



Enabling the 5G / 6G Ecosystem

July 8, 2021

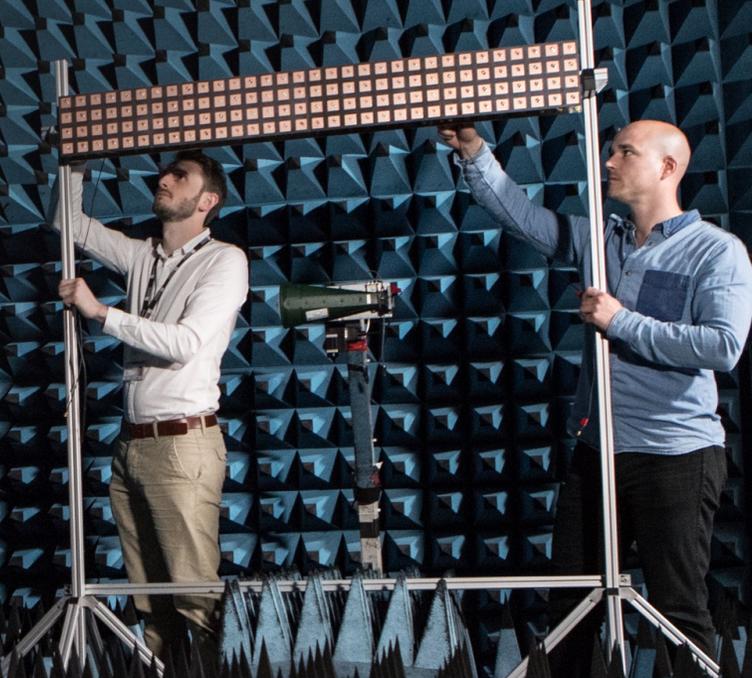
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Our Mission:
NI equips engineers
and enterprises with
systems that accelerate
productivity, innovation,
and discovery.



FIRST

128 Channels

REAL-TIME MASSIVE
MIMO PROTOTYPE WITH
LUND UNIVERSITY

DEMONSTRATED

14+ Gbps

OVER-THE-AIR MMWAVE
LINK WITH NOKIA

FIRST

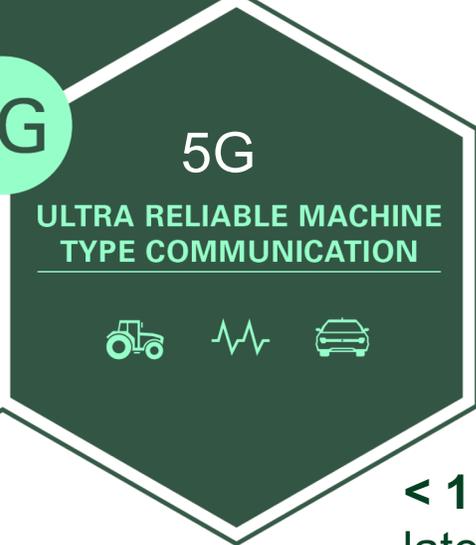
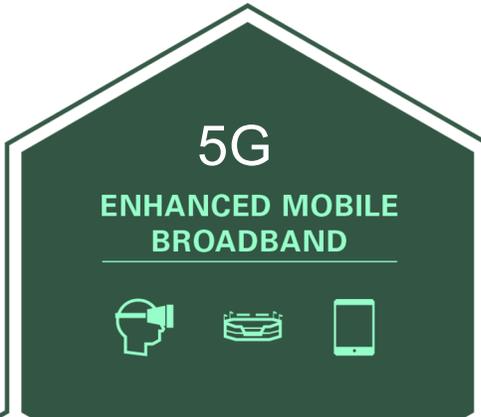
146 b/s/HZ

SPECTRAL EFFICIENCY
RECORD SET WITH
BRISTOL UNIVERSITY



5G Vision to Reality...

