



6G overview and expectations

& the Future Network Services programme

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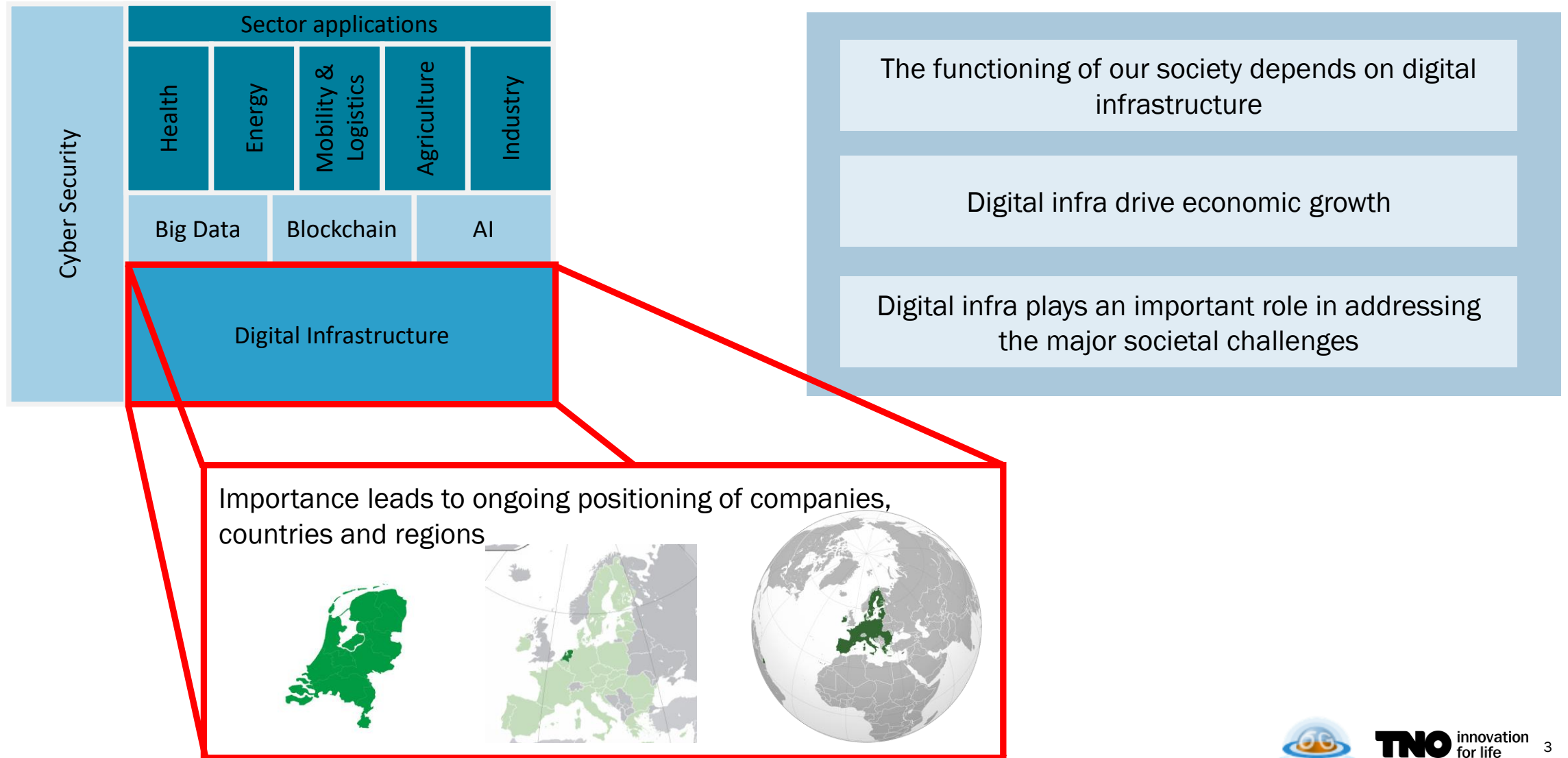


› IN THIS PRESENTATION

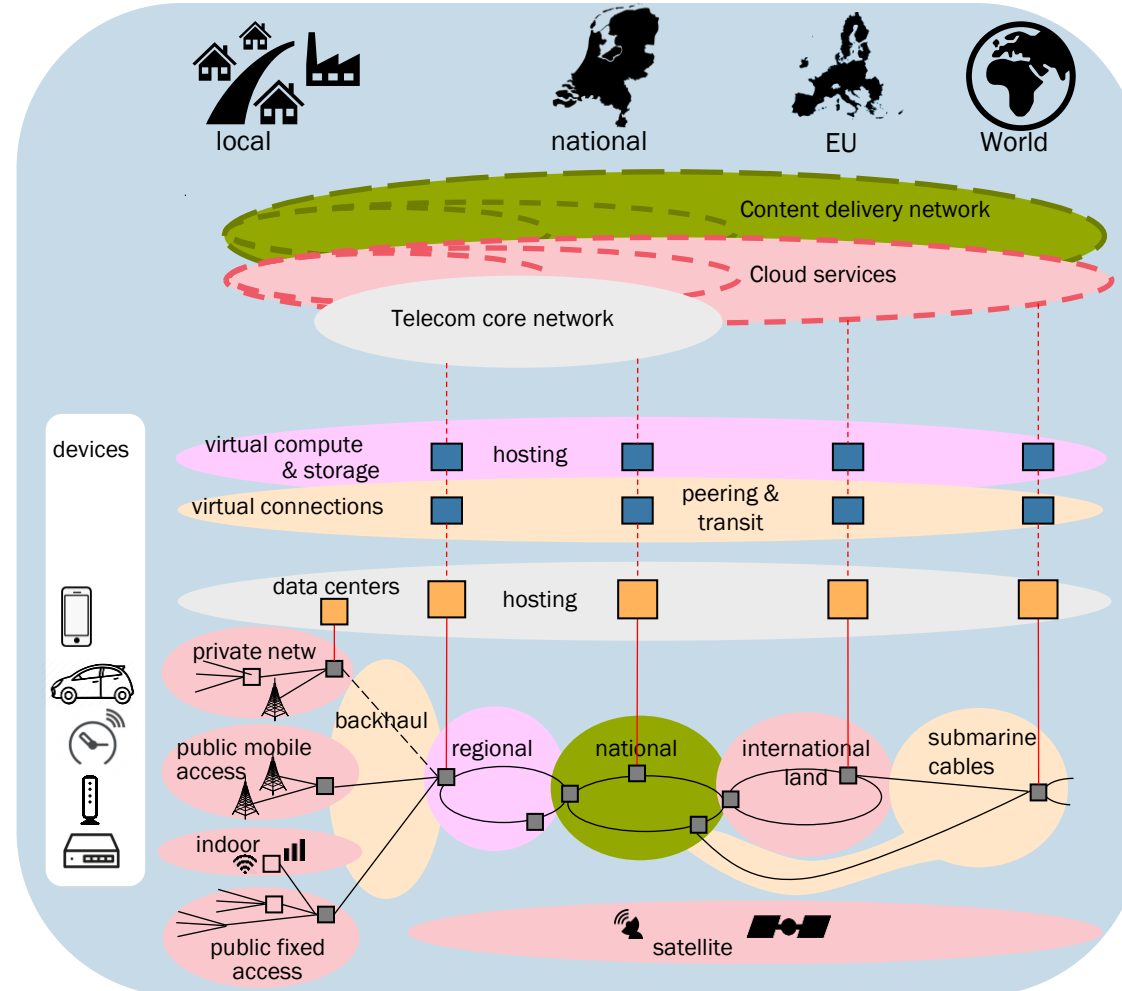
- › Digital infrastructure
 - › What is in it
 - › Topics around it: sustainability, digital autonomy
- › 6G development
 - › A worldwide phenomenon
 - › How can we make a useful contribution from the Netherlands
- › 6G Future Network Services Programme
 - › Goals: earning power, digital autonomy and trustworthiness, and sustainability
 - › Align development in Intelligent components, intelligent networks and applications



