ECP Jaarfestival

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SIDN fonds

TNO innovation for life

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Ministerie van Binnenlandse Zaken en Koninkrijksrelaties

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DIGITAAL DOORDACHT

NL IGF – Nederlands Internet Governance Forum

Informatieveilig gedrag in de zorg

aanpak begeleidings ethiek

Coalitie Duurzame Digitalisering

DUTCH SUBSEA CABLE COALITION

FUTURE 6G NETWORK SERVICES

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Digitale soevereiniteit – hoe werkt dat rond mobiele netwerken? 65 Nederlandse partijen slaan de handen ineen voor 6G

Sprekers

Ramon Rentmeester
Senior beleidsmedewerker Digitale Economie bij Ministerie van Economische Zaken

Pieter Nooren
Principal consultant mobiele netwerken bij TNO

Rob Hoeben
Directeur Strategie
bij NXP Semiconductors

Agenda

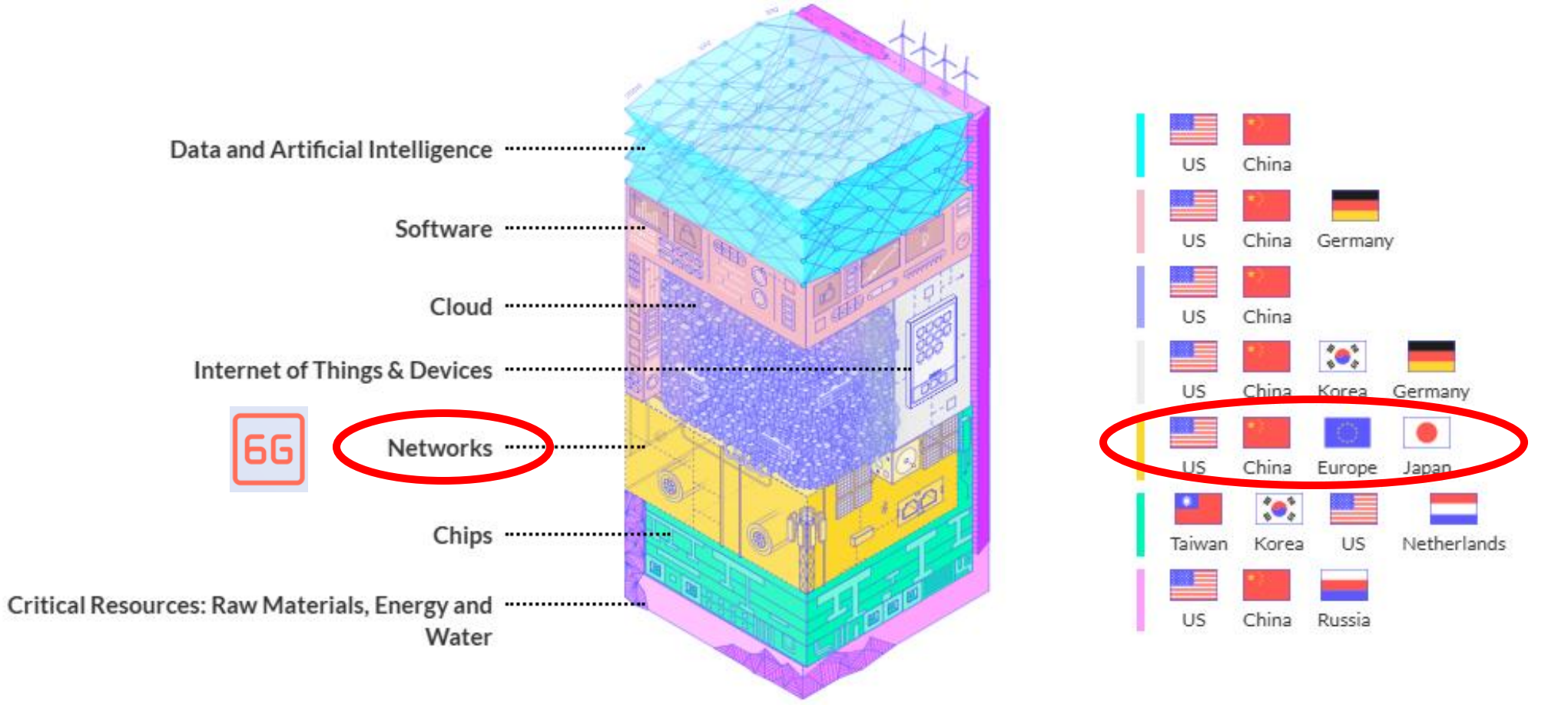
Inleiding: Het belang van digitale soevereiniteit	5 min
Overzicht: Hoe bouwt FNS met 6G mee aan een soevereine digitale stack?	15 min
Voorbeeld: Hoe zorgt FNS-partner NXP als chipsbedrijf voor meer soevereiniteit?	20 min
	Vragen 10 min

Maatschappelijk belang

- Versterken Digitale (Open Strategische) Autonomie
  - Veranderende wereldorde
  - Netwerktechnologie is een prioriteit, telecommunicatie is vitaal
- Kabinet investeert o.a. in 6G-ontwikkeling via het Nationaal Groeifonds

