



4G Americas

The Voice of 5G for the Americas

Perspective from Industrial Associations

5G Standardization

**Dr. Håkan Andersson, Ericsson presenting
on behalf of Chris Pearson, President, 4G Americas**

**5G Workshop between Regional Initiatives
20 October 2015, Lisbon**

4G Americas Board of Governors

MISSION: 4G Americas will advocate for and foster the advancement and full capabilities of LTE mobile broadband technologies, including LTE-Advanced and beyond to 5G, throughout the ecosystem's networks, services, applications and wirelessly connected devices in the Americas.

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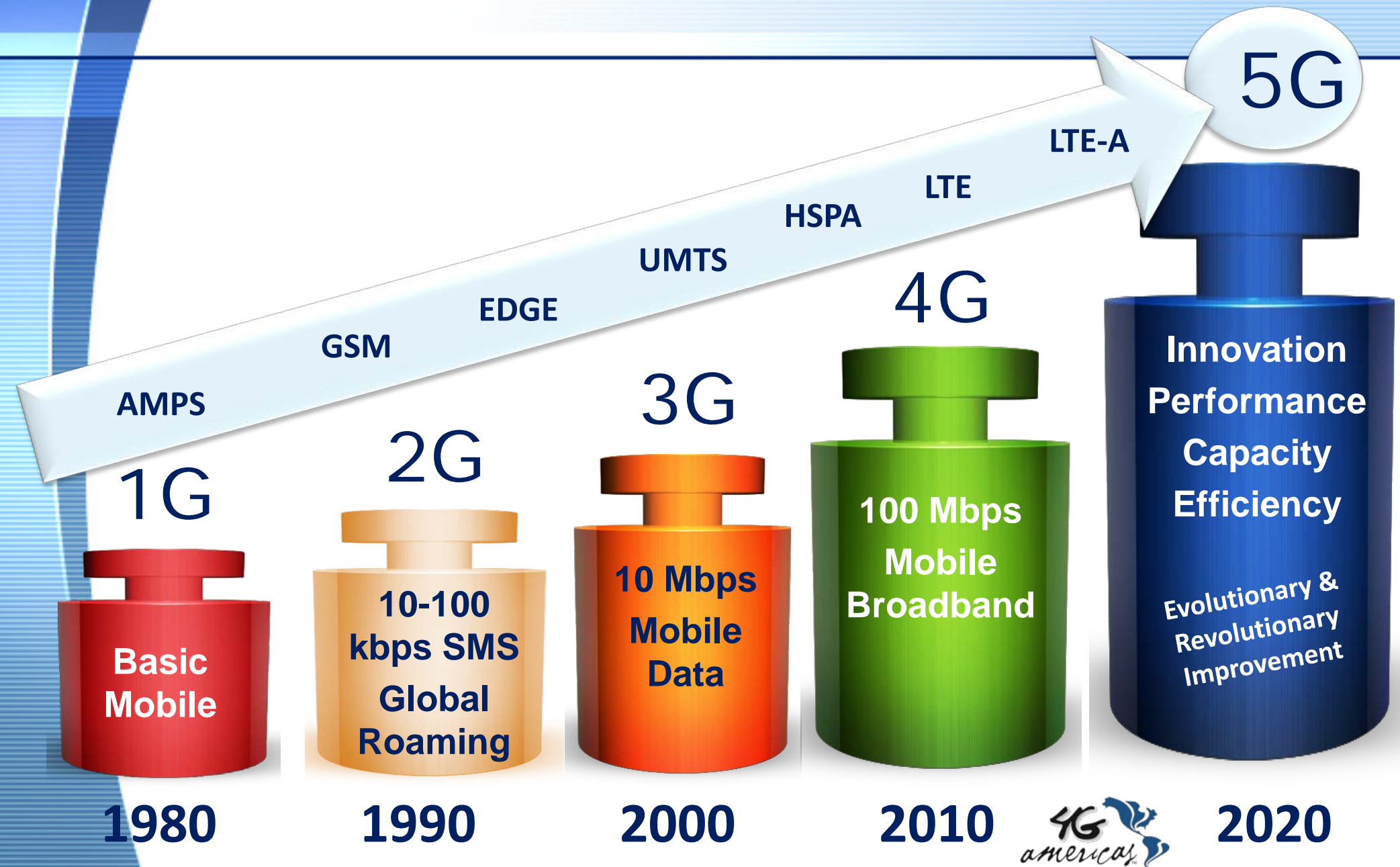
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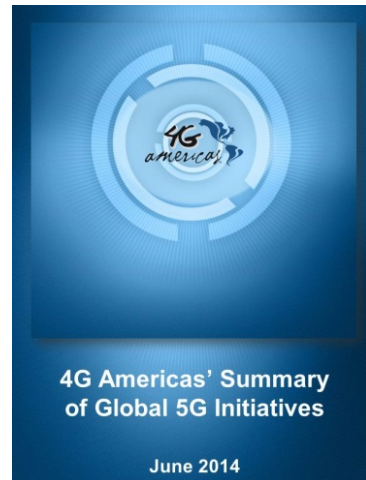
The Voice of 5G for the Americas



