XONA

**MWC 2016
Industry Trends and Takeaways**

February 2016

Preface

The 2016 edition of MWC had two key themes: 5G and IoT. Both themes are positioned as potential revenue drivers for MNOs, but they are diametrically opposed propositions. These themes enforce the status of the MNOs as connectivity providers. Connectivity is a (necessary) commodity; 5G and IoT will take time to unfold as bounded by the requirements of investments and market development. But behind the limelight, the Internet giants and OTTs continue to lead the evolution towards network virtualization, while leveraging their inherent cloud and big data advantages, and as such, driving towards major market disruption. New business models are now possible that may render the MNOs to spectrum holders as service delivery is achieved through multiple channels with the cellular network being one of many such channels.

The Xona Partners Team
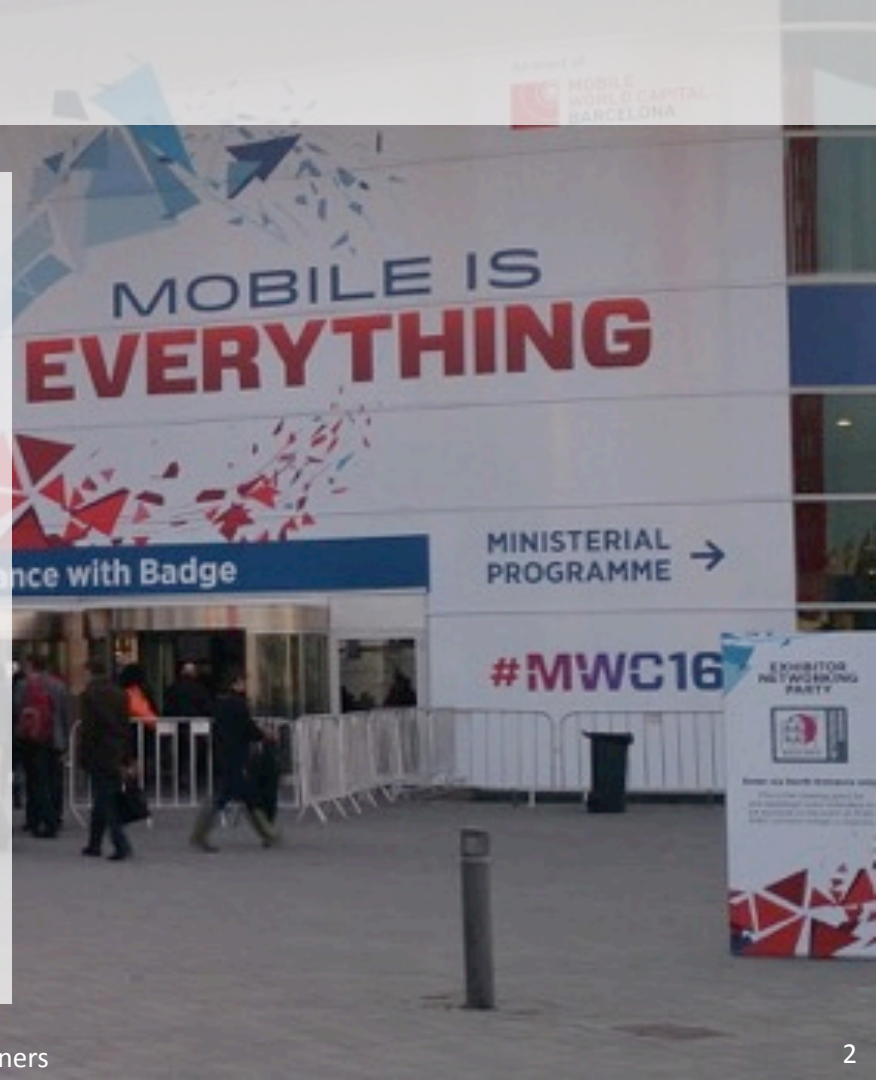
5G: Dominant by too early

5G dominated MWC16. The industry considers 5G as a linear evolution with focus on speed as vendors competed on gigabit announcements.