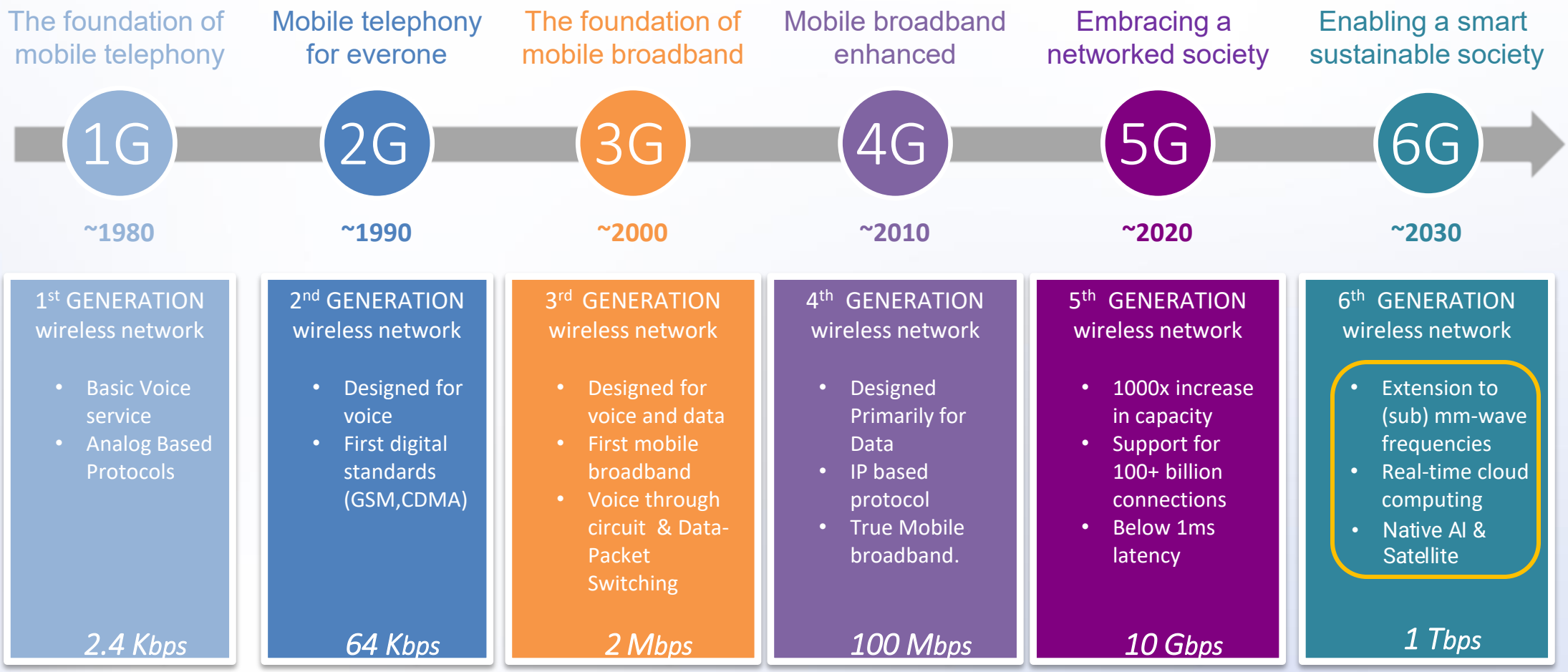
Hoe bouwt FNS met 6G mee aan een soevereine digitale stack?

Eurostack koppelt de lagen in de stack aan geopolitiek



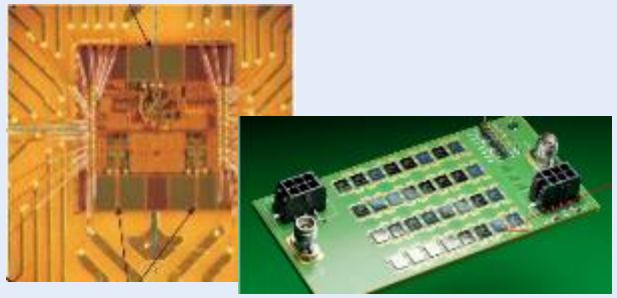
(bron: Eurostack, 2025)

De ontwikkeling van mobiele standaarden



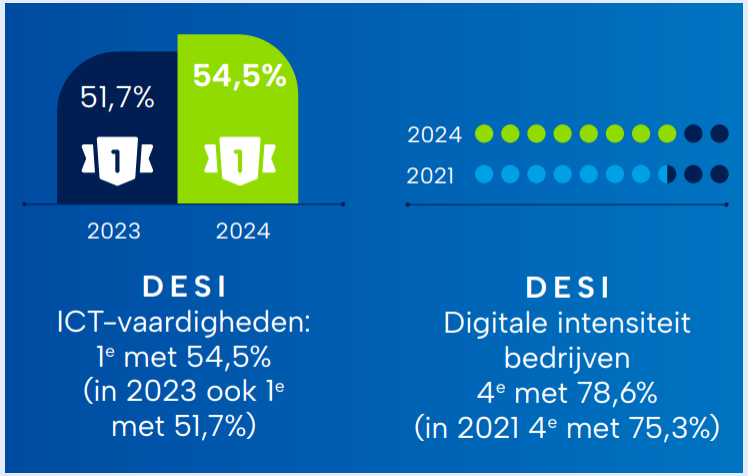
FNS bouwt voort op bestaande sterktes en ontwikkelt ook nieuwe (1)

Strong in semicon and radio components



High-quality research in Computer Systems and Networking

Strong in application of new digital technology in business and society



FNS bouwt voort op bestaande sterktes en ontwikkelt ook nieuwe (2)

Strong in semicon and radio components

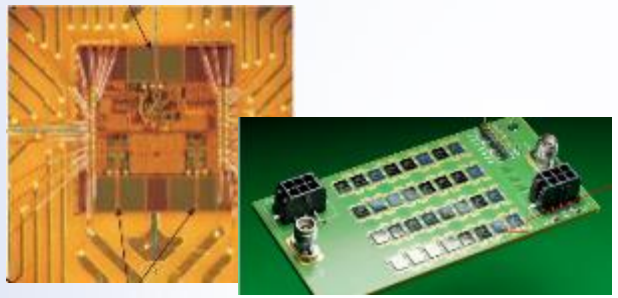
High-quality research in Computer Systems and Networking

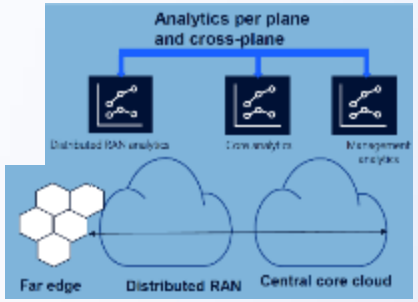
Strong in application of new digital technology in business and society