Evolution of Cellular Technology



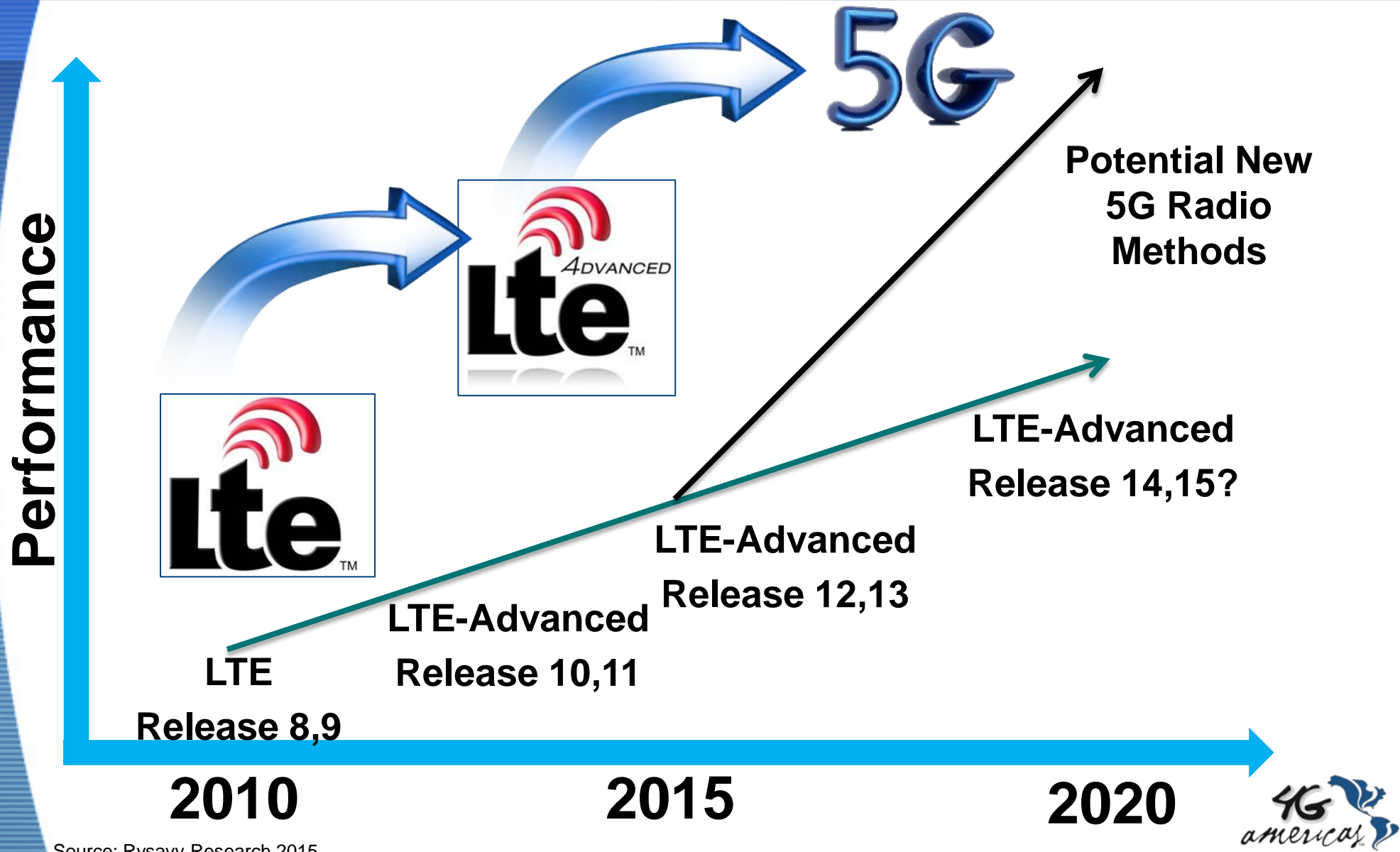
4G Americas 5G Work Program and White Papers



