# The NGMN Alliance: Paving the way for true mobile broadband

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# The NGMN Alliance – Who we are …

## Members

## Sponsors, New Innovators, Advisors

## Key Facts – NGMN Alliance

- Founded in 2006 by seven leading international Operators
- Goal to ensure that
  - next generation standards will satisfy customer expectations as well as operator requirements
  - a viable ecosystem in place for successful next generation services
- Key activity: Development of requirements to shape the evolution of the mobile ecosystem. No standardisation, technology neutral
- Grown to 60 partners in 2010 – covering more than 50% of worldwide subscribers, >90% of telecom equipment market
- NGMN Alliance is established as the world-wide premier telecom industry organization for all next generation mobile network related matters

# We leverage our close co-operations to industry bodies

**Verification, Certification**
e.g. GCF, PTCRB

Strengthen and improve verification and certification

Deliver operators' requirements for next generation mobile broadband to standardisation

ngmn
the engine of broadband wireless innovation

**Standardization**
e.g. 3GPP, IEEE, IETF

Promote requirements to drive harmonisation, globalisation – technology neutral perspective

**Promotion**
e.g. ITU, GSMA, WiMAX Forum, WWRF

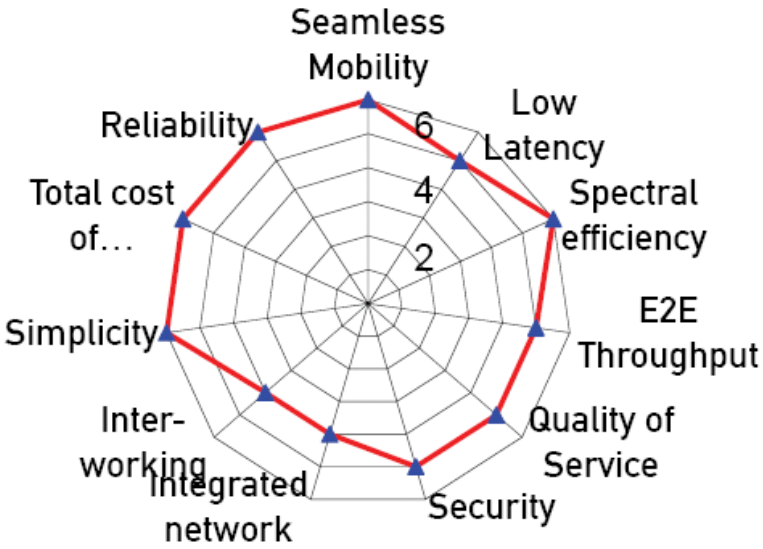
**NGMN Co-operation Partners**

# In 2006, all NGMN partners have agreed on common targets in a White Paper

**Overview Content NGMN Whitepaper (www.ngmn.org)**

- Executive Summary
- Purpose and Scope of Document
- Content of NGMN
- NGMN Overview
- NGMN Recommendations
  - Common Recommendations
  - Radio Access Network Recommendations
  - Core Network Recommendations
  - Terminal Recommendations
  - Service Creation & Delivery in NGMN
- Conclusions
- Annex

**Functional and Non-Functional Requirements**




*4 = Compromise possible 6 = No compromise*

*Source: NGMN*

# Overall objective is to provide attractive wireless broadband services for the end-customer

## Network requirements derived from service characteristics (examples):

| Service Class | Requirements on the Network |
|---|---|
| Fast interactive sessions | Low-latency |
| Video streaming | High throughput |
| Mobile broadcast / multicast | Efficient NW utilisation |
| Trust based services (e.g. VPN) | Extra levels of security |