Chips & components for 6G

AI-driven 6G networks

6G applications





FNS werkt via drie 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**

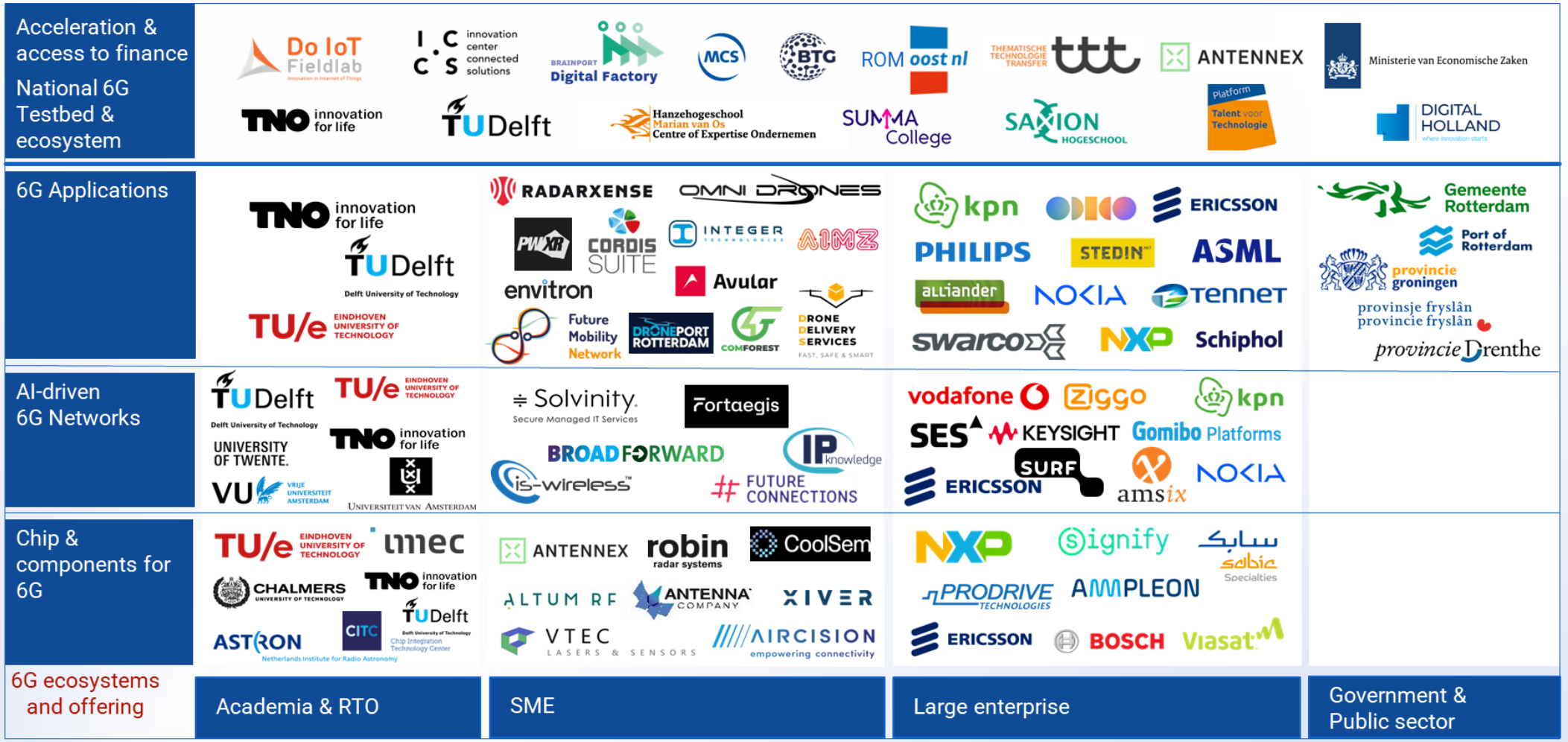
digital autonomy and resilience

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

Het FNS consortium bestrijkt de hele stack



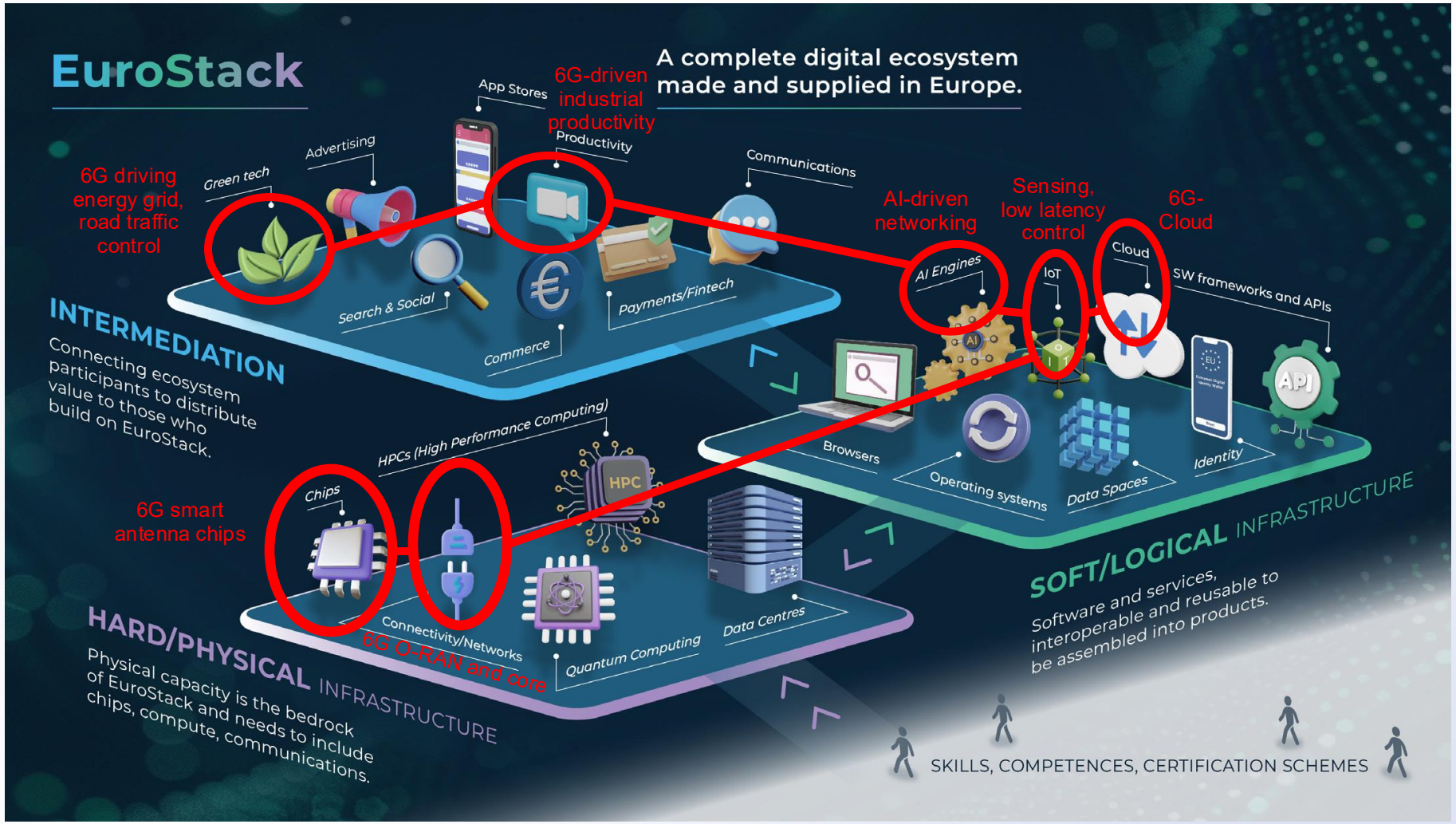
(onder voorbehoud)

- €315 miljoen National 6G program 2024-2030
  - €203 miljoen subsidie Nationaal Groeifonds
  - €112 miljoen investering door 65 partners

