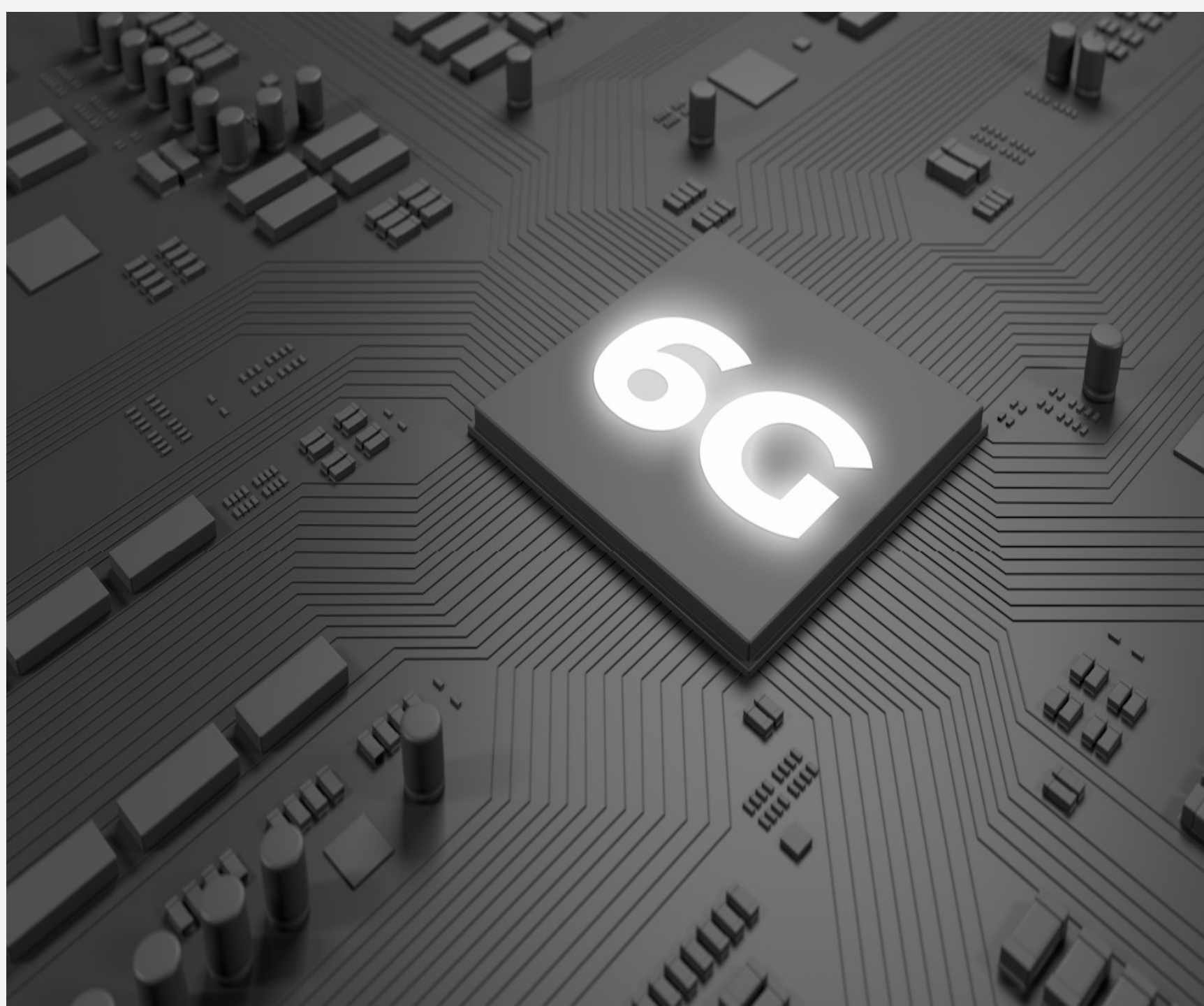
# Introduction

## **4** Upcoming Opportunities

**OPEN** - £700 European Travel Awards

# Introduction

**5** Enjoy!

**Dr Alexandros Kaloxylos,**
Executive Director. 6G Smart Networks and Services

**Craig Sharp,**
UK National Contact Point for Horizon Europe – Digital

# Horizon Europe 6G SNS

Craig Sharp
Horizon Europe UK National Contact Point for Digital
NCP-Digital@iuk.ukri.org

HORIZON EUROPE

# Horizon Europe 6G funding

- 6G development is primarily dealt with by the separate €900m **Smart Networks and Services** (SNS) partnership.

- 5G opportunities are available across other work programmes (Mobility, Energy, Health, Climate, Security), etc. often embedded in usage sector activities, not just Digital, Industry and Space (enabling technology)

6G SNS site - https://smart-networks.europa.eu

(Previous 5G projects listed at https://5g-ppp.eu - by phase 1/2/3, sectors,  5->6G transition, etc)
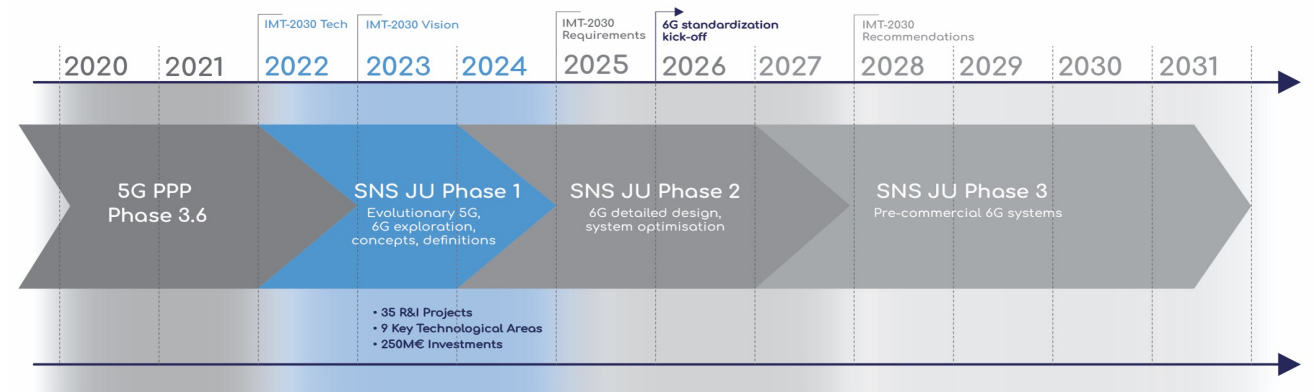
**Pillar 2**
Global Challenges and European Industrial Competitiveness

**Clusters**
- Health
- Culture, Creativity and Inclusive Society
- Civil Security for Society
- Digital, Industry and Space
- Climate, Energy and Mobility
- Food, Bioeconomy, Natural Resources, Agriculture and Environment

UKRI Innovate UK

www.ukri.org/HorizonEU

# SNS – 6G programme



€900m programme, collaborative projects

UK organisations are eligible to apply (and coordinate)

Industry Association – 6GIA https://6g-ia.eu
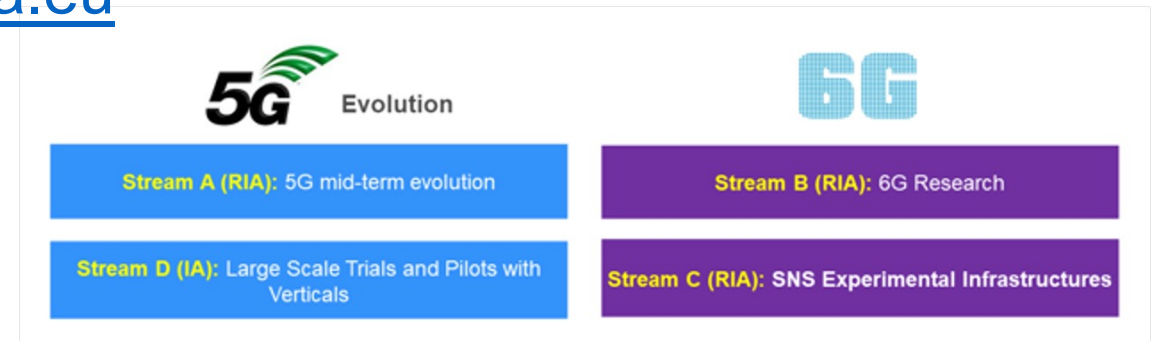


1st call in 2022 (€250m)

Project sizes from €2m to €23m

35 projects funded from 2022 call

21 UK partners in 15 projects

SNS Projects - https://smart-networks.europa.eu/project-portfolio/

www.ukri.org/HorizonEU

# 6G Industry Association
## https://6g-ia.eu

The voice of European Industry and Research for Next Generation Networks and Services
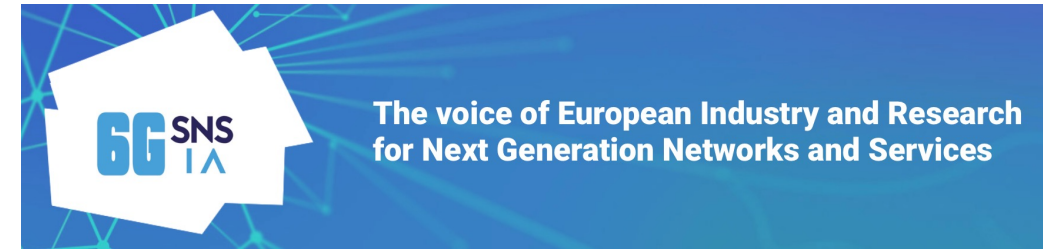
- Industry side of the SNS JU partnership (5G PPP had this in H2020, etc)
- Membership from companies (large, SMEs), research organisations, Unis, public and sector associations, etc
- Membership is open to UK organisations
- Help shape the SNS roadmap and updates
- Visibility of topic development
- Networking opportunities
- Working Groups
- Topic conditions
- Membership lists

