



5G Standards & Spectrum Focus Day – Opening Remarks

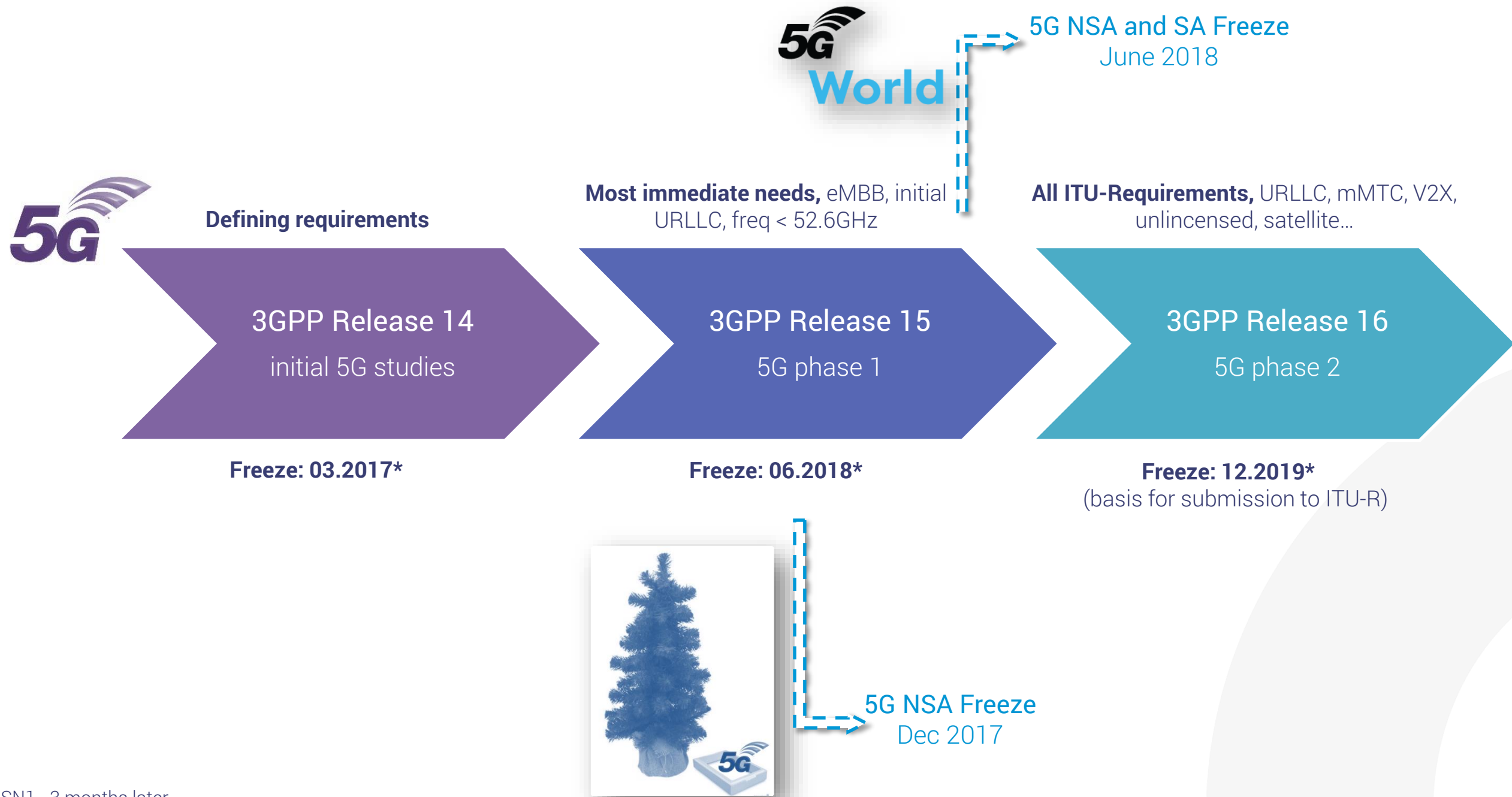
5G World, London, 12.06.2018

Marcin Dryjanski

5G Standards & Spectrum Introduction

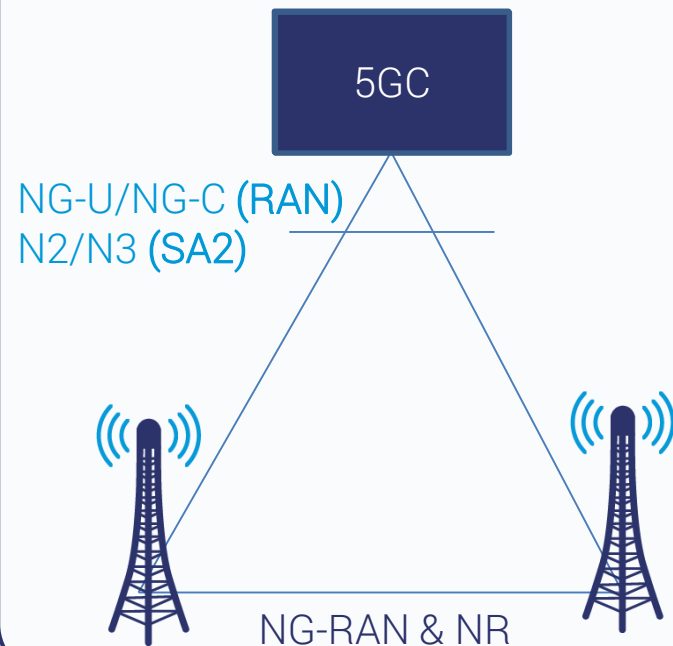


5G Standards – Roadmap



5G Standards – Complexity of the System

Naming - Architecture



Compared to:
EUTRAN
EUTRA
EPC
EPS

Dual connectivity options

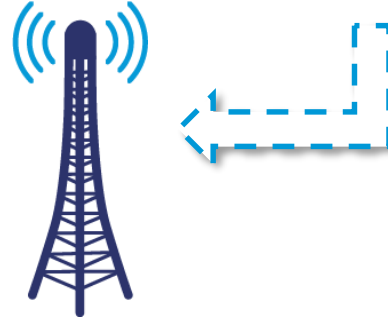
EN-DC	E-UTRA-NR Dual Connectivity
MR-DC	Multi-RAT Dual Connectivity
NE-DC	NR-E-UTRA Dual Connectivity