- Nu in fase 1, 2024-2026
- Afronden plan voor fase 2, 2026-2030, inclusief open calls

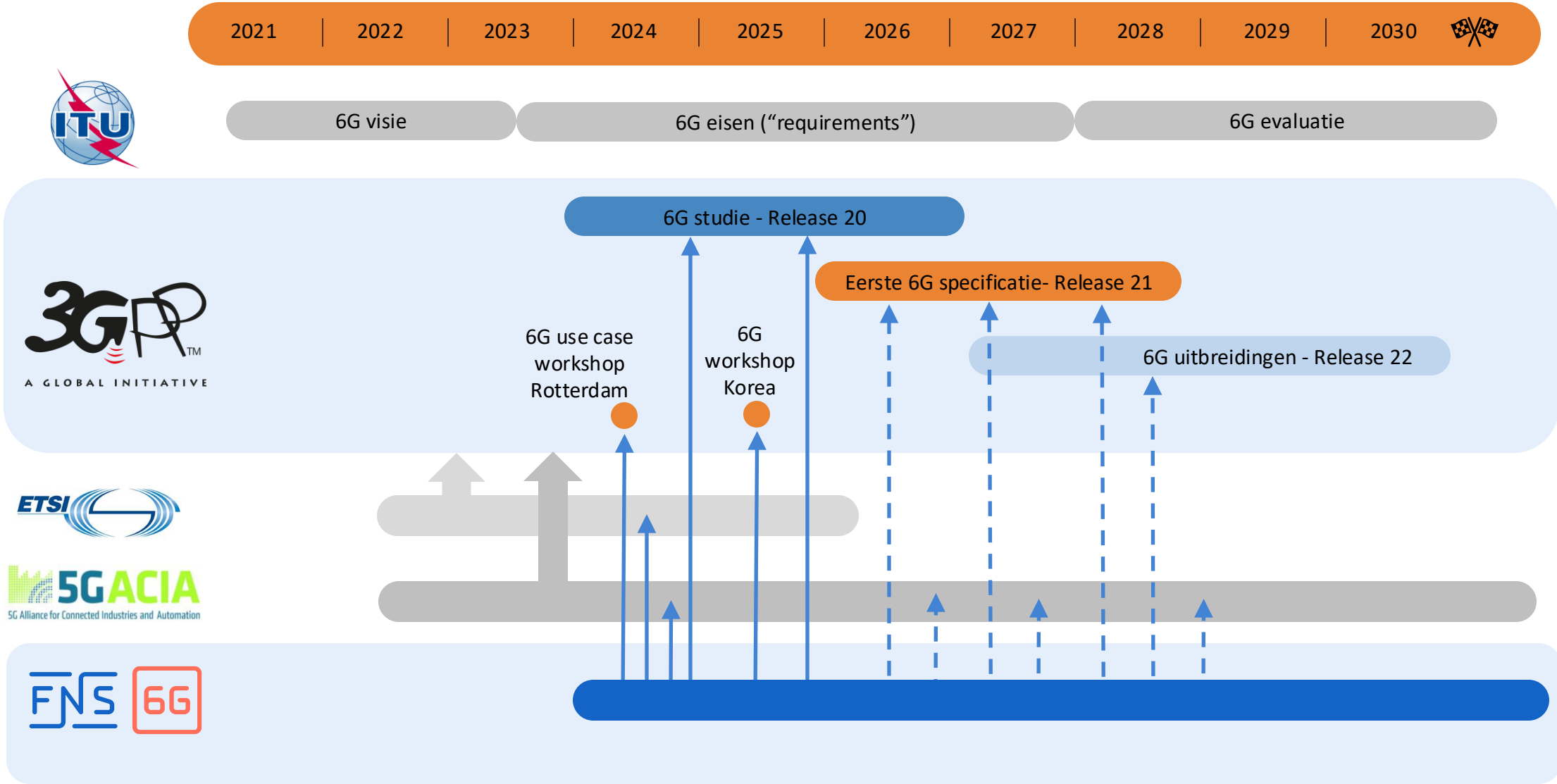
FNS 6G

De FNS innovaties versterken de EuroStack: van chips via AI-driven networking naar de toepassingen