# 2022 Stream B project

- **CENTRIC: Towards An AI-Native, User-Centric Air Interface For 6G Networks**

- *CENTRIC proposes to leverage Artificial Intelligence (AI) techniques through a top-down, modular approach to wireless connectivity that puts the users' communication needs and environmental constraints at the centre of the network stack design. It all starts with the users' objectives and application-specific requirements. Then, AI techniques are used to create and customize tailor-made waveforms, transceivers, signaling, protocols and RRM procedures to support these requirements. This is the user-centric AI Air Interface (AI-AI) that CENTRIC will enable.*

- *To guarantee that CENTRIC's AI-AI can be implemented in practice, we will also develop innovative hardware computing substrates with realistic and AI-AI-compatible energy-efficiency properties. This includes novel electronics such as neuromorphic computing and mixed analog-digital platforms. CENTRIC will make this possible by advancing theory, algorithms, hardware co-design, and training and monitoring environments based on Digital Twins. We will focus on providing the desired quality of experience (QoE) to a given user, or type of users, while optimizing spectrum usage, minimizing energy consumption and guaranteeing EMF compliance. The results of CENTRIC will be validated and demonstrated in laboratory prototypes and its breakthroughs will enable future 6G use-cases, such as self-driving vehicles, the internet of nano bio-things, or multi-sensory holographic communications.*

1. EURESCOM-EUROPEAN INSTITUTE FOR RESEARCH AND STRA STUDIES IN TELECOMMUNICATIONS GMBH, DE
2. ALCATEL-LUCENT INTERNATIONAL SA, FR
3. AALBORG UNIVERSITET, DK
4. NVIDIA GmbH, DE
5. CONSORZIO NAZIONALE INTERUNIVERSITARIO PER LE TELECOMUNICAZIONI, IT
6. CONSIGLIO NAZIONALE DELLE RICERCHE, IT
7. KING'S COLLEGE LONDON, UK
8. SEQUANS COMMUNICATIONS SA, FR
9. OULUN YLIOPISTO, FI
10. KEYSIGHT TECHNOLOGIES SPAIN SL, ES
11. INTERDIGITAL EUROPE LTD, UK
12. NOKIA SOLUTIONS AND NETWORKS GMBH &CO KG, DE
13. SYNTHARA AG, CH

www.ukri.org/HorizonEU

# 2022 Stream D project

- **[IMAGINE-B5G: Advanced 5G Open Platform For Large Scale Trials And Pilots Across Europe](#)**

- *The evolution of mobile telecoms networks Beyond-5G creates a tremendous opportunity for Europe to establish leadership in innovation by addressing the requirements of use case from PPDR, smart agriculture, media, eHealth, education, transportation, logistics, Industry 4.0, and energy sectors. IMAGINE-B5G project aims to create an advanced and accessible end-to-end (E2E) 5G platform for Large-Scale Trials and Pilots, providing a set of B5G applications, enabled by the integration of advanced 5G disrupting technologies. The project will support 3GPP Rel- 17 and beyond features which are crucial for implementation of private networks under real-life operational conditions to enable advanced 5G services, driven by the industrial needs and requirements of a wide variety of verticals.*

- *IMAGINE-B5G brings together four advanced 5G experimental facilities, in Norway, Spain, Portugal and France. These facilities will capitalise on previous 5G-PPP infrastructure (ICT-17) and vertical trial projects (ICT-19) reusing the platform components and extending the existing capabilities of these facilities. The strategy is built up implementation of the latest 5G Rel-16 technology enablers. The project is to become an incubator, facilitating technology innovations and a diverse set of advanced 5G applications, services and ecosystem developments.*

1. UNIVERSITAT POLITECNICA DE VALENCIA, ES
2. TELENOR ASA, NO
3. TELEFONICA INVESTIGACION Y DESARROLLO SA, ES
4. ALTICE LABS SA, PT
5. NOKIA SPAIN SA, ES
6. ALTRANPORTUGAL, SA, PT
7. SAMSUNG ELECTRONICS (UK) LIMITED, UK
8. KEYSIGHT TECHNOLOGIES DENMARK APS, DK
9. UBIWHERE LDA, PT
10. AIRBUS DS SLC, FR
11. FUNDACION DE LA COMUNIDAD VALENCIANA PARA LA INVESTIGACION, PROMOCION Y ESTUDIOS COMERCIALES DE VALENCIAPORT, ES
12. EURECOM, FR
13. INSTITUTO DE TELECOMUNICACOES, PT
14. UNIVERSITETET I OSLO, NO
15. WATERFORD INSTITUTE OF TECHNOLOGY, IE
16. ATHENS UNIVERSITY OF ECONOMICS AND BUSINESS – RESEA CENTER, EL
17. NOKIA SOLUTIONS AND NETWORKS OY, FI

# 2024 6G SNS Call – links

- 2024 work programme - https://smart-networks.europa.eu/wp-content/uploads/2022/12/sns_ri_wp_2023-24.pdf /

- European Commission SNS site - https://smart-networks.europa.eu

- SNS funded projects - https://smart-networks.europa.eu/project-portfolio/

- SNS Strategic Research and Innovation Agenda 2021-27 (2023 version)

- 6G Industry Association – https://6g-ia.eu

- CORDIS (EC Project results, details) - https://cordis.europa.eu/en

# Thank you

Craig Sharp
Horizon Europe UK Digital National Contact Point
NCP-Digital@iuk.ukri.org

- Chips – Coordinated tasks in both JUs, contributions to the SRIA
- Photonics – cross check and validation of priorities, contribution to the SRIA
- Rail – new synergy project
- AI Data and Robotics - link established participation in the first call
- CCAM – cross check of information, contribution to the WP
- HPC – exchange of information, link with HiPEAC

# Call 1 & 2



**Call 1**

BENEFICIARIES DISTRIBUTION
- 24% Higher or Secondary Education
- 2% Other
- 36% Industry
- 20% Research Organization
- 18% SMEs

PHASE 1 SNS VERTICALS COVERAGE
- 2% Smart Farming
- 2% Other relevant verticals
- 9% Gaming, Metaverse
- 7% Energy
- 5% Automotive
- 25% Media, xR Communications
- 18% Industrial IoT
- 2% Tourism and Culture
- 5% Smart Cities
- 5% Construction/Building
- 7% eHealth
- 14% PPDR/ Security and Safety

PHASE 1 SNS TOPICS COVERAGE
- 7% Orchestration & Management
- 3% IoT
- 13% Security
- 15% Radio Access Network
- 10% Microelectronics
- 25% Architecture - including Edge
- 11% Sustainability - Energy Effiency & EMF
- 9% Optical Communications
- 7% NTN

- 288 unique beneficiaries
- ~30% not 6G-IA members
- Covering 10+ different Vertical Industries

**Call 2**

**Beneficiaries distribution**
- 28% Higher or Secondary Education ↑
- 1% Other ↓
- 33% Industry ↓
- 12% Research Organisation ↓
- 26% SME ↑

**216 unique beneficiaries 33% not 6G-IA members**

**SNS JU Call 2023 Verticals Coverage**
- Other 11%
- Industrial IOT 10%
- Education 8%
- Gaming, Metaverse 12%
- Tourism 2%
- Smart Cities 8%
- Smart Farming 8%
- eHealth 8%
- Automotive 33%

**6G SNS IA**

**Call 1**

**Call 2**

18%
SMEs

20%
Research
Organization

BENEFICIARIES

2%
Smart Farming

2%
Other relevant verticals

7%
Orchestration & Management

3%
IoT
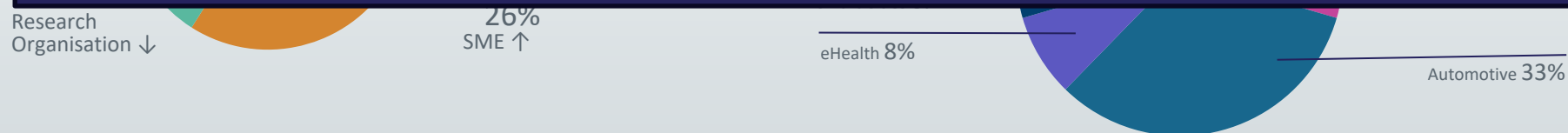
Research
Organisation ↓

26%
SME ↑

eHealth 8%

Automotive 33%

- SMEs 18% in Call 1 and 25% in Call 2 and more will join with Open Calls that are being organized by Stream C and D projects
- Excellent coverage of Vertical industries
- No significant gaps from the implementation of the WPs

## IMPORTANT DATES

**Call 3 Opening date: 16 January 2024**

**Proposal submission deadline: 18 April 2024 17:00:00 (Brussels local time)**

## MUST READ

**R&I Work Programme 2024** approved on 23 November 2023, see:

[SNS R&I WP 2024 - SNS JU (europa.eu)](#)

[Funding & tenders (europa.eu)](#)

**See in particular Appendix 1: Additional Conditions of the SNS 2024 Call,** detailing all **SNS Call 3 specific conditions**