THE IMPORTANCE OF DIGITAL INFRASTRUCTURE FURTHER RAISES THE STAKES FOR ITS FUTURE DEVELOPMENT

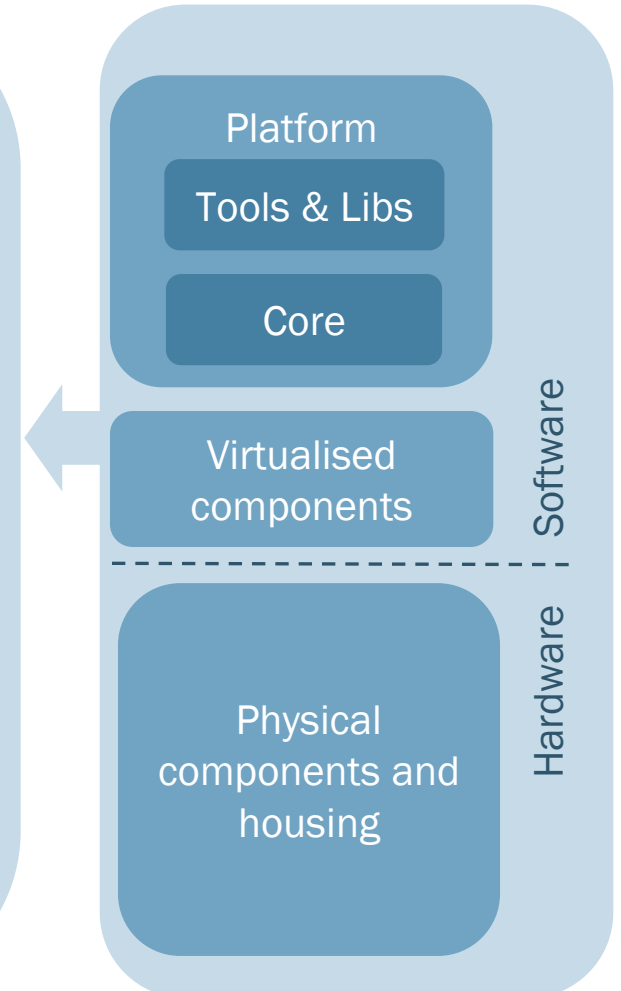


WHAT IS INSIDE THE DIGITAL INFRASTRUCTURE?