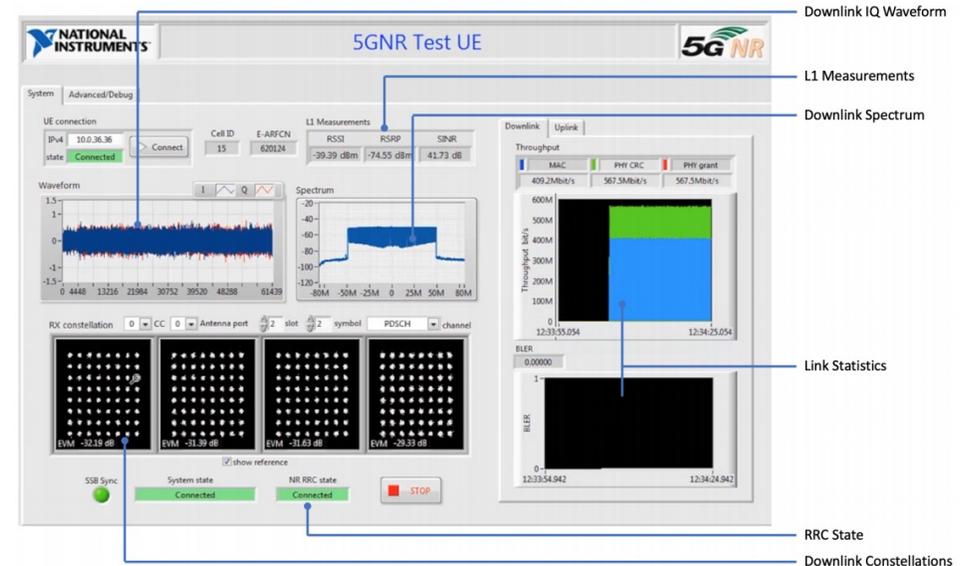
> 10 Gbps
peak rates



5G

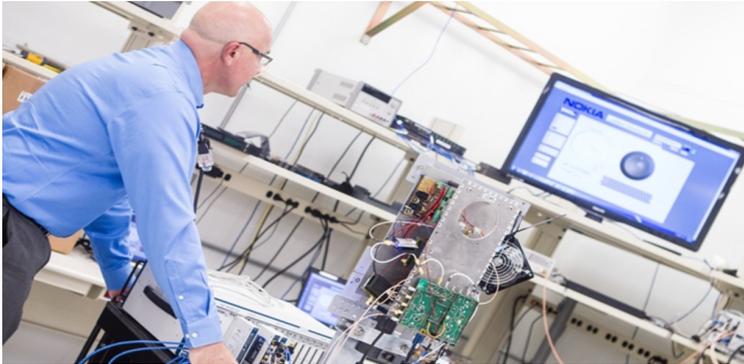
> 100K
connections
per cell

< 1 ms
latency



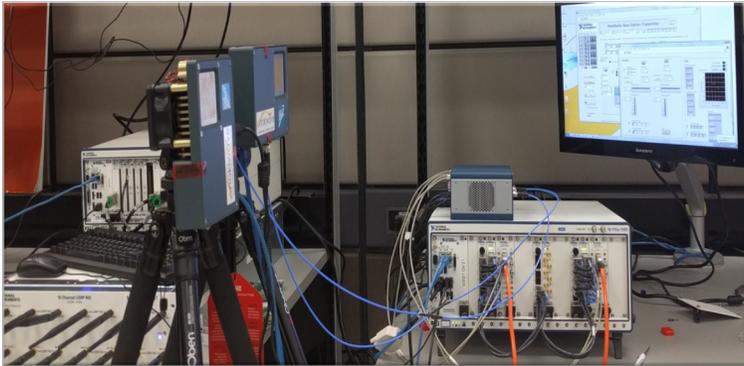


NI Systems were Critical to 5G Research



Nokia
First mmWave Prototypes
14.5 Gbps

AT&T
World's Most Advanced Channel Sounder



Verizon 5G
World's First 2x2 MU-MIMO 5GTF

NTT Docomo
mmWave, First System Field Trials



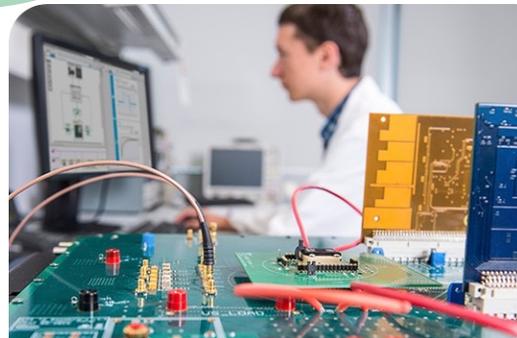
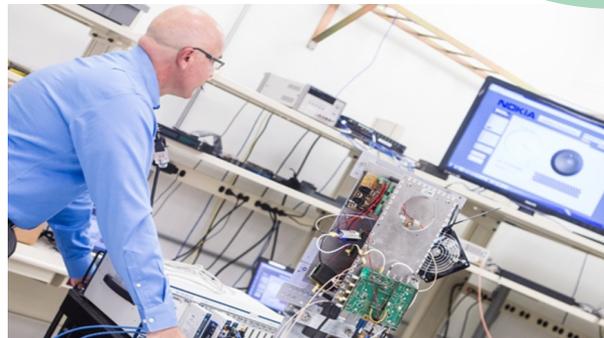
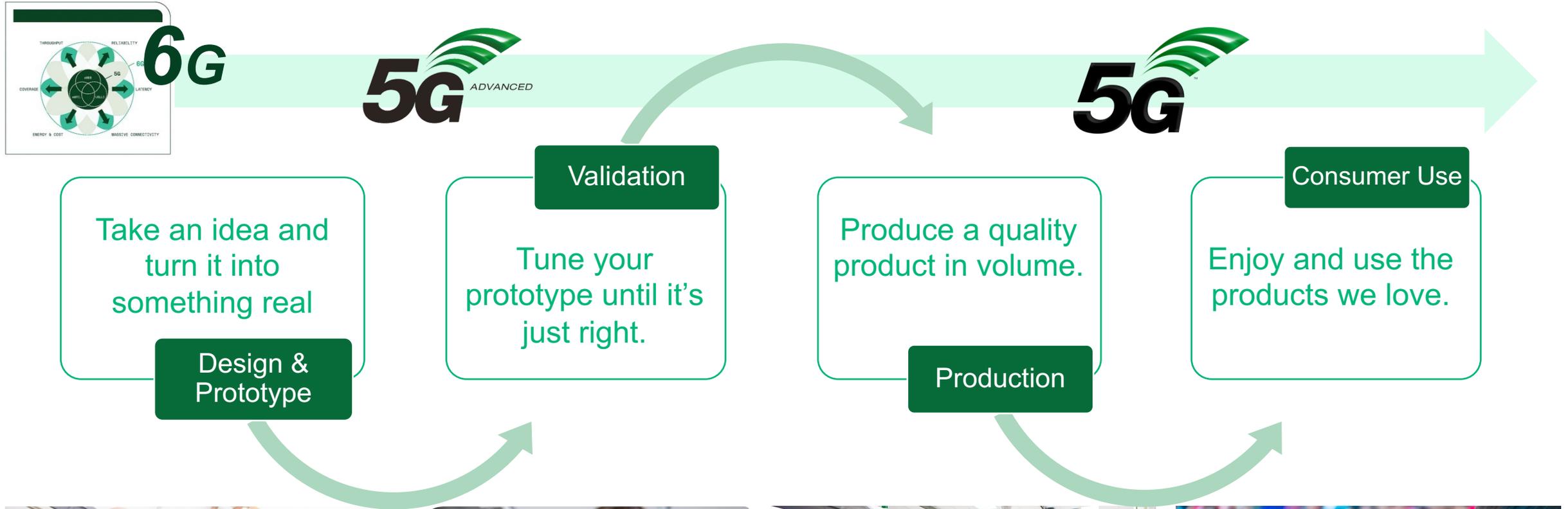
Lund University
512 Channel Massive MIMO Test Bed

Intel
