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# ERICSSON'S VIEW ON EVOLUTION FROM TD-LTE TO 5G

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Nov. 29, 2016



# 5G = NETWORK FOR NETWORKED SOCIETY

## Massive MTC (mMTC)



## Critical MTC (cMTC)



## Enhanced Broadband (eMBB)



LOW COST, LOW ENERGY  
SMALL DATA VOLUMES  
MASSIVE NUMBERS

ULTRA RELIABLE  
VERY LOW LATENCY  
VERY HIGH AVAILABILITY

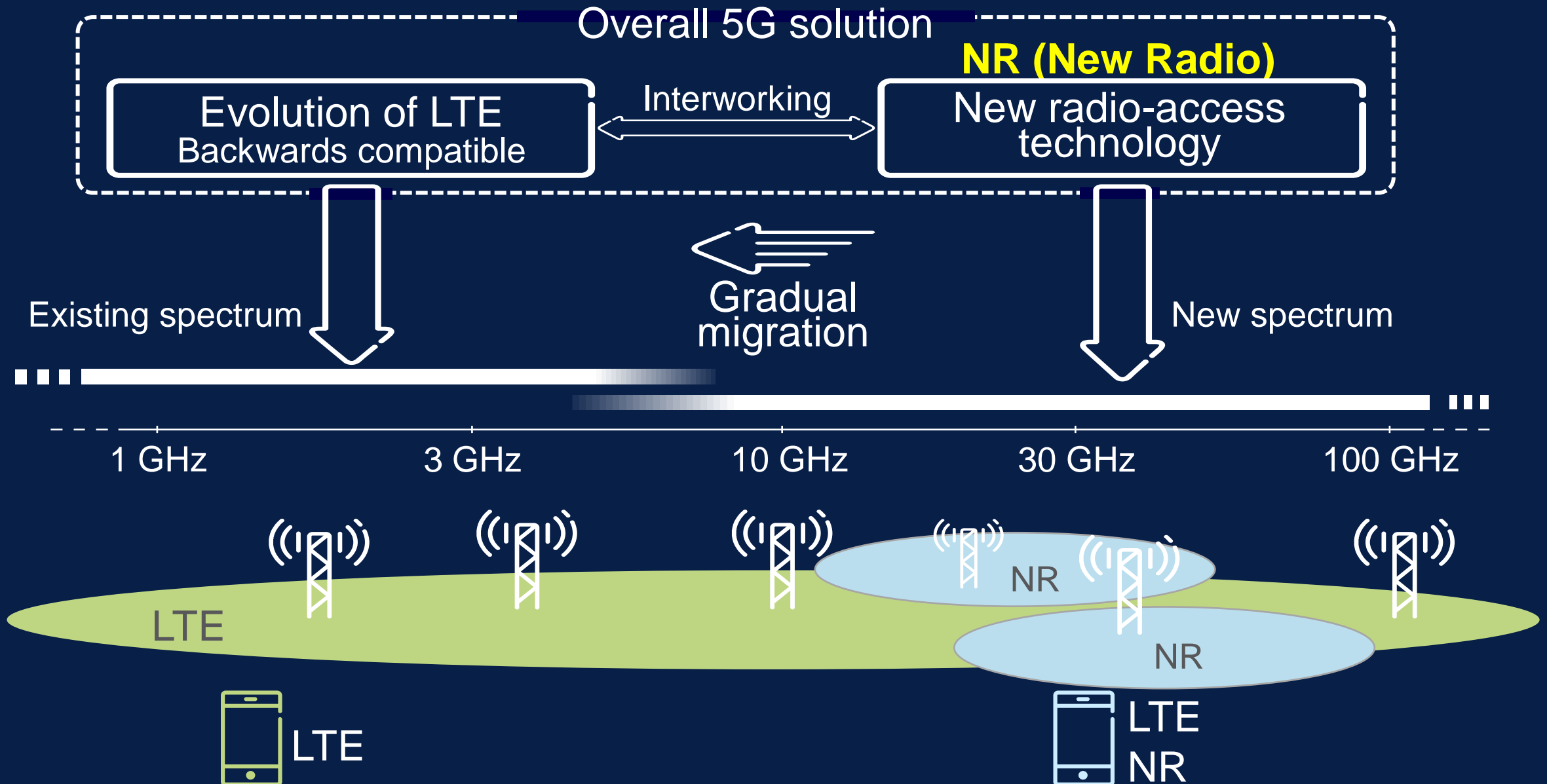
# LOW LATENCY . HIGH CAPACITY . HIGH SPEED