Geographic overview of digital infrastructure

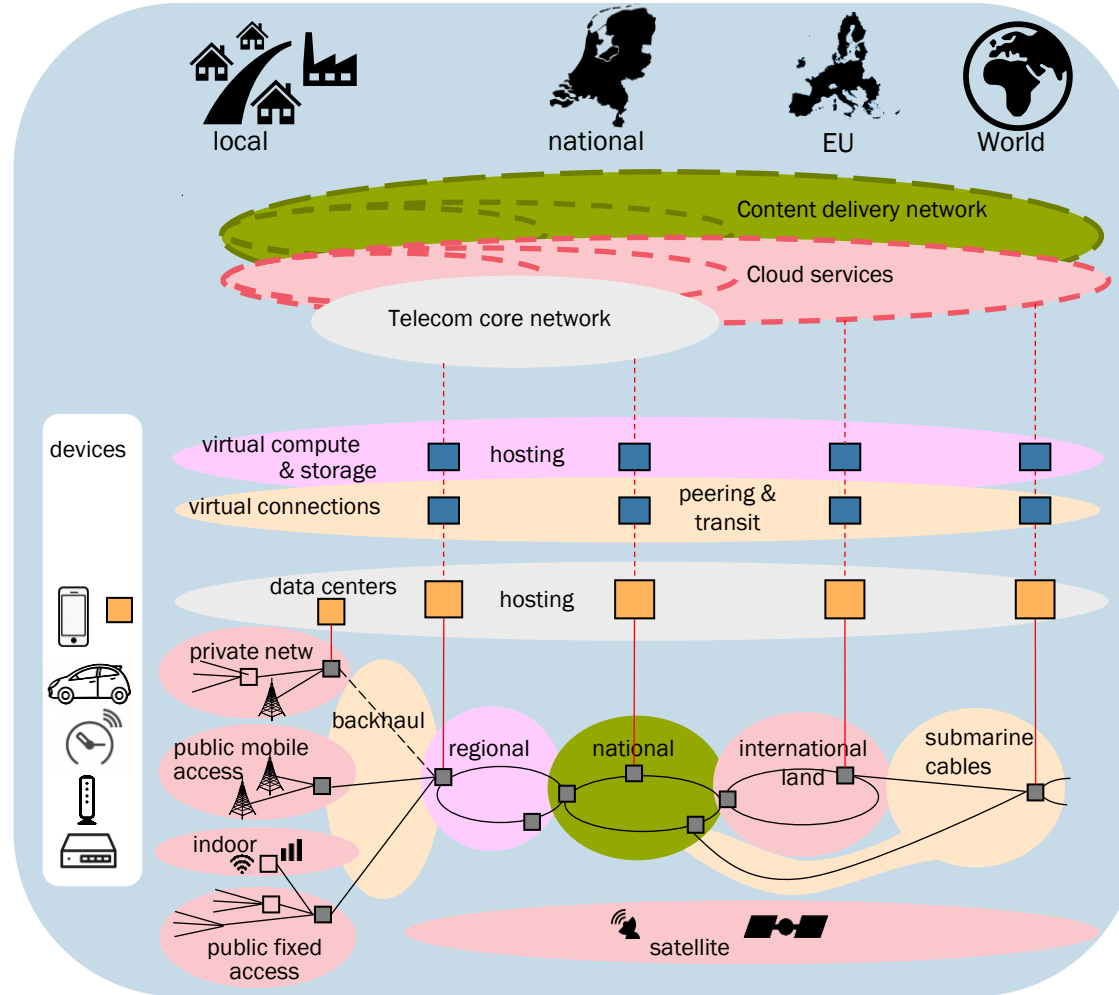
Applications, services & data



Hardware and software layers

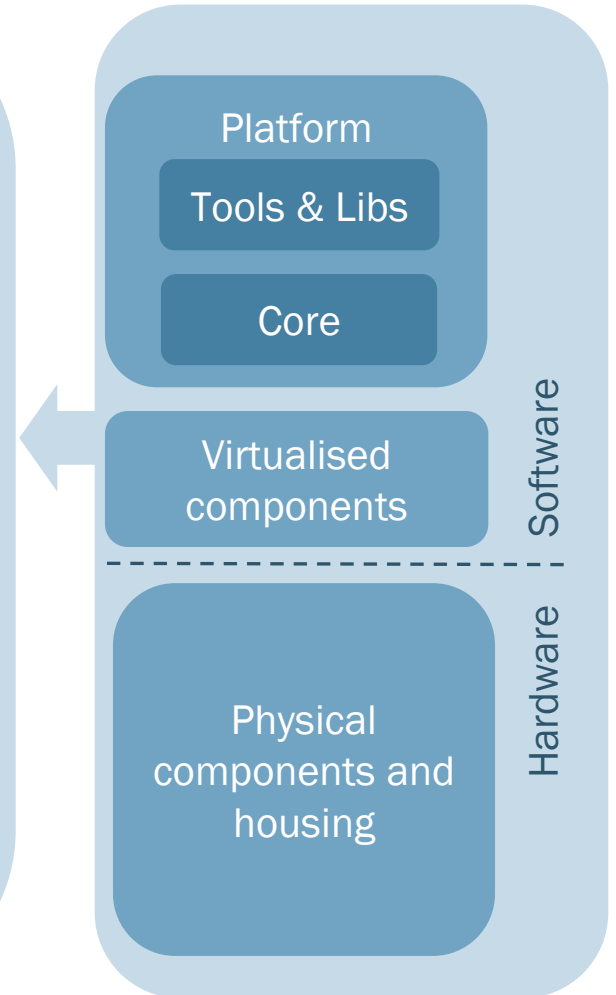
WHAT ARE THE NON-TECHNICAL ANGLES TO LOOK AT DIGITAL INFRASTRUCTURE?

- Sustainability
- Well-functioning market
- (Open) Internet for everyone
- Innovation and business climate
- Local roll-out and urban planning
- Resilience
- Digital Open Strategic Autonomy



Geographic overview of digital infrastructure

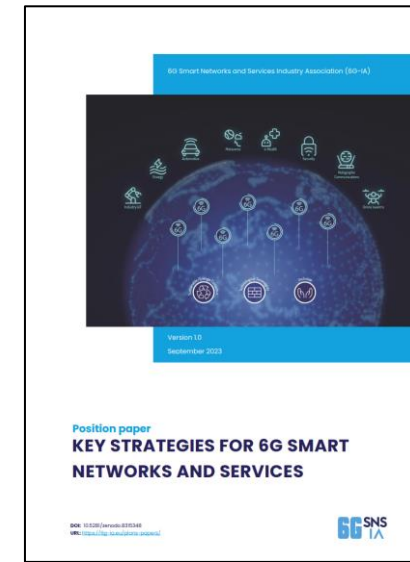
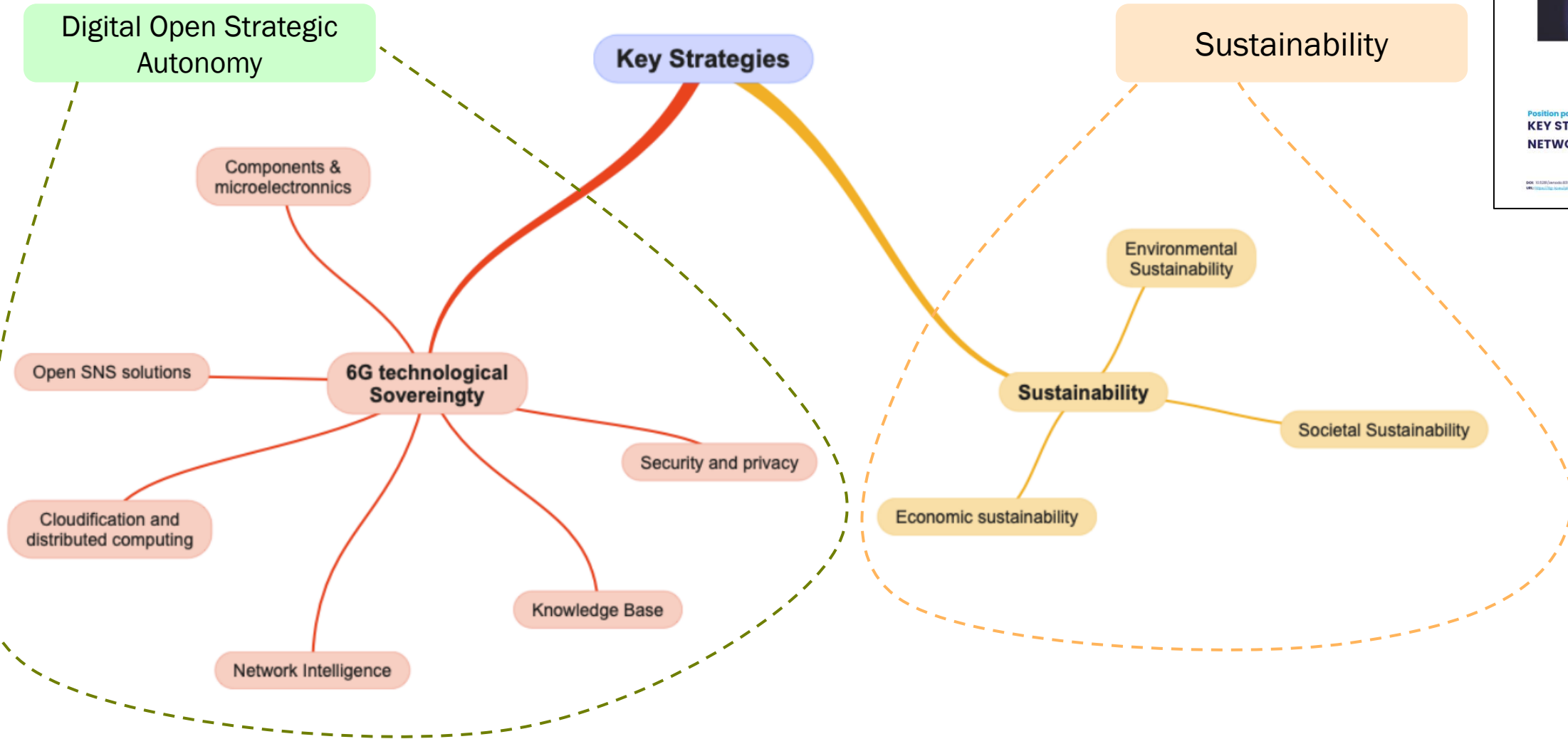
Applications, services & data



Hardware and software layers



EACH POLICY TOPIC SPLITS DOWN INTO SUBTOPICS



(source: 6G-IA)