## IMPORTANT BACKGROUND READING

**FAQ's:** regularly updated list of "Frequently Asked Questions", made available on the SNS JU website

[https://smart-networks.europa.eu/faq-3/](https://smart-networks.europa.eu/faq-3/)

1. Stream B: Continuity from 2022 and 2023

2. Stream B: Target higher TRL, PoC, Impact in Standardization

3. Sustainability Lighthouse in Stream B and main expected outcome in Stream D

4. Microelectronics Lighthouse

5. Reliable AI for 6G

6. International Collaboration (Japan, ROK)

7. Synergy with EU Rail

| Streams / Topics | Call 2024 Topic Budget (in M€) |
|---|---|
| **HORIZON-JU-SNS-2024-STREAM-B (RIA)** | |
| 01-01: System Architecture | 16.0 |
| 01-02: Wireless Communication Technologies and Signal Processing | 16.0 |
| 01-03: Communication Infrastructure Technologies and Devices | 16.0 |
| 01-04: Reliable Services and Smart Security | 16.0 |
| 01-05: International Collaboration – EU-JP | 3.0 |
| 01-06: International Collaboration – EU-ROK | 3.0 |
| 01-07: Sustainability Lighthouse | 13.0 |
| 01-08: Reliable AI for Reliable Communications Systems and Services | 6.0 |
| **HORIZON-JU-SNS-2024-STREAM-C (RIA)** | |
| 01-01: SNS Microelectronics Lighthouse | 10.0 |
| **HORIZON-JU-SNS-2024-STREAM-D (IA)** | |
| 01-01: SNS Large Scale Trials and Pilots (LST&Ps) with Verticals (IA) | 25.0 |
| **HORIZON-JU-SNS-2024-STREAM-CSA (CSA)** | |
| 01-01: SNS Operations and Output optimisation | 4.0 |
| **HORIZON-ER-JU-2024-FA2-SNS** | |
| EU-RAIL – SNS SYNERGY: Digital & Automated testing and operational validation of the next EU rail communication system | 1.0 |
| **Total (M€)** | **129** |

# Funding rate:

**RIA & CSA:**
- **100% for non-for-profit organisations,**
- **90% for profit organisations,**

**IA:**
- **100% for non-for-profit organisations,**
- **70% for profit organisations**

**To be implemented by EU-Rail JU, WP will be published within December 2023**

**Stream B (6G Technological advancements)**

System Architecture
(2 projects)

select one or more of these issues

- **New design approaches for 6G system architecture systems**

- **Native and trustworthy integration of AI for telecommunications**

- **Network exposure to vertical application developers**

- **New Data Transfer Paradigms**

- **Digital network twinning for 6G**

Start at TRL 2-3 and to reach TRL 4 by the end of the project, and if/where relevant up to maximum TRL 5 (mature 6G technologies and solutions for verticals). Parts of the project may only target TRL 3 by the end of the project

**Stream B (6G Technological advancements)**

Wireless Communication and Signal Processing
(2 projects)

select one or more of these issues

- **Novel techniques for integrated sensing and communication**

- **Machine learning empowered physical layer evolutions**

- **Cell-free and extreme exploitation of MIMO technologies potentially including reconfigurable surfaces**

- **Key functionalities and technologies for 6G RAN system design**

- **Seamless integration of multiple frequency bands**

Start at TRL 2-3 and to reach TRL 4 by the end of the project, and if/where relevant up to maximum TRL 5 (mature 6G technologies and solutions for verticals). Parts of the project may only target TRL 3 by the end of the project

**Stream B (6G Technological advancements)**

**Communication Infrastructure Technologies and Devices (2 projects)**

select one or more of these issues

- **Ultra-high energy efficiency especially in optical networks**

- **3D networking for 6G networks**

- **Development of low-energy communication solutions**

- **New IoT components and devices**

- **Unified NTN service provision**

- **Integration of Optical and Wireless Technologies**

Start at TRL 2-3 and to reach TRL 4 by the end of the project, and if/where relevant up to maximum TRL 5 (mature 6G technologies and solutions for verticals). Parts of the project may only target TRL 3 by the end of the project

**Reliable Services and Smart Security
(2 projects)**

Stream B (6G Technological advancements)

select one or more of these issues

- **Exploitation of (distributed) trusted AI/ML for 6G infrastructures**

- **Cooperative holistic E2E security and privacy for 6G architectures**

- **Smart and trustworthy service frameworks**

- **Efficient security and privacy enablers**

- **Zero-touch integrated security deployment**

- **Integration of secured 6G communications via Quantum key distribution and post-quantum cryptography support**

- **Timing sensitive & responsive SW/HW techs for distributed, multi-stakeholder multi-system service provision.**

Start at TRL 2-3 and to reach TRL 4 by the end of the project, and if/where relevant up to maximum TRL 5 (mature 6G technologies and solutions for verticals). Parts of the project may only target TRL 3 by the end of the project

**Stream B (6G Technological advancements)**

### International Collaboration EU-JP (1 project)

- AI-enabled radio access network (RAN) solutions including physical layer and signal processing technologies for 6G RAN such as distributed MIMO and user centric network, RIS implementations and AI-enabled integrated RAN/Core network functions

- Streamlined views on a) the use of AI and b) potential extensions on the radio interface

- Impactful contributions to standardization bodies are also in scope of this project

**Applicants are invited to explain how EU-JP cooperation will be implemented**

Activities are expected to achieve TRL 2-4 by the end of the project

**Stream B (6G Technological advancements)**

International Collaboration EU-ROK
(1 project)

- Algorithms for 6G RAN that improve transmission performance and reduce complexity in wireless transmission

- Procedures and protocols empowered by AI that improve efficiencies of the wireless communications through mobility management, wireless resource management, automated maintenance, and self-optimization of network parameters

- Streamlining of the use of AI, interfaces and mechanisms that are expected to be developed by mirror R&I activities in ROK where the focus could be on the devices' side

Applicants are invited to explain how EU-ROK cooperation will be implemented

Activities are expected to achieve TRL 2-4 by the end of the project

**Stream B (6G Technological advancements)**

### Sustainability Lighthouse (1 project)

- "Sustainable 6G" and "6G for Sustainability"

- Environmental Sustainability

- Societal Sustainability

- Economic Sustainability

- Reference sustainability scenarios and benchmarks

- Characterisation of sustainability KPI and KVI's, in view of their potential use at standardization level

- Validation of critical technologies for the sustainability solutions in experimental platforms and use case pilot

Activities are expected to achieve TRL 2-5 by the end of the project

# SNS R&I WP2024

Stream B (6G Technological advancements)

**Reliable AI for 6G Communication Systems and Services (1 project)**

- Development of a reference framework for end-to-end AI usage

- Development of appropriate data infrastructure and functionalities (AI as a Service to vertical industries )

- Training, assessment, conflict resolution, vulnerability assessment, reliable and trustable AI lifecycle

- Production of data sets and validation methodologies

- Potential future links to future Stream C and Stream D projects

- Harmonization/coordination  with other SNS projects and national initiatives

Start at TRL 2-3 and to reach TRL 4 by the end of the project, and if/where relevant up to maximum TRL 5 (mature 6G technologies and solutions for verticals). Parts of the project may only target TRL 3 by the end of the project

Microelectronics Lighthouse
(1 project)

Stream C (Experimental Infrastructures)

select one or more of these issues

- Advanced baseband capabilities (open approaches, technologies for JCAS, HW platforms supporting virtualization, HW accelerators)
- Integration of the THz communications technology into a complete THz communication chain and demonstrator
- Address an E2E x-hauling demonstrator prototype with extended transmission reach at Sub-THz frequencies (>140GHz)
- Inclusion of microelectronics solutions in the transport domain or unified solutions with NTNs and support of the IoT-connectivity-service provision value chain

- Mainly focus on Radio Access Network computing and communication capabilities (potentially covering a wide spectrum e.g., from cmWave up to THz)
- Opportunity to create a bridge between the SNS JU and the Chips JU

Activities are expected to achieve TRL 6 by the end of the project

**Stream D (Large Scale Trials)**

2 Projects – expecting results on sustainability

- Demonstration of clear benefits for stakeholders using advanced technologies

- Tangible results for environmental, societal and economic aspects

- Involvement of SMEs/scaleups/ startups is targeted in the projects

- Stream D projects should aim to take advantage from developed platforms and/or elements from the SNS Phase 1 Stream C projects, platforms developed in the context of national initiatives or any other solutions that integrate and offer preliminary 6G network solutions

Open to applicants to select from any already advanced 6G use cases that are in line with the 6G vision

Activities are expected to achieve TRL 5-7 by the end of the project

# SNS R&I WP2024

**Coordination and Support Action**

## CSA- 1 project

- Support the SNS promotion and communication, international cooperation & collaboration with Member State initiatives

- Stakeholder management towards R&I orientation and SNS cross-project coordination and cooperation

- Europe wide cartography of relevant initiatives

- SNS web site and program infrastructure (web sites, mail systems, repositories, etc.).