devices

4K/8K UHD, Broadcasting, VR/AR

MTC: Machine Type Communications

# 5G RADIO = NR + LTE EVOLUTION



# FIRST 5G NR RADIO

## AIR 6468 (Antenna Integrated Radio)



AIR  
6468



5G NR  
RADIO

FIRST COMMERCIAL 5G NR  
MASSIVE MIMO RADIO

- › 64T / 64R active antenna system
- › LTE and 5G NR going forward
- › Supports 5G plug-ins: Massive MIMO and Multi-user MIMO
- › Beamforming as part of Cloud RAN split baseband architecture
- › Works with today's Ericsson Radio System Baseband
- › 5–6 times capacity compared to 8T / 8R configuration
- › First deployments mid 2017 for TD-LTE



# ERICSSON 5G PLUG-INS

Innovative SW applying 5G technical concept to 4G



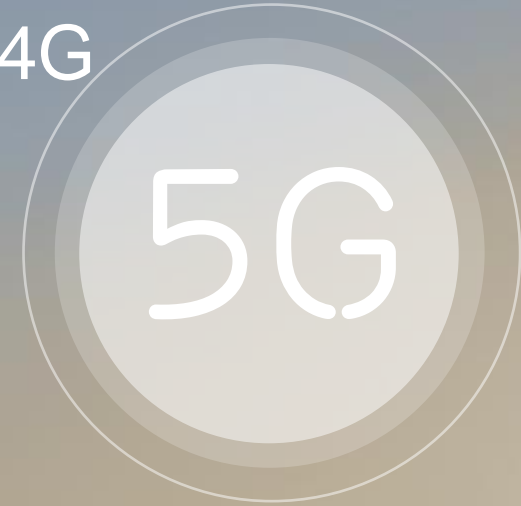
Massive MIMO

Multi-user MIMO

RAN virtualization

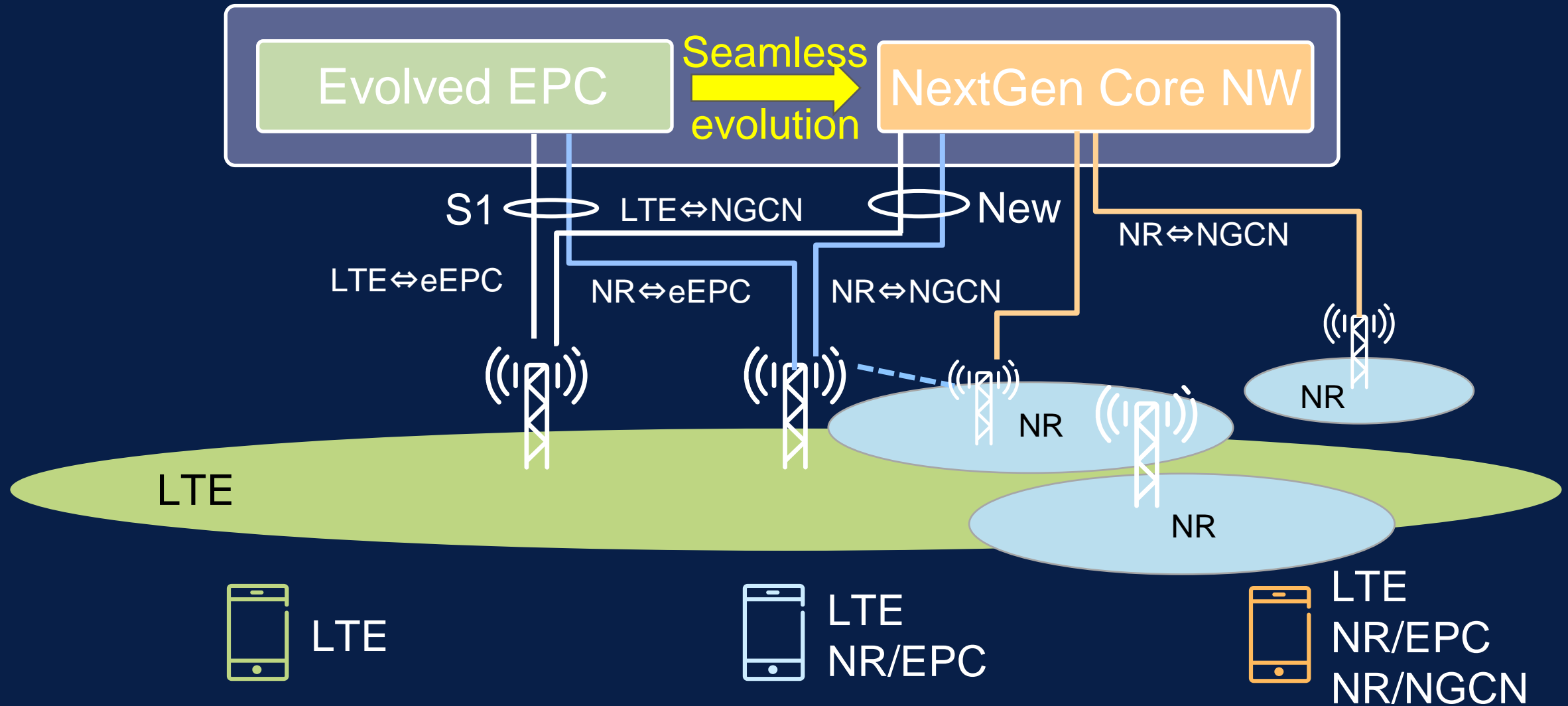
Latency reduction

Intelligent connectivity

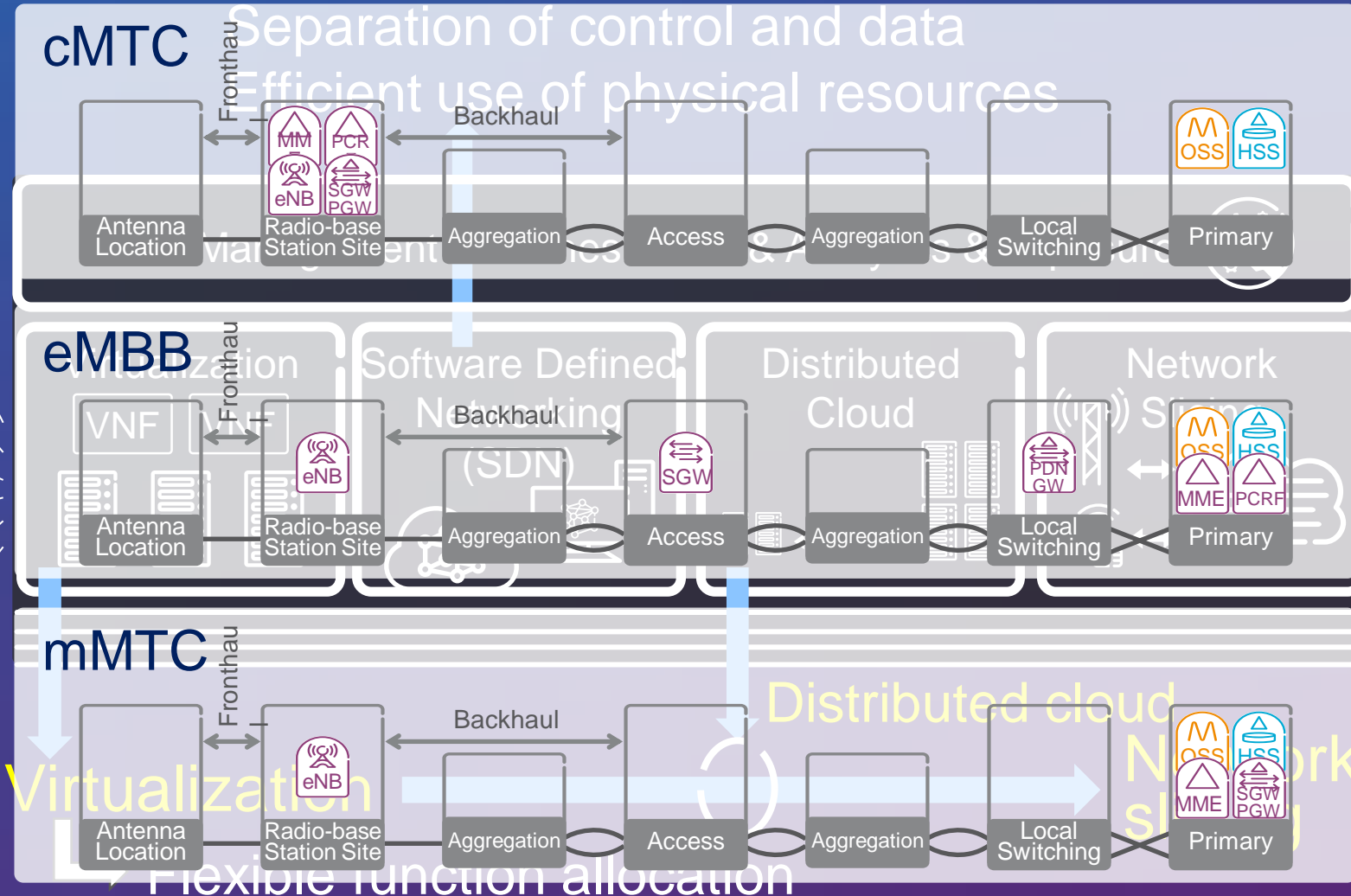


Existing  
baseband HW  
re-used with  
new SW