THE WORK ON LINKING 6G DESIGN PRINCIPLES TO THE HIGHER-LEVEL UN SUSTAINABLE DEVELOPMENT GOALS IS ONGOING

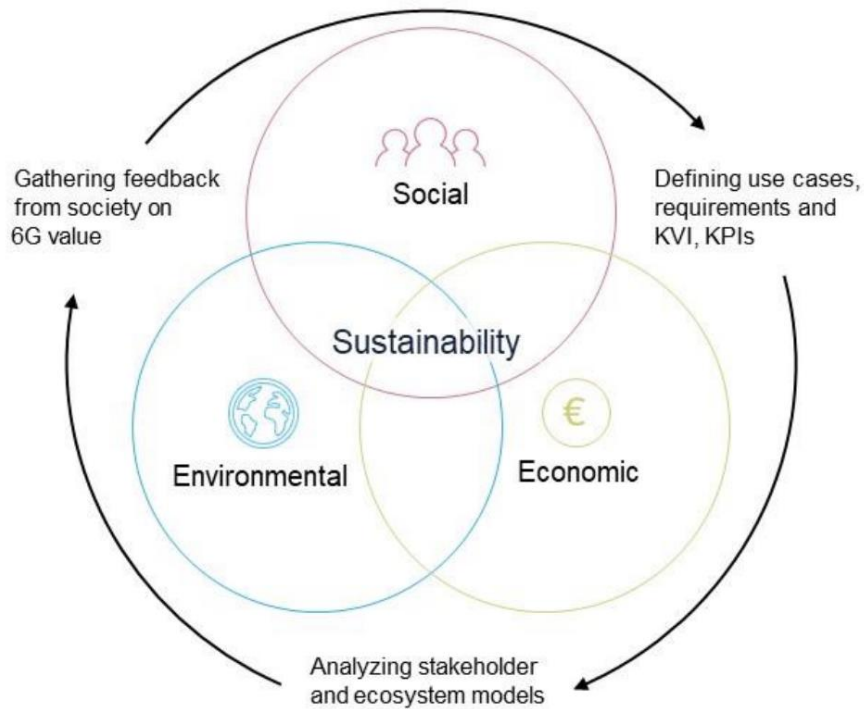


Figure 1-1: The three Pillars of Sustainability

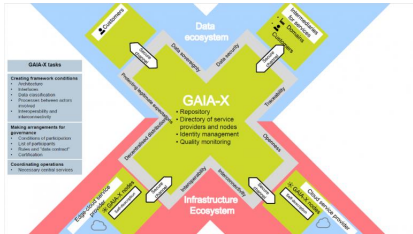
(source: Hexa-X-II)



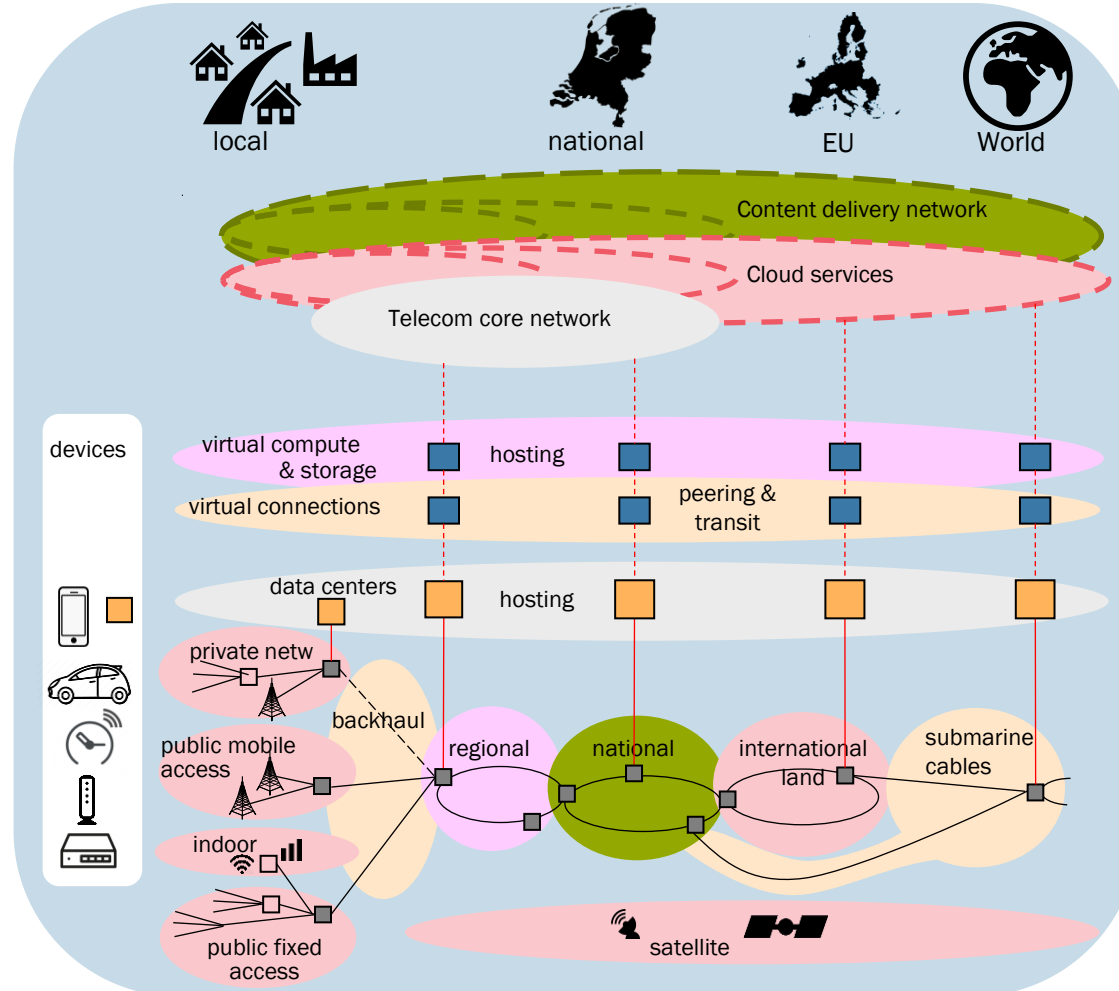
STRATEGIC AUTONOMY IS DISCUSSED FOR MANY TOPICS IN THE DIGITAL INFRASTRUCTURE

Applications, services & data

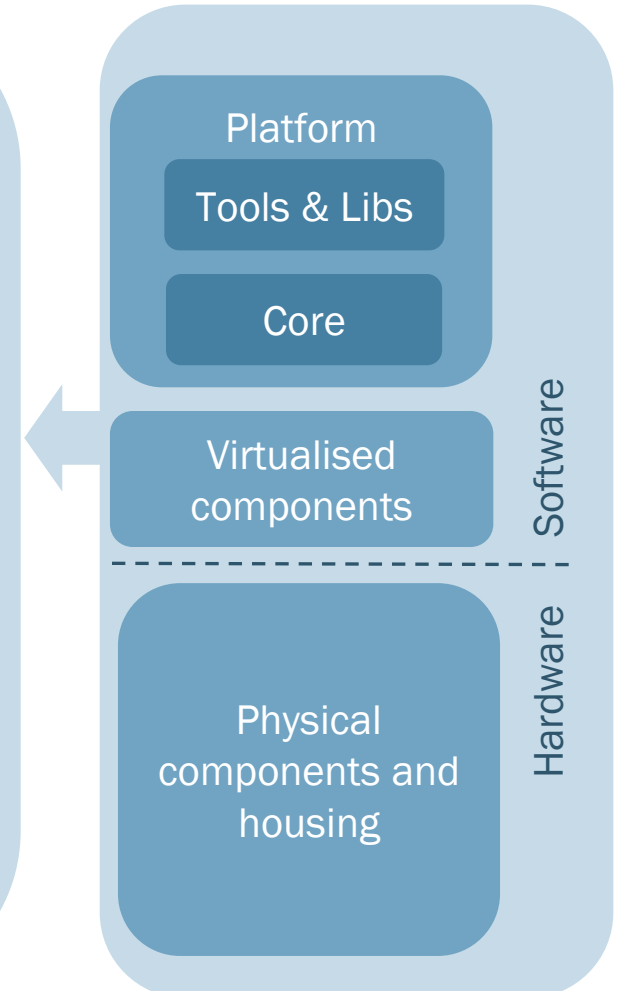
Examples



5G 6G



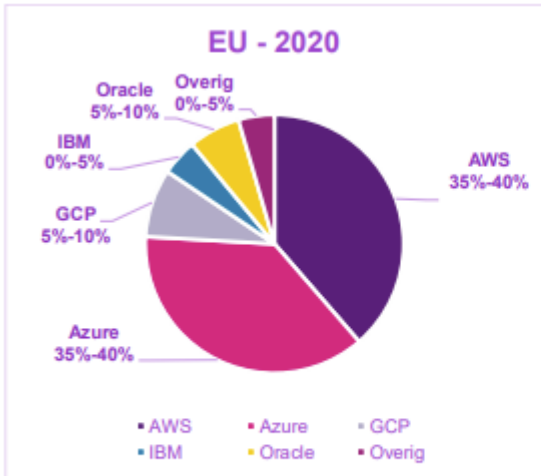
Geographic overview of digital infrastructure



