

ECP Jaarfestival

Bewust digitaal!

Georganiseerd in samenwerking met:

Forum
Standaardisatie

Standaard Samenwerken



SIDNfonds

TNO innovation
for life



Ministerie van Economische Zaken



Ministerie van Binnenlandse Zaken en
Koninkrijksrelaties



Ministerie van Justitie en Veiligheid

DIGITAAL
DOORDACHT



aanpak
begeleidings
ethiek



FUTURE
NETWORK
SERVICES



Welkom!

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FUTURE
NETWORK
SERVICES



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



Ramon Rentmeester

Senior beleidsmedewerker Digitale Economie bij
Ministerie van Economische Zaken en Klimaat



Pieter Nooren

Principal consultant bij TNO



Rob Hoebe

Senior Directeur Strategie
bij NXP Semiconductors

Agenda

Inleiding: Het belang van digitale soevereiniteit

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

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



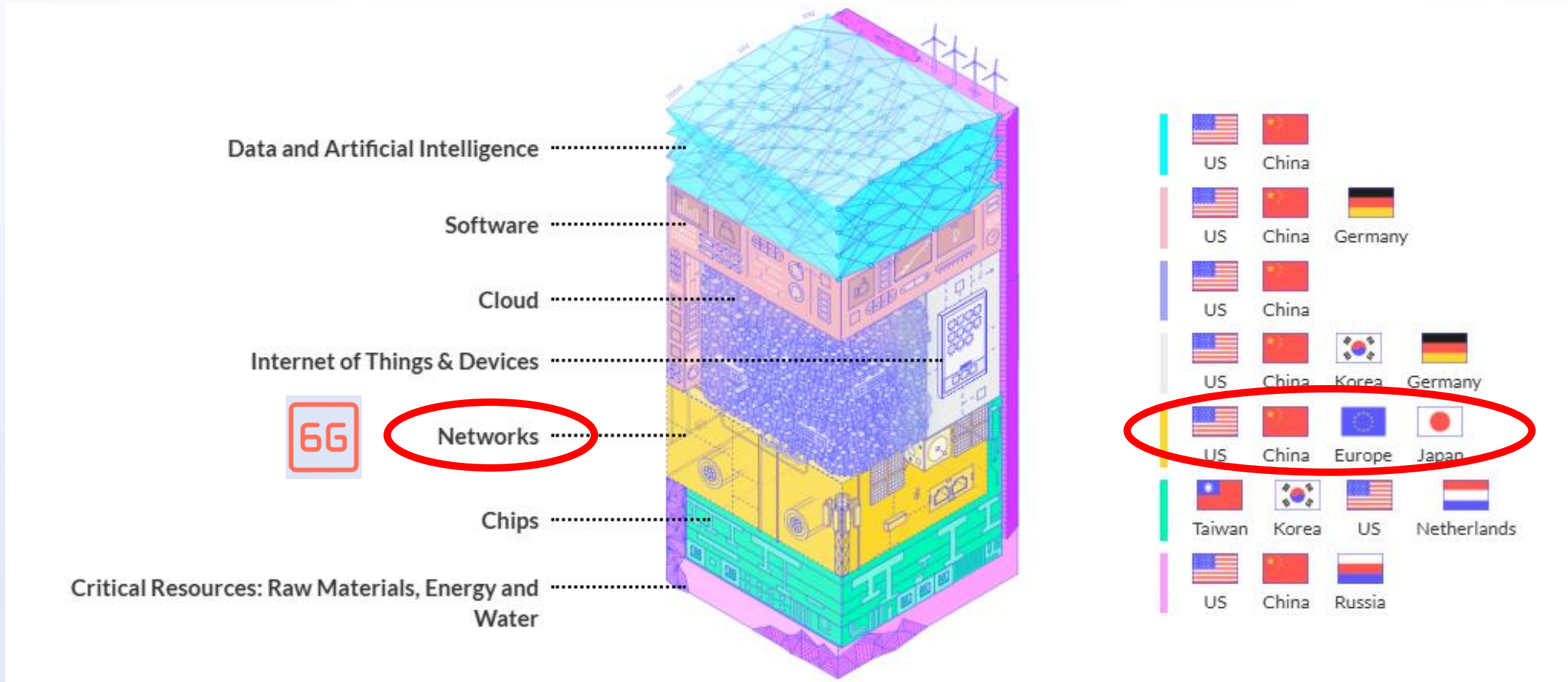
Maatschappelijk belang

- › 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



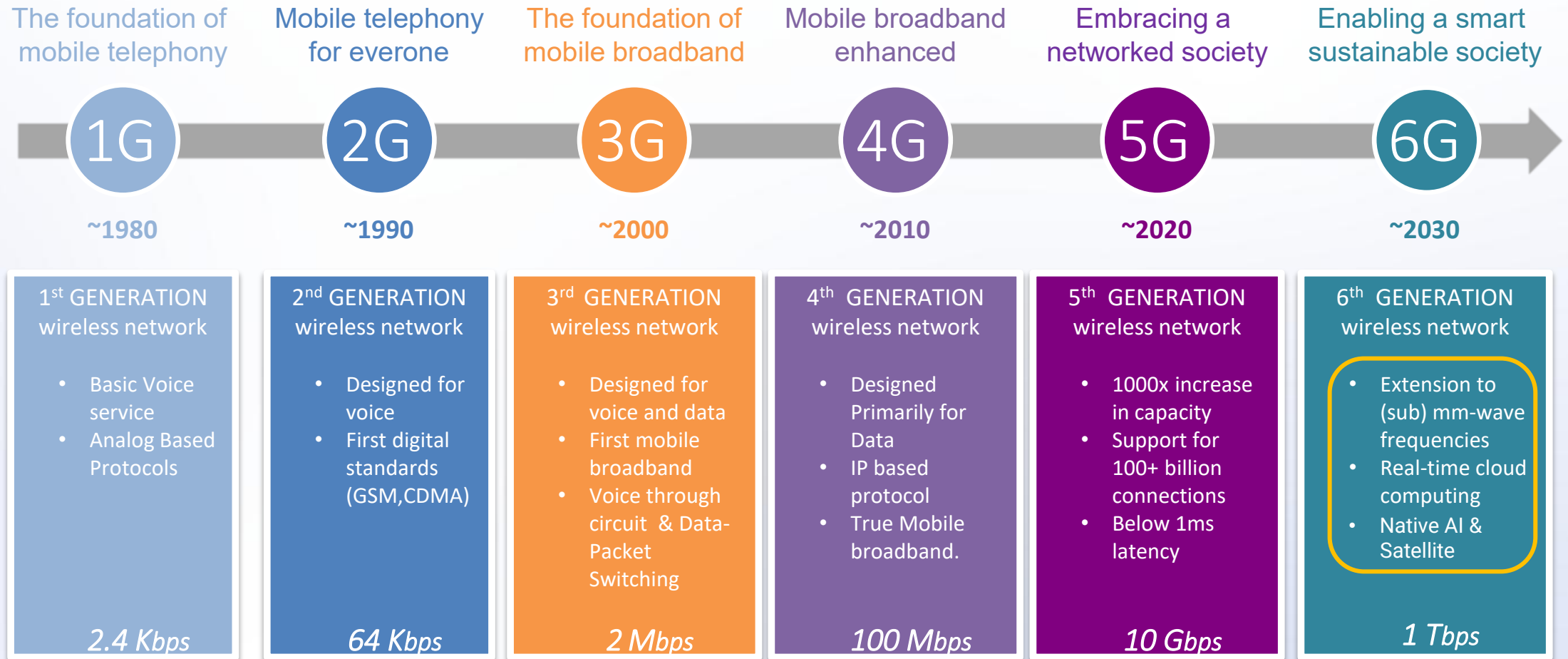
Hoe bouwt FNS met 6G mee aan een soevereine digitale stack?

Eurostack koppelt de lagen in de stack aan geopolitiek



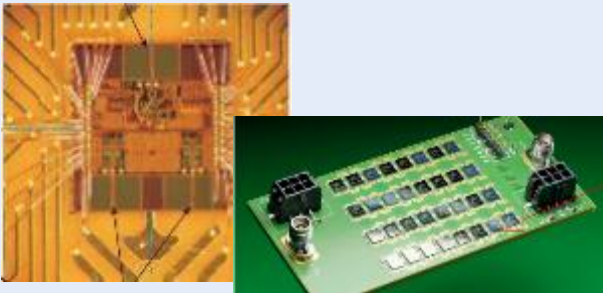
(bron: Eurostack, 2025)