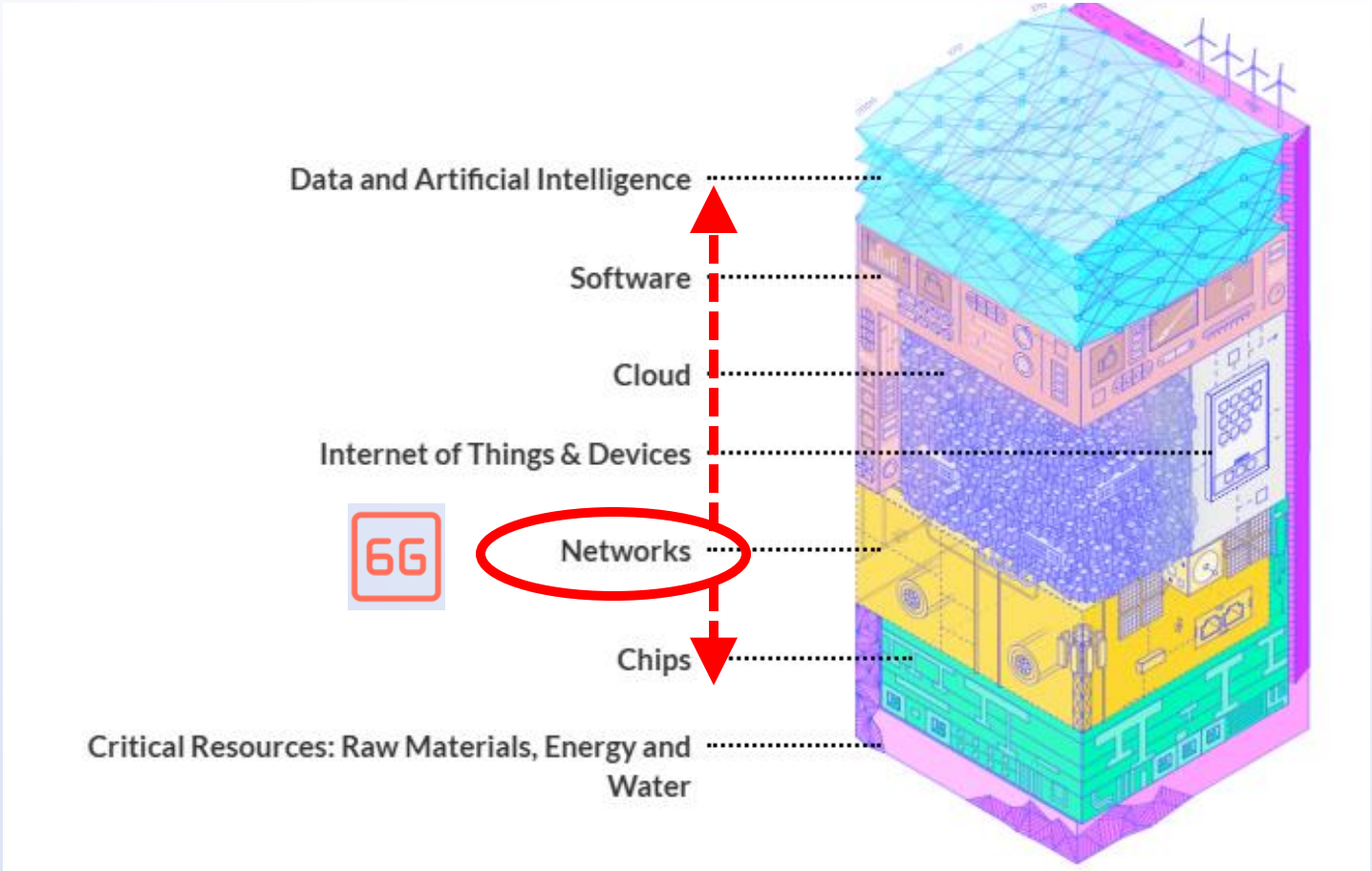


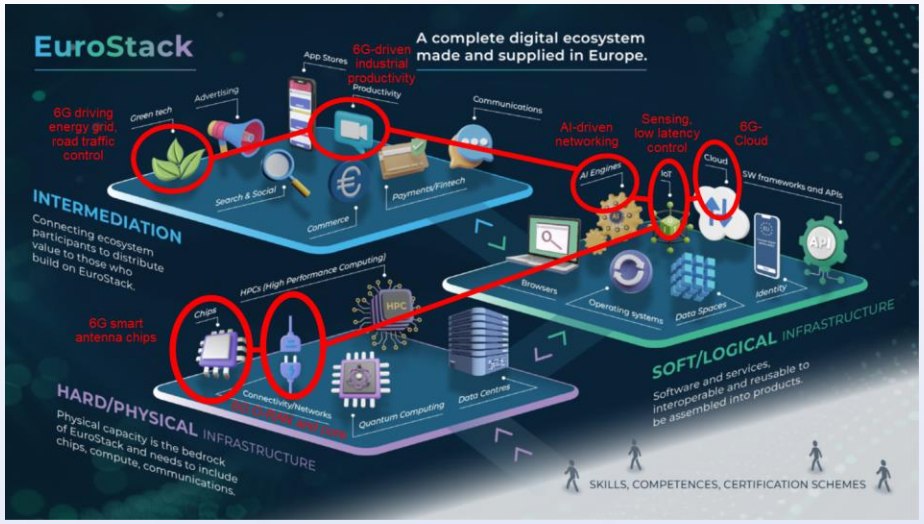
(Bron: EuroStack, 2025)

FNS innoveert in de wereldwijde 6G markt



Maak vanuit 6G in de Networks laag de verbinding met de andere lagen van chips tot toepassingen





FNS werkt aan digitale soevereiniteit via relevante posities in ketens en via interoperabiliteit

Digitale soevereiniteit

Relevante posities in 6G ketens

- Innovaties uit combinatie kennis, marktposities en standaardisatie
- Beperk afhankelijkheden van ander regio's
- Relevante posities leveren geopolitiek wisselgeld
- Verdienvermogen en soevereiniteit lopen grotendeels parallel

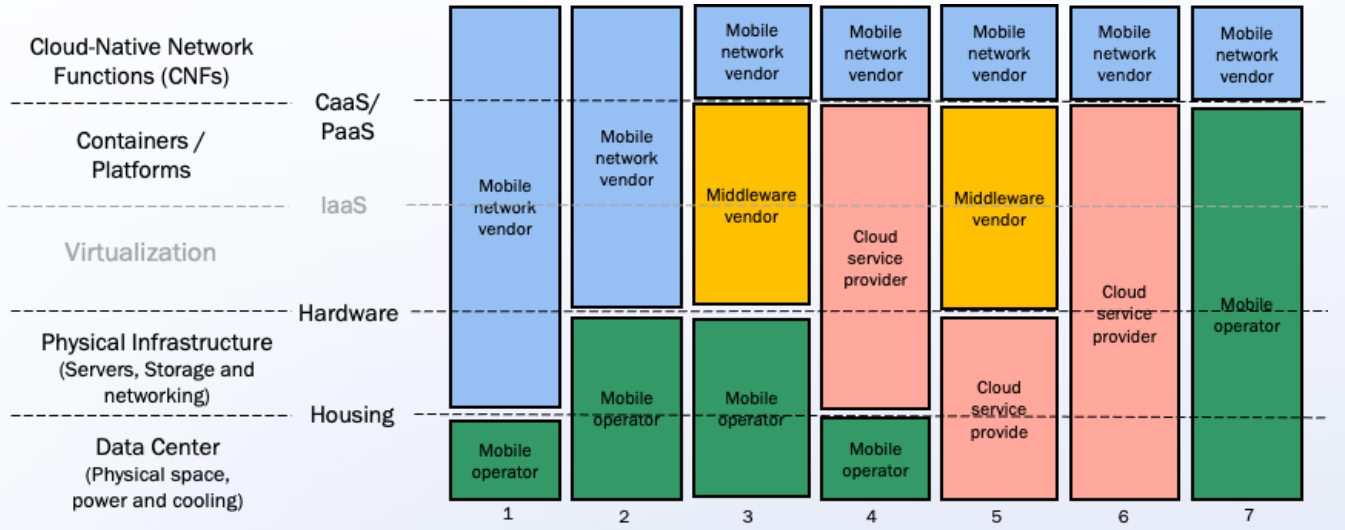
Interoperabiliteit rond andere posities

- Maak afhankelijkheden hanteerbaar door openheid en alternatieve opties
  - Standaarden in 3GPP
  - Open source
- Openheid biedt kansen op verdienvermogen door nieuwe toetreders
- Business case voor individuele bedrijven kan lastig zijn

Meer weten over FNS en digitale soevereiniteit?

White paper binnenkort op
https://futurenetworkservices.nl/publicaties

Draft – work in progress



White paper in december
Deployment models for telco cloud – technology and policy perspective

Hoe zorgt FNS-partner NXP als chipsbedrijf voor meer soevereiniteit?