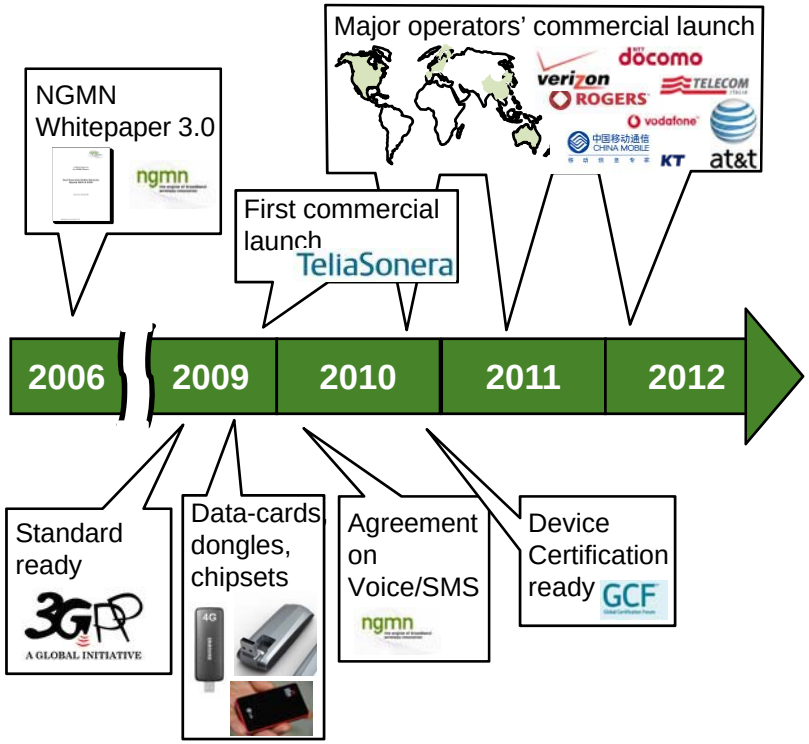
## In addition, fundamental NGMN service requirements have been defined:

- One integrated network for seamless introduction of mobile broadband services (includes e.g. converged services, legacy services support)
- Cost efficient service delivery and offering
- Effective end-to-end management and flexible introduction of services
- Interfaces to 3rd parties via open and standardized APIs