Speed is achieved leveraging ever higher spectrum resources through carrier aggregation which is not scalable.

Widely demoed outdoor millimeter wave access will have a most challenging business case: Beware!

5G is too early on the road to deployment – there is much to agree on, not the least is the physical layer.

5G is a network of networks but 'network slicing' has become a common cliché.

We expect 'true' 5G to be commercialized post 2022. Different services will be marketed as 5G in the meantime confusing the public in the meantime like never before.

A crisis is brewing in radio access as spectral efficiency will be marginally improved over 4G driving the need for additional spectrum which while is cheaper cannot be deployed similar to current practice.

4G: Long Life

The runway for 4G technologies is long driven by market economics.

Carrier aggregation will drive speed on networks while virtualization of core network elements will drive future upgrades.

VoLTE is well positioned to get more traction as operators look for competitive advantage.

Attention ramping up on LTE in unlicensed spectrum: LAA, MulteFire, and LWA, but we have reservations on the commercial potential as they challenge the value proposition of MNO services.

The focus on 5G has overshadowed the evolution of LTE in public displays providing an inaccurate projection of where operators will invest.
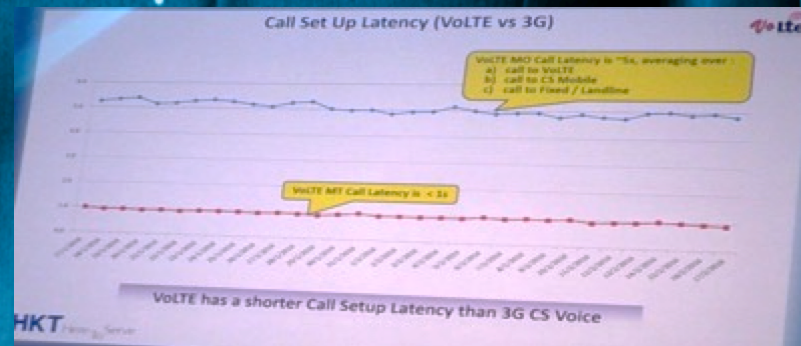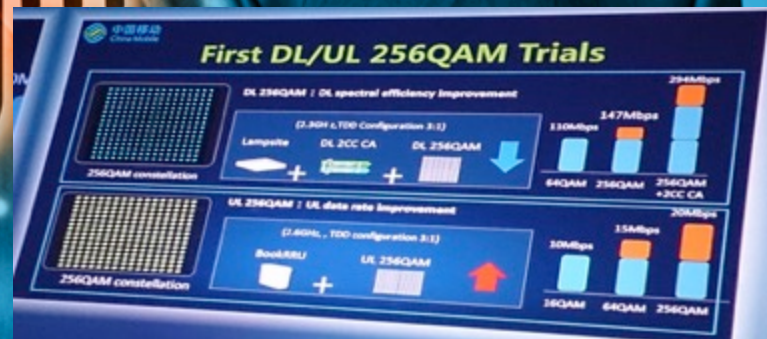
IoT Connectivity: déjà vu!

The threat of LPWAs bearing down on MNOs focused action on NB-IoT. Where are the applications?

MNO community aiming to forestall the growth of LPWA ecosystem through multipronged attack that includes unrealistic accelerated timelines for NB-IoT.

NB-IoT is positioned for availability by end of this year. We believe it is early 2018 before mature systems are available.

The LPWANs vs. NB-IoT battle is a repeat of the WiMAX vs. LTE race. For LPWANs, the diversity of applications and operation in unlicensed spectrum offers a market opportunity.

MNOs have limited ability to capitalize on NB-IoT unless they undertake a major shift in operation.

Connectivity is a commodity; the value is in the information. More information from more data increases value. Focusing on 'small data' is a commercial challenge for the MNOs.

LTE Cat-0 is defunct. Cat-m1 which may become the workhorse of many IoT applications has taken a back seat to NB-IoT.