NXP semiconductors

A position of strength to better serve our 26,000+ customers

NXP Semiconductors N.V. (NXP) is a public Dutch company with headquarters in Eindhoven, Netherlands, and locations throughout the globe.

NXP has over 34,200 dedicated team members united by a passion to build solutions that enhance the capabilities of people, organizations and society at large.

60+ year
history of experience and expertise

9,500
patent families

34,200+
talented team

~12,000
R&D members

Present in
30+ countries

$13.28B
annual revenue[1]

[1] Posted revenue for 2022 – Please refer to the Financial Information page of the Investor Relations section of our website at www.nxp.com/investor for additional information

A smarter world starts with NXP

We design purpose-built, rigorously tested technologies that enable devices to sense, think, connect and act intelligently to improve people's daily lives.

Automotive

Industrial & IoT

Mobile

Smart Home

Smart City

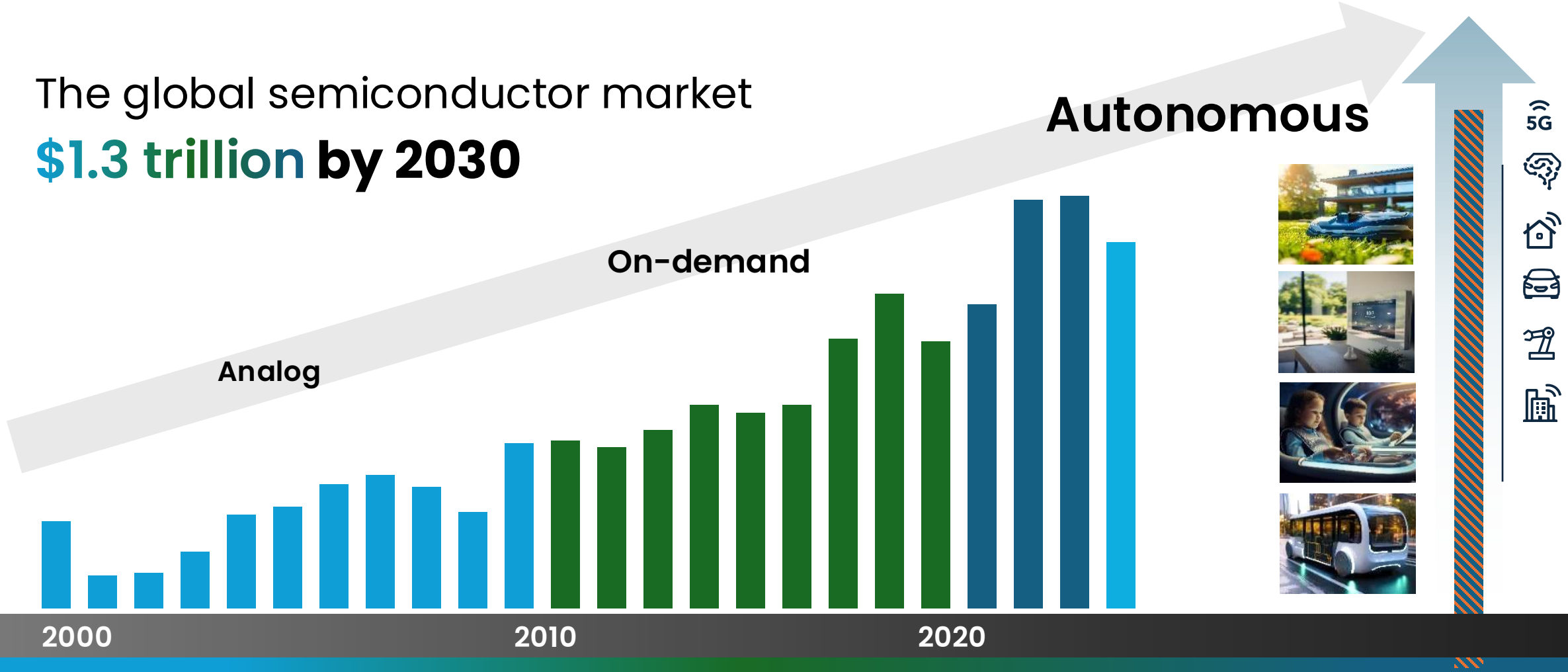
Communication Infrastructure

NXP NL – approx. 2,750 employees

> 60 nationalities

The global semiconductor market

$1.3 trillion by 2030



Laptops
Desktops
Mobiles
Game consoles
Home audio & video

Smartphones
Tablets
Data-center servers

Intelligent Edge

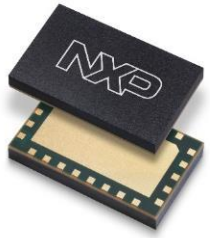
Cloud & Edge AI
Smart connected devices
Smart factories and homes
Smart connected cars