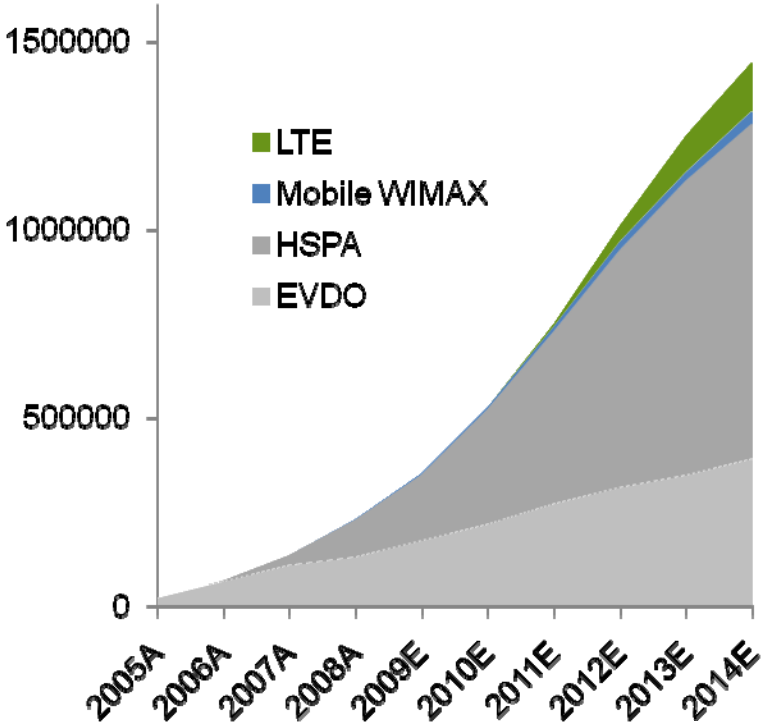
*Source: NGMN Whitepaper, NGMN*

# Next generation technology roadmap is on track

## Next Generation Technology Roadmap and Adoption



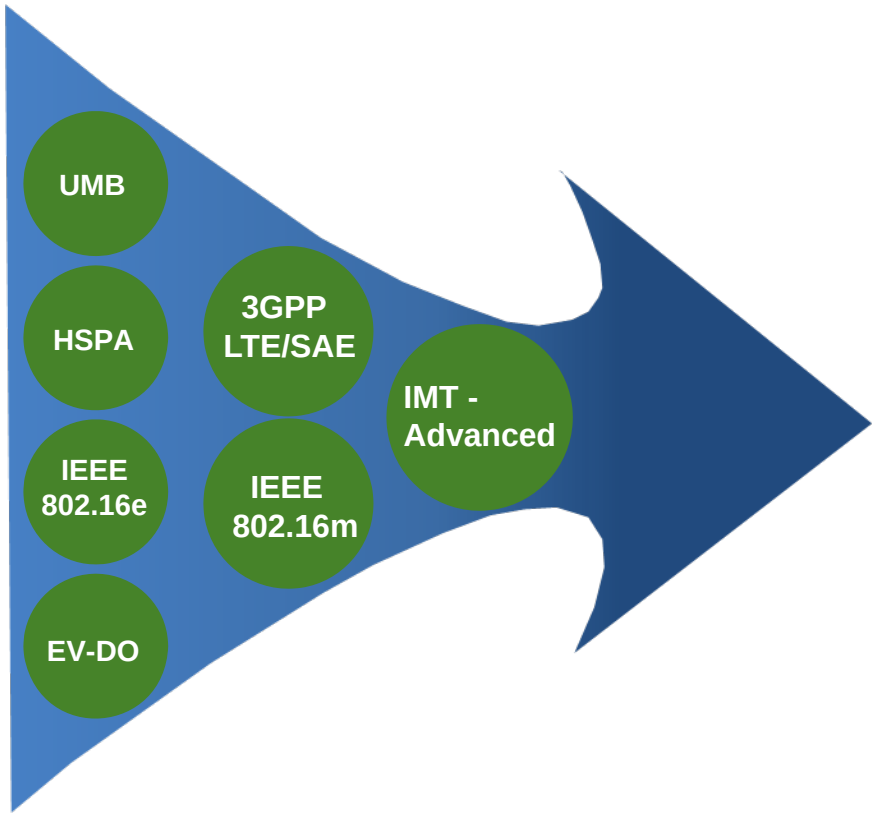

## Global Mobile Broadband Connections by Technology




*Source: Heavy Reading 2009, IDATE 2009, NGMN*

# Technology convergence ensures economies of scale for the future

## Convergence of Technologies



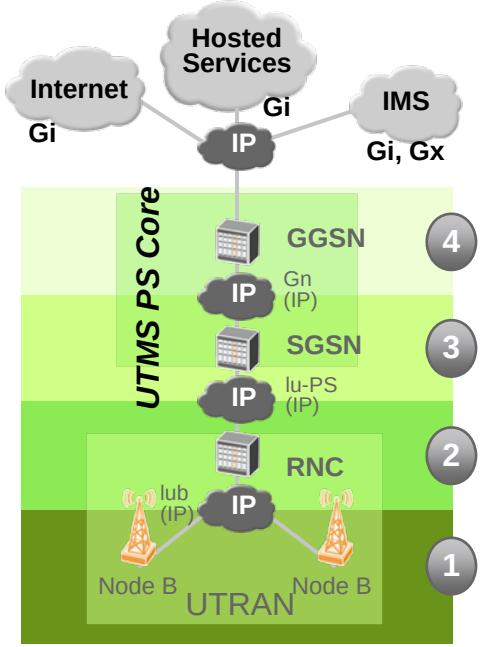

## Scale Effects

- Better global roaming support
- Larger industrial scale
- More flexible spectrum usage
- Reduced standardization complexity