4G Americas' 5G Memorandums of Understanding and Liaisons



Evolution to 5G Including LTE Improvements and Potential New 5G Radio Methods



Source: Rysavy Research 2015

The Potential of 5G

Broadband

Massive traffic capacity
Higher download speeds
Spectrum efficiency
New spectrum

Extreme Density

Massive user density

Innovative Applications

Creative use cases
New dimensional services
Context Awareness

Mission Critical

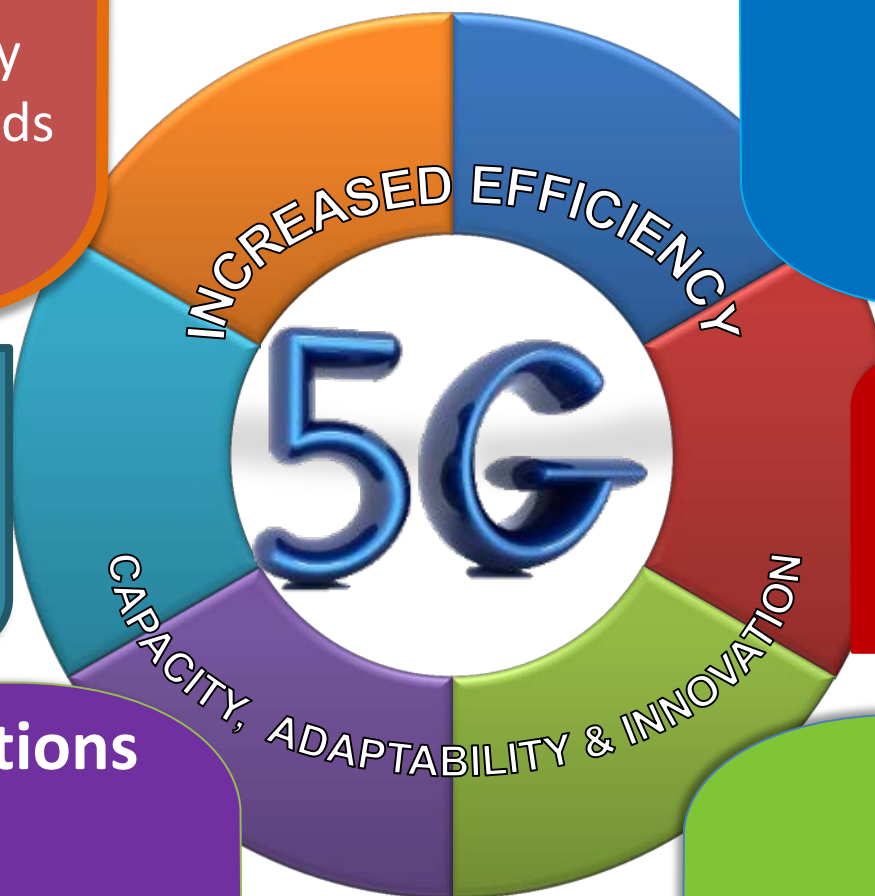
Very low latency
High reliability
High availability
Secure

Battery Life

Energy optimization
Adaptive Efficiency

Internet of Things

Signaling reduction
Billions of connections
Low energy consumption





Key Principles

- Architected to meet the expected use cases/demand in 2020 and beyond
- Allows time for true advances of technology, feasibility studies, standardization and product development
- Inclusive of the entire ecosystem, including air interface, devices, transport, packet core and more
- A critical investment for the Americas region



Features considered 5G requirements should be implemented as LTE-Advanced extensions in advance of full 5G availability.