Notes and sources

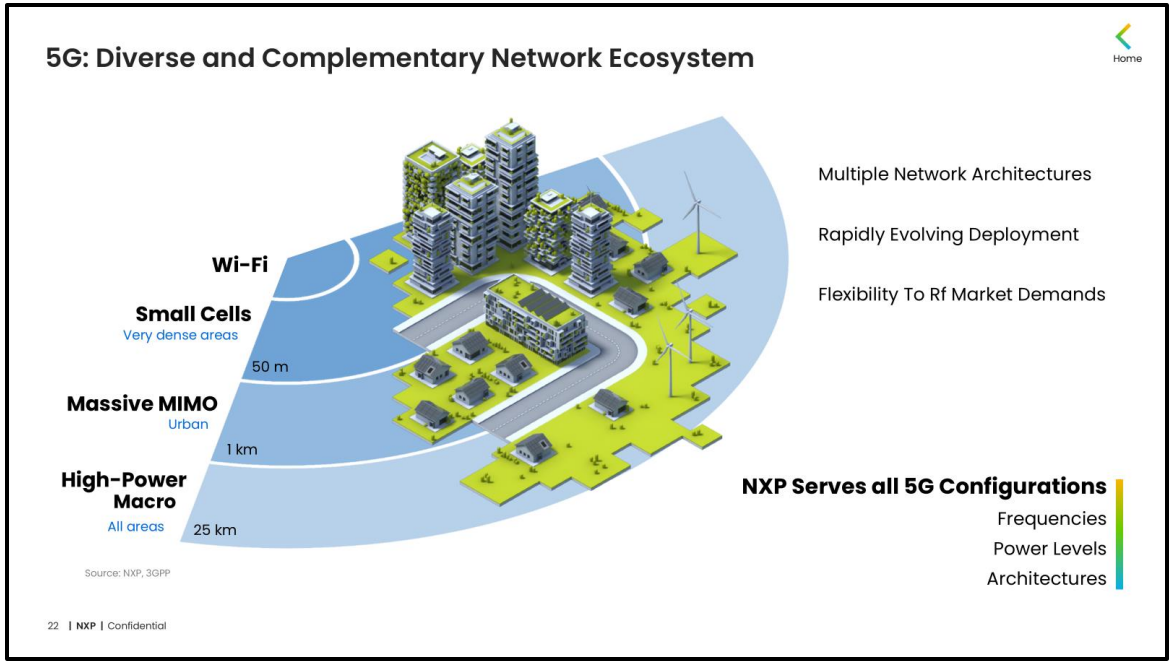
NXP in Radio Power

5G Infrastructure

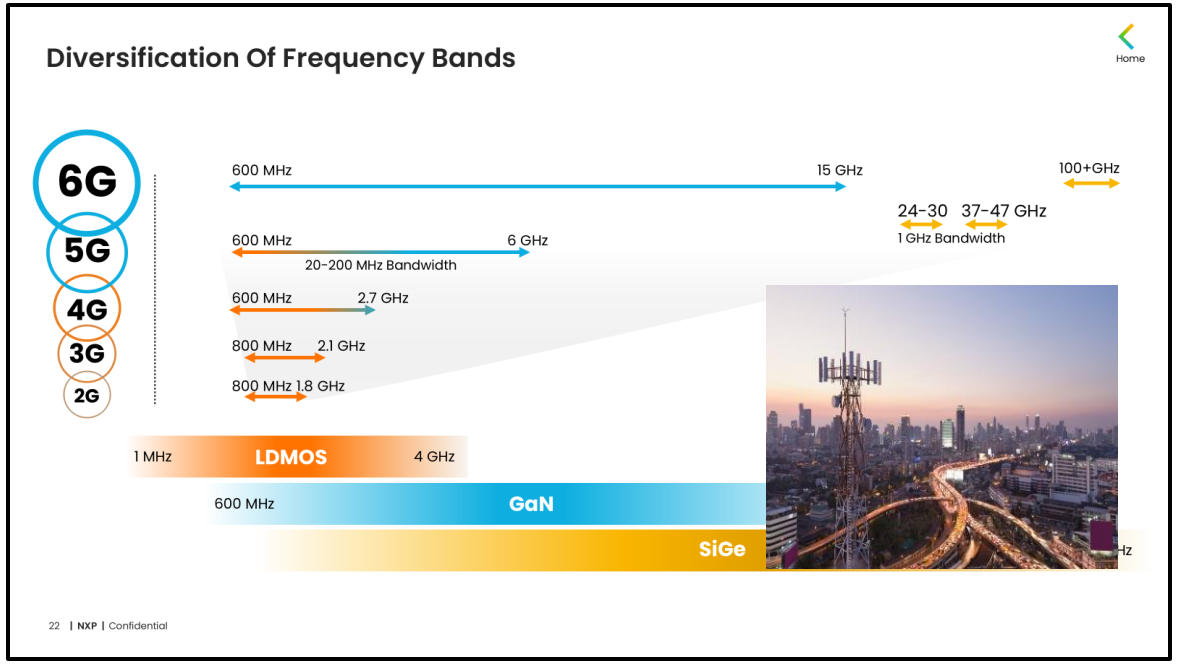
End-to-end solutions for diverse networks and architectures offering full lineups of GaN, LDMOS and SiGe discrete transistors, ICs and multi-chip modules



5G Networks



New Frequency Bands



Home

GaN mMIMO Solutions

Multiple mMIMO device families to support diverse radio configurations, from flexibility to advanced integration

GaN 4.5 Discretes

GaN 5 Discretes

Flexibility

Hybrid LDMOS + GaN Modules

Top-Side Cooling

GaN Modules with controller (SG family)

Software Defined PA (Green MIMO)

Integration

Analog Front-End

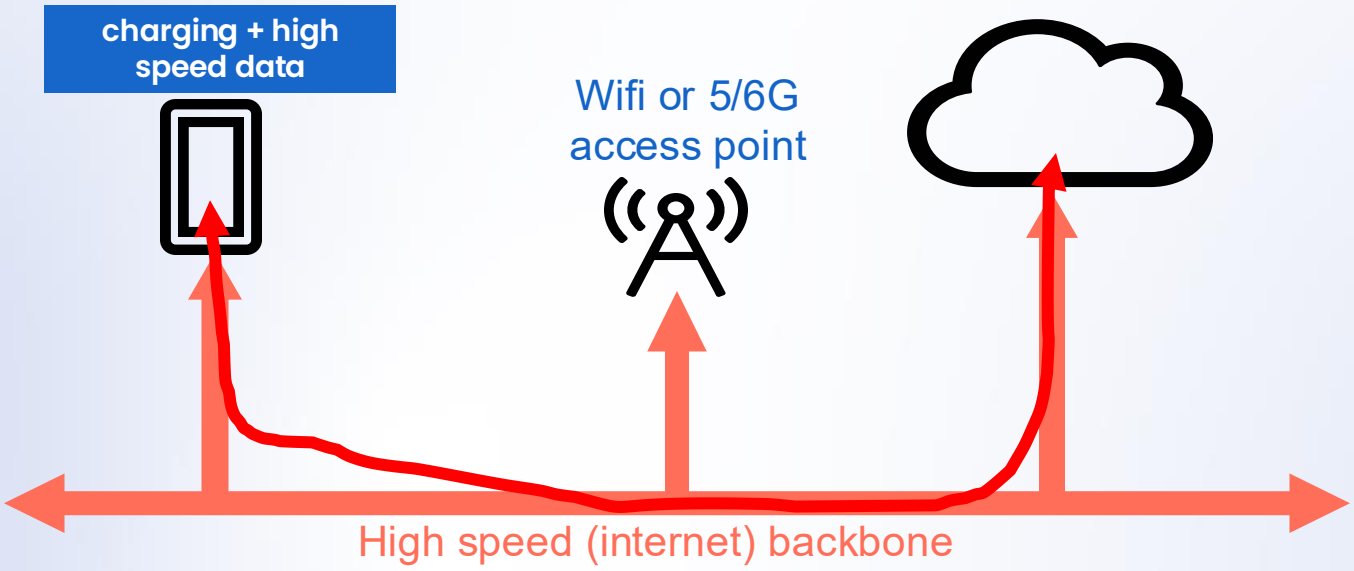
GaN will be a key enabling technology for 6G

FROM CONNECTORS >>> TO WIRELESS

… Unprecedented industrial freedom

… High speed data transfer while charging.