NGEN-DC	NG-RAN E-UTRA-NR Dual Connectivity

L1 parameters

Few weeks before freezing **5G NSA**, RAN1 sent RAN2 ~600 L1 parameters to cover within RRC spec.
(compared to ~80 L1 parameters for **LTE Rel-8**)



5G Standards – **How Do Call This One?**



BS
(Base Station)

1G

BTS
(Base Transceiver Station)

2G

NB
(NodeB)

3G

eNB
(evolved NodeB)

4G

gNB
(next generation NodeB)

but also:

en-gNB

ng-eNB

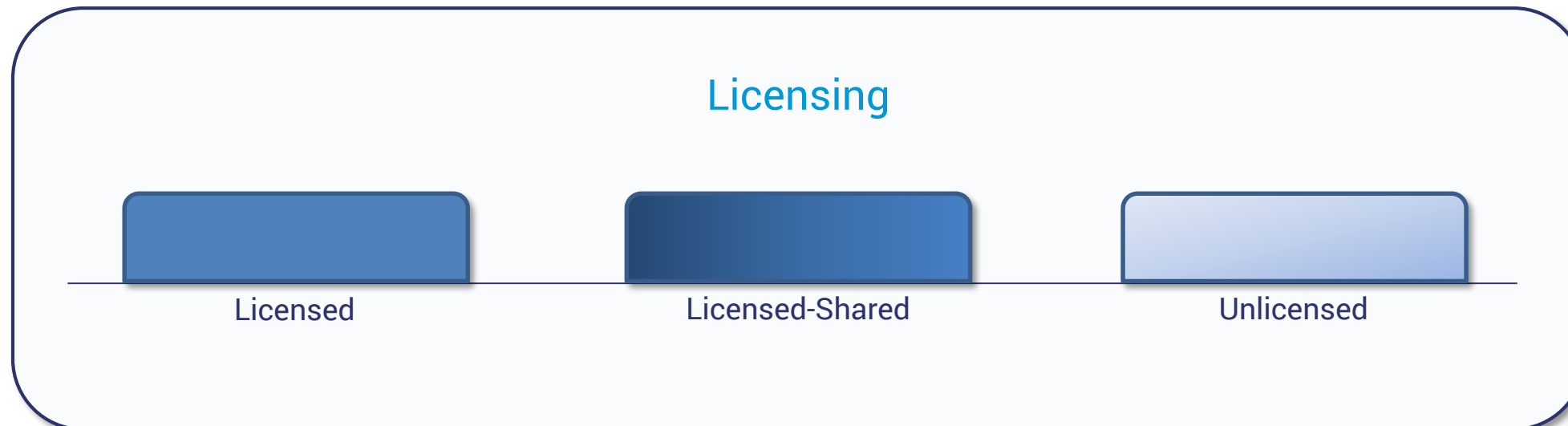
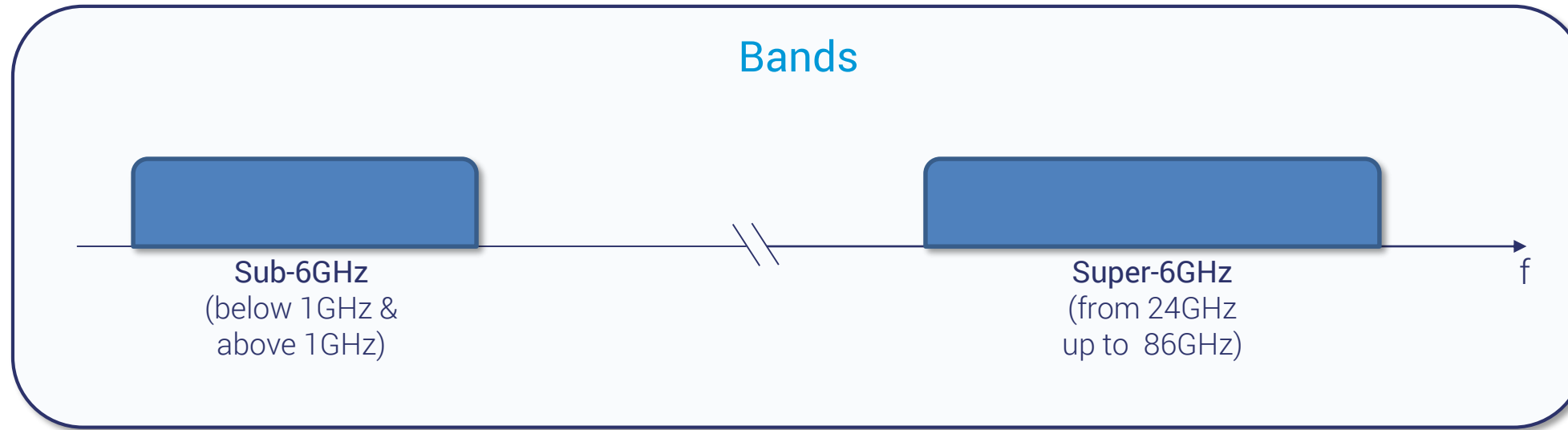
gNB-DU