Too many IoT connectivity solutions. Which will win?

Artificial Intelligence is everywhere

Resurgent AI driven by the Internet players is making inroads into the mobile application ecosystem. Still, when filtering the announcement, only few players could show for real AI applications!

Telcos such as Softbank have been positioning intelligent robots as a possible evolution of telco services. While drastic, it is an interesting bet. Expect a lot of competition ahead.

A good proportion of new products and solutions advertise "predictive analytics" and "deep learning." Ironically, the same vendors are in early stages of putting together a big data architecture which is a prerequisite for intelligent data processing!

Incremental AI use cases will continue to emerge as more data becomes available. But we believe that the "AI + everything" story will not last: only the companies with strong AI teams will leverage its potential while most others will have to partner with specialized AI companies to achieve their goals.

To make AI work, more expertise is required within many of the companies aiming at leveraging it.

Virtualization:
Leading new services and business models

Virtualization of the mobile core has been slow with the notable exception of a few Asian and US operators actively pursuing commercialization of virtual EPC solutions.

Nascent cloud-based implementations of EPC, IMS and BSS emerging from few startups have a shot at business model disruption (private/corporate LTE, IoT MVNO, etc.)

Tier 2 vendors and small innovators to challenge complacent top TEMs in commercializing virtualized solutions in the core and access networks.

Virtualization of the RAN is still in its infancy but major developments occurred over the past year bolstered by creative startups. Expect drastic change in the small cell and DAS markets within the next 5 years as virtualized RAN enable new business models and services.

Virtualization and open compute platforms are the domains of Internet giants who built a substantial lead and are intent on defining telecom services in a commoditized context to the disadvantage of MNOs.

Open Compute Platform (OCP): Underestimated emerging threat

OCP is an important threat to Cloud and equipment providers. It has a huge impact on how data centers will be architected in the future.

The cloud giants have been doing internally for years what OCP does. However, one notices strong momentum in taking these designs public.

Launch of the Telecom Infrastructure Project (TIP) as part of OCP created much attention driven by progressive operators such as SK telecom & Deutsche Telekom. HPE, Cisco, Intel and alike should watch out for a bumpy future ahead!

OCP will piggyback on the Open Source momentum, but its impact is less serious on the system vendors than portrayed. In fact, some vendors are likely to leverage it.

Open Source had wide interest – several NEPs messaged on Open Source efforts: Open MANO, DPDK and FD.IO are the latest buzz words. While a few reference implementations are available, we believe it will be another 12-18 months before mature public deployments are realized on DPDK and FD.IO.

Network Function Virtualization (NFV)

NFV was a hot topic with many Network Equipment Providers (NEPs) demonstrating functionality including many virtual EPC demos.

Major NEPs using NFV as a prime vehicle to deliver network services and virtualized GiLAN services. OpenMANO (Management and Orchestration) was displayed by Telefonica.

All NEPs and Open Source Providers had big messaging on NFV. We believe NFV is real and will be deployed at large scale in the next 12 months. However, the same cannot be said about SDN.

vEPC is 'for real' and GiLAN virtualization is happening at all mobile service providers.

OpenStack implementations seem to have matured and many providers and NEPs displayed and discussed their deployments.

Notable Topics

The GSMA-driven RCS framework got a new breath of life through the Google partnership. We believe RCS is passé, and won't make an attempt to come back!

The wearable fad that took over MWC14 has largely fizzled, as we pointed it would. Capitalizing on the wealth of data generated by wearables is still work in progress.

MVNO / MVNE services and platforms are emerging to address the global IoT opportunity. eSIM technologies are enabling new business models. The MVNO revival is driven as more MNOs seek the opportunity to capitalize on the emerging IoT market for low revenue connectivity while they focus on providing high-bandwidth broadband.

Virtual & Augmented Reality had a strong showing. The low-latency, high-bandwidth promise of 5G is in line with VR requirements and will feature in many uses cases, but VR alone cannot carry 5G.

