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Liaison statement from NGMN on 5G

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Abstract

This document contains a liaison statement from NGMN (Next Generation Mobile Networks).

From: Klaus Moschner (NGMN Office), Philipp Deibert (NGMN Office)

Next Generation Mobile Networks
NGMN Liaison Statement to IEEE

Title: Liaison to IEEE on NGMN's 5G Initiative

Source: NGMN 5G Initiative Steering Committee

To: IEEE

Date: 2 September 2014

Contacts: Klaus Moschner (NGMN Office), Philipp Deibert (NGMN Office)

Attachments: NGMN Alliance 5G Press Conference at MWC, NGMN 5G Initiative Overview on Work Streams

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1. About the NGMN Alliance

The NGMN Alliance is an industry organization of leading world-wide Telecom Operators, Vendors and Research Institutes (see www.ngmn.org) and was founded by international network operators in 2006. Its objective is to ensure that the functionality and performance of next generation mobile network infrastructure, service platforms and devices will meet the requirements of operators and, ultimately, will satisfy end user demand and expectations. The NGMN Alliance will drive and guide the development of all future mobile broadband technology enhancements with a focus on "5G". The targets of these activities are supported by the strong and well-established partnership of worldwide leading operators, vendors, universities, and successful co-operations with other industry organisations.

2. Introduction NGMN 5G Initiative

Over the past few years LTE has established itself as a truly global technology and will continue to evolve. It is anticipated that LTE will remain the dominant technology platform of wireless broadband for the next decade, deployed in a growing number of frequency bands, and supported by a vibrant eco-system of devices and innovative service offerings.

The requirements for a new technology platform, to complement LTE, are being driven by high density demand and ever increasing consumption of a wide variety and variability of devices, services and applications. Furthermore, NGMN expects new use cases such as massive machine type communication (like M2M, Internet of Things), and more stringent demands for real time communications. This has to be delivered in a sustainable and cost-efficient way while continuing to provide consistent customer experience.

Beginning of 2014, the Board of the NGMN Alliance made the decision to strongly focus the future NGMN work-programme on defining the end-to-end requirements for 5G. The Board also ensured that NGMN will continue to accelerate the development of LTE-Advanced. (Please find attached to this liaison the presentation of the press conference on the launch of the NGMN 5G Initiative at the Mobile World Congress in Barcelona 2014.)

3. Scope and objectives NGMN 5G Initiative

Inspired by the strong industry collaboration which materially contributed to the success of LTE and its adoption across the world, a global NGMN initiative will deliver key operator requirements intended to guide the development of future technology platforms and related standards, create new business opportunities and satisfy future end-user needs.
This will be done in close collaboration with all industry partners and relevant initiatives and within the well-established NGMN processes.
The work of the NGMN 5G Initiative is based on five work streams, which respectively cover 'Vision Implications', 'Requirements', 'Architecture & Technology', 'Spectrum', 'IPR'. (Please find attached to this liaison a document with additional information on the working scope and objectives of the work streams.)

The first major public outcome of the NGMN 5G initiative will be an industry White Paper delivered in March 2015, intended to support the standardisation and subsequent availability of 5G from 2020. The White Paper will set challenging technical and other ecosystem requirements for 5G, and accelerate the adoption of new emerging technology innovations.
In June 2014 at the NGMN Forum, 5G experts and strategists of all leading global NGMN Operator, Vendor and Research Partners reviewed the initial results of the 5G initiative. During the event, the WS1 (work stream 1) team laid out their viewpoint of a vision for 2020 and beyond in terms of industry environment and use cases. This viewpoint on the business vision built the basis for the following presented WS2 technology requirements, WS3 architecture design principles and WS4 spectrum guidelines.
The NGMN Forum will be the starting point for a close collaboration of all NGMN Partners and co-operation Partners in the work of the initiative for the further development and refinement of the final NGMN 5G White Paper.

