



Recent 5G Market Findings

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5G Use Cases, Trials and Timelines

Panel Session, May 23, 2016

Moderated by Gabriel Brown, Senior Analyst, Heavy Reading



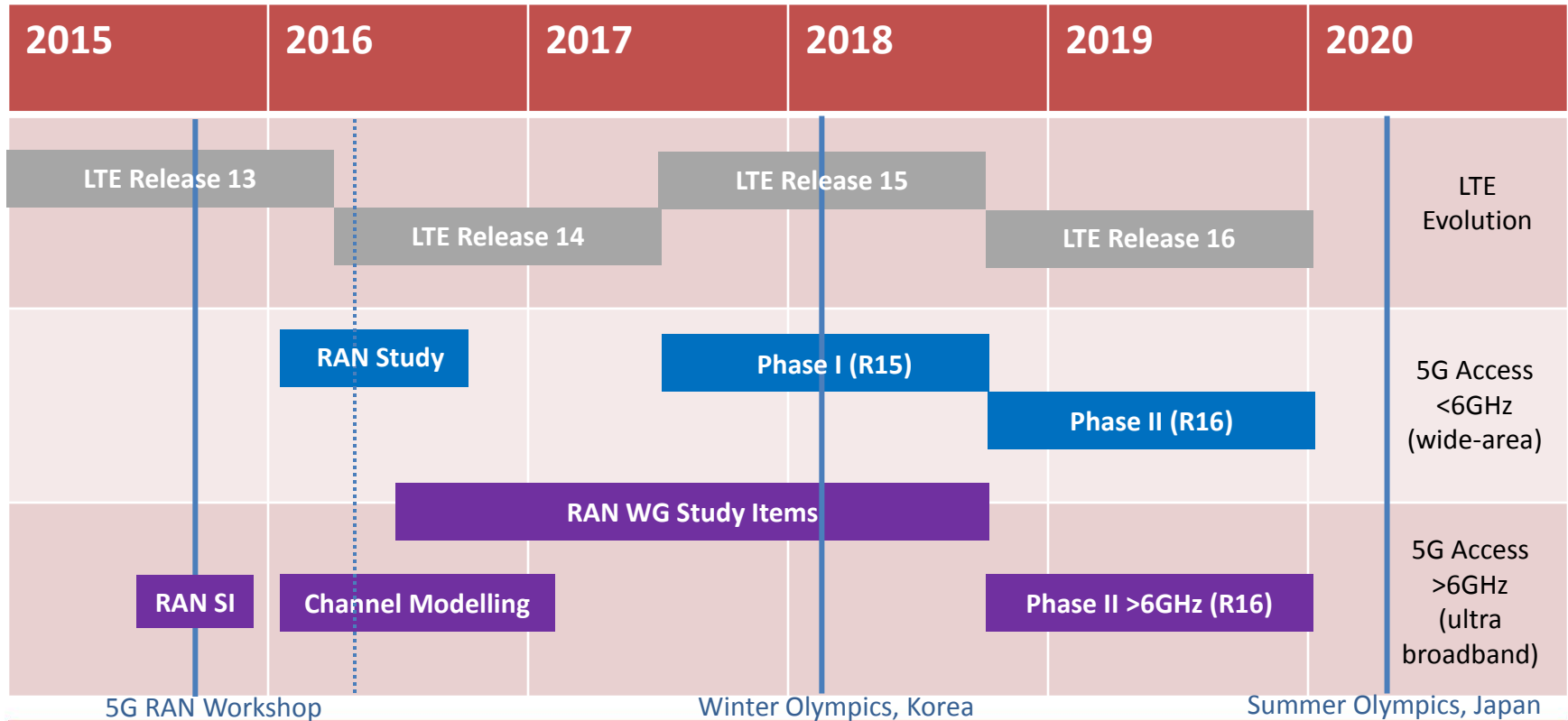
Today's Panelists

- **Ojas Choksi**, Executive Technology Advisor, DISH
- **Arun Ghosh**, Director, Advanced Radio Technologies Group, AT&T
- **Gerry Flynn**, Director of Corporate Technology, Verizon Communications
- **Virgil Renz**, Director IoT/OEM/Partners, TELUS