# Low-complexity All-IP architecture allows for more cost efficient operations

## From Current 3G Architecture ...

Voice and Data separated

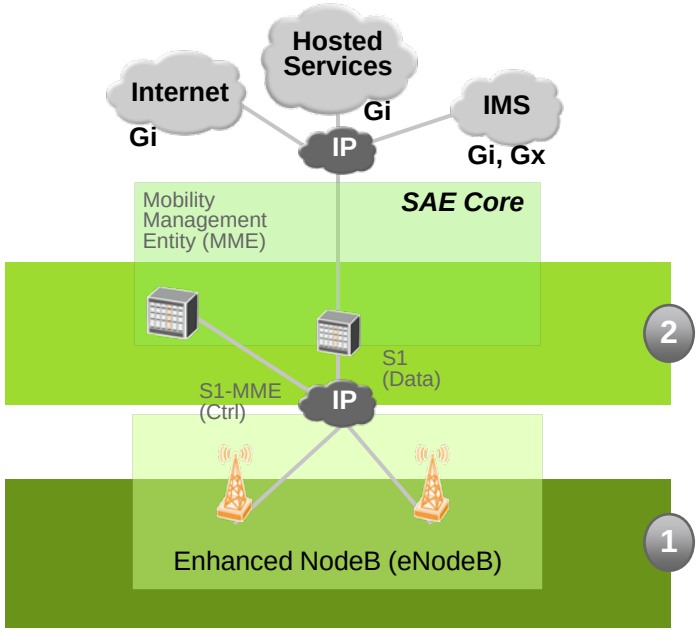



- Vertical integrated architecture for services
- Complex O&M – proprietary, multiple vendor technologies

**Technology: from Complexity to Simplicity**

## ... to Future NGMN

Voice and Data integrated




- Flexible service introduction, reduced time to market, differentiated QoS
- Simplified, cost-efficient operations – e.g. Self Organizing Networks

*Source: TMO, NGMN*

*O&M = Operations and maintenance*

# NGMN delivers based on the expectations of the three key players

## Customers

- Mobile Broadband Experience
  - Easy Access, Easy Handling
  - High Speed, Low Latency
  - Seamless Mobility
- Security and Privacy
- Reasonable Price-Performance Ratio & Quality of Service
- More Info, More Entertainment, More Fun, and More Business