4. Intention of the LS and required actions

The intention of this liaison is to introduce the scope and objectives of the NGMN 5G initiative to IEEE. We would like to invite IEEE to provide feedback on the activities and to make proposals on potential aspects to be considered in our work. In addition, this is to inform IEEE that it is our intention to keep IEEE updated on our activities in the area of 5G at major milestones.

Furthermore, NGMN would like to understand and to receive information on IEEE's current and potential future activities in the area of 5G.
It would be of particular interest for NGMN if there is input required from the NGMN 5G initiative and the dates and milestones by which the input from NGMN would be required.

We also kindly ask IEEE to save the date for the NGMN Industry Conference & Exhibition in Frankfurt/Germany on 24-25 March 2015, where the NGMN 5G White Paper will be publicly introduced and distributed for the first time.

We look forward to deeper and further collaboration with the IEEE on 5G related activities.

NGMN 5G Initiative

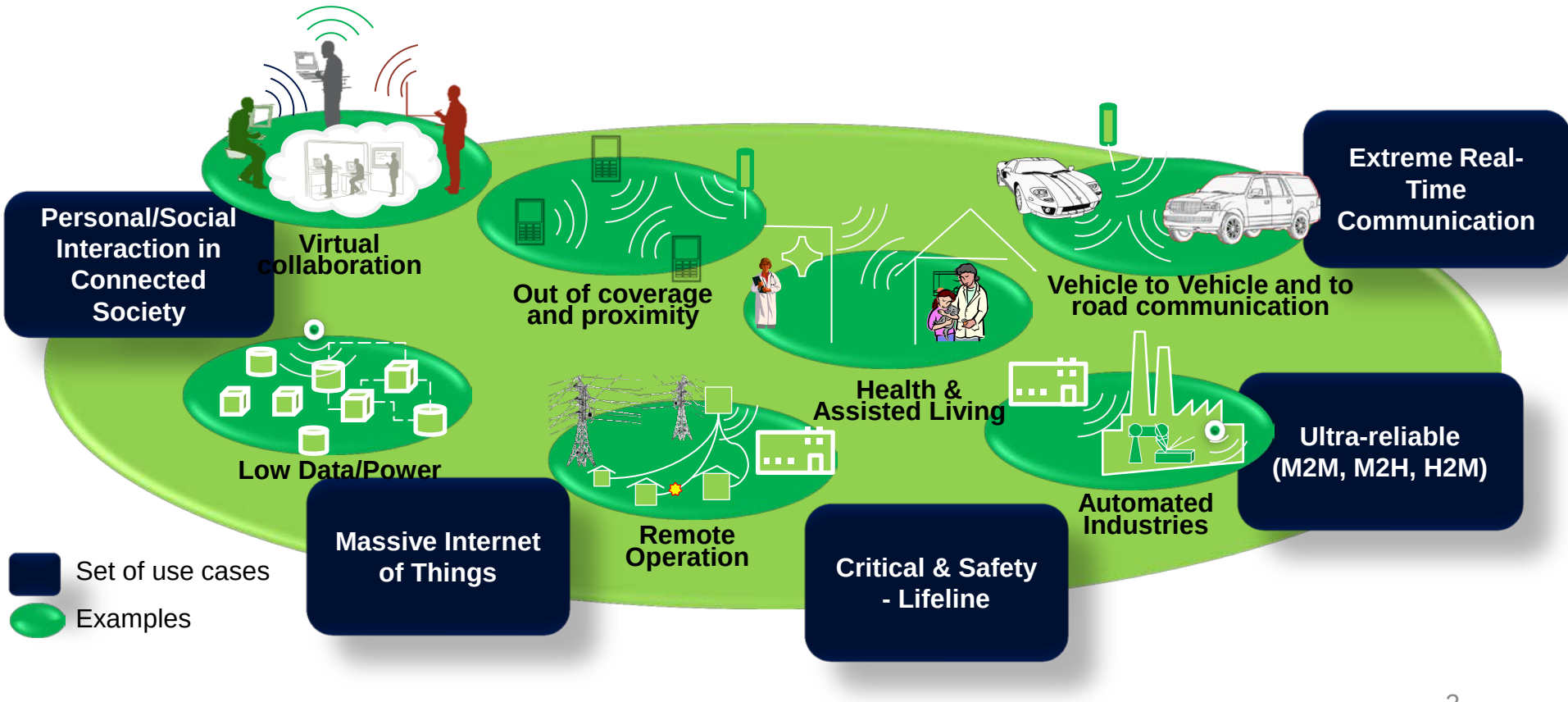
Overview on Work Streams 1-4

NGMN Alliance

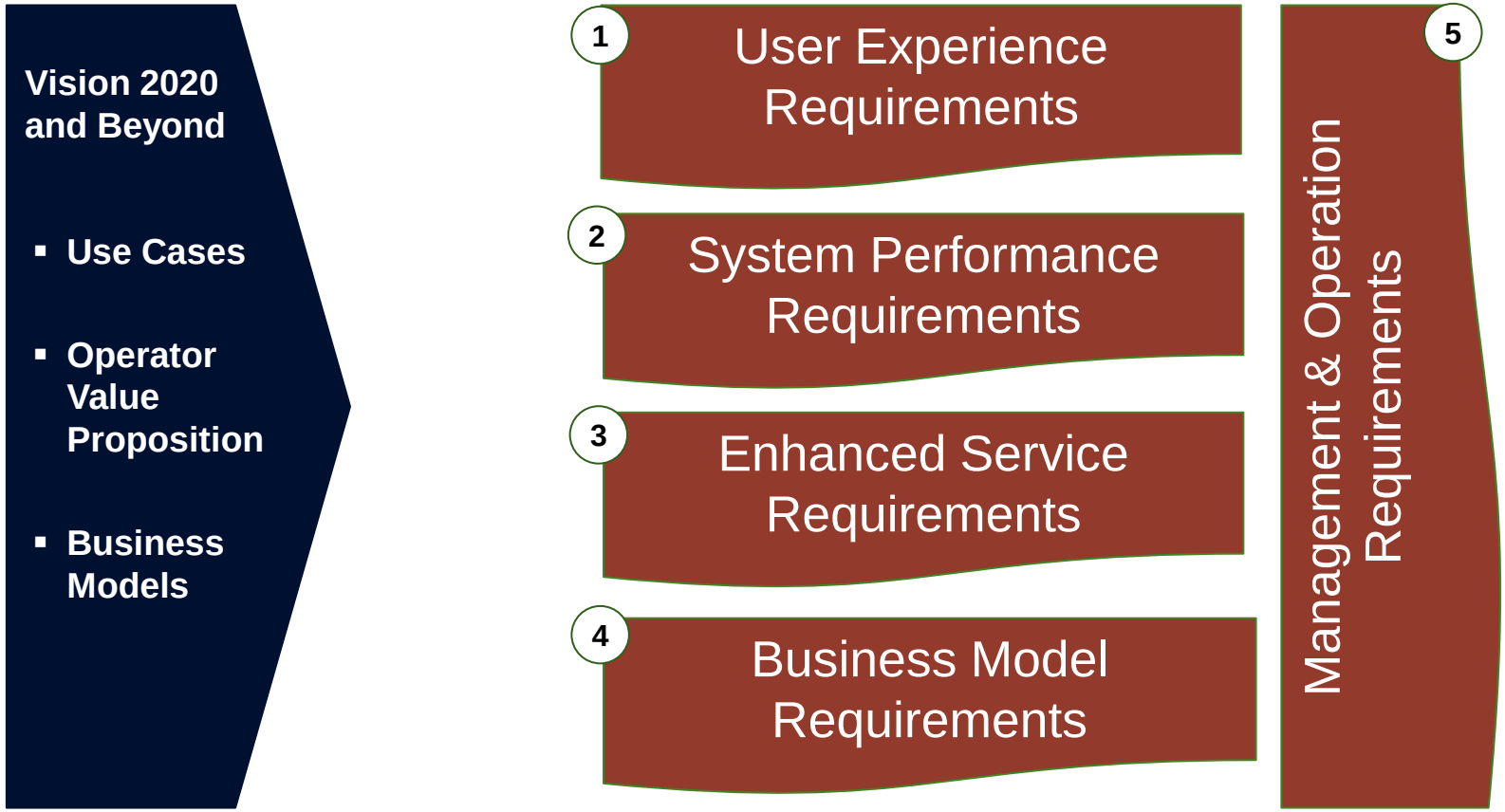
August 2014

WS1: 5G Use Cases

The post-2020 outlook is vastly broad in terms of variety and variability. Sets of selected use cases show both enriched service categories and also prospects for numerous new services.



WS2: 5G Requirements Overview



WS3: Architecture - Design Principles overview

1. Leverage spectrum
2. Coordinate and cancel interference
3. Enable cost efficient dense deployments
4. Simplify the core
5. Flexible functions and capabilities
6. Leverage virtualized & programmable platform
7. Security and privacy
8. Utilize data-aided intelligence
9. Expose APIs

WS4: 5G Spectrum Bands - Summary

On *Spectrum Bands* the emerging conclusions are:

1. Operators must be free to “re-farm” their existing mobile spectrum holdings for 5G and have access to additional spectrum that may be identified at the ITU WRC-15
2. We anticipate that 5G will be integrated within the umbrella of IMT within the ITU and will look to ITU for global spectrum identification and harmonisation.
3. Potential new requirements for 500-1000MHz of spectrum located above [6/10] GHz to support very high data rates and shorter-range connectivity should be studied and if appropriate addressed at the conference after WRC-15.
4. Depending on the outcome of WRC-15 there may be a need a future conference to consider additional spectrum for coverage and capacity (e.g. for the period beyond that considered by WRC-15). Spectrum below 1GHz is useful for coverage (rural and indoor) and spectrum above 6GHz is useful for very high data rates and shorter-range connectivity.
5. Backhaul requirements for 5G may include wireless solutions and need spectrum