5G

Requirements



- Battery Life
- Per-user Data Rate and Latency
- Robustness and Resiliency
- Mobility
- Seamless User Experience
- Context Aware Network



- Scalability
- Network Capacity
- Cost Efficiency
- Automated System Management & Configuration
- Network Flexibility
- Energy Efficiency
- Coverage
- Security
- Diverse Spectrum Operation
- Unified System Framework



Building on 4G for 5G

**Networking
Flexibility**

**Additional support
for essential
functions as
fundamental
attributes of
networking layer**

**Providing more
flexible mobility**



**Expanding form
of multi-RAT
integration and
management**



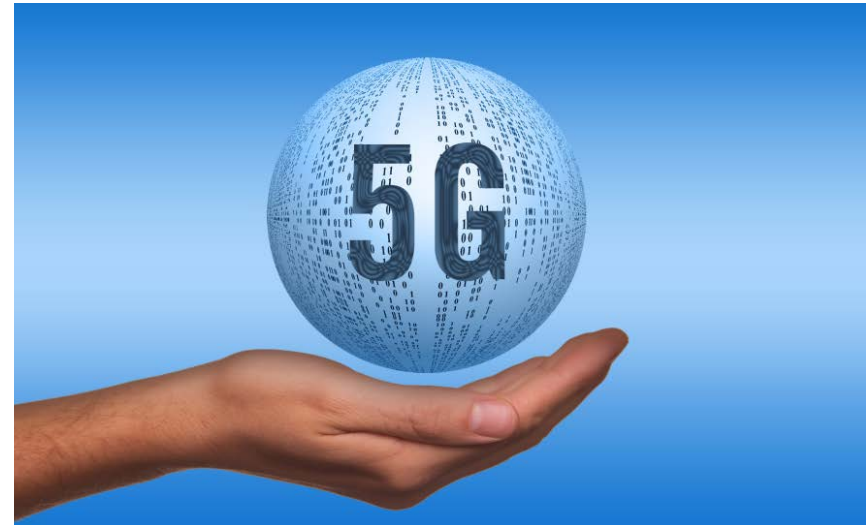
**Enhanced
efficiency for
short burst or
small data
communication**

**Expanding
context
information
known to the
network**

5G WILL ENHANCE SOME OF THE BUILDING BLOCKS DEFINED IN 4G

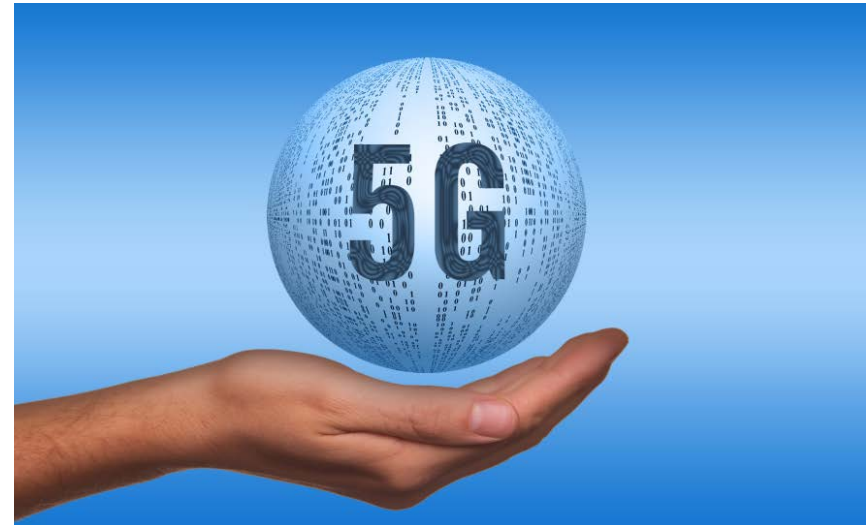
Recommended Potential 5G Technologies (1)