De ontwikkeling van mobiele standaarden



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

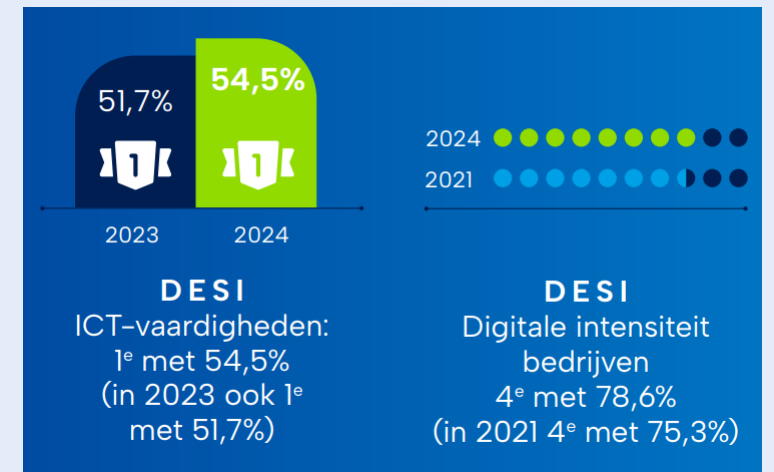
Strong in semicon
and radio components



High-quality research
in Computer Systems and
Networking



Strong in application of
new digital technology in
business and society

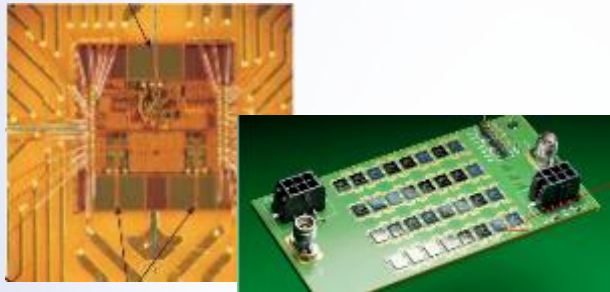


FNS bouwt voort op bestaande sterktes en ontwikkelt ook nieuwe (2)

Strong in semicon
and radio components



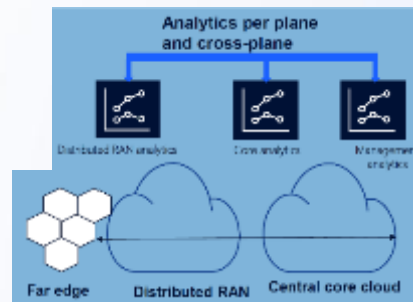
Chips & components
for 6G



High-quality research
in Computer Systems and
Networking



AI-driven 6G networks



Strong in application of
new digital technology in
business and society



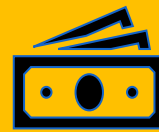
6G applications



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

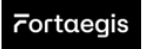
Sustainability pathway

- **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

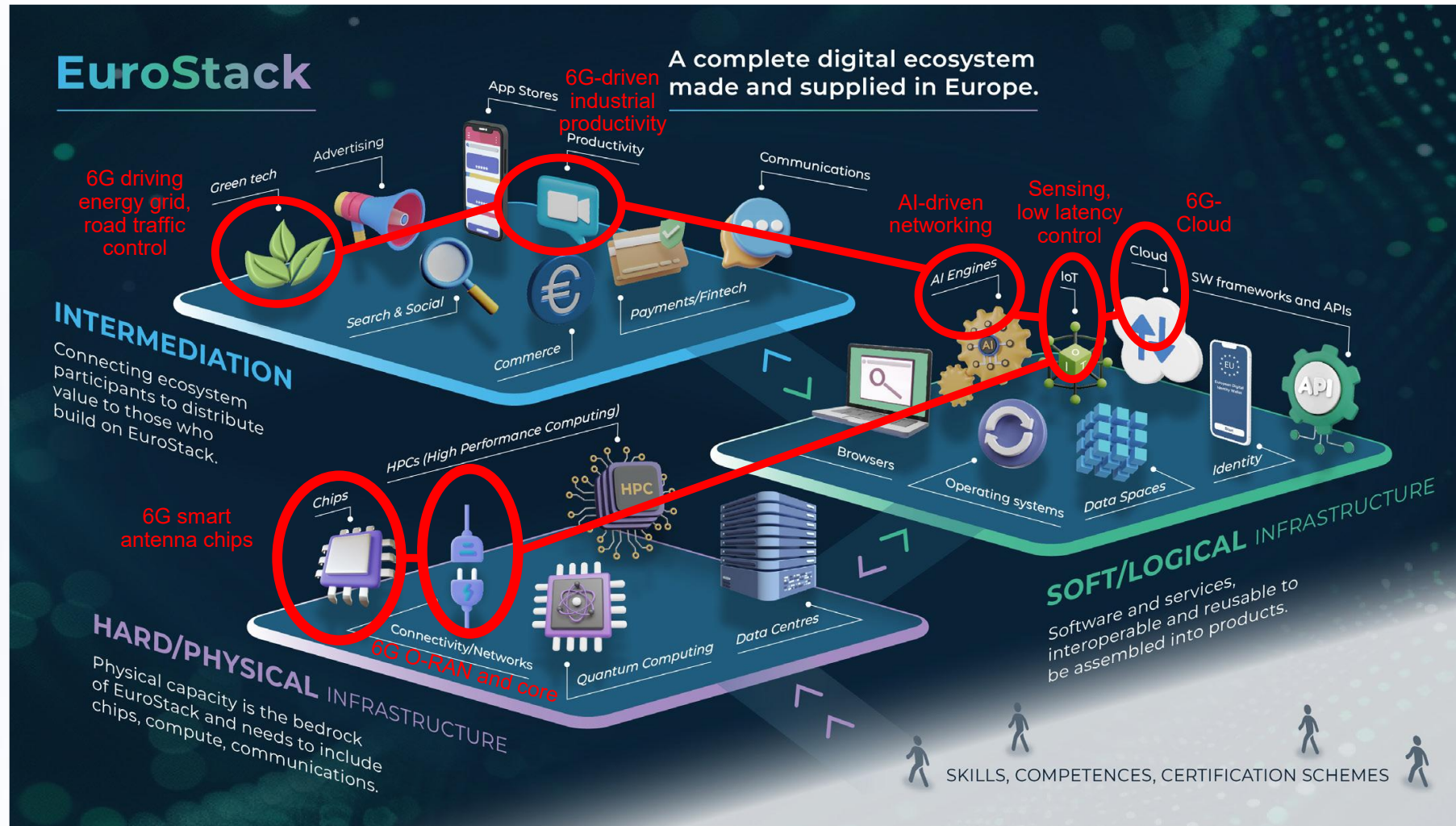
Acceleration & access to finance National 6G Testbed & ecosystem	                			
6G Applications	                            			
AI-driven 6G Networks	                   			
Chip & components for 6G	                      			
6G ecosystems and offering	Academia & RTO	SME	Large enterprise	Government & Public sector