Smart City demos took a step back this year in favor of more specific applications. This comes as a relief from the vague concept promoted by industry players as a catch-all phrase for different applications.

VoLTE and IMS were topics of discussion. While Google announced IMS support, we believe VoLTE will continue to be deployed and Rich Media Communications (RMC) will continue to be Over the Top.

Notable Topics

Unlike MWC15, there were fewer merger and acquisitions announced this year. The acquisition of Alcatel-Lucent by Nokia foretells of further consolidation in the supply chain.

MNOs are projected to increase collaboration on procurement further reducing margins for vendors.

Anything as a Service (XaaS) is emerging as a vehicle to stimulate revenue for equipment vendors. The challenge is in establishing a cooperative framework with the clients and mitigating a competitive stance.

The first Public Safety LTE solutions were on display. Tetra will have a major challenger in LTE.

There are interesting similarities among "country specific" innovation booths in relation to applications and products. It lead us to conclude that much of the innovation in applications has 'gone local'. In reality, the main challenge is to scale which requires one to 'be global'. Hence, we foresee challenges ahead for many of these startups.

While MWC15 has had a significant number of Demand Side Platforms (DSPs), this number has been reduced drastically. A sign of the online advertising business consolidating around big players. Best times are behind for startups in this sector.
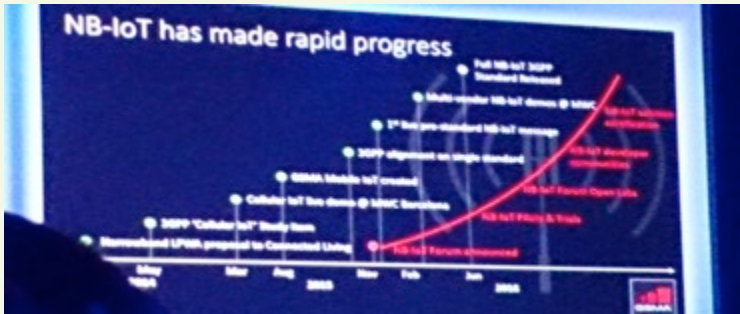
Highlights

Virtual reality rampant: touted as 5G use case, it is close to the ultimate in hype!

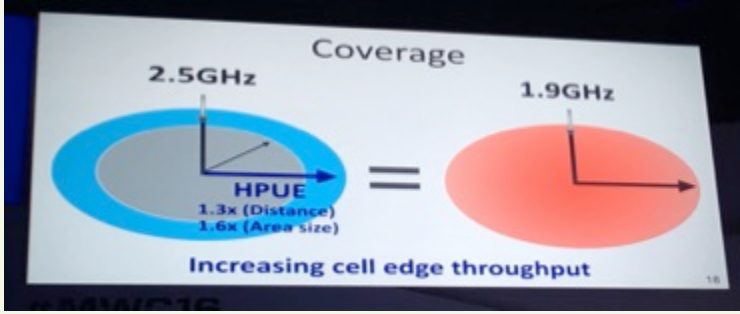Cars were everywhere – much can be achieved though without 5G!

The push for NB-IoT is in full swing as the battle with LPWANs intensify

TD-LTE aiming to align with verticals foretells of MNO strategy in saturated markets.

Highlights

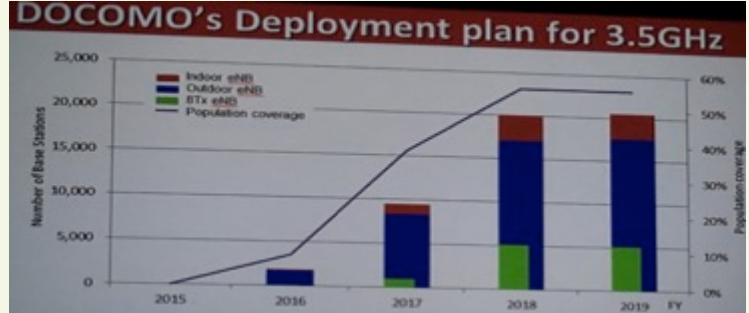Band 41 (2.5 GHz) high-power UE requested by SoftBank points to future challenges with spectrum

MNOs bet on LPWANs as ecosystem attempt to accelerate NB-IoT: is this the right play?