- Working group management

- Monitoring and communication with peer JU Partnerships and Vertical Associations

- Organisation, management and support of IAFAs

- EuCNC and 6G Summit organization and support

**Information day**: 22.01.24 at 10:00 – 13:00 CET

**Brokerage event**: After the information day – you can already use the SNS brokerage platform at https://sns-brokerage.eu/

**Don't forget to visit:**
- **https://smart-networks.europa.eu**

**Don't forget to follow**:
- **https://www.linkedin.com/company/sns-ju/**

**Chris Young**

**Horizon Europe UK National Contact Point**

**Finance & Legal**

**chris.young@iuk.ukri.org**

# Landscape Speakers

**Professor Ari Pouttu- Finland**
**Lars Gustafsson – Vinnova Sweden**
**Tom Kirkham  - Innovate UK UK**

**NCP-Digital@iuk.ukri.org**

Innovate
UK

# 6G Landscape in Finland

**Prof Ari Pouttu**
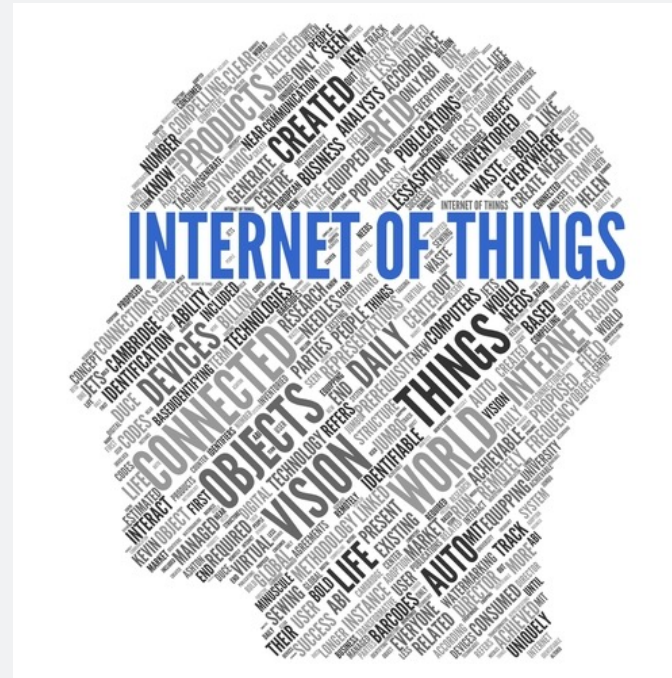**Vice-Director, 6G Flagship**

**Dec 12, 2023**

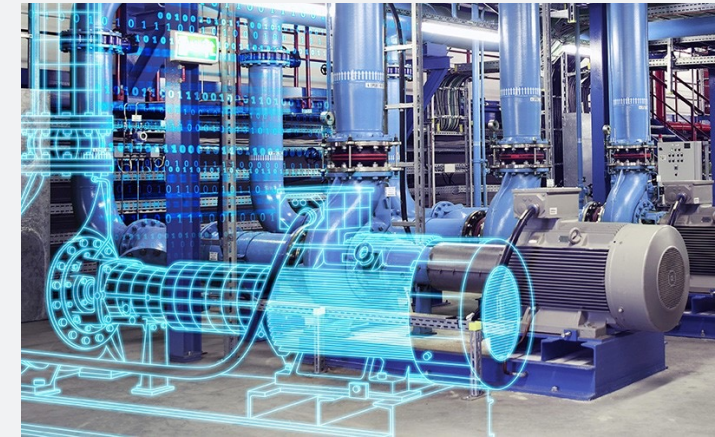# From Human Centricity To Holistic Digitalization of Society

**6G**

ABC (Always Best Connected)
Vision for future made in 2003



next 50 billion connected things
2013 vision



6G metaverse and
digital twins
2023





**Finnish Metaverse Strategy:**
**https://drive.google.com/file/d/1rDPFt_Lkjn5cXmAF_IG**
**W8P3RisS672J2/view**

# 6G Visions and Research Directions

► *6gflagship.com/white-papers*



KEY DRIVERS AND RESEARCH CHALLENGES FOR 6G UBIQUITOUS WIRELESS INTELLIGENCE
6G Research Visions 1
September 2019

WHITE PAPER ON 6G DRIVERS AND THE UN SDGS
6G Research Visions, No. 2
June 2020

WHITE PAPER ON RF ENABLING 6G – OPPORTUNITIES AND CHALLENGES FROM TECHNOLOGY TO SPECTRUM
6G Research Visions, No. 13
April 2021

WHITE PAPER ON BUSINESS OF 6G
6G Research Visions, No. 3
June 2020

6G WHITE PAPER ON VALIDATION AND TRIALS FOR VERTICALS TOWARDS 2030'S
6G Research Visions, No. 4
June 2020

6G WHITE PAPER ON CONNECTIVITY FOR REMOTE AREAS
6G Research Visions, No. 5
June 2020

WHITE PAPER ON 6G NETWORKING
6G Research Visions, No. 6
June 2020

WHITE PAPER ON MACHINE LEARNING IN 6G WIRELESS COMMUNICATION NETWORKS
6G Research Visions, No. 7
June 2020

6G WHITE PAPER ON EDGE INTELLIGENCE
6G Research Visions, No. 8
June 2020

6G WHITE PAPER: RESEARCH CHALLENGES FOR TRUST, SECURITY AND PRIVACY
6G Research Visions, No. 9
June 2020

WHITE PAPER ON BROADBAND CONNECTIVITY IN 6G
6G Research Visions, No. 10
June 2020

WHITE PAPER ON CRITICAL AND MASSIVE MACHINE TYPE COMMUNICATION TOWARDS 6G
6G Research Visions, No. 11
June 2020

6G WHITE PAPER ON LOCALIZATION AND SENSING
6G Research Visions, No. 12
June 2020

# Three development paths

## Next steps: Three development avenues

Providing e.g. coverage, medium data rate, latency & Jitter, zero carbon footprint solutions, RedCap Devices

**3GPP path Rel. 17…Rel. 20**

Providing e.g. low capex with moderate performance, high opex , studying security, energy consumption, jitter/latency perf., stability

**O-RAN path**

Providing e.g. 1 Tpbs, joint com&sensing, low latency and jitter, sub-cm positioning, reflective surfaces, Sub-THz transceivers

**Disruptive 6G path**

**6 Usage scenarios**

**Extension** from IMT-2020 (5G)

eMBB ➡ **Immersive** Communication

mMTC ➡ **Massive** Communication

URLLC ➡ **HRLLC** (Hyper Reliable & Low-Latency Communication)

**New**

**Ubiquitous Connectivity**

**AI and Communication**

**Integrated Sensing and Communication**

4 Overarching aspects:

*act as design principles commonly applicable to all usage scenarios*

Sustainability, Connecting the unconnected, Ubiquitous intelligence, Security/resilience
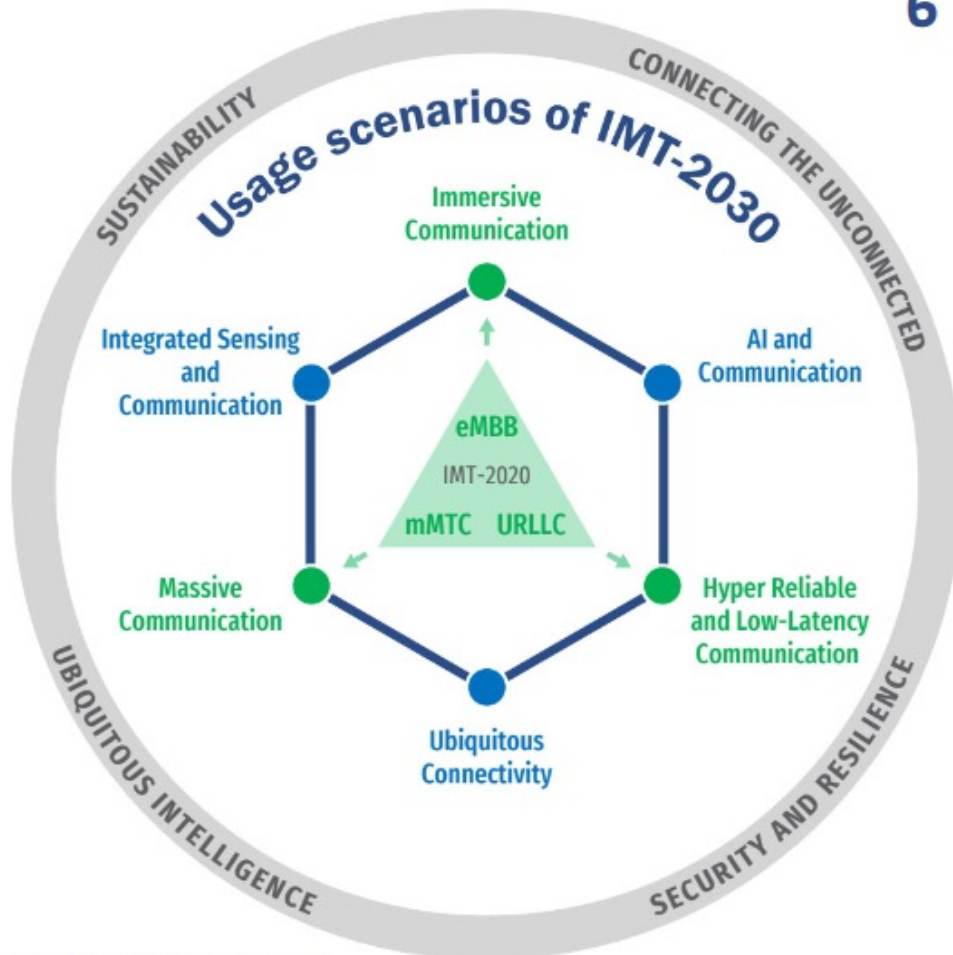
So called "Wheel diagram"
Source: Document 5/131 and edited in SG 5

**6G BRIDGE**

Business Finland funding programme 1/23 – 12/26 with 130M€ budget; currently 27 projects funded.

