

INTELLIGENTE 6G SYSTEME FÜR DIE FERTIGUNGSINDUSTRIE

Martin Schäfer
NXP Semiconductors Germany GmbH
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SECURE CONNECTIONS
FOR A SMARTER WORLD

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Intelligent 6G Systems for Manufacturing

Agenda

- NXP
- 6G drivers
- 6G requirements (industrial)
- 6G use cases (examples)
- 6G purposeful network
- Summary



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OUR DIGITALLY ENHANCED WORLD IS EVOLVING TO ANTICIPATE AND AUTOMATE

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A POSITION OF STRENGTH TO BETTER SERVE OUR 26,000+ CUSTOMERS

We accelerate breakthroughs that advance the world
through our semiconductor technology leadership

EMPLOYEES IN

30+ COUNTRIES

Headquartered in Eindhoven,
Netherlands

~34,500

TEAM MEMBERS

9,500

Patent Families

\$13.21B

Annual Revenue ¹

60+

Year History

~11,000

Engineers

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

Seamless multi-access continuity - what is available today?



INTELLIGENT 6G SYSTEMS FOR MANUFACTURING

Wikipedia:

- Intelligence

The capacity for abstraction, logic, understanding, self-awareness, learning, emotional knowledge, reasoning, planning, creativity, critical thinking, and problem solving...

- System

A group of interacting or interrelated elements that act according to a set of rules to form a unified whole

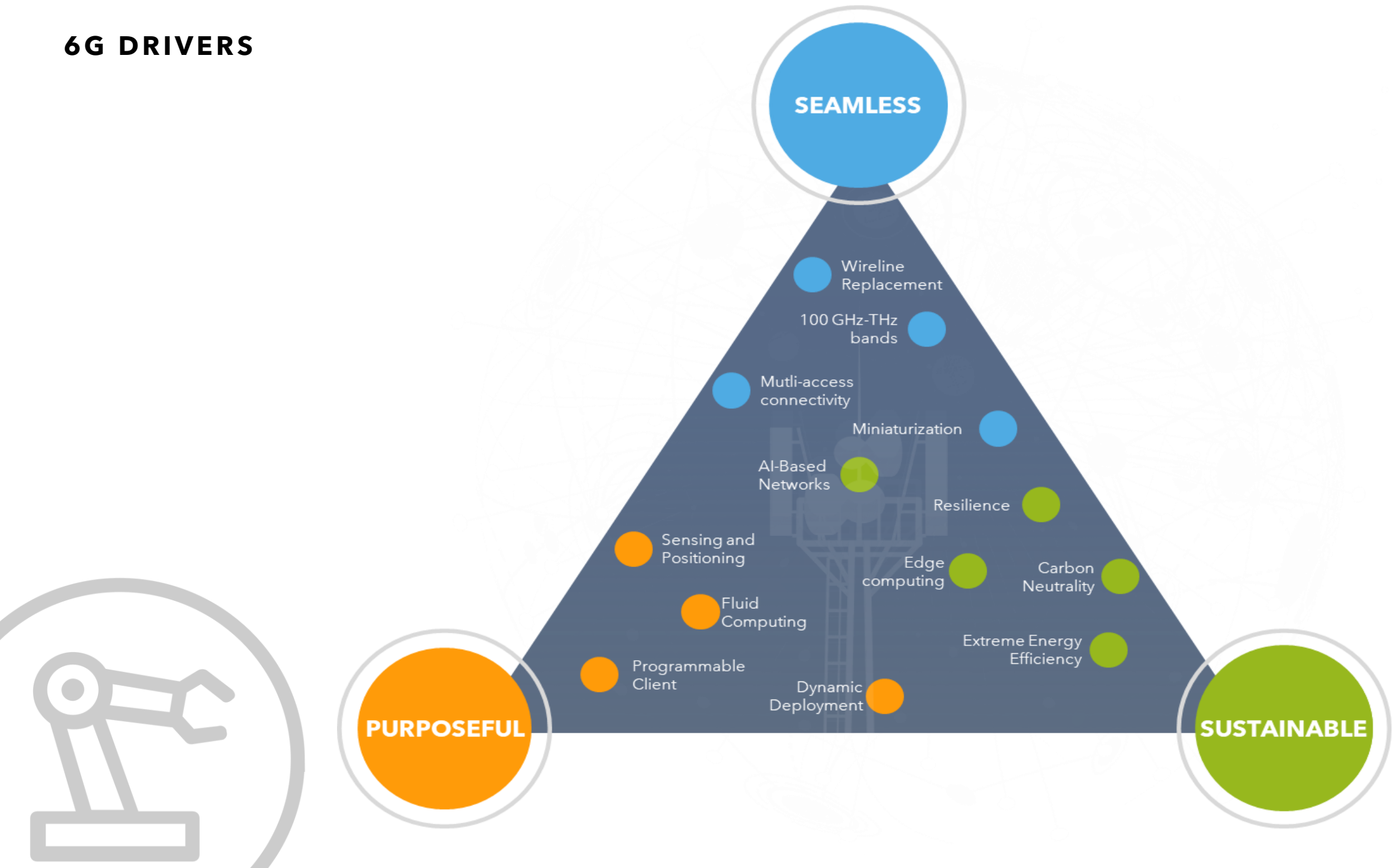
- Manufacturing

Creation or production of goods with the help of equipment, labor, machines, tools and chemical or biological processing or formulation...

→ Requirements of an Intelligent 6G System for Manufacturing?