NGMN Alliance Press Conference – Launch of the “5G” initiative

- **Welcome & Introduction**
- **Launch of the NGMN “5G” initiative**
- **Q&A**

25th February 2014

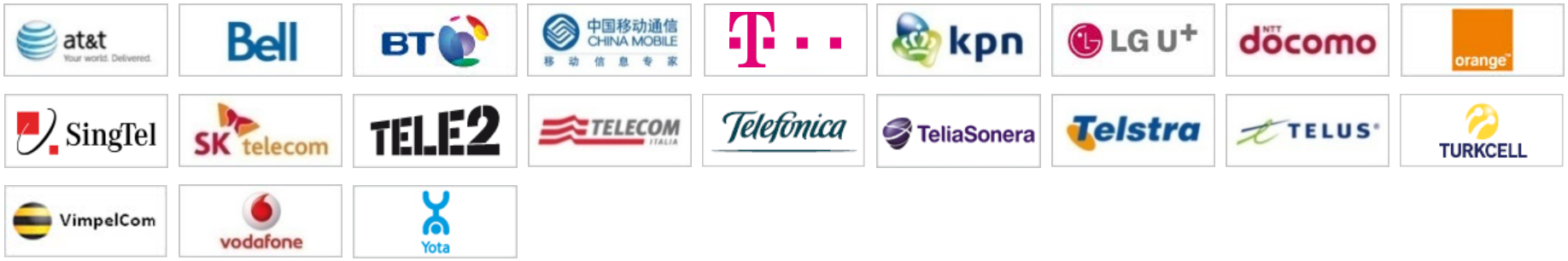
11:00 – 12:00

Barcelona, MWC

Deutsche Telekom AG Hall 3 Booth K30

The NGMN Alliance …

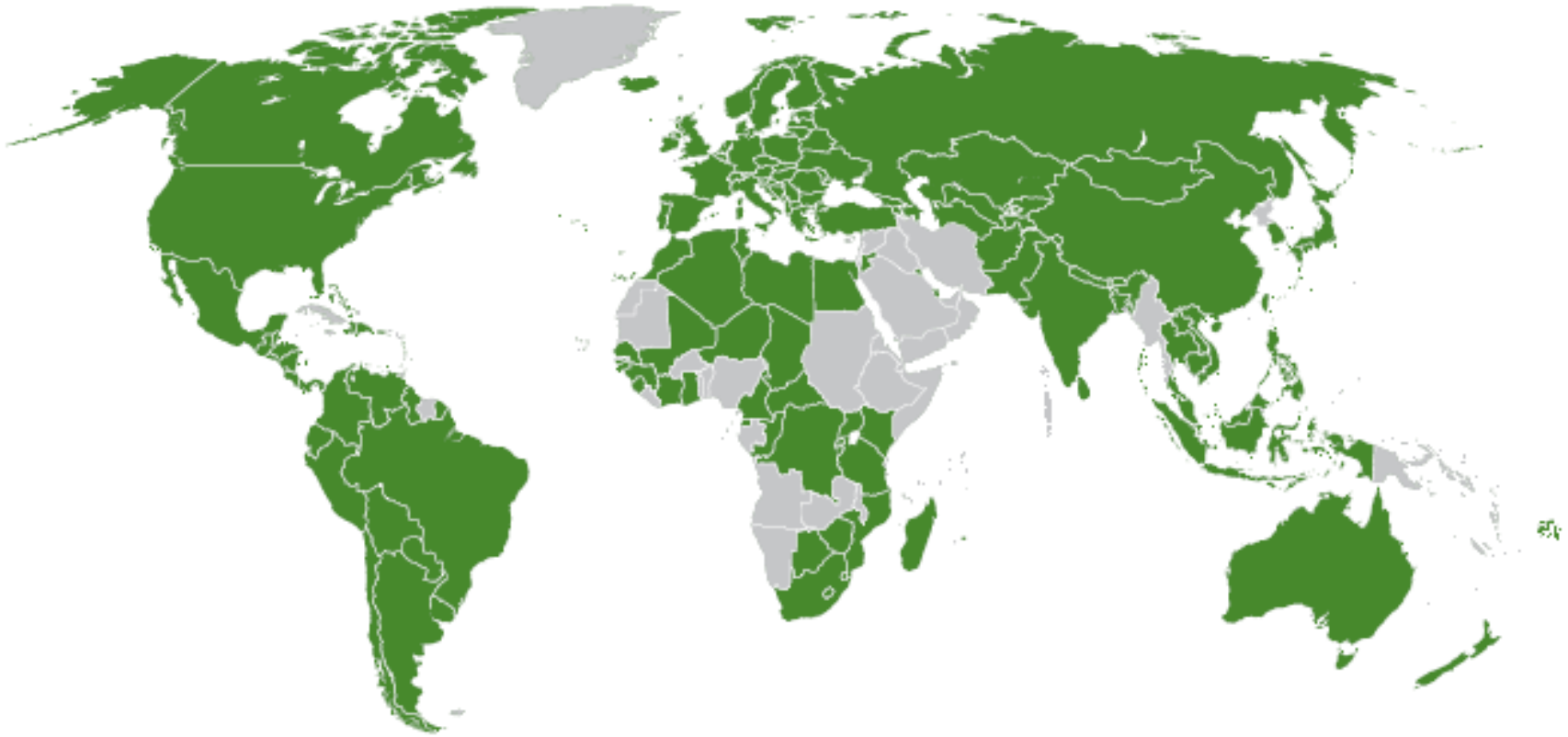
Members



Sponsors and Advisors

… a global initiative

ngmn
the engine of broadband wireless innovation



NGMN Press Conference

Mobile World Congress, 25th February 2014, Launch of the NGMN "5G" Initiative

Participants:

Jae Byun, Chairman NGMN, CTO, **SK Telecom**

Kris Rinne, SVP Network Technologies, **AT&T**

Yuhong Huang, Deputy General Manager CMRI, **China Mobile**

Bruno Jacobfeuerborn, CTO, **Deutsche Telekom AG**

Seizo Onoe, CTO, **NTT DOCOMO**

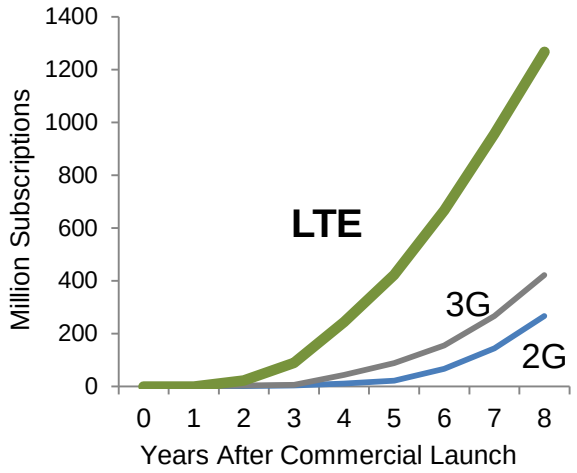
Moderation:

Peter Meissner, Operating Officer, **NGMN Alliance**

LTE success: Fast adoption and strong demand

NGMN Alliance: Central role in the definition of LTE Operator requirements

Performance targets | Prioritisation | Gap analysis | Solution assessment | Alignment | IPR transparency | Information sharing



> 260 LTE Networks in service in 2014

> 1300 LTE devices in the market in 2014

A true global, mainstream mobile technology …

… continuing to support the customer and market demand

LTE will remain the dominant technology platform of wireless broadband for the next decade

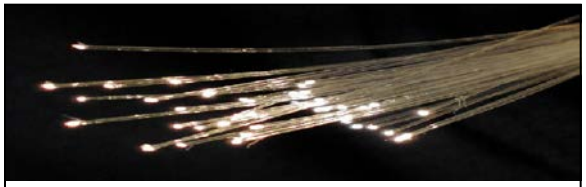
Source: NGMN, GSA, Strategy Analytics

Drivers for technology development 2020+

Massive Traffic Growth and High Density Demand

Wide Variety and Variability of Services Consumed

New Use Cases



Stringent Demands for Real-time Communications

“5G”

Future role of the NGMN Alliance

Define End-to-End Operator Requirements for "5G"