**6G FLAGSHIP** — UNIVERSITY OF OULU

National research flagship for 5/2018 – 6/2026 with 251M€ budget

UKRI — Innovate UK

**6G Finland**

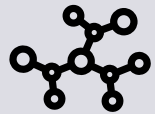National 6G coalition formed in 5/22 to lead 6G policy level and other strategic discussions In Finland
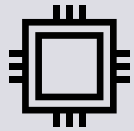
# 6G Flagship Overview

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

### Strategic Research Areas (SRAs)

**Wireless connectivity solutions**

**Device and circuit technologies**

**Distributed intelligent wireless computing**

**Sustainable human-centric services and applications**

### Flagship Goals

**1** 6G technology enablers

**2** 6GTN development

**3** 6G vertical applications
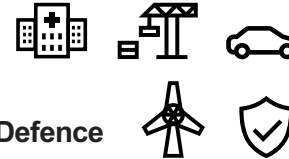
**4** 6G vision leadership

### Impact Actions

**A** 6G-enabled Sustainable Society
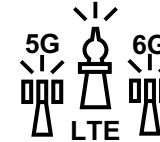
**B** Strategic Vertical Areas (SVAs)
- Health
- Industry
- Vehicular
- Energy
- Security & Defence

**C** Global 6G Collaboration

**D** Research infra-structures – 6G Test Network (6GTN)

5G    6G    LTE

### Beyond 6G Flagship

6GTN as the core of 6G Radio Park

Training 6G experts for industry

Influence on 6G standard

Expertise building beyond 6G

2027    2028    2029    2030

# Test Network – For Innovation Experimentation and co-creation

6G

**5GTN**

**PyeongChang 2018**

**ACADEMY OF FINLAND**

**ESFRI** European Strategy Forum on Research Infrastructures

**SLICES-RI**: 15 countries (**https://slices-ri.eu/**)

**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 |

3GPP Rel. 16

**5GTN**   **4G-LTE**   **5G PoC**   **5G NR**   **5G+**   **5G+   …   6G**   **6GTN**

**LTE small cell @2.1 and 2.6 GHz**

**5G PoC/5GNR**

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

**Cloud RAN based 5G @3.5GHz 5GNR @24 GHz**

# Take Aways – An economic and policy view

**6G**

## Summary and actions

Finland is a 6G pioneer.

6G development started in Finland as the first in the world already in 2018.

6G is vital for exports to Finland.

6G is the EU's "must-win" priority technology.

The features brought by 6G are the basis of future real-time digital societies and businesses.

### 1. Finland is a pioneer

6G vision and thought leadership comes from Finland. We cannot compete with funding or the number of experts.
We must be agile, collaborative and most innovative. That's why there is close multi-stakeholder cooperation that adapts to the situation, agile financing and a way of working that reacts quickly to situations: long-term financing is an important tool.

### 2. 6G is the highest technological know-how

Huge market and export potential for Finland.
The IP portfolio accumulated around 6G is very valuable globally. Finland must invest enough in R&D work so that we are in a good position in business..

### 3. 6G is a multi-use technology

Intelligent, adaptive, real-time environment: 6G combines electronics, radio technology, artificial intelligence and software.
6G creates a real-time and mission-critical platform with great business potential. We must ensure pioneer position, Finland's IP placement, our share of the 6G network's business and especially applications.

### 4. 6G key partnerships

We are a highly sought-after partner in the world - promoting partnerships requires additional efforts from everyone.
We have formed important partnerships, e.g., USA, Japan, South Korea, Germany, Brazil, and India. In the future, the agile cooperation of Finnish operators will be of great importance in collecting the benefits.

### 5. 6G and NATO

6G is of particular interest in NATO due to its advanced features and great dual-use technology potential.
NATO has many large R&D programs. Finland should network and utilize them effectively.

### 6. 6G team Finland

Finland can only succeed by intensifying internal cooperation. When the resources of the stakeholders are combined, we can be a competitive global player.
Cross-administrative cooperation as a network with R&D actors, strengthening three key areas of activity: R&D funding – international relations, regulation - R&D programs. Successful R&D requires people, and at the same time, education in the field must be strengthened through co-op and funding

## Vision & thought leadership
(6G started in Finland, we have been a global vision and thought leader. The goal is to stay ahead of others and constantly produce new to "stay relevant")

## International partnerships
(USA, Japan, Germany, Australia, South Korea, India, Brazil and the EU - our partnership network is being built, and close implementation and cooperation between actors is required next)
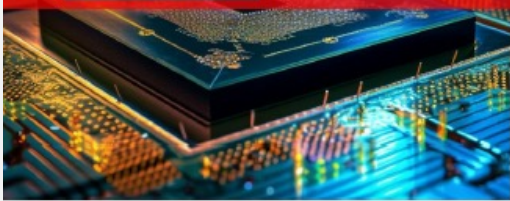
## Cooperation of Finnish team
(Finance - Corporate relations, regulation - R&D programs, EU, Academy and Business Finland - ministries and 6G Finland - 6G flagship and other flagship programs)

**Summary and actions**

Finland is a global pioneer in the key technologies of 6G: RF and radio, microelectronics, network artificial intelligence and systems.

6G is an integration of wireless, artificial intelligence, electronics and software technologies.

6G technologies create an intelligent real-time programmable platform with applications.

Continuous investments in R&D and international technological cooperation ensure Finland's competitiveness.

### 1. 6G is a family of technologies

The special technologies of 6G form a whole that achieves real-time, low delay, intelligent network and next-generation real-time digital services.

It is important to develop core technologies in parallel and systemically to achieve 6G targets. Radio frequencies are important enablers. Therefore, R&D projects must be comprehensive and balanced.

### 2. 6G brings local high speeds, AI and distributed computing

New radio frequencies, distr. computing and AI placed at the edge of the network, with intelligent data routing and programmability create a real-time operating environment.

6G enables smart functions and applications that require heavy computing and near real-timeliness. At the same time, a large part of the data processing will move closer to the operation instead of cloud centers.

### 3. Multipurpose radios

New radio technology brings more capacity, adapts to the user's needs and functions as sensor network observing the environment.

In Finland, we are researching the multi-use of radio technologies, which in 6G opens many new applications, e.g., base stations become distributed smart hubs located close to users and edge computing stations capable of observing the environment.

### 4. 6G - the gold mine of patents

Patents are prerequisite of competitiveness for companies. Compared to previous generations, 6G patents are made globally faster and more.

Finnish operators should invest sufficiently in developing their own strong patent portfolio. Intense global competition is already underway.

### 5. International research cooperation

6G technologies (radios, electronics, artificial intelligence, software and systems) are very complex and it is necessary to cooperate and agree on standards.

We form effective R&D partnerships both at the national level and between global research institutes. This requires agile and suitable funding instruments.

### 6. 6G is natural dual use technology

6G is a natural dual use technology, which is interesting for e.g., NATO, the EU and especially the US gov affiliates. This creates opportunities in the defense industry.

The defense industry is a large global and high-margin business. This creates a huge potential for our companies in the future.

### R&D funding

R&D funding must be invested systematically - from basic research to larger industry-driven international projects:
**RADIOs – ELECTRONICS – AI - SOFTWARE**

### Special programs

The development of 6G is very research and equipment intensive. In addition to project funding, the recruitment and education of talented students and the re-training of professionals is important.

### RF and patent portfolio

In R&D projects, Finland must invest heavily in the innovative utilization of current and new radio frequencies that enable future business, and in technology patents together with international partners.

# Take Aways – Application and Service View

## Summary and actions

6G brings a set of multi-use technologies and creates a platform for services and applications of a real-time digitalizing society & business life.

Artificial intelligence, information processing and calculation are brought close to the user, enabling speed and low-delay of services.

The reliability and quality of 6G rises to a new level compared to previous generations.

6G enables completely new and easy-to-use services globally, also outside the growth centers.

### 1. 6G – disruptive environment

6G technology combined with the platform economy revolutionizes digital services, enabling personalization, real-time and augmented reality applications in industry, society and consumer business

It is important to understand the impact and potential of 6G widely enough. Therefore, it is beneficial for Finland to create enough projects and programs utilizing 6G for various vertical business sectors.

### 2. Unique feature coverage

In addition to the 6G network, users', businesses and industry get a large number of new features, which are offered to application developers through the platform's interfaces. To get the benefits of all the features 6G offers, we need to use technology, platforms and tools efficiently.

Utilizing 6G requires versatile special expertise in terms of hardware features, software capabilities and edge/special AI, combined with expertise in business areas.

### 3. Sentient, delay-free, data-secure environment

Due to the real-time requirement, application and communication data are processed as close as possible to operations. 6G requires the development of special AI capable of optimizing applications' data traffic, data security and providing the resources required by applications. Applications' communication and data are increasingly processed in a 6G edge, i.e., close to the user (instead of cloud service centers). This creates a great opportunity to build fault-tolerant, energy-efficient and data-secure

### 4. 6G makes all business areas more efficient

From heavy industry to smart traffic and cities, from health care to environmental protection, and from the entertainment industry to the defense industry - 6G technology and platforms play a significant role in the development of business models in the 2030s.

Platform economy and real-time economy business models are key skills in monetizing the features brought by 6G.

### 5. 6G standard evolves in steps

Low-delay, embedded intelligence, energy efficiency, accessibility and security are key requirements of 6G. 6G develops in stages and brings important features not only for application developers, but also for combating climate change and poverty, for example.

