

LTE Mobile Broadband Opportunities

Technical and Solutions for network upgrade

Bosco Eduardo Fernandes
UMTS Forum



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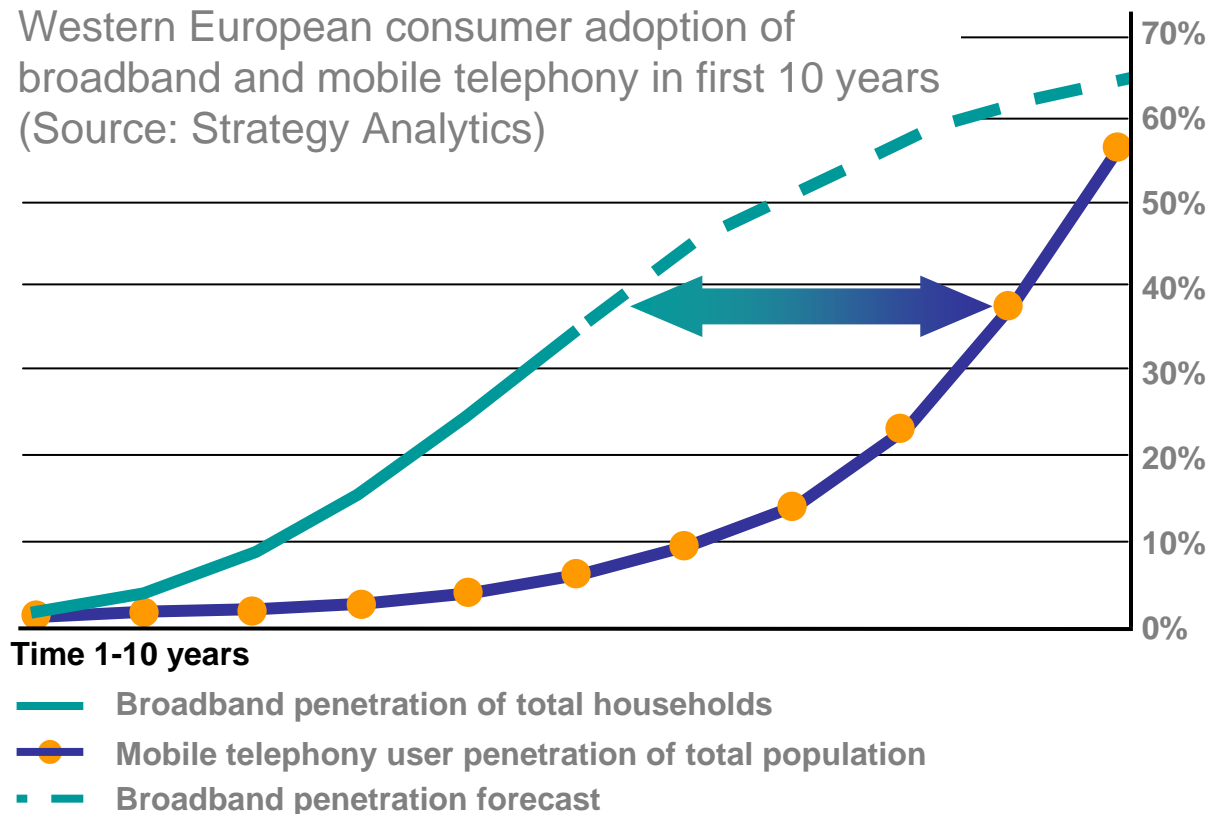
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Demand for broadband connections continues to increase

Western European consumer adoption of broadband and mobile telephony in first 10 years
(Source: Strategy Analytics)



Continuing growth in fixed broadband connectivity creates demand and market potential for wireless broadband