CRAN-Massive MIMO Test Bed



The Design Flow - Cellular Ecosystem

ENABLING INNOVATION AND PRODUCTIVITY ACROSS THE PRODUCT DEVELOPMENT CYCLE





Looking Towards 6G

Applications



WIRELESS COGNITION



WIRELESS SENSING



IMMERSIVE XR



DEVICE LOCATION



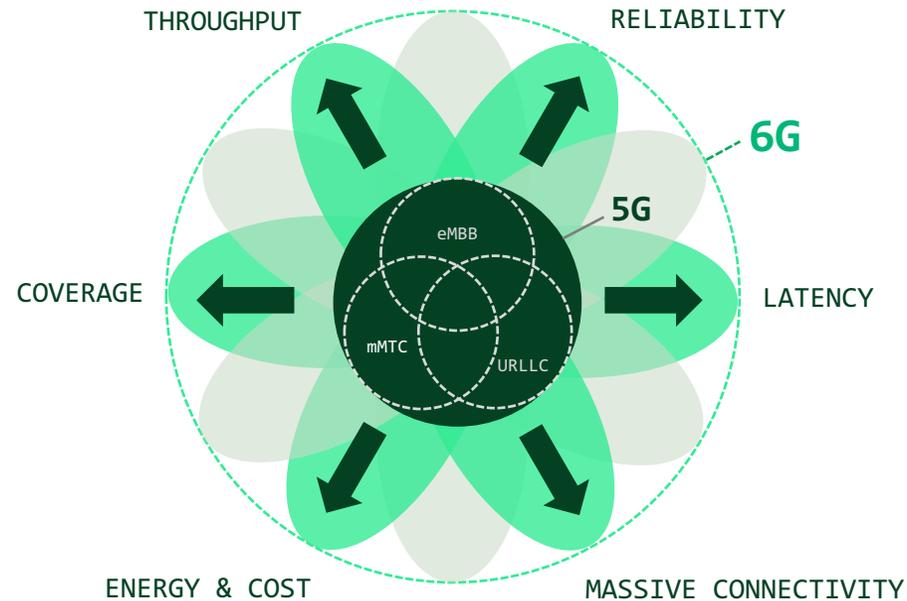
IMAGING & RADAR



MOBILE HOLOGRAM

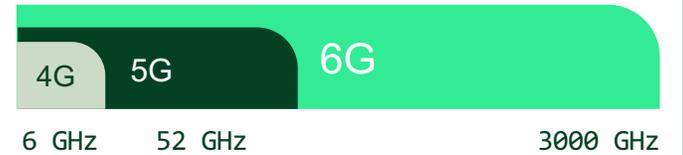
AND MORE

Requirements



Enabling Technologies

Terahertz Frequencies



Extreme MIMO

More Antennas and Distributed Radios

Joint Communication & Sensing

Spectrum Efficiency & Sharing

AI and Machine Learning

Thank you!