(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

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

2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 🏁



6G visie

6G eisen ("requirements")

6G evaluatie



6G studie - Release 20

Eerste 6G specificatie- Release 21

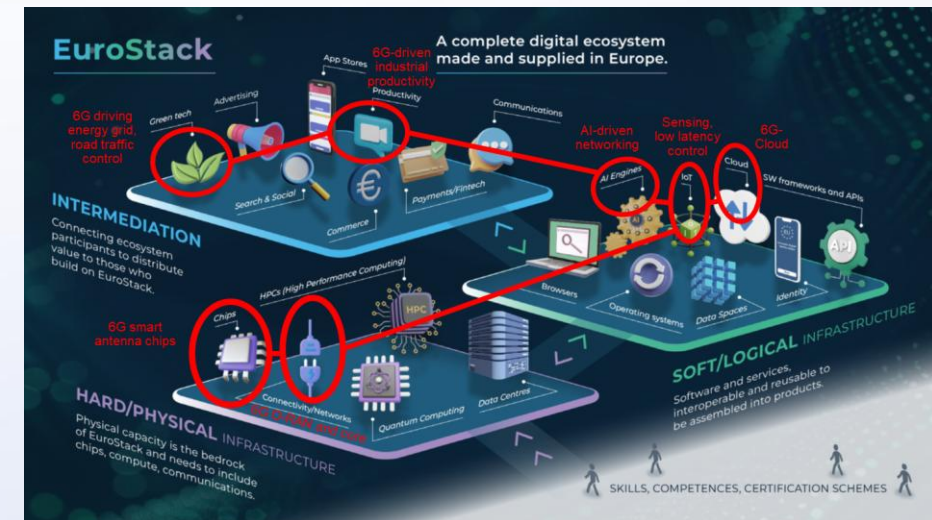
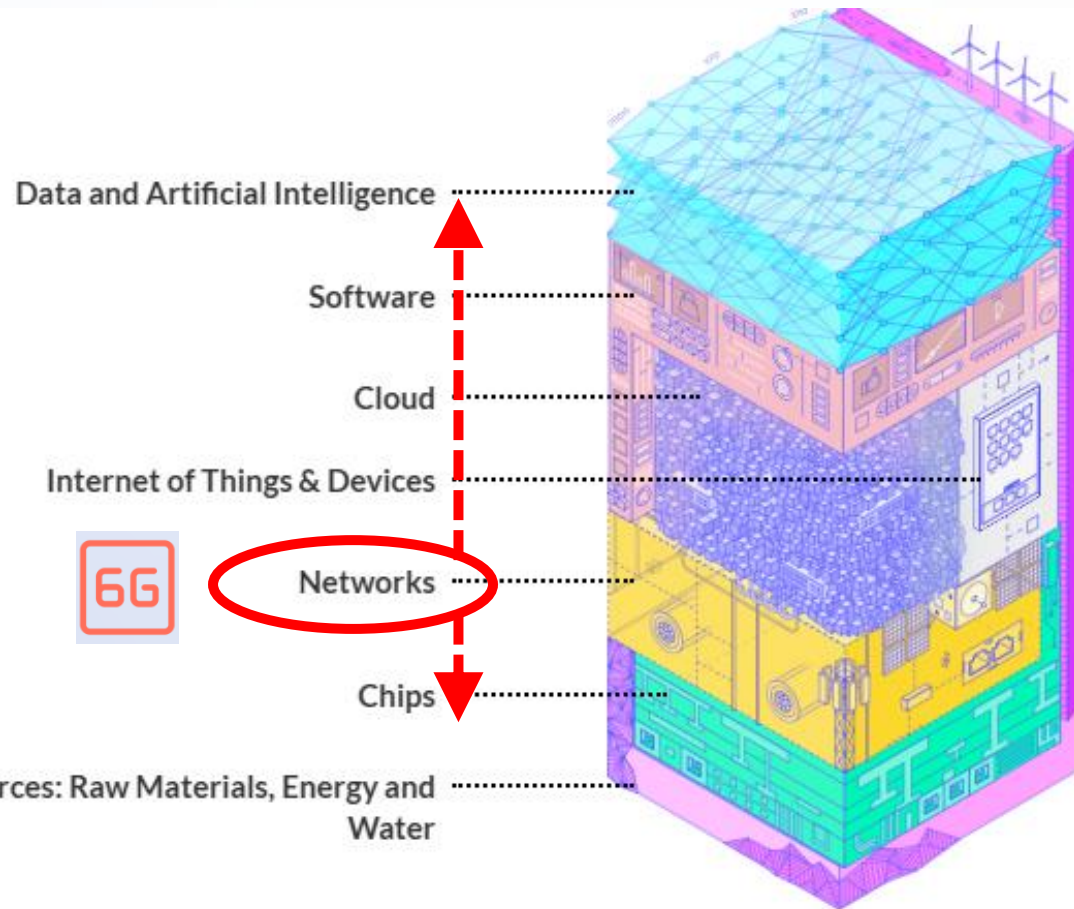
6G use case
workshop
Rotterdam