It is important for Finland to be a pioneer in defining new features, developer / test environment and derivate applications as standardization progresses.

### 6. Largest business potential is in applications and services

6G network and equipment sales is large global business. However, 6G as a platform will be evern larger opportunity in a road towards real-time data economy.

The 6G development work started in Finland and is internationally significant and respected. This is an important competitive asset for our ICT industry. According to the platform economy, the greatest business potential will be in applications and services. Thus, we need a special investment in these areas.

## 6G is platform for 2030s
Transition to a real-time platform economy.

## Busines potential
The 6G network and the applications and services built on top of it create multiple business potential compared to previous technology generations.

## An opportunity in verticals
6G enables a leap in productivity for almost all sectors and levels in societies and businesses.
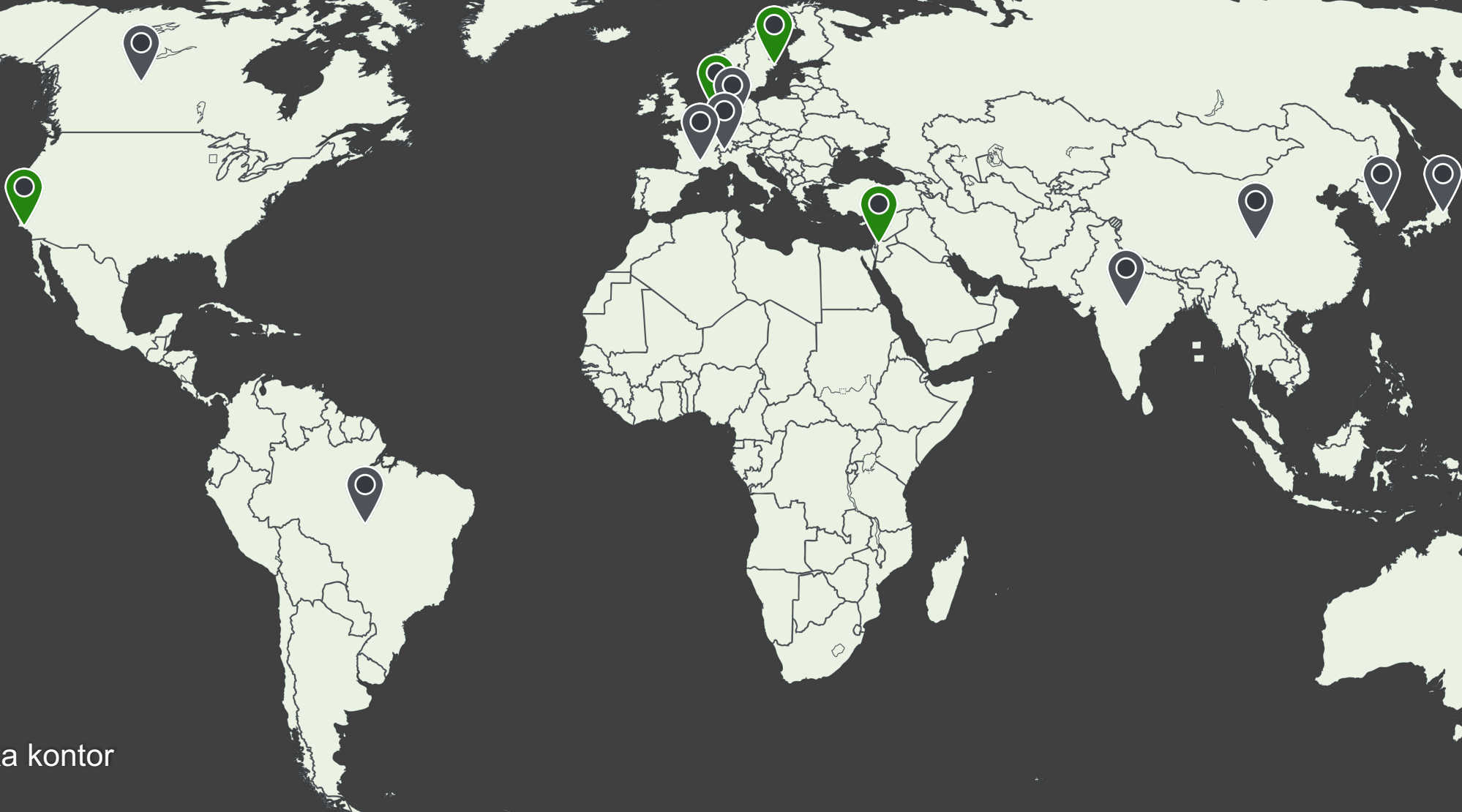
# Thank you!

Fysiska kontor

Samarbeten

VINNOVA

Photo: Sustainable Development Goals

VINNOVA

# We need innovation in the broad sense

Taking our society in a new direction

Photo: Shutterstock

VINNOVA

# We help organisations come together

Companies, researchers, the public sector and civil society

VINNOVA

## HORIZON EUROPE

# We're the link to EU funding

## SMART NETWORKS AND SERVICES JOINT UNDERTAKING (6G)

**Industry Association**

**SE members: KTH Royal Institute of Technology, Luleå Technical University, Karlstad University, SIVERS Semiconductor, Ericsson**

**European level 6G Flagship project**

**SE partners: Ericsson AB, Sony Nordic AB, Chalmers University, Luleå Technical University, Qamcom Technology and Research AB**

VINNOVA

# 6G RELATED AGENCIES IN SWEDEN





**The Swedish Post and telecom authority**

**The Authority works with consumer and competition issues, efficient utilisation of resources and secure communications.**

**LTE / 5G / 6G spectrum**

**Advice to government regarding SE participation in CEF-2 5G corridor projects**

**PTS is generally not involved in funding of R&I collaboration**

**Sweden´s Innovation Agency**

**Program Advanced Digitalization. Partner (including funding) to Association of Swedish Engineering Industries, Ericsson, ABB and SAAB. Annual budget of 900 million Euro.**

**Several Competence Centers related to 6G, collaboration between Universities, Industry (also international) and Vinnova.**

**EUREKA Celtic Next (5G/6G), Vinnova represents as Public Authority.**

**State Representative Group, SNS JU (6G)**

VINNOVA

# Strong research environments for a sustainable industry and digital transformation

Published: 5 September 2023

Vinnova invests in 11 new competence centers starting in January 2024, where universities and companies will jointly conduct excellent research and education in areas that are important for a sustainable industry and digital social transformation. In total, the universities, companies and Vinnova are investing SEK 1 billion in the first five years.

## Next Generation Communication and Computing Infrastructures and Applications (NextG2Com)

A competence center in future advanced communication systems with a focus on everything from wireless communication technology and networks to software, data, security and relevant application areas. (Advanced digitalisation)
Lunds university
Project manager: Maria Kihl

## Swedish Wireless Innovation Network (SweWIN)

A competence center where sustainability and energy efficiency in both wireless communication and in the use of sustainable materials are in focus. (Advanced digitalisation)
KTH Royal Institute of Technology
Project manager: Emil Björnson

## New Centers related to 6G, in operation from 2024

## Continuous Digitalization

The focus of this competence center is to enable transforming the software-intensive systems industry into a digitized industry that can fully benefit from next-generation computing and communications infrastructure. (Advanced digitalisation)
Chalmers University of Technology
Project manager: Jan Bosch

News article 29 Sep 2023 10:50

## New wireless technology centre drives sustainability and innovation



Christian Fager and Marianna Ivashina with Maria Wargelius (in the middle), Chair of the WiTECH Centre Steering Board.

WiTECH, *Wireless Infrastructure Technology at Chalmers,* receives 36 million SEK from Vinnova in areas that are important for a sustainable industry and digital social transformation.

VINNOVA

# Thank you!

**VINNOVA**
Sweden's Innovation Agency

# Future Telecoms In the UK

Tom Kirkham

Innovation Lead Future Telecoms

InnovateUK

# Benefiting everyone through knowledge, talent and ideas

UK Research and Innovation brings together the 7 Research Councils, Innovate UK and Research England.

As part of UK Research and Innovation, Innovate UK drives productivity and economic growth by supporting businesses to develop and realise the potential of new ideas including those from the UK's world-class research base.