… Targets to support offloading wireless networks



High Bandwidth
UP TO 11GBPS
FULL DUPEX
SUPPORTS AGGREGATION

Low Latency
FUNCTIONAL DOWN TO BER 1E-12

Short Range
CONNECTION FOR NEAR FIELD COMMUNICATION (<5cm)

Low Energy / bit
5-6 TIMES LOWER COMPARED TO WIFI

Next Generation
Increase data rate to >80Gbit/s

… phone as workspace while charging
… download content in crowded area's

Replace cables in moving parts

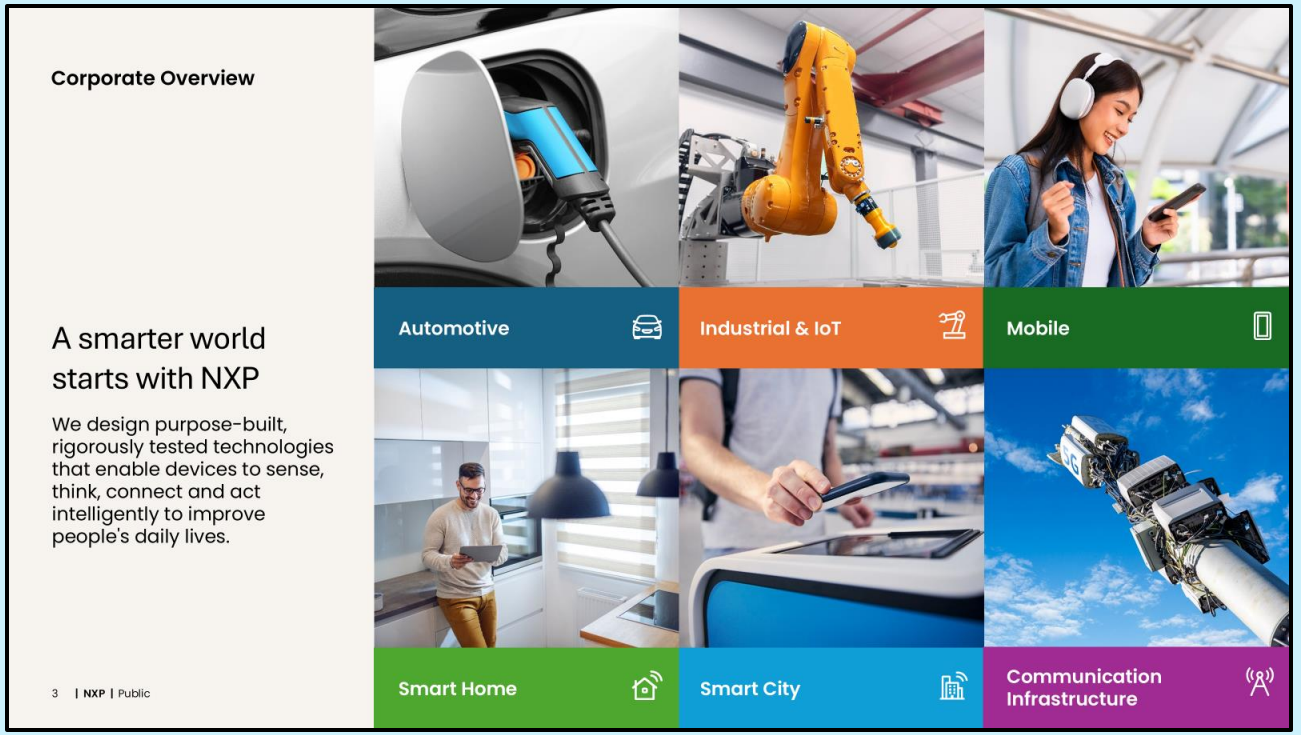
FNS 6G

NXP 6G Vision

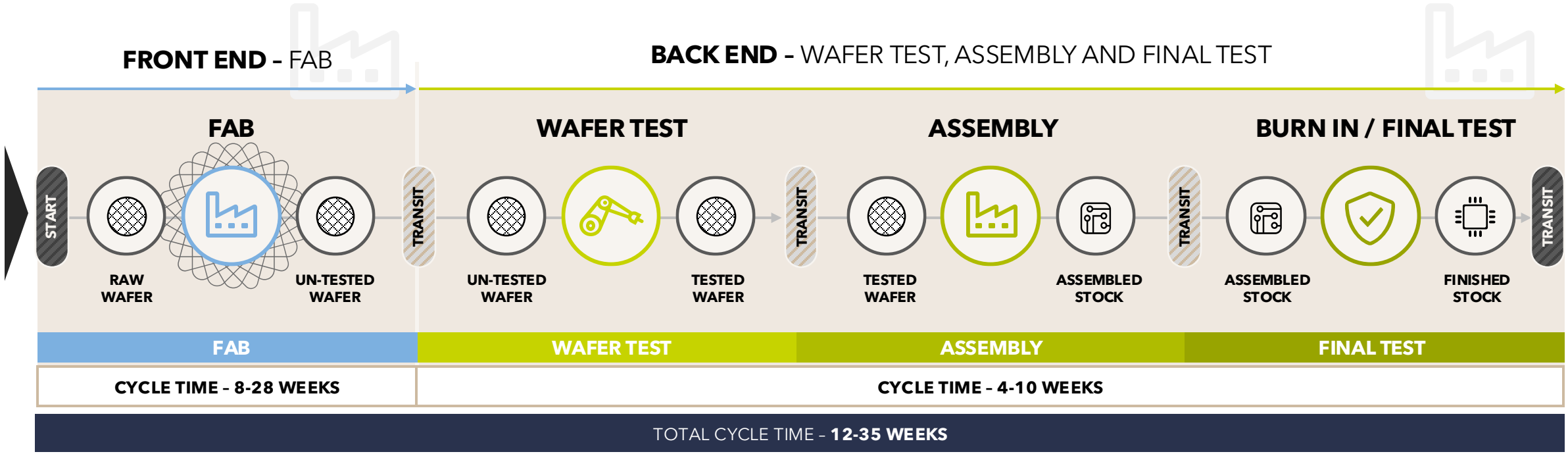
New Use Cases

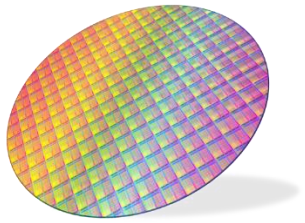
AI at the Edge
Communications
Sensing
Low Latency communications
Wi-Int into 6G framework
Robotics (swarm drones, fleet, etc.)
-> all need communication pipes
Car 2 X / V2X
Wireless Factory

NXP Opportunity



SEMICONDUCTOR MANUFACTURING PHASES – TYPICAL FLOW





Global cost optimized supply chains => Regional Resilience of supply chains

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Vragen en discussie

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Bedankt!