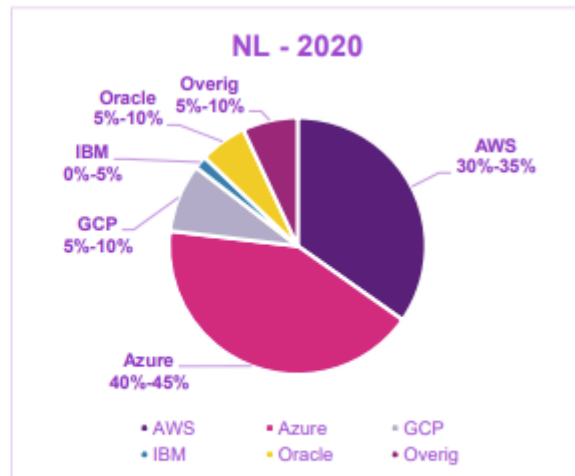
Hardware and software layers



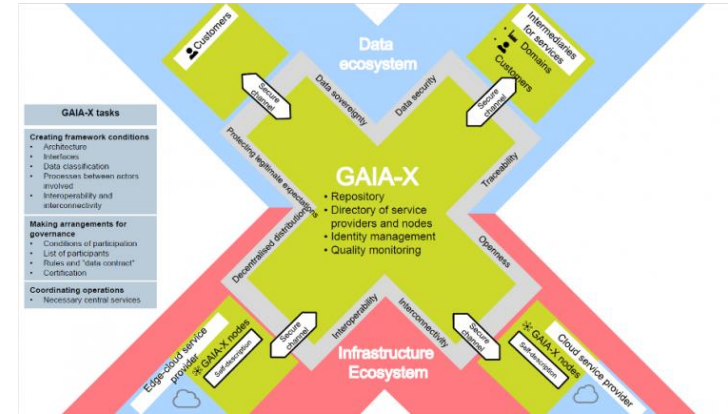
EU FOCUSES ON INNOVATION AND REGULATION FOR CLOUD & DATA



Figuur 10: Marktaandeel EU (Bron: data verzameld door ACM).



Figuur 11: Marktaandeel Nederland (Bron: data verzameld door ACM).



IPCEI on Next Generation Cloud Infrastructure and Services

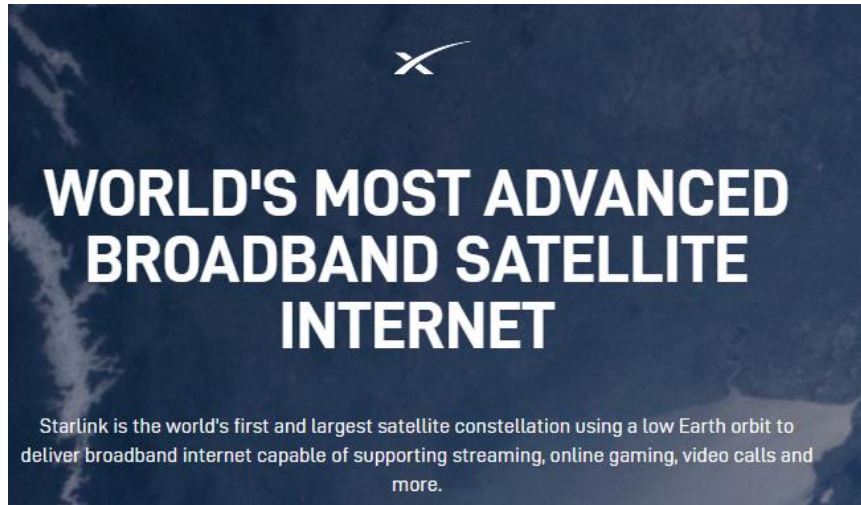
12 EU Member States join forces to create a common cloud and edge infrastructure and its associated smart services for the future



Data Act: Commission proposes measures for a fair and innovative data economy

The Digital Services Act: ensuring a safe and accountable online environment

THE NEW SPACE RACE IS ABOUT LEO CONSTELLATIONS



Starlink logo

WORLD'S MOST ADVANCED BROADBAND SATELLITE INTERNET

Starlink is the world's first and largest satellite constellation using a low Earth orbit to deliver broadband internet capable of supporting streaming, online gaming, video calls and more.



Everything you need to know
about Project Kuiper, Amazon's
satellite broadband network



PROGRAMME OF THE EUROPEAN UNION

#EUSpace

IRIS²

INFRASTRUCTURE FOR
RESILIENCE,
INTERCONNECTIVITY
AND SECURITY
BY SATELLITE



FIRST EXPERIENCES WITH DIGITAL AUTONOMY WERE IN MOBILE NETWORKING

B B C

NEWS

Huawei: Which countries are blocking its 5G technology?