6G
workshop
Korea

6G uitbreidingen - Release 22



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

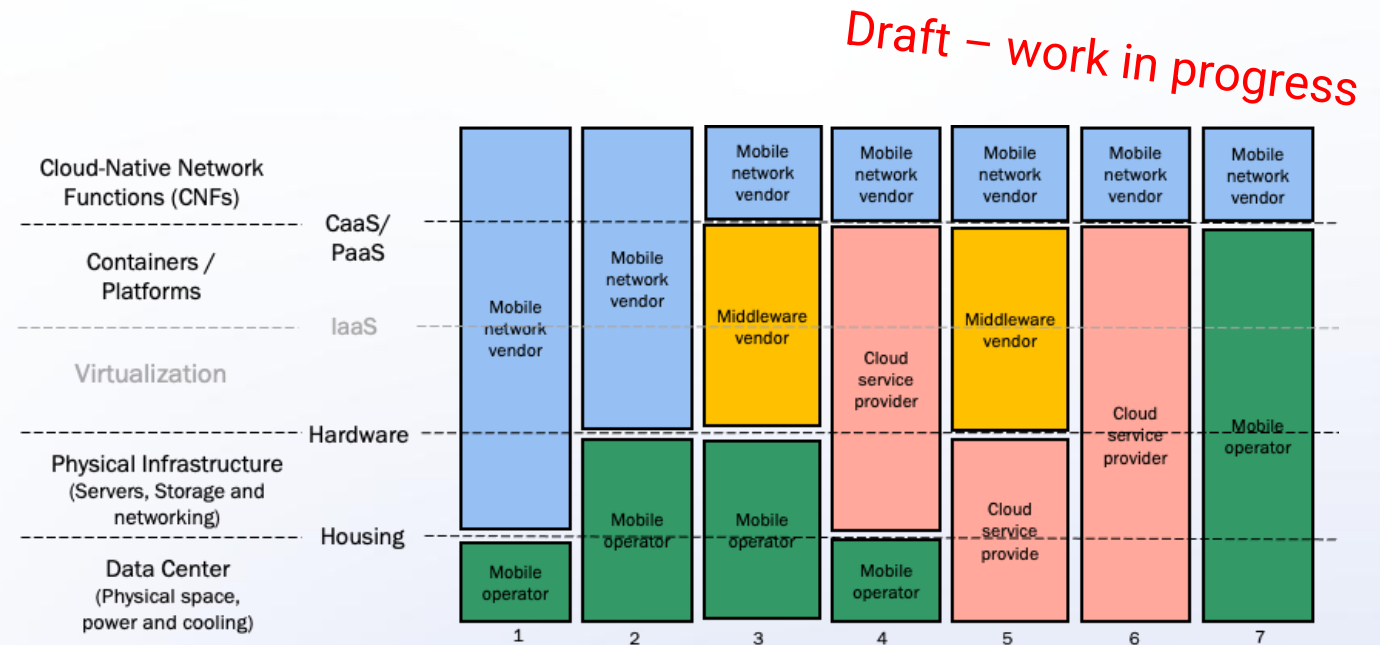
Interoperabiliteit rond andere posities

- 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>



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 revenue¹

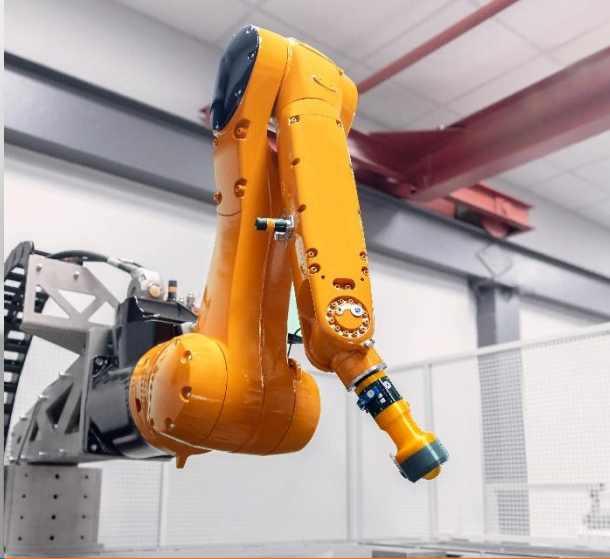


¹ Posted revenue for 2022 – Please refer to the Financial Information page of the Investor Relations section of our website at www.nxp.com/investor for additional information