# NETWORK EVOLUTION TOWARDS 5G



# ONE NETWORK FOR VARIOUS USE CASES



# ERICSSON 5G RADIO TESTBED



## Phase 1

2014~

- 400 MHz BW
- 4 Stream MIMO
- 5+ Gbps Peak Rate
- **Scalable OFDM**

## Phase 2

2015~2016

- 800MHz BW
- **Beam Forming/Tracking**
- **Multi-User MIMO**
- 10+ Gbps/user, 20+Gbps/site

## Phase 3

2017+~

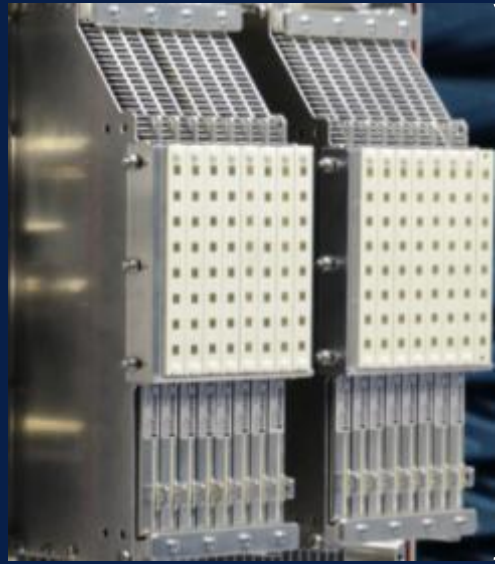
- **End-to-End Trial Network**
- From Factor for Pre-Commercial Trial



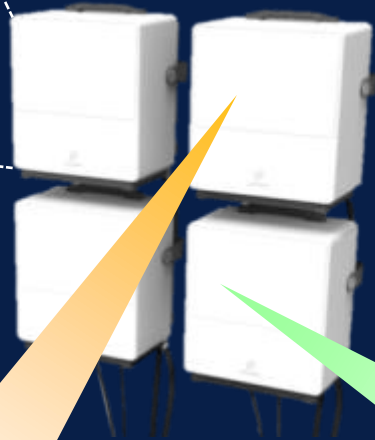
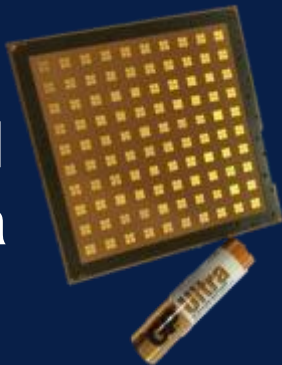
# GLOBAL 5G MOMENTUM