Customer

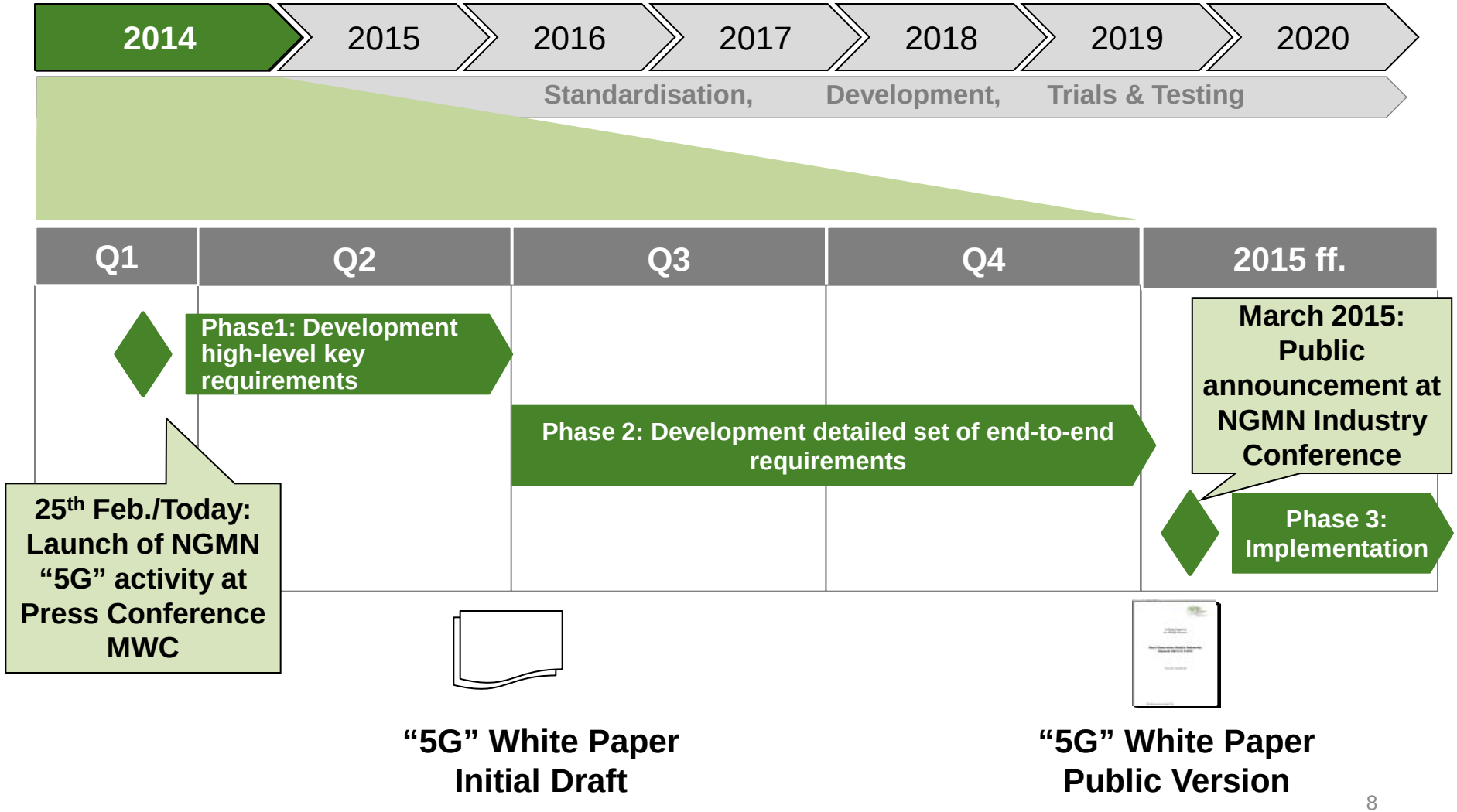
- Attractive Services
- Consistent Experience