Corporate Overview

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 Nijmegen



Wafer production
R&D + Business Automotive +
Communication & Infrastructure

NXP Delft



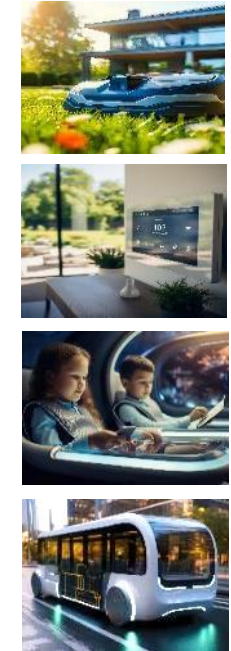
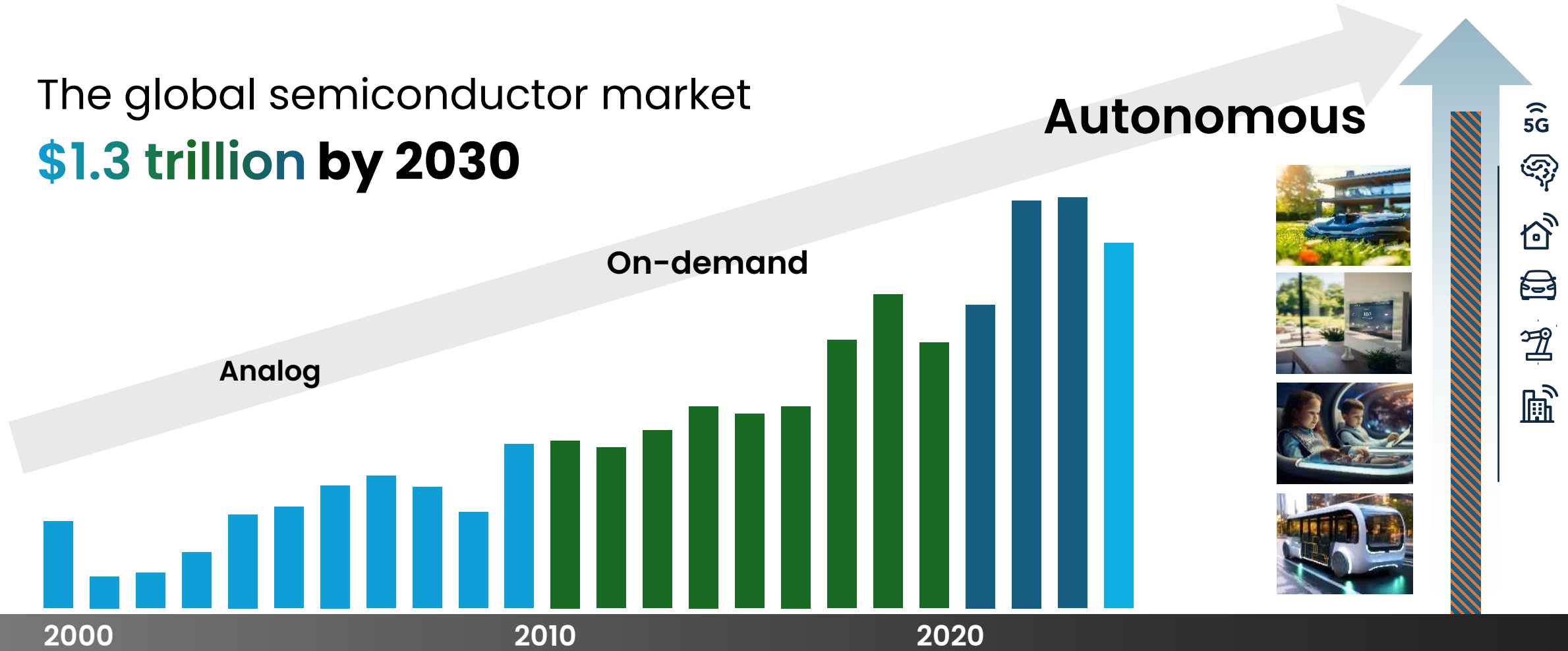
NXP Eindhoven
International Headquarters
R&D



NXP NL – approx. 2,750 employees
> 60 nationalities



The global semiconductor market **\$1.3 trillion by 2030**



2000

2010

2020

Laptops
Desktops
Mobiles
Game consoles
Home audio & video

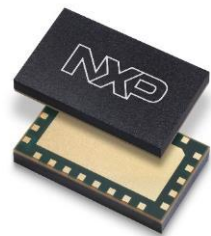
Smartphones
Tablets
Data-center servers

Intelligent Edge 2030E
Cloud & Edge AI
Smart connected devices
Smart factories and homes
Smart connected cars