🕒 18 May 2019



EU TOOLBOX FOR 5G SECURITY

A SET OF ROBUST AND COMPREHENSIVE MEASURES FOR AN EU COORDINATED APPROACH TO SECURE 5G NETWORKS



6G DEVELOPMENT IS TURNING INTO A GLOBAL RACE FOR TECHNOLOGY, MARKET AND STRATEGIC DOMINANCE



US Funding 2.5BE



EU Funding: 2BE

900M€ EU funding and
900M€ Industry contribution



Funding Unknown



700M€



500M€



290M€



Incl. various research hubs,
industry projects (incl. 6G-
ANNA), 6G platform



› 6G AIMS AT A NUMBER OF NEW GOALS ... AND OF COURSE IMPROVES ON 5G

Main 6G Goals

Connecting intelligence

Programmable

Determinism

Integrated sensing

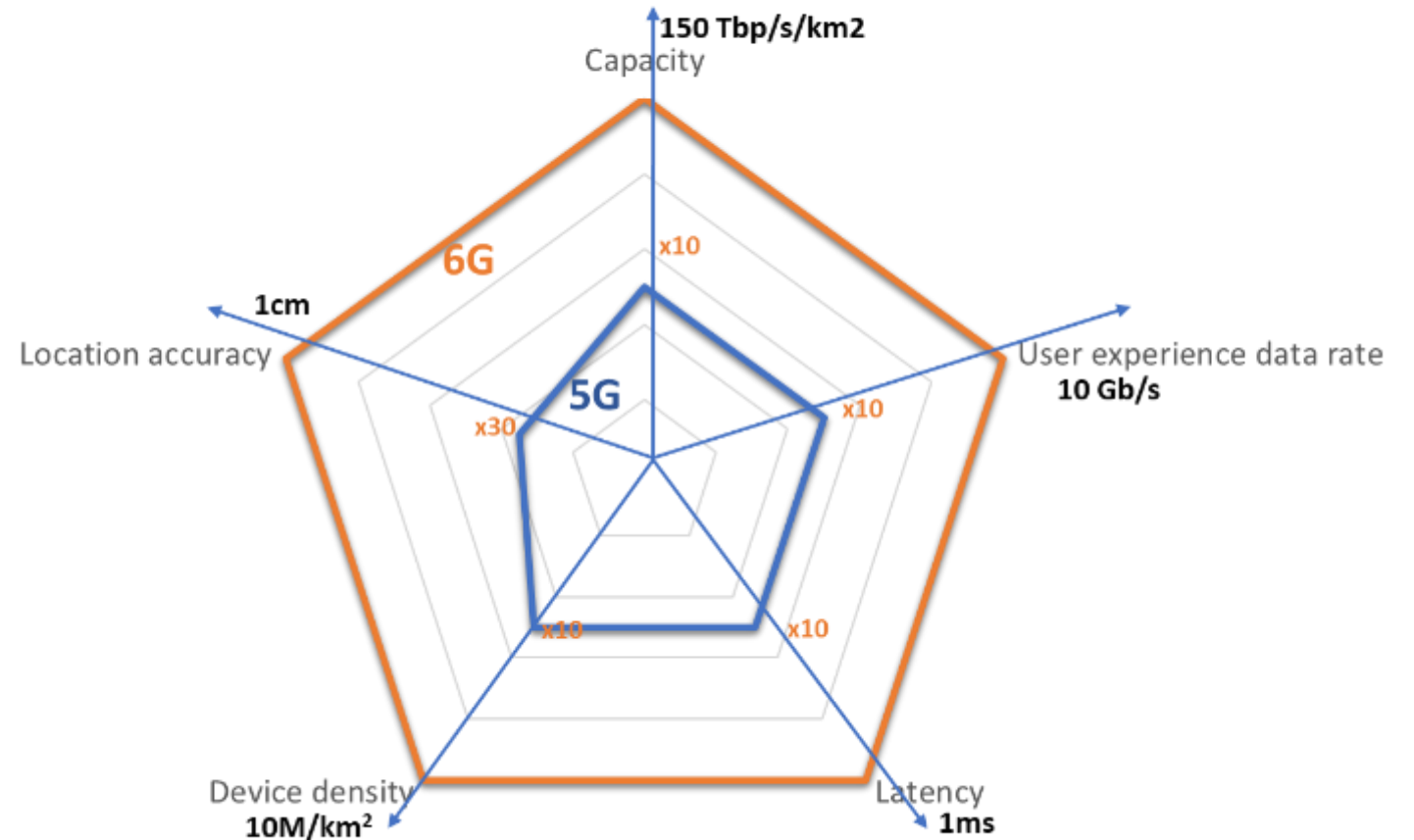
Sustainable

Trustworthiness

Affordable and Scalable

(Source: 5G-IA)

Improving 5G



THE FNS PROGRAMME AIMS AT BUILDING OUT EXISTING DUTCH STRENGTHS AND ALSO DEVELOPING NEW ONES (1)

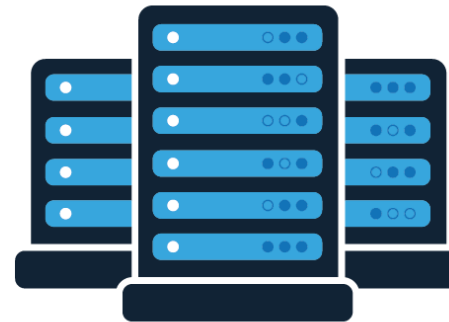
1.

Strong in semicon and radio components



2.

Multi-decade tradition of high-quality research in Computer Systems and Networking

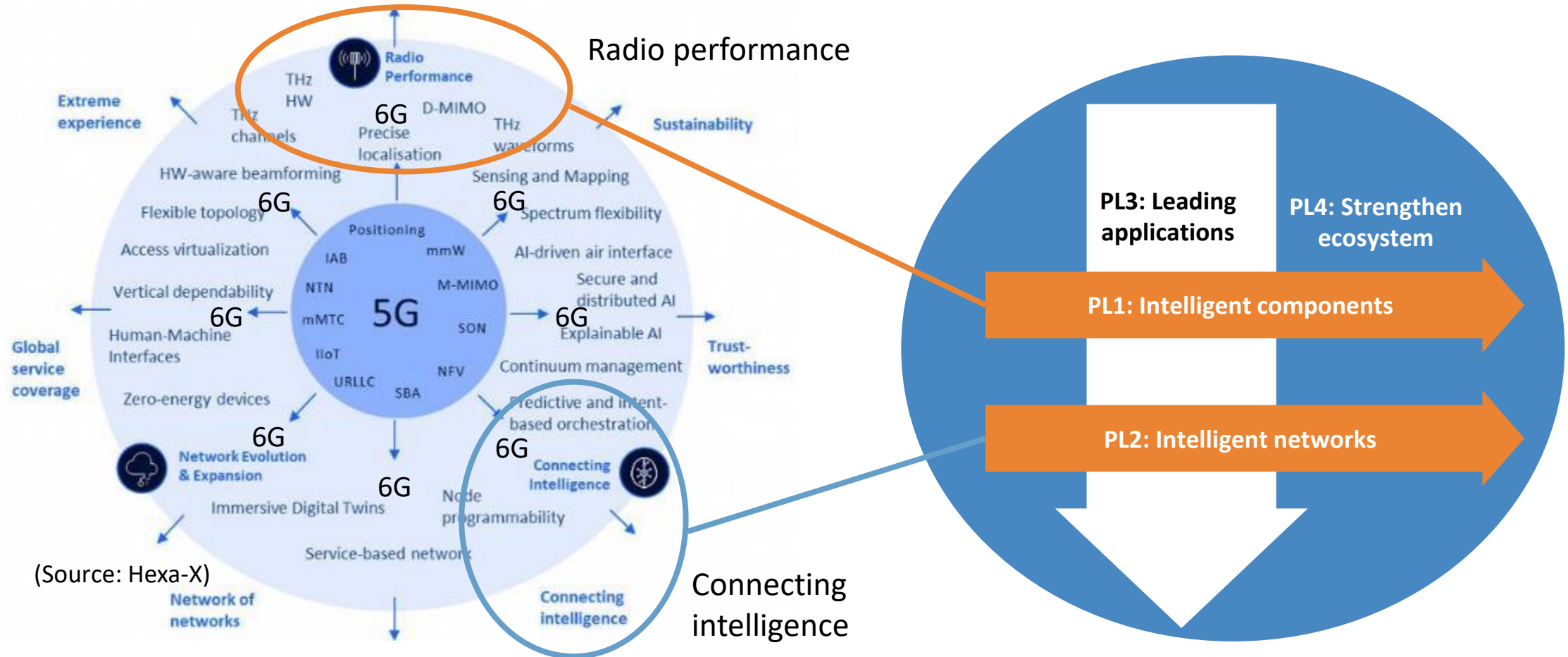


3.