# Innovate UK

- We are the UK's innovation agency

- We support business-led innovation in all sectors, technologies and UK regions

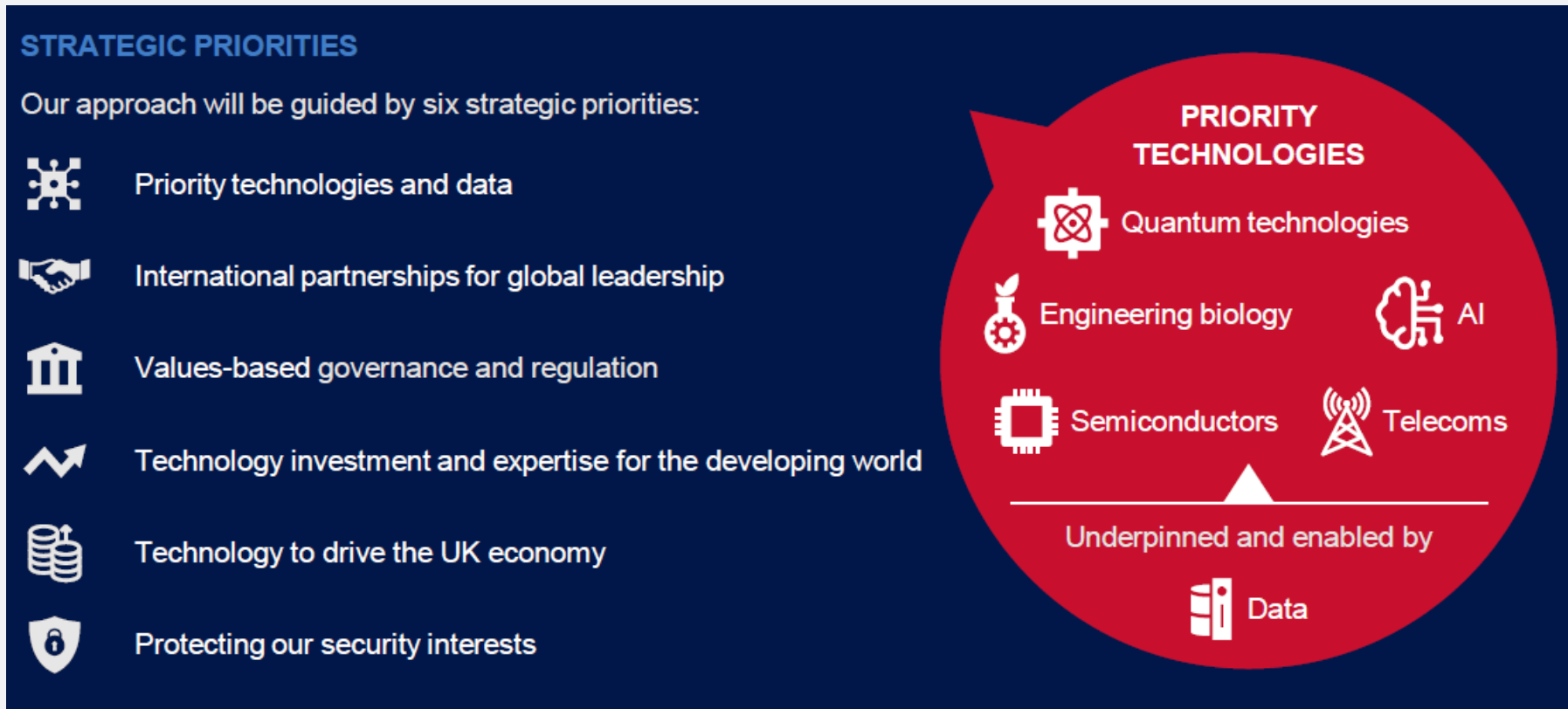- A key delivery body of the Government's Innovation Strategy

# Our Mission

To help UK businesses grow through the development and commercialisation of new products, processes, and services, supported by an outstanding innovation ecosystem that is agile, inclusive, and easy to navigate.

# Telecoms is identified as one of the strategic priority technologies of UK

The Prime Minister has announced our intention to be a science superpower by 2030, placing science, innovation, and technology at the heart of his vision for the UK.

**STRATEGIC PRIORITIES**

Our approach will be guided by six strategic priorities:

- Priority technologies and data
- International partnerships for global leadership
- Values-based governance and regulation
- Technology investment and expertise for the developing world
- Technology to drive the UK economy
- Protecting our security interests

**PRIORITY TECHNOLOGIES**

- Quantum technologies
- Engineering biology
- AI
- Semiconductors
- Telecoms

Underpinned and enabled by

- Data

Source: The UK's International Technology Strategy, March 23

Innovate UK

# TMF Telecoms Missions

**Network of networks
EG. Non-Terrestrial
Integration**
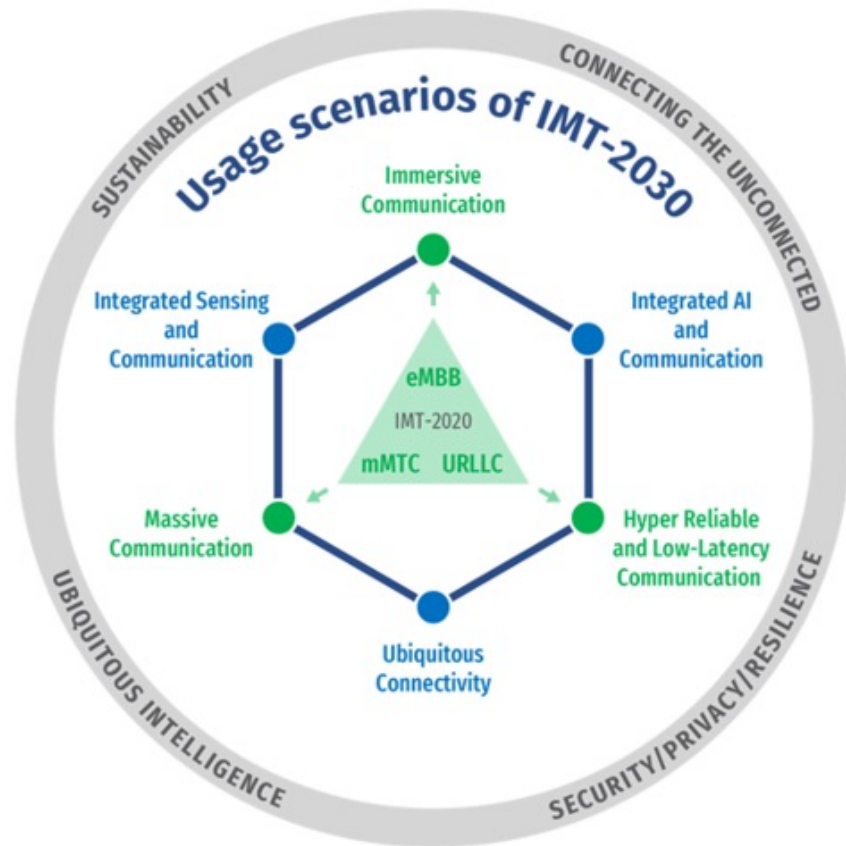


**Next gen wireless
EG. Massive MIMO + AI**
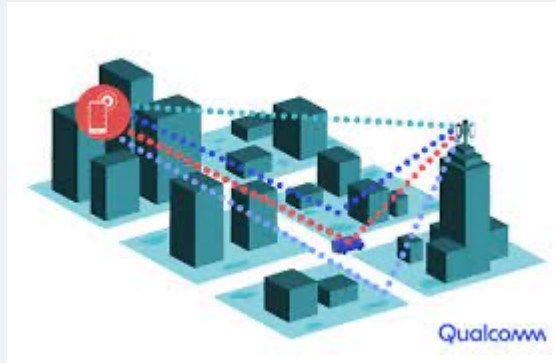


**Terabit optical
EG. Laser / Fibre**



**Telco cloud
EG. Software defined
networks**

# 6G Opportunity



Source: ITU IMT-2030 Framework (June 2023)

## 6G Connectivity*

- **High Data Rate:** peak downlink > 100Gbps, uplink > 10Gpbs
- **High Capacity:** 100x 5G
- **Gbps Coverage Everywhere,** 3D coverage' in the skies, space and underwater
- **Extreme Low Latency:** E2E < 1ms
- **High Reliability:** > 5 "9"
- **Always Secured** – Trust, Security and Resilience
- **Sensing Capability** & High Precision Positioning: 1-10 cm
- **Massive Connected Devices** (1-100m /km2)
- **Low Energy and Cost** – devices and infrastructure

Consumer

Business

Industry

Government

* Current proposals; to be defined by ITU IMT-2030 and 3GPP

# Future Wireless Innovation Landscape

## Wireless Network 2030 Innovation Opportunities

**End-User Service Innovation**
(Infotainment, work efficiency, DX..)

**Network Infrastructure Innovation**
(New Service Introduction, network efficiency, fast GTM..)

| Consumer/ 2C | | Business/ 2B | | RAN | Backhaul | Core | OSS/ BSS |
|---|---|---|---|---|---|---|---|
| 2H | B2B2C | B2G | B2G2C | Edge Cloud | SDN/NFV/Slicing | | Core Cloud |

| | | |
|---|---|---|
| 5G → 5.5G → 6G | FWA   Cloud VR   Private Mobile Network (PMN)   mMIMO   Edge Computing<br><br>Rural Coverage   Neutral Host Network   Open RAN   Standalone (SA) Network<br><br>V2X/UAV...   Digital Twin   Industry 4.0+   Smart City/Health/Transport/Edu/Agri.. | AI Application Network<br><br>Autonomous Networks (AN)<br><br>Green & Secure |
| | XR/ Metaverse/ Hologram wireless   Joint Sensing and Sensor Networks   TN-NTN Integration   Terahertz/mmWave /Free Space Optic<br><br>Terabit Broadband Network   Network of Networks   Reconfigurable Surfaces   Ultra mMIMO   Quantum Security | |

Component   Device   Hardware   Software   Platform   Service   Application

UKRI   Innovate UK

# Testbeds and the Catapult Network



Catapults:
where they are

Our network of Catapult centres
is located throughout the UK in
areas of strategic importance to
each sector.