Ils-gNB-DU ...

5G



5G Spectrum – Large Diversity



Beyond 5G – Shall We?

Will 5G become an umbrella with a set of technologies (NR + LTE + NB-IoT + ...) where new features are added over time?

Or do we need nextG's...?

China National News

National news service for People's Republic of China

China starts research into 6G technology

ANI - Sunday 11th March, 2018



Beijing [China], Mar 11 (ANI): The Chinese Minister for Industry and Information Technology Miao Wei has announced the beginning of research into the next-generation of mobile communications networks, 6G.

According to the Sputnik, Wei said the start of the research was closely tied to the constant broadening and development of the "Internet of Things."

UNIVERSITY OF OULU

HOW TO APPLY

STUDYING

RESEARCH

COOPERATION



6Genesis

After being a leader in Finland's telecommunications research for more than two decades, University of Oulu has started **Academy of Finland's Flagship programme** 6Genesis. The programme will provide intelligent digital applications and will develop the fundamental 6G competence needed for smart societies.



5G Standards & Spectrum Focus Day



5G Standards & Spectrum **Topics**

#SpectrumSharing **#5GStandardization** **#5GTechnologies** **#UnlicensedAccess**
#5GSpectrum **#Verticals&UseCases** **#NewRadio&5GCore** **#SDOs**



5G Standards & Spectrum **5Questions to 5G**

How is the 5G standardization progressing and what we can expect in the future?

What are the different options for sharing the spectrum?



What are the initial and futuristic 5G use cases?

What activities are happening within SDOs?

How unlicensed spectrum fits into the picture?



5G Standards & Spectrum **Outline**

- 09:00 **Chairperson's Opening Remarks**
Marcin Dryjanski, Principal Consultant, Grandmetric
- 09:10 ***Ensuring the World Has the Spectrum It Needs***
Philip Marnick, Group Director, Spectrum, Ofcom
- 09:30 ***Fireside Chat: Early and Future Use Cases for 5G***
Moderator: Marcin Dryjanski, Principal Consultant, Grandmetric
Jean-Pierre Bienaimé, Secretary General, 5G Infrastructure Association (5G-IA)
Rami Yaron, Co-Chair, Global Marketing & Education Committee, MEF
- 10:00 ***New Technical Solutions and Opportunities in Spectrum Sharing and Coexistence with 5G/NR***
Kamran Etemad, Senior Technology Advisor, University of Maryland and FCC
- 10:30 ***Fireside Chat: Standards for 5G and Beyond***
Moderator: Marcin Dryjanski, Principal Consultant, Grandmetric
Kamran Etemad, Senior Technology Advisor, University of Maryland and FCC
David Boswarthick, Director CSC, ETSI
Reza Arefi, Director of Spectrum Strategy, Intel



5G Standards & Spectrum **Outline**

- ☛ 11:00-11:30 Coffee Break
- ☛ 11:30 *ITU Standards and Spectrum Harmonisation to Enable 5G*
Mario Maniewicz, Deputy Director, Radiocommunication Bureau, ITU
- ☛ 11:50 *ETSI's Standards Activities: Enabling Technologies for 5G Networks and Beyond*
David Boswarthick, Director CSC, ETSI
- ☛ 12:10-12:30 Interactive Think Tank Session
- ☛ 12:30 End of Focus Day



Let's Talk.

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