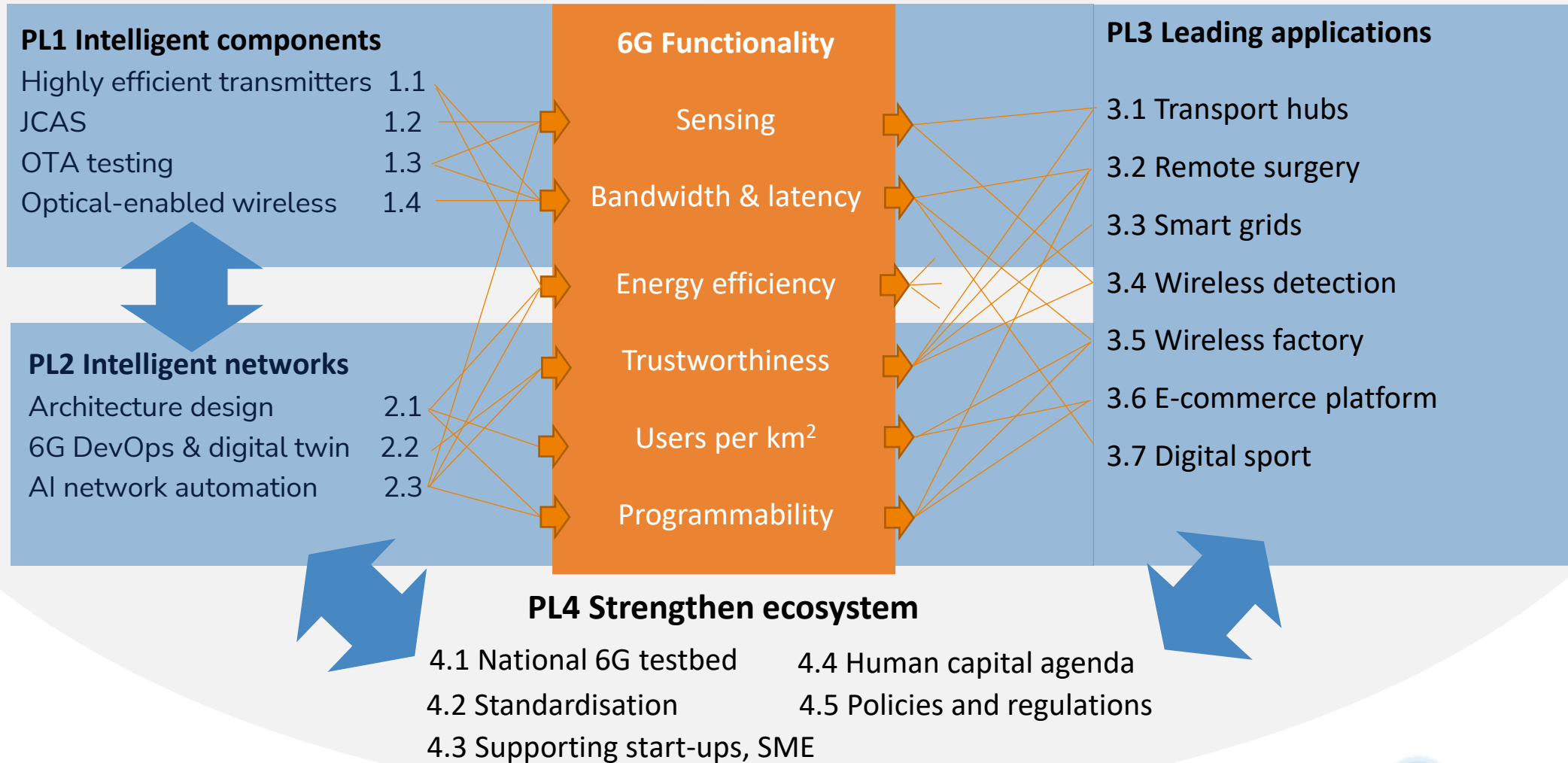
Strong in application of new digital technology in business and society



THE FNS PROGRAMME AIMS AT BUILDING OUT EXISTING DUTCH STRENGTHS AND ALSO DEVELOPING NEW ONES (2)



› FNS PROGRAM OVERVIEW



60 PARTNERS FROM ALL ACROSS THE VALUE CHAIN

PL1: Intelligent components

PL2: Intelligent networks

PL4: Strengthen Ecosystem

PL3: Leading applications

- Phase 1 (91 Meuro, 2024–2026)
- Phase 2 (224 Meuro, 2026–2030)
- Detailed plan, Letters of Commitment and budget allocation
- Open calls in period 2026-2027 for new technology and application R&D

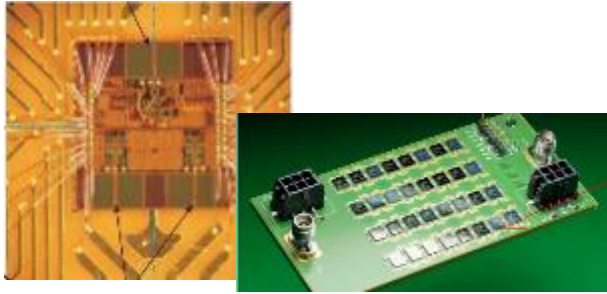


Future Network Services Partner meeting - 3 April 2023 - Delft



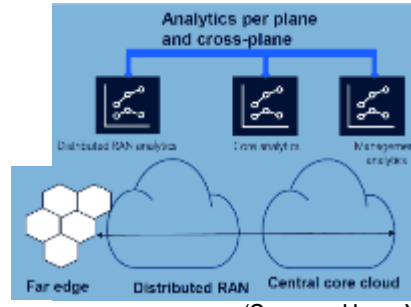
› JCAS IS AN EXAMPLE WHERE THE ECOSYSTEM APPROACH IS KEY

PL1: intelligent components



Software antennas with JCAS subsystem

PL2: intelligent networks



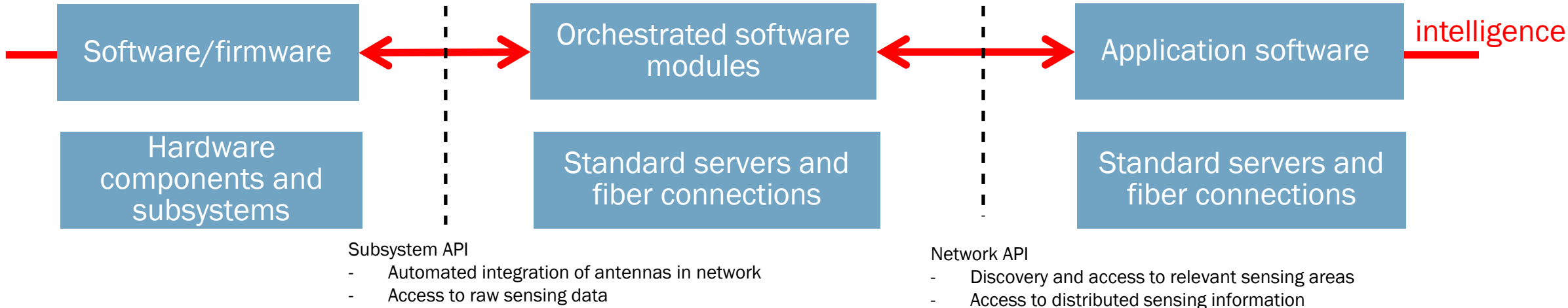
(Source: Hexa-X)