**Offshore Renewable Energy**
Glasgow
Blyth
Levenmouth

**High Value Manufacturing**
AFRC – Strathclyde
NCC – Bristol
CPI – Wilton/Sedgefield/Darlington
AMRC and NAMRC – Rotherham
MTC – Ansty
WMG – Coventry

**Medicines Discovery**
Alderley Park

**Energy Systems**
Birmingham

**Future Cities**
London

**Regional Centres**

**Satellite Applications**
· North East
· Scotland
· South West
· South Coast
· East Midlands

**Compound
Semiconductor
Applications**
South Wales

**Cell and Gene Therapy**
Stevenage
London

**Digital**
· North East and Tees Valley
· Yorkshire
· Brighton
· Northern Ireland

**Satellite Applications**
Harwell

**Digital**
London

**Transport Systems**
Milton Keynes

# Tom.Kirkham@iuk.ukri.org

UK
RI

Innovate
UK

UK RI

Innovate UK

Case Study:
Dan Warren

Samsung Research UK

Craig Sharp

adr-association.eu

# National Contact Support

Craig Sharp
Horizon Europe UK National Contact Point for Digital
NCP-Digital@iuk.ukri.org

# Horizon Europe Support – National Contact Points

- National Contact Points are publicly funded and offer an accessible, free and confidential service for organisations interested participating in Horizon Europe. They provide impartial advice, tailored to each individual business and organisation – scope fit, help finding partners, proposal review

- Detailed knowledge of the Work Programme and how it aligns with the UK research and innovation priorities - **www.ukri.org/HorizonEU**

- International NCP network – support in Member States, Associated Countries and Third Countries

- Depth of understanding of European Commission processes including 'non-standard' call variations, EIC, ETPs, and other TLAs

- Help with navigating 'The (Funding & Tenders) Portal' – the EC publishes everything you could ever want to know, however, finding it can (occasionally) be a problem

- Digital NCP Project ideal-ist.eu – network of NCPs - resources, events, proposal checks (during Research to Reality event 5-6/2/24 Brussels)

If in doubt – ask your National Contact Point, their role is to support applicant organisations

UK
RI

Innovate
UK

www.ukri.org/HorizonEU

# Consortium building mechanisms

**Funding and Tenders portal –** Every topic once published will have a 'Partner Search' function where you can upload your profile and review others (also show existing projects in old topics)

**Brokerage events –** European Commission, JU/Partnerships, Enterprise Europe Network (EEN), UK's KTN, NCPs from around Europe, etc will hold events*

**Partner Search –** under the How to participate tab on the EU funding and tenders portal where you can search for past projects and organisations

**CORDIS (cordis.europa.eu) –** a useful way of finding past projects and participants

**JU Partnership (6GIA)** – strategic research agenda, research & industrial membership network

**Contacts - and contacts of contacts…** networking, events (including UK Universities and Research Organisations experienced in European funding)

**No single mechanism..**



Searching the formal consortium building mechanisms is a bit like looking for a needle in a haystack – they all look like needles so finding the ones for you can be difficult

www.ukri.org/HorizonEU

# Links

6G SNS workprogramme 2024 (pdf - deadlines to be added – currently mid-April)

SNS Strategic Research and Innovation Agenda 2021-27 (2023 version)

6G SNS Online brokerage tool - https://sns-brokerage.eu

List of existing 6G SNS projects

https://cordis.europa.eu (search on project name/number to get more detail, ability to contact participants…)

"ICT" event – 5-6/2/24, Brussels - https://www.researchtoreality.eu

**Become an Assessor** (Expert) - https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/work-as-an-expert

www.ukri.org/HorizonEU

# Thank you

**Newsletter Subscription:** **https://eufunding.ukri.org/subscribe**

Craig Sharp
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HORIZON EUROPE

THE NEXT EU RESEARCH & INNOVATION

PROGRAMME (2021 – 2027)

# Pitches

**Dr Deepak GC**
Kingston University London

**Professor Timothy O'Farrell**
University of Sheffield

**Open the Floor**
**Raise your hand**
**Invited to the floor, unmute yourself**

**Pitches 3 mins**

# Horizon Europe 6G Smart Network Services

**Energy Efficient, Secure and Intelligent Tactile Communication in 6G framework**

In 5G, ultra-reliable low-latency communication has been a backbone for various applications that need extremely low delay. However, further research will be needed to minimize the round trip delay and improve energy efficiency and security of user data in the 6G network. In the proposed haptic/tactile communication, we may need "Network Edge Intelligence" where we build a digital twin in the edge server near the controller. A digital twin is a simulation environment that mimics the behaviour of a real-world system. Moreover, the proposed system should be intelligent enough which autonomously and jointly optimize the prediction parameters and 6G network parameters.

My previous experience in disaster resilience wireless network design, resource allocation in IoT networks, spectral and energy efficiency trade-off management in cognitive radio, cyber security and threat intelligence would contribute to this project.

## Partners

The partner organization are expected from the academic, industrial or SMEs in the UK and EU  countries. It is expected the partners have facilities of testbed to test new 5.5G and 6G network topologies for tactile communication.

## Organisational Capabilities

Kingston University London, Digital Information Research Centre (DIRC) is dedicated to the advancement of the theory and applicability of computer science, to enable internationally leading work in the field of informatics, addressing the needs of society in four thematic areas, i.e., health, communications, security and AI. There are eight research groups under DIRC, which include digital healthcare, visual surveillance, wireless

**Administrative Information**

Kingston University London is a public research university located in South West London, England with its four campuses situated in Kingston and Roehampton. The university specializes in the arts, design, fashion, science, engineering and business.

I am looking to being partner in the proposed research project.

# Horizon Europe 6G SmartNetwork Services Joint Undertaking/ 6G Radio Systems

**Proposed Approach & Experience**

What is your understanding of the part of the problem/challenge you can solve? What previous, relevant, work or track record can you bring to the team?

*The proposed use of sub-THz frequency bands in 6G creates the need for advanced integrated radio transceivers that should support multi-band operation, multi-mode signals and antenna array deployments for MIMO. These requirements create significant research challenges in terms of minimising transceiver complexity, energy consumption and costs. Software-Defined-Radio (SDR) techniques based on Single Chain Radio Transceivers are an extremely attractive solution to these challenges. Since 2011 Sheffield has worked on numerous EPSRC and UK national projects researching SDR technology to address such challenges. Currently, Sheffield is a partner in the DSIT YO-RAN £7M national project looking at such solutions for Open RAN radio units.*

**Partners**

If you are looking for partners, what type of partners are you looking for?

*We are looking for:*

1. *University partners with complementing RF systems expertise – specifically, MIMO expertise, RF circuits at subTHz, waveforms for wireless systems and channel sounding expertise*
2. *Industry partners with circuit integration expertise at subTHz frequencies and cellular technology development*
3. *Network operators with expertise in cellular network deployments, Open RAN and energy efficiency.*

**Organisational Capabilities**

What skills, capabilities, facilities does your organisation have that will be vital for this project?

*Sheffield hosts the UKRI National 6G Radio Systems Facility and the UKRI National Millimetre-wave Facility. These state-of-the-art, internationally leading facilities enable cutting edge research on radio systems development for 5G and 6G systems. The facilities provide a complete measurement capability up to 220GHz encompassing waveform definition, baseband processing, RF circuit development and antenna array measurements. Academic staff and researchers at Sheffield are internationally recognised for their contributions to radio systems design and energy efficiency in wireless communications system. Our expertise extends to channel modelling and III-V semiconductor material development through the EPSRC National Epitaxy Facility.*

**Administrative Information**

Organisation Type: Academic
Willing to Coordinator or be a Partner

**Contact details:**
Name: Professor Timothy O'Farrell FREng
Email: t.ofarrell@Sheffield.ac.uk
Tel: +44 114 222 5193
Country: UK
organisation's Participant Identification Code (PIC): 999976881

# 6G Smart Network Services: Teleport Protocol
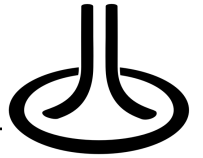
**Proposed Approach & Experience**

The Spatial Internet is considered an important emerging technology of extraordinary potential. But there is no core protocol suitable to build such a network.

Simul has developed the Teleport Protocol, a real-time application-layer protocol to power the Spatial Internet. Teleport is the "HTTP of Spatial Computing" – the core protocol that enables the network. This protocol has the potential to fully exploit the emergine 6G network while maintaining low costs and barriers to entry. Without Teleport or something like it, there is no "Spatial Internet" – just apps and websites. Only with a purpose-built protocol can we build a network that is navigable, discoverable and usable to the vast potential audience that awaits a breakdown of the barriers to its development.

Partners

We want early customers and users to join us in pilot projects to prove the value of this revolutionary technology.

We seek investors with vision to help bring the solution to market.

**Organisational Capabilities**

Simul has a proven track-record of delivering high-quality software in the immersive and simulation industries. We have been working with immersive technology since 2015 and some of the worlds' most valuable companies trust Simul to deliver.

We have won numerous awards, including the British Computer Society's R&D prize, and the TIGA technical innovation award.

Our members are deeply involved with standardization efforts in standards bodies for spatial computing.

But more than this, we, among all the companies involved in spatial computing and the Spatial Internet, have uniquely identified this fundamental need, and built the technology it requires.

**Administrative Information**

Simul is an SME, and can act as Coordinator or Partner, depending on the project.

Roderick Kennedy, Roderick@simul.co.uk. 07941 555 920
United Kingdom
PIC 885374291

# Opportunities

**OPEN** - £700 European Travel Awards

**12 Dec – DIGITAL SERIES - 6G Smart Network Services Joint Undertaking**

**6-7 Dec - Immersive Technology Conference:** Understanding & Application in Industry

**6 Dec – Horizon Europe Support** and Consortia Building webinars

Innovate UK's **BridgeAI Programme**