- **Massive MIMO**
- **RAN Transmission – Centimeter and Millimeter Waves**
- **New Waveforms**
- **Shared Spectrum Access**
- **Advanced Inter-Node Coordination**
- **Simultaneous Transmission Reception**
- **Multi-RAT Integration & Management**



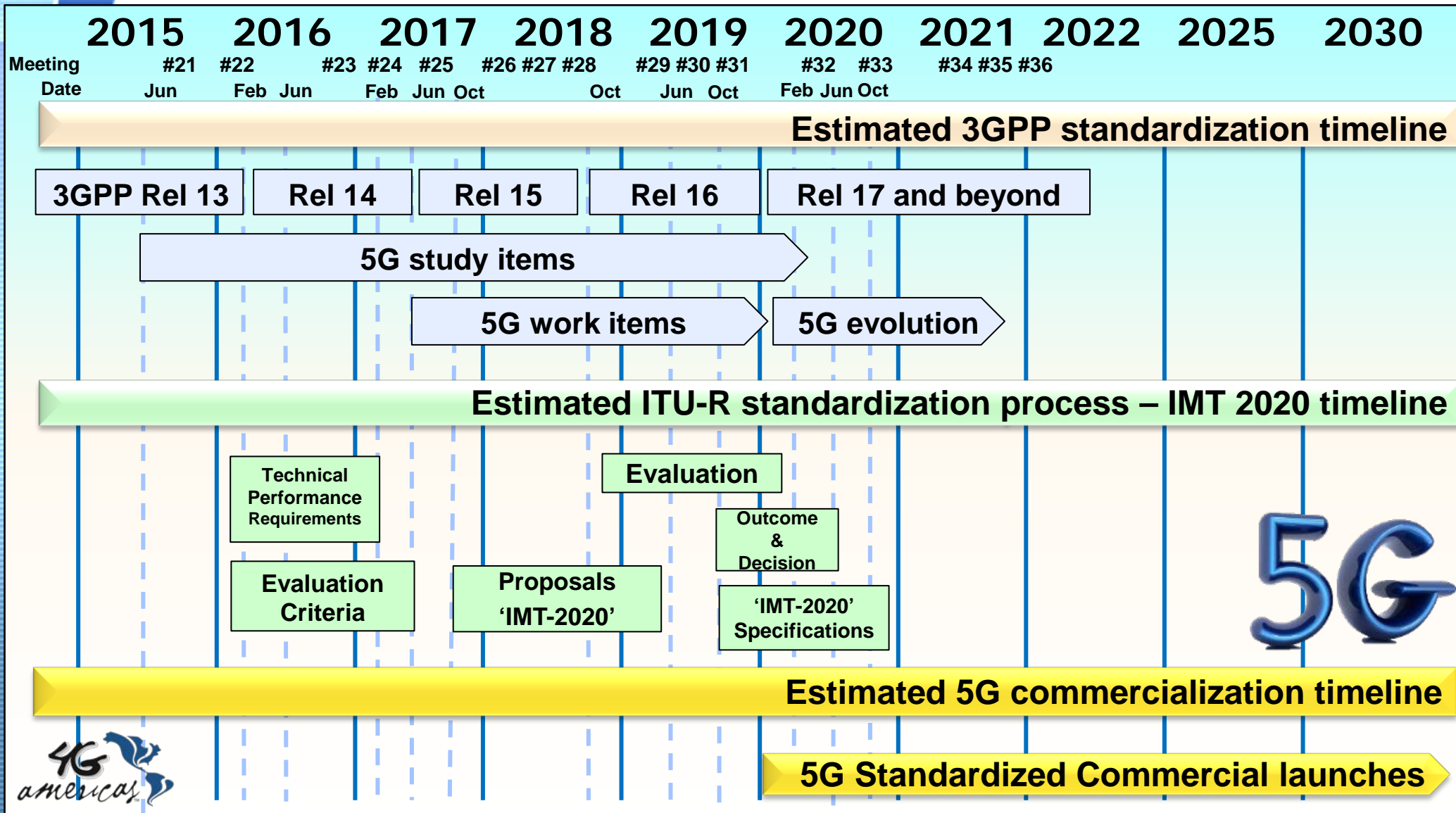
Recommended Potential 5G Technologies (2)