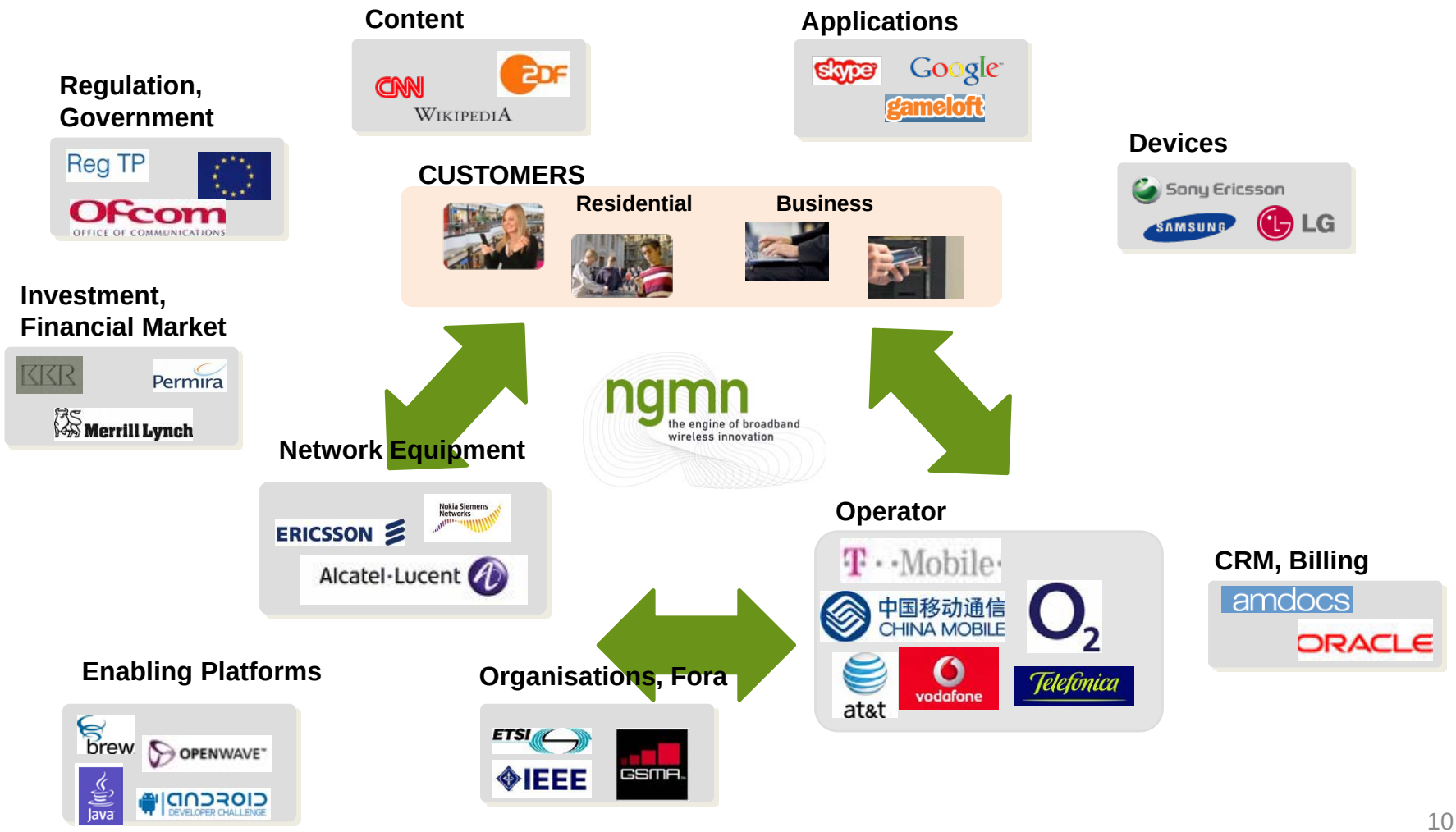
## Vendors

- Economies of Scale
- Secure Margin
- Avoid Fragmentation
- Global Reach
- Secure Long-term and Sustainable Technology Development and Innovation

## Operators

- Customer Satisfaction
- Reasonable Total Cost of Ownership
- Reuse of Assets
- Common and Open Standards for Systems and Interfaces
- Simplicity
- Inter-Operability and Inter-Working

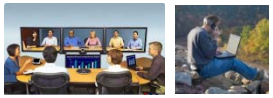
# NGMN delivers based on the expectations of many key players



# NGMN makes sure that enablers are in place for successful mobile broadband adoption

**Devices, CE, Modules**

**Ubiquitous Mobile Broadband**



**Services, Applications**

## Technology

- Operational Efficiency
- Open Interfaces
- Security
- Multivendor RAN
- Terminals
- Heterog. NWs
- Backhaul
- QoS
- Technology Evaluation

## Economics

- IPR
- Spectrum
- Eco-System

**NGMN Working Areas**

**Key Criteria**

- Time to market
- Performance
- Low Opex/ Capex
- Global reach
- Fragmentation avoidance, scale

# NGMN projects and task-forces close the remaining gaps based on operator requirements

## Overview NGMN Projects and Task-Forces – Examples

### Security

- Gap analysis, recommendations and approach of relevant SDOs to close gaps
- Covered items e.g. network self protection, signalling integrity, terminal platform security /protection

### Terminals

- Driving certification via specific NGMN requirements, ensure readiness
- Monitoring of device availability, address challenges, provide industry requirements

### Operational Efficiency

- Use-cases and requirements for self-optimising networks
- O&M requirements – open interfaces, standardized systems

### API

- Inventory of existing initiatives, identificatoin of potential gaps
- Education of NGMN membership
- Recommendations with regards to standards, solutions