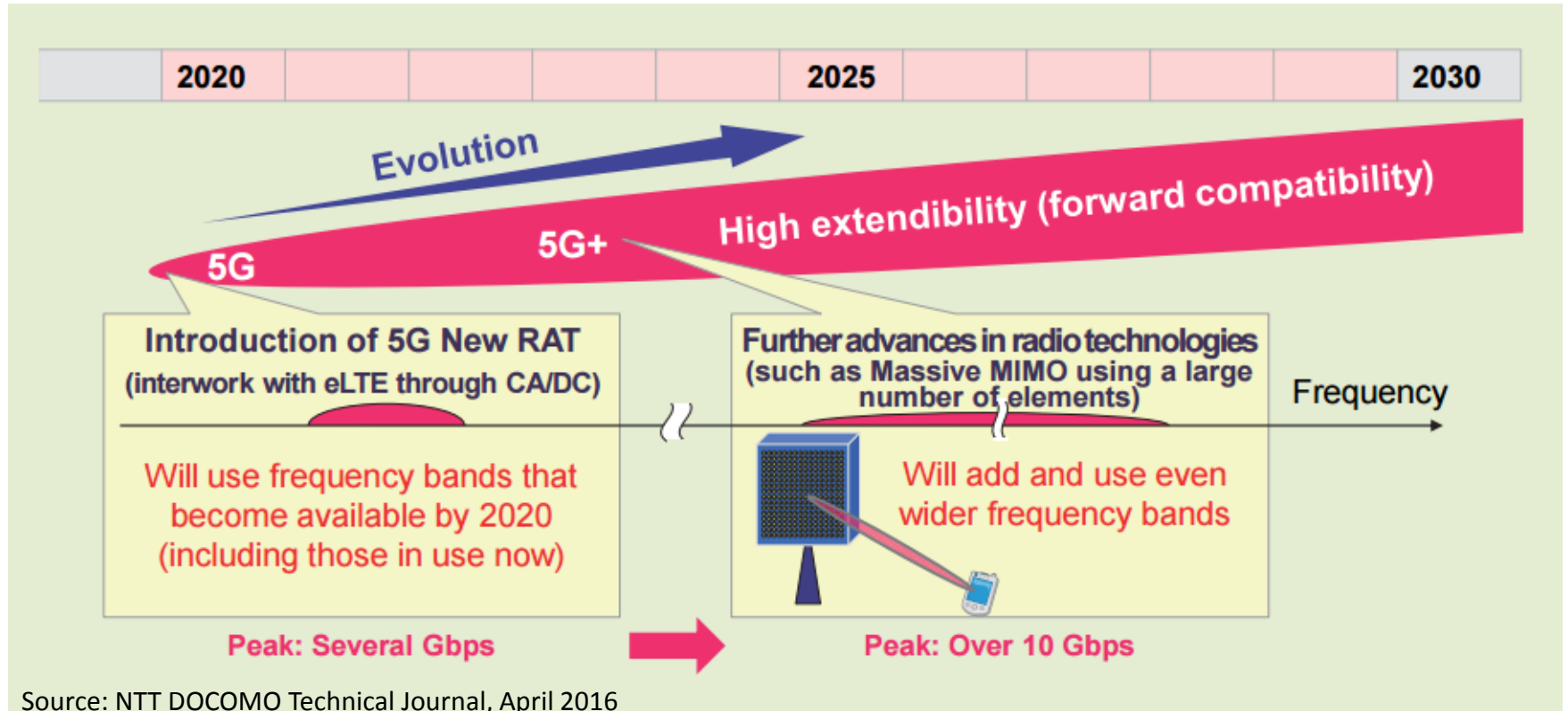
Since the 2015 ATIS 5G Symposium...

- **IMT-2020 Performance Targets**
 - Technical evaluation criteria under development
- **World Radio Congress 2015 (WRC-15)**
 - Few surprises; conservative; preparation for WRC-19 underway
- **3GPP Standardization Underway**
 - 5G RAN Workshop (Sept. 2015); start of specification Q1 2016
- **Accelerating Operator Trial Activity**
 - Notably, in the US, Japan & Korea; initial focus on mmWave

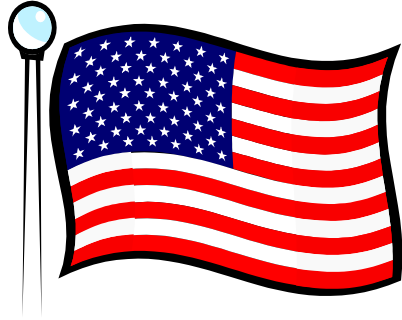
5G Timeline... (on-track for 2020)



2020 is Just the Start...



5G Trial Activity (announced)



- AT&T
- C-Spire
- Sprint
- T-Mobile
- Verizon



- Deutsche Telekom
- Orange
- Telefonica
- TeliaSonera
- Vodafone



- China Mobile
- DOCOMO
- MTS
- SK Telecom
- SoftBank

5G Use-Cases

- The focus of 5G development appears to be on enhanced MBB, while massive IoT and ultra-reliable, low-latency communications are being side-lined (for now). Is this correct?
- Is there any cause for concern that more transformational use-cases are being de-emphasised in the early phases? Is 5G being oversold?

5G Trials

- Are the current wave of trials more about generating data and experience to inform standardisation and product R&D?
- To what extent can we think of them as pre-commercial trials?

Standards Timeline

- What is the status of 3GPP standards work?
- Do you expect the 10-year “G” cycle to hold?
- How far are “corridor conversations” ahead of formal standards? Do you see informal consensus emerging?
- Presumably, we can expect a barrage of “5G” marketing ahead of time?

Network Architecture

- How will 5G and evolved LTE co-exist? Is 5G inherently multi-RAT?
- Can we expect an evolved 4G core to support 5G access? Or is a fresh start – a new core network – preferable?
- At what stage will the requirement for one-hop access to the “edge cloud” become important?
- Should we think of 5G as an application on an SDN network?

mmWave & 5G

- There is a perception that 5G = mmWave. Is this correct?
- How mature is mmWave for NLOS operation? Mobile access? For outdoor-in coverage?
- Is 5G primarily a capacity/performance solution for hotspot locations (e.g. stadiums)?

Industry Structure

- Do cloud and open source fundamentally change the 5G development process?
- Is “RAN disaggregation” really likely?
- What are the opportunities for 5G beyond the classic mobile operator market?

Thank You.

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