NXP in Radio Power

5G Infrastructure

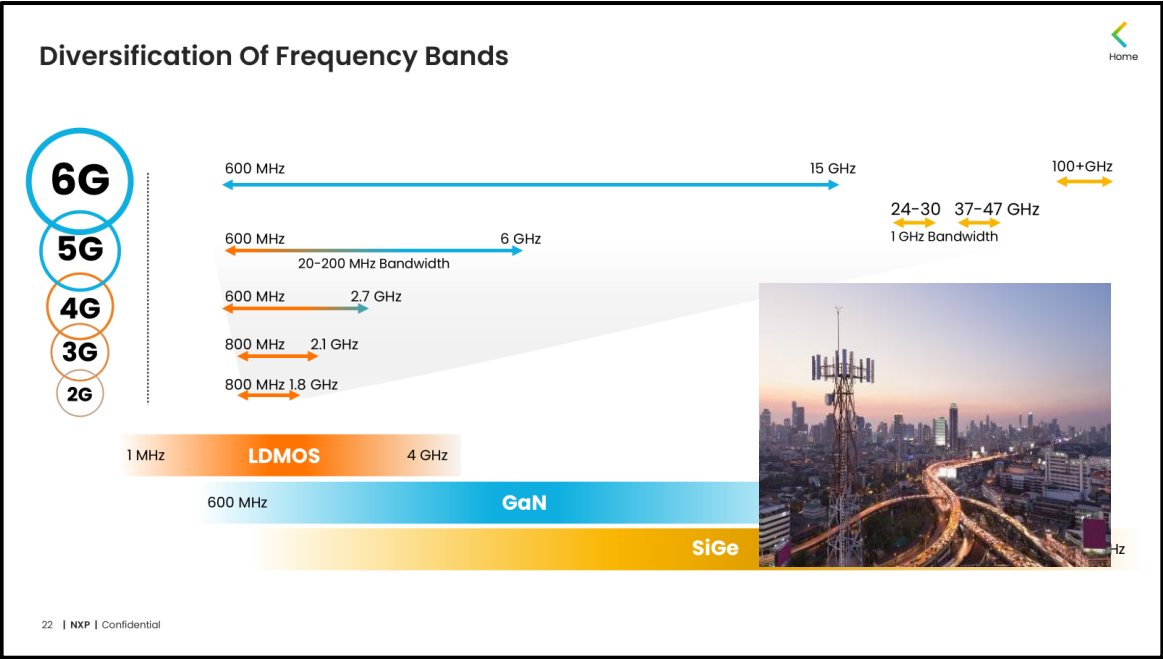
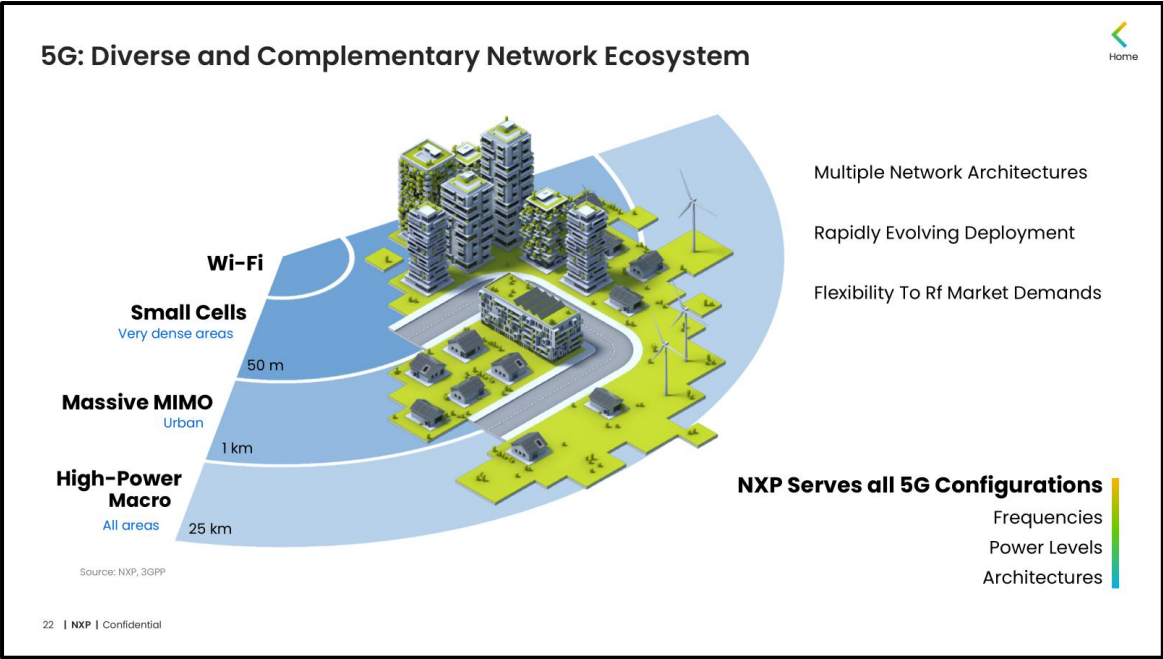
End-to-end solutions for diverse networks and architectures offering full lineups of GaN, LDMOS and SiGe discrete transistors, ICs and multi-chip modules