# TECHNOLOGY COMPONENTS VERIFIED



28GHz  
Testbed  
Antenna



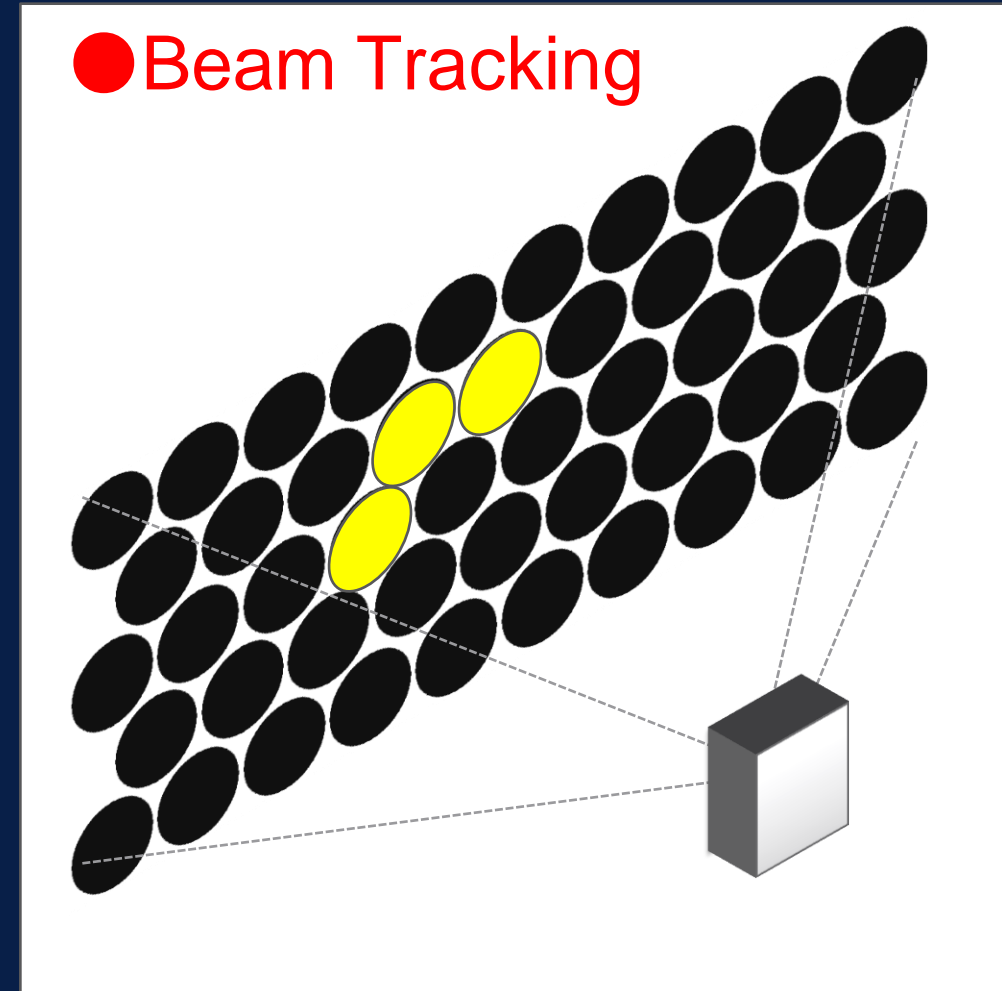
Massive antenna



Beam forming



Multi-user MIMO





# 5G FIELD TRIALS





# CROSS-INDUSTRY 5G TRIALS



## INDUSTRIAL MOBILE COMMUNICATION IN MINING

- › Evaluate mobile communication infrastructure in an industrial context
- › Consider strict requirements on safety and robustness in underground mining



- › Increased productivity
- › Improved Safety
- › Industrial 5G requirements
- › Understanding new eco system, business models, etc.



ABB BOLIDEN ERICSSON     TeliaSonera VOLVO WOLFIT

## 5G-ENABLED WORLD CLASS MANUFACTURING

- › Evaluate 5G technology in manufacturing industry
  - Wireless factory communication
  - Industrial Internet of Things (IIoT)
  - Mission critical clouds (MCC)
  - Data analytics



- › Improved production efficiency
- › Increased flexibility
- › Excellent traceability



SKF

 CHALMERS

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## CONNECTED MOBILITY ARENA STOCKHOLM

- › Create Europe's leading test site for connected mobility
  - Open innovation platform
  - Open cellular radio connectivity
  - Management and control platform
  - Efficient management of test activities (system configuration, road authority, etc.)



- › Emergency vehicle prioritization
- › Remote-controlling of platoons
- › Automatic service orchestration



 SCANIA



STIL - INTEGRATED TRANSPORT  
RESEARCH LAB  
AT KTH ROYAL INSTITUTE OF TECHNOLOGY

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## ABB REMOTE OPERATION OF ROBOTS

- › Evaluate potential of mobile communication for industrial use
- › Consider requirements from mission critical operation



- › Industrial 5G requirements
- › Transformation benefits
  - Central utilization of expertise
  - Minimize personnel in hazardous environments
  - Increased productivity

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