- D2D Communications
- Efficient Small Data Transmission
- Wireless Backhaul / Access Integration
- Flexible Networks
- Flexible Mobility
- Context Aware Networking
- Information Centric Networking
- Moving Networks

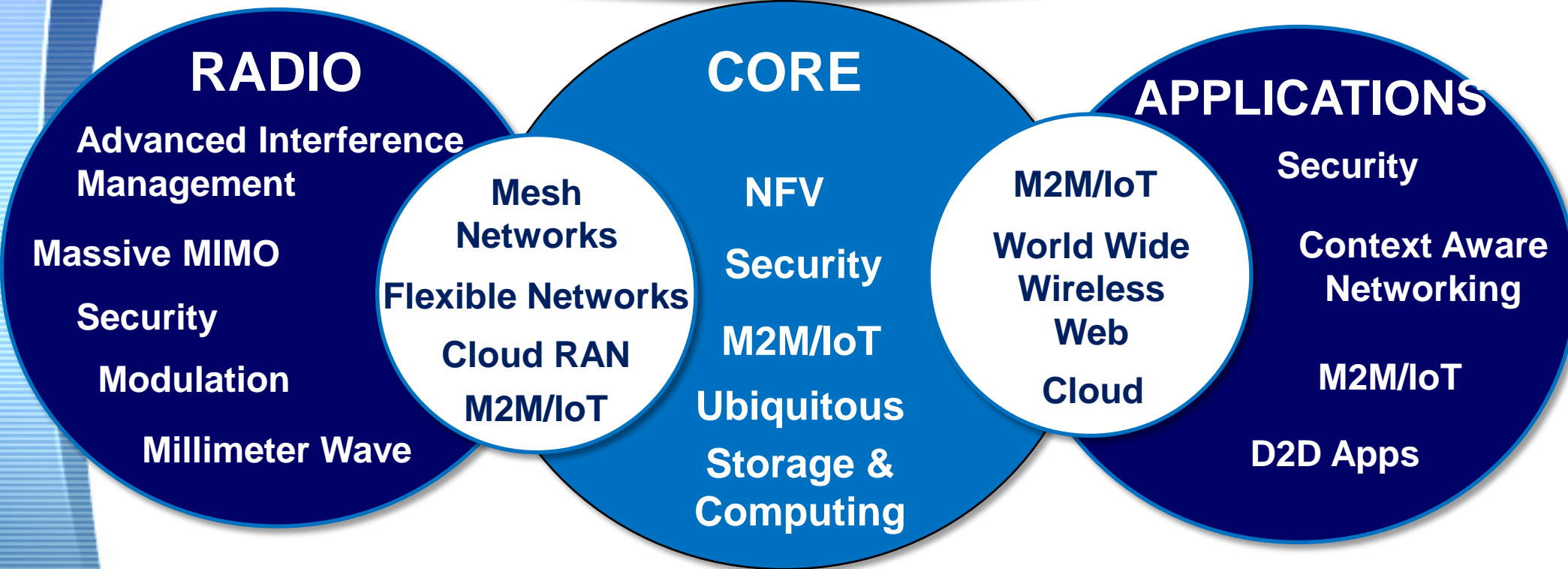
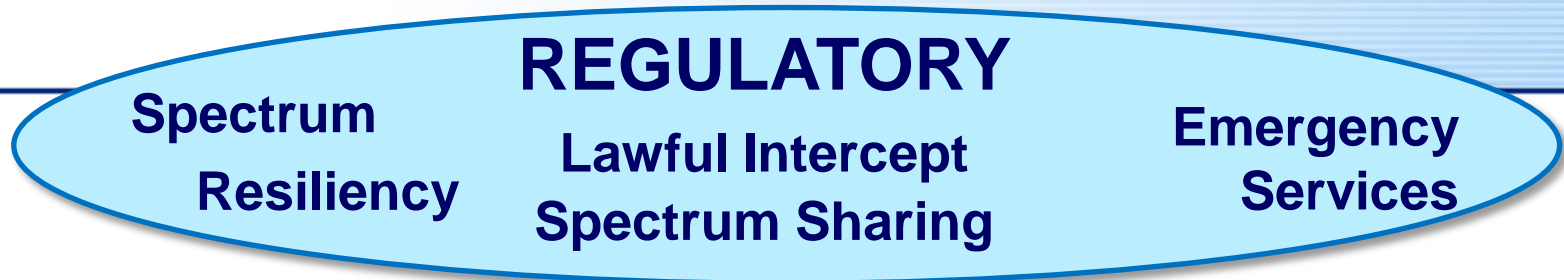