Why mount small cells on expensive poles where there are manholes?

3.5 GHz market awaits Japan's deployments. US CBRS to drive volumes post 2017.

Highlights

A bandpass filter laminate by 3M: Reflecting light while letting RF pass through.

Virtual RAN projected enables neutral host and other business services: a disruption in waiting for small cells and DAS.
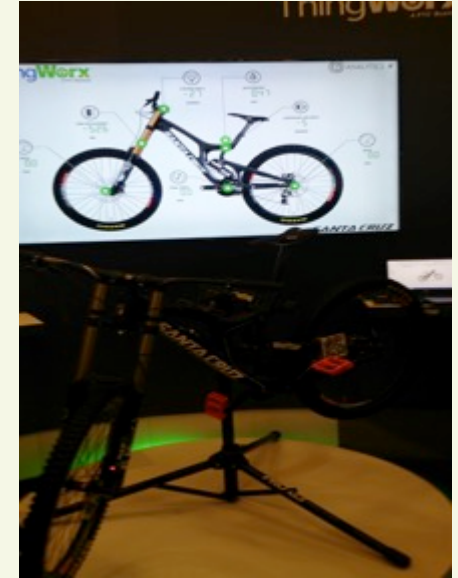
Asset allocation and tracking are key IoT applications. Bikes were second to cars in display!

About Xona Partners

A Boutique Advisory Firm Specialized in Developing New Technology Ventures & Growth Strategies

Clients / Activities

Private Equity & Venture Funds
• M&A due diligence; competitive analysis & positioning
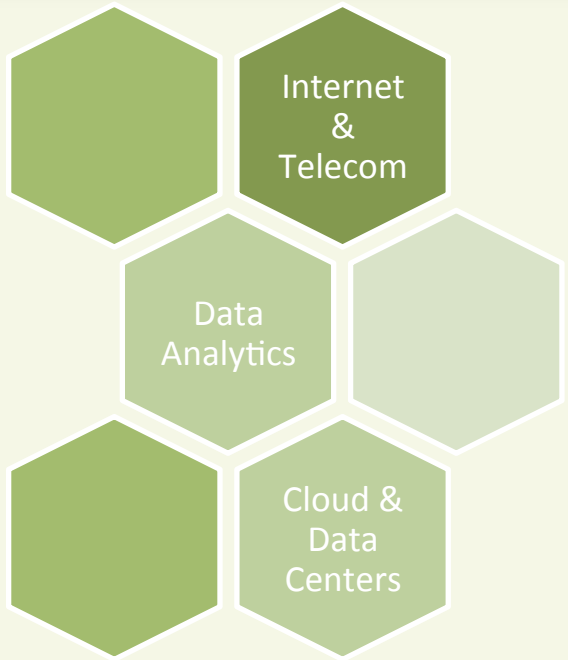
Technology Corporations
• Develop new business ventures from concept through execution on shared risk/return basis

Governments, Regulatory & Policy Makers
• Market & technology assessment to form policy decisions

Internet & Telecom

Data Analytics

Cloud & Data Centers

X O N Δ PARTNERS

Meet Us Next at TMT Finance Asia

Xona Partners will be in Singapore on March 9th at TMT Asia

To book a meeting, please contact us at:
advisors@xonapartners.com

Additional information at:
www.tmtfinance.com/asia

XONA Partners

Innovate. Enable.

Contact: advisors@xonapartners.com

Web: www.xonapartners.com

Partners & Advisors: www.xonapartners.com/Team

S a n   F r a n c i s c o   •   S i n g a p o r e   •   D u b a i   •   P a r i s