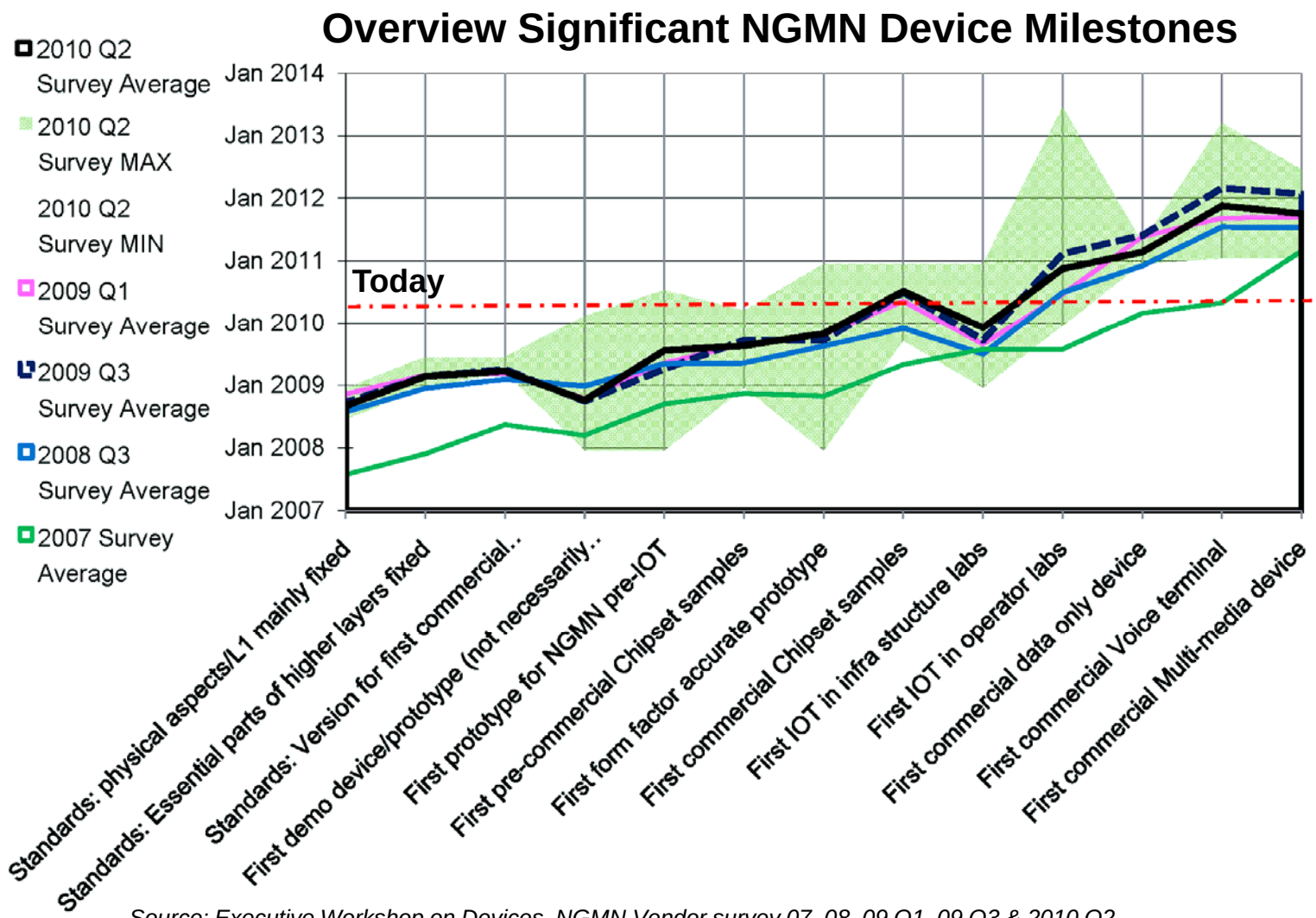
### QoS

- Ways to maintain End to End QoS – RAN, transport, interworking
- Improving QoS in Roaming
- Differentiated QoS and charging, control on QoS, control on heavy users during network congestion

### IPR

- Enhanced transparency on expected IPR royalty rates
- Patent pool feasibility study, RFI with potential licensing administrators

# Project example: NGMN drives LTE device and chipset availability in workshops




*Source: Executive Workshop on Devices, NGMN Vendor survey 07, 08, 09 Q1, 09 Q3 & 2010 Q2*

# Project example: Next generation network operational efficiency will be improved

## Project Operational Efficiency

Objective:

- Lower operating expenses, lower network complexity, higher efficiency
- Enhanced service quality, better user experience

Areas covered, e.g.:

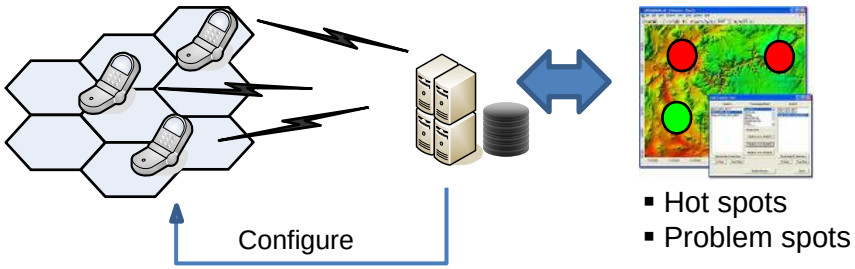
- SON cases for load balancing, cell outage compensation, energy saving, QoS optimization
- Open O&M: Standardized O&M, standardized configuration management / optimisation