The Evolution of Mobile Broadband

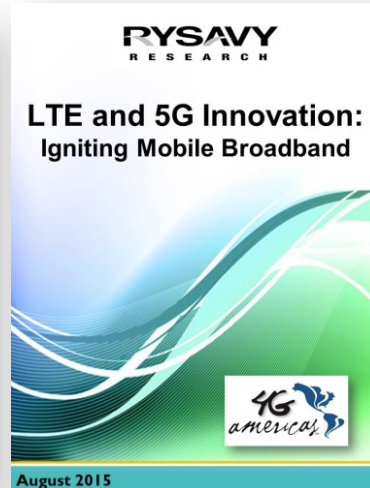
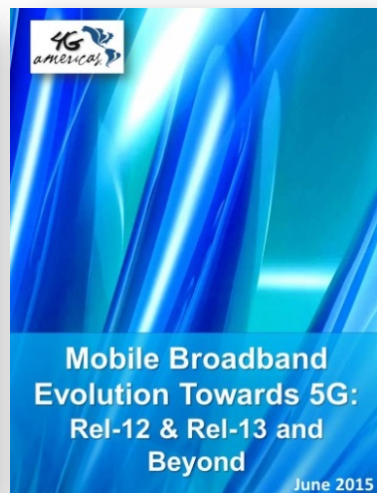
Timeline



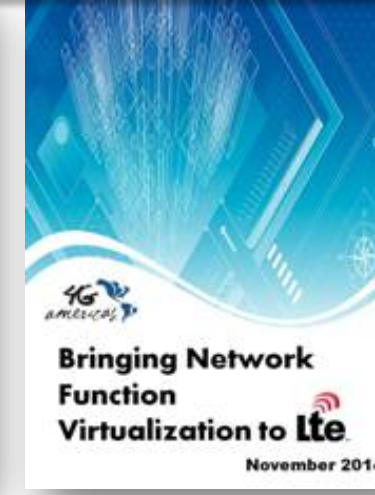
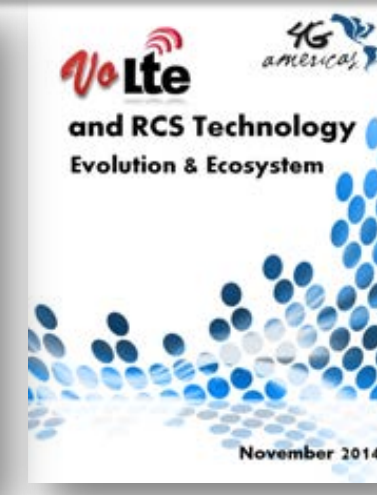
End-to-End 5G Ecosystem