6G DRIVERS



6G INDUSTRIAL REQUIREMENTS

→ IMPLEMENTATION

6G

Ubiquitous

Purposeful

Context-Aware

Intelligent

Massive

Compute-Aware

High Bandwidth

Autonomous

Resilient

Deterministic

Industrial



Mesh

Low latency

Ultra-reliable

Cognitive

Heterogeneous



HIGH DIVERSITY

- Wireless connectivity



- Main industrial protocols



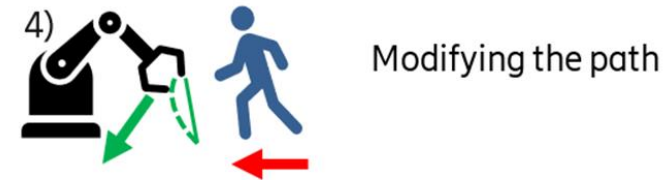
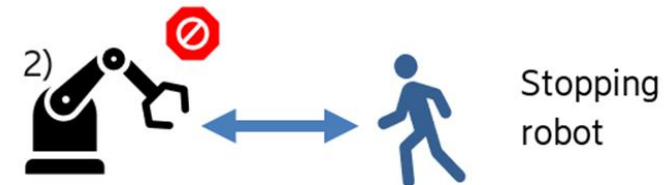
6G IMPLEMENTATION CHALLENGE

- 6G roll-out 2030+
- Understand (industrial) use cases
- System(s) definition
- Product(s) definition



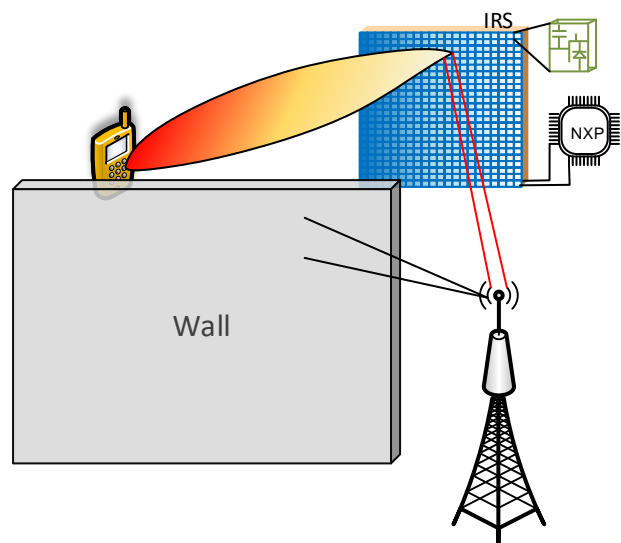
EXAMPLE 1: 6G JOINT COMMUNICATION AND SENSING IN FACTORY

- 6G JCAS – Joint Communication and Sensing
 - Communication (robot - factory environment)
 - Sensing (radar, behavioral, ...)



[Source: Unpacking joint communication and sensing in 6G - Ericsson](#)

EXAMPLE 2: INTELLIGENT REFLECTIVE SURFACES



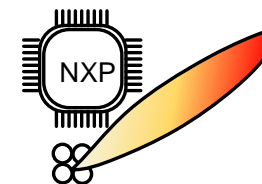
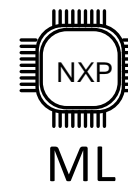
- IRS grid receives Rx Signals from a Line-Of-Sight Basestation
- IRS is UE position/location aware
- Smart algorithms extrapolate information from received signal
- Intelligent Surfaces generates beam & in the direction of UE
- Signal received from IRS will be near BS-LOS quality
- Independent of Operator, Bands (?)

Use case / Applications



- Line-of-sight
- Redundancy
- Beam Forming
- Operator Agnostic
- Signal boosting
- Secure, Anomaly Detection

Focus / Areas of Interests



- Processors
- ML/Crypto Accelerators
- Antenna Processors
- Beamforming
- Surfaces
- Power Management
- Re-usable/re-configurable

6G purposeful network : full dimensional coverage

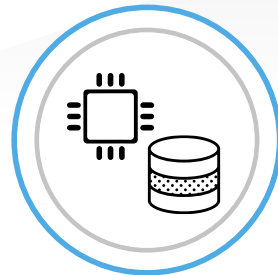
Ecosystem



Seamless end-to-end service



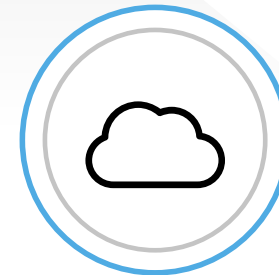
Sensing
& actuating



Edge
processing



RAN



Cloud



AI-driven data processing
& network management

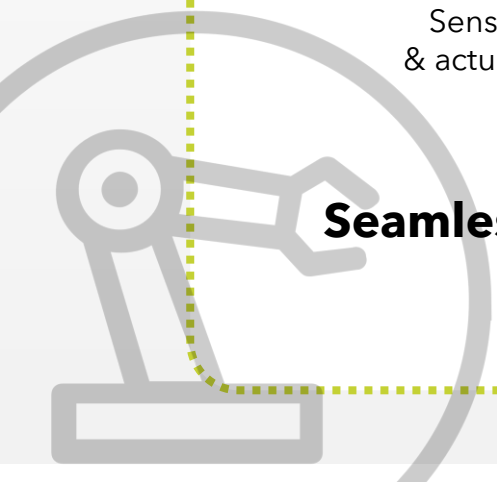
Seamless multi-access continuity



Personal
connectivity



People



INTELLIGENT 6G SYSTEMS FOR MANUFACTURING - SUMMARY

- 6G - high complexity
- Requirements 6G → requirements for Intelligent 6G Systems for Manufacturing
- Understand use cases
- Creation of purposeful systems
- Definition of 6G products



Thank you!





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