Ecosystem

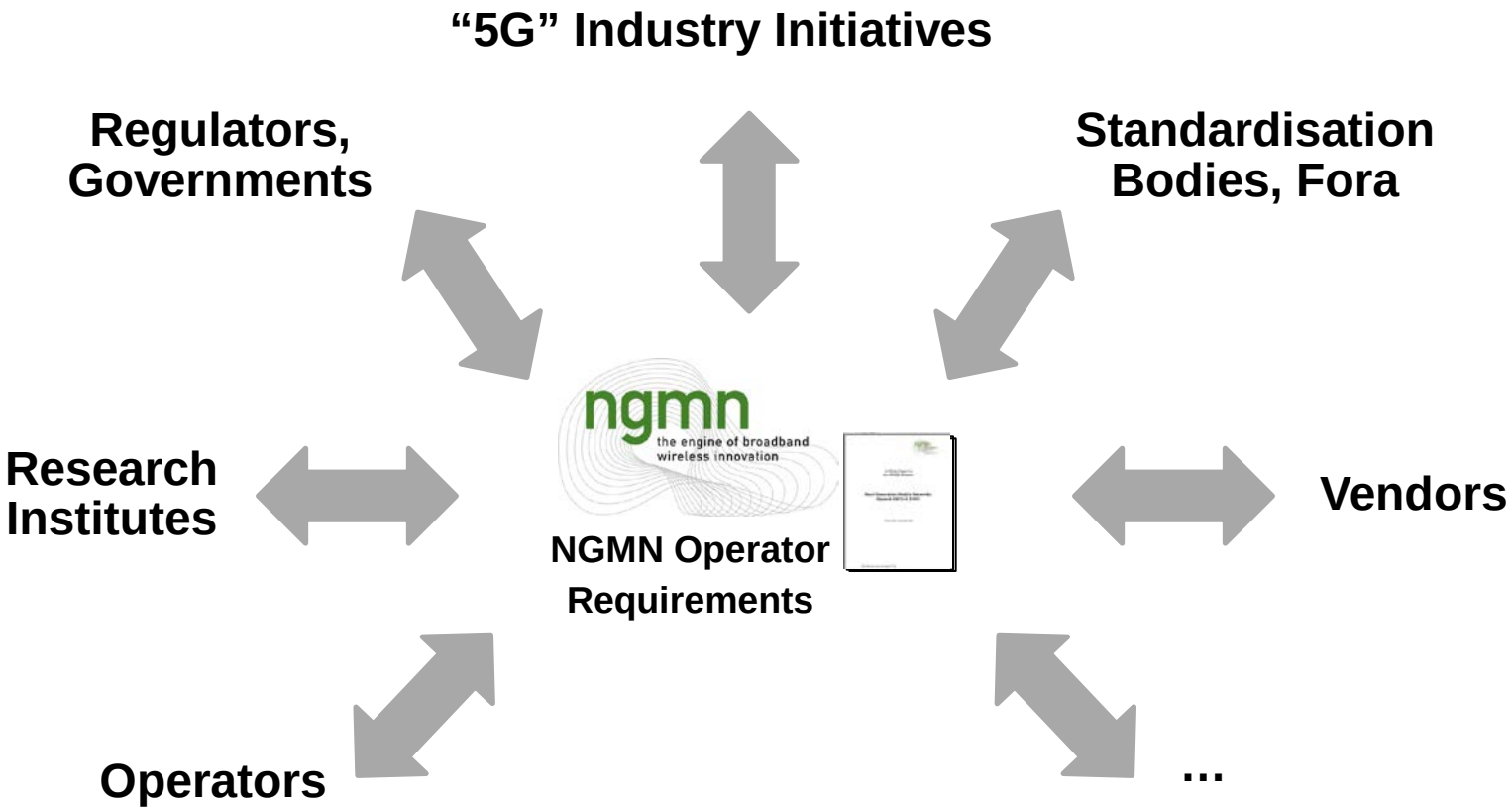
- Cost-efficient Solutions
- Sustainable Business

Accelerate the Development of LTE-Advanced and its Ecosystem

Delivery of the NGMN “5G” White Paper end of year 2014



NGMN to reach out and co-operate with all ecosystem stakeholders in developing the 5G technology



Orchestrated Effort for Global and Aligned Development of "5G"

Summary: Key messages

- NGMN has had a central role in the definition of operator requirements which contributed significantly to the overall success of LTE. LTE has become a true global and mainstream mobile technology, and will continue to support the customer and market needs.
- NGMN expects customer requirements in the 2020+ timeframe to result in:
  - Accommodation of massive traffic growth and high density demand
  - A wide variety and variability of services consumed
  - New use cases such as machine type communication (M2M, Internet of Things)
  - Stringent demands for real time communications
- While accelerating the development of LTE-Advanced, NGMN will develop end to end operator requirements to satisfy the needs of customers and markets in 2020+, to be delivered in a sustainable and cost-efficient way while continuing to provide consistent customer experience.
- The requirements will be delivered in the form of a ‘5G’ White Paper by YE 2014. As an interim deliverable, an initial draft of the ‘5G’ White Paper will be delivered by mid of 2014.
- NGMN as an open forum will continue to reach out and work together with all ecosystem stakeholders to promote an orchestrated effort for global and aligned development.

Questions

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the engine of broadband wireless innovation