Technical Publications



Free download at www.4gamericas.org



Time Ticking Towards 2020



5G and the 5C's

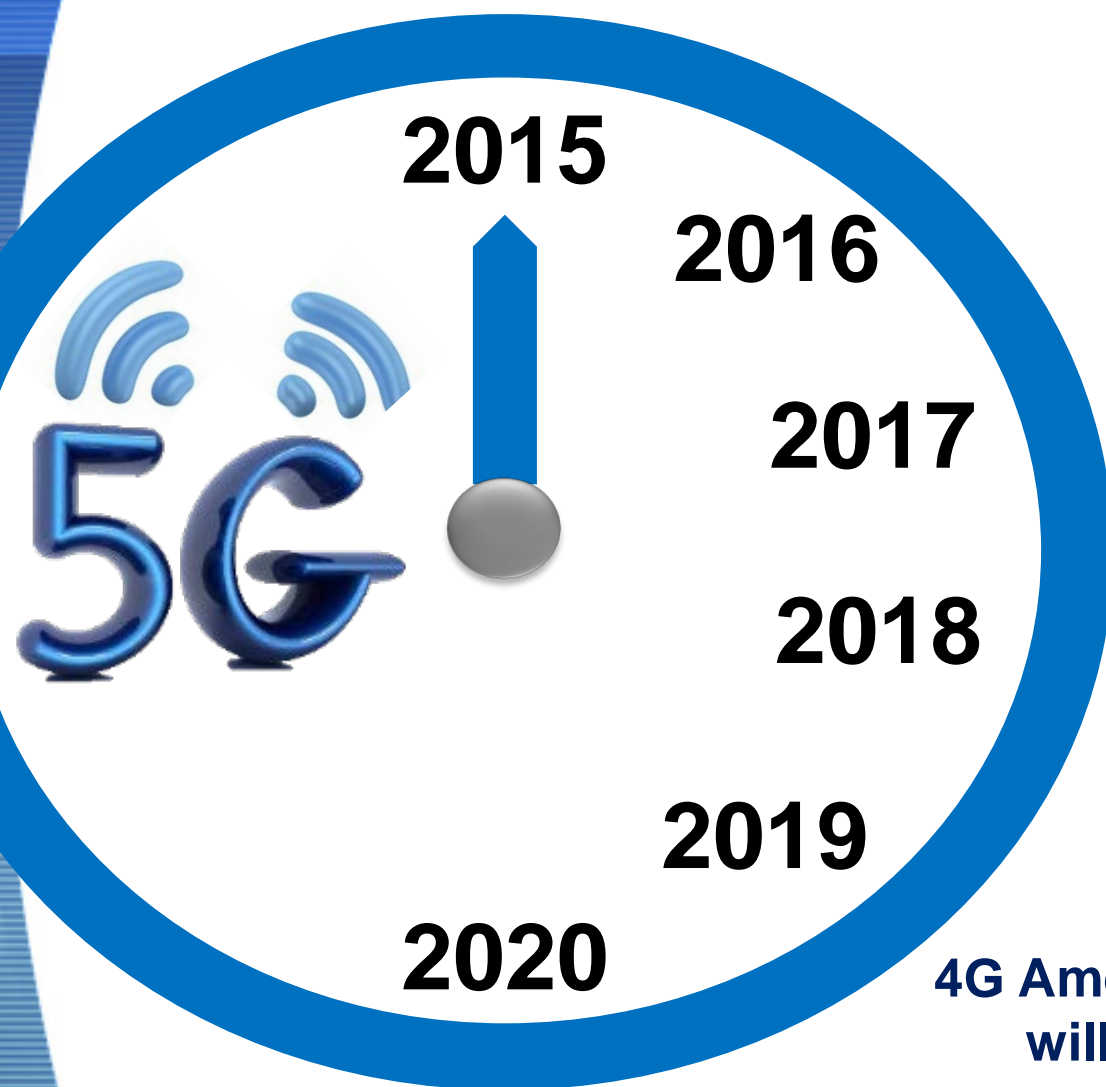
Connect

Communicate

Collaborate

Cooperate

Contribute



4G Americas publicizes 5G work and is willing to embrace the 5C's with organizations around the world.

THANK YOU



Available for free download at
www.4gamericas.org