Approach:

- Gaps identification, requirements definition based on use cases
- Analysis of technical frameworks and relevant solutions, develop implementation guidelines
- Contribute to SDOs, industry fora

**Example: Substitution of Drive Tests**

**Rationale:** Drive tests require huge effort in terms of resources and time so huge potential is given if typical information can be provided by alternative methods

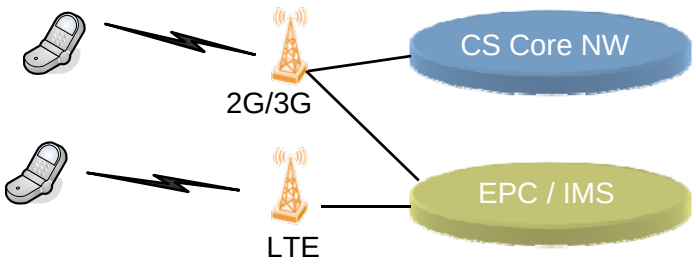



- Recommendation: Rely on UE involvement for performing, collecting and reporting measurements to the O&M.
- Two architecture options for implementation: a) No access network involvement, direct UE-O&M interface and b) eNB involved architecture
- Option b is based on OMA Device Management server and client

*Source: NGMN Project OPE, S. Dionisi (Telecom Italia) MWC 2010, NGMN*

# Project example: Existing and future services should run on next generation NWs

**Voice / SMS over LTE**




- No circuit-switched (CS) voice support in All-IP Networks – Challenge: Several options for „day-one“ solution available and hence, risk of fragementation

⇨ NGMN recommendation on migratory solution to enable roaming

⇨ NGMN timeline and performance targets for IMS based target solution for voice

**APIs**

- Industry Challenge:
  - Fragmentation and inconsistency of NW APIs
  - Limited utilisation of NW capabilities for applications

⇨ Education via NGMN API catalogue

⇨ NGMN recommendation on NW APIs, Web APIs, de-fragmentation initiatives and general exposure of NW functions

# NGMN builds on conference contributions as an impactful tool to reach its target audience

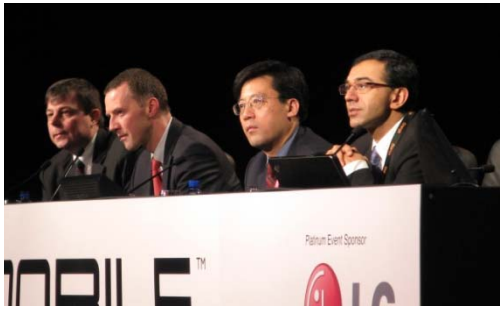
## NGMN Industry Conference & Exhibition

Presentations, panels and exhibition 2006, 2008, 2010

## ITU / NGMN Session

Joint conference stream at ITU Telecom World 2009 “Mobile Broadband 2010+”

## GSMA / NGMN stream



One-day conference stream “Technology Evolution” at Mobile World Congress

- Communicate NGMN requirements, identified gaps to drive adoption and awareness in the industry
- Provide a networking and presentation platform for partners
- Present NGMN achievements, working-plan, objectives
- Show proof of concept of next generation mobile networks in presentations and at exhibitions

# Outlook

## Work-items, next steps NGMN

- Examples of current and future work-items:
  - Trials
  - Operational Efficiency
  - Backhaul
  - Heterogeneous Networks
  - Voice / SMS over LTE
  - Spectrum (e.g. initial terminal requirements)
  - Devices, certification
  - QoS
- Develop whitepaper addendum, future roadmap, e.g.:
  - IPv6 migration and services
  - P2P service capabilities
  - Operational excellence, data traffic management
  - M2M

## Points for discussion with OMA

- Key areas (from an OMA view) not covered in current NGMN work-programme
- Joint work-areas for NGMN / OMA

Potential areas:

- Early analysis/ guidance of LTE/SAE impact on the service enabler/ model/ standards/ implementation
- LTE/SAE environment will distinctly enable real-time and near real-time IP applications (communication, interaction, peer-2-peer), in addition to other capabilities such as speed, efficiency and flexibility.

# Thank you!