Programmable network delivers generic and sector specific JCAS data

PL3: leading applications



Safe crossing application based on JCAS



FNS BRINGS CHANGE THROUGH THREE IMPACT PATHWAYS

Economic pathway

- Leading international position in intellectual property and production of **intelligent 6G antenna technology** and **semiconductor components**
- Leading knowledge and industrial position in **new algorithms, methods, and software modules** for intelligent networks
- Benefits for **large companies and SMEs** from the new capabilities of 6G networks in an early stage; new activities through **start-ups and scale-ups**



earning power

Strategic pathway

- **Reduced societal vulnerabilities** for **risky strategic dependencies** in the 6G supply chain and for **human and technical error**



digital autonomy and reliability

Sustainability pathway

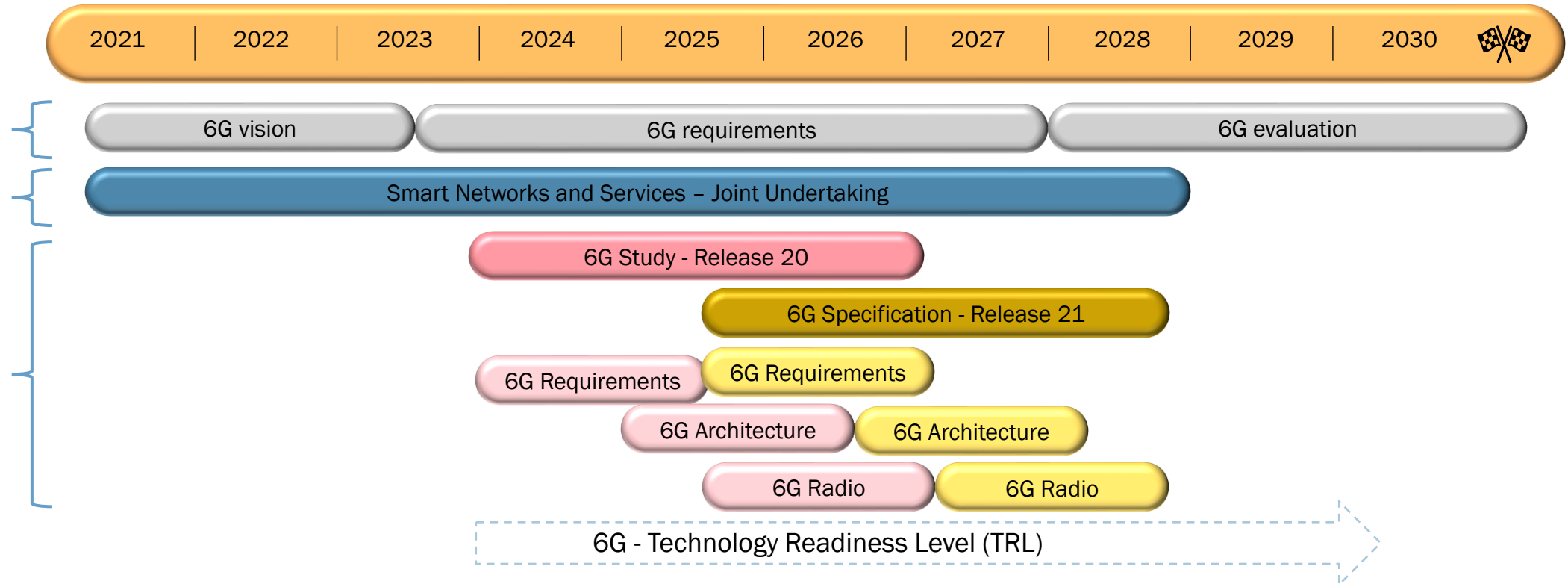
- **Minimized energy consumption** of 6G networks
- Optimal contribution of 6G networks to the **sustainability transitions** in the energy, logistics, and high-tech industry sectors



sustainability



THE TIMING IS RIGHT TO HAVE IMPACT IN STANDARDISATION – ALSO THROUGH EUROPEAN PROJECTS



Trustworthiness

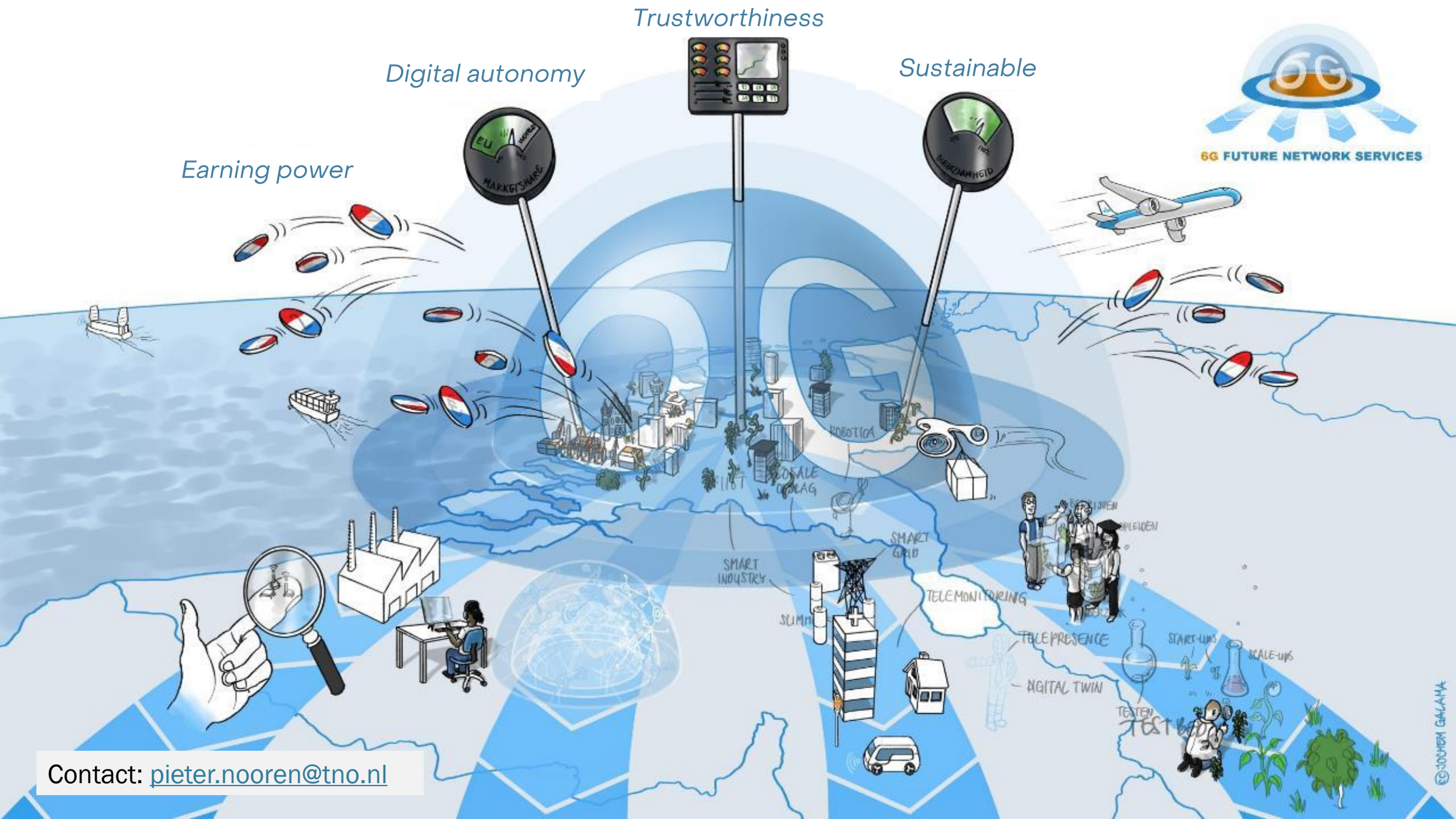
Digital autonomy

Sustainable

Earning power



6G FUTURE NETWORK SERVICES



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