5G Networks



New Frequency Bands



GaN mMIMO Solutions

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

GaN 4.5 Discretes

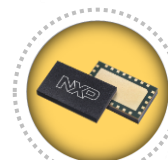


GaN 5 Discretes

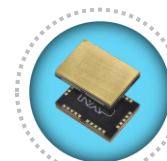


Flexibility

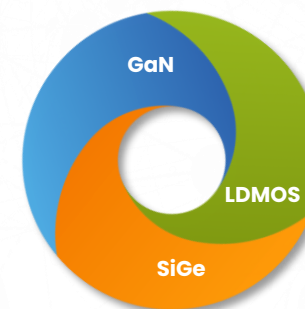
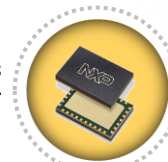
Hybrid LDMOS + GaN Modules



Top-Side Cooling



GaN Modules with controller (SG family)

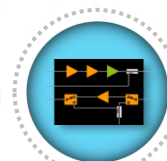


Software Defined PA (Green MIMO)



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

charging + high speed data

Wifi or 5/6G access point



High speed (internet) backbone

High Bandwidth

UP TO 11GBPS
FULL DUPLEX
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

Corporate Overview

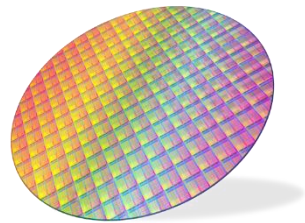
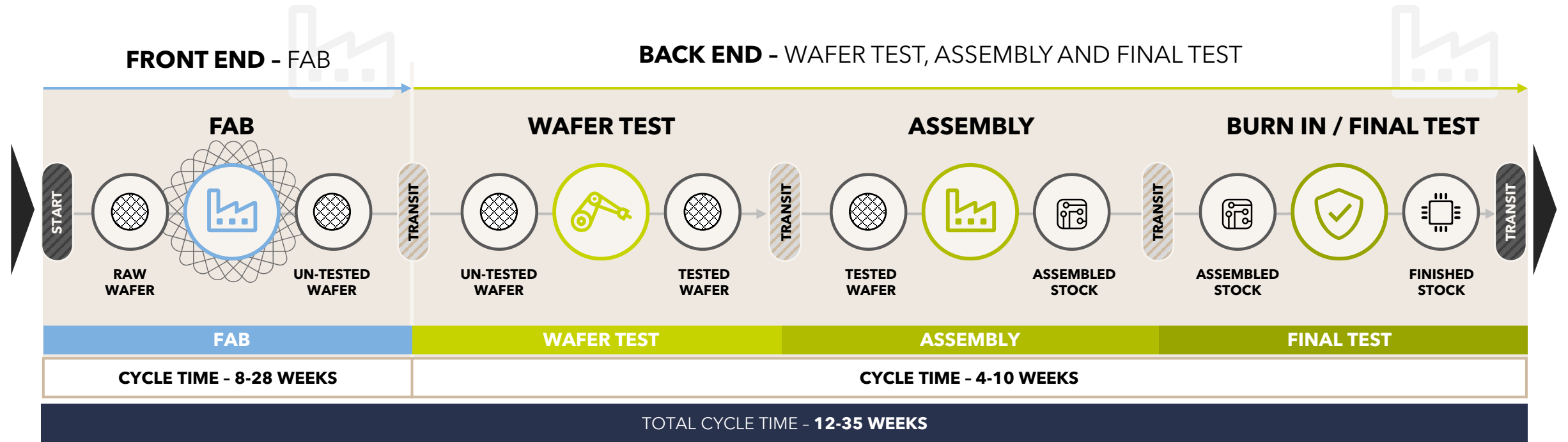
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We design purpose-built, rigorously tested technologies that enable devices to sense, think, connect and act intelligently to improve people's daily lives.

3 | NXP | Public



SEMICONDUCTOR MANUFACTURING PHASES - TYPICAL FLOW



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



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Vragen en discussie

FUTURE NETWORK SERVICES

6G



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DIGITAAL
DOORDACHT

NLIGF
NETHERLANDS INTERNET GOVERNANCE FORUM

Informatieveilig
gedrag in de zorg

aanpak
begeleidings
ethiek

Coalitie
Duurzame
Digitalisering

DUTCH
SUBSEA CABLE
COALITION

FUTURE
NETWORK
SERVICES



Over
Informatie
Gesproken

ONLINE TRUST
COALITIE

online
content
moderatie

Bedankt!