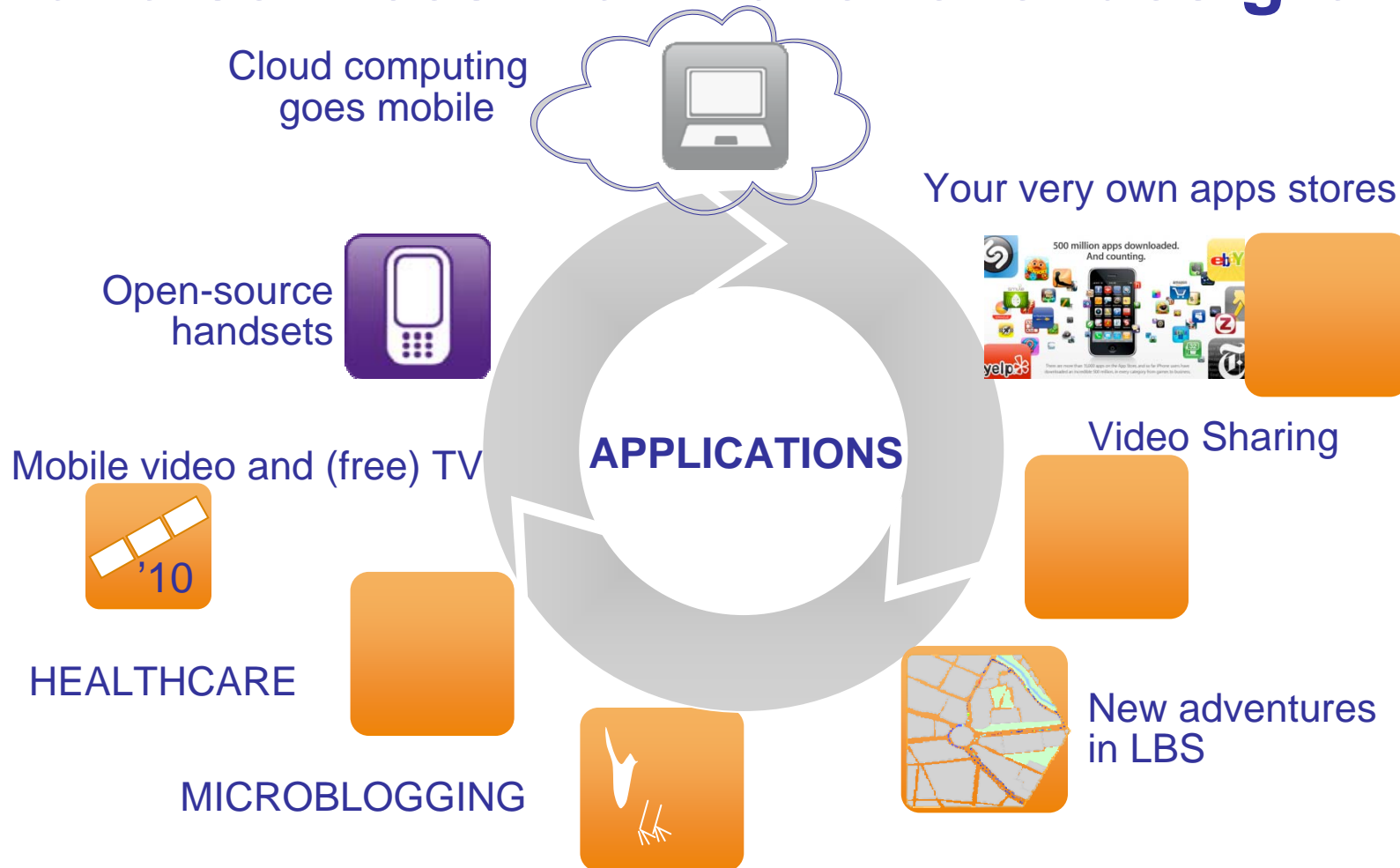
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▶ 2



Technology is great, but it's applications and services that make revenues grow



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Evolution path to open industry

Terminal & device innovations



3rd party content



Device & SW oriented service enablers



Today's sphere's of influence on business models

Creative disruptive concepts



Customer driven innovation



Communities



New business models B2B2C

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In the future, The web (& MySpace) will be more ...

personal

mobile

collaborative



- Profile 2.0

- iPhone App
- Blackberry App

- Open social
- Data availability

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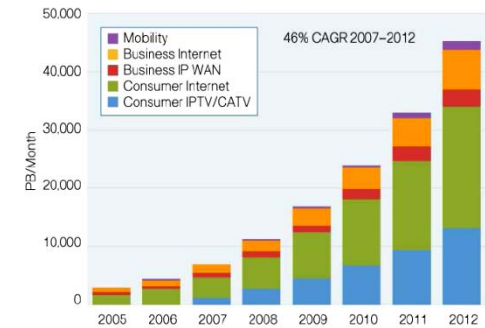


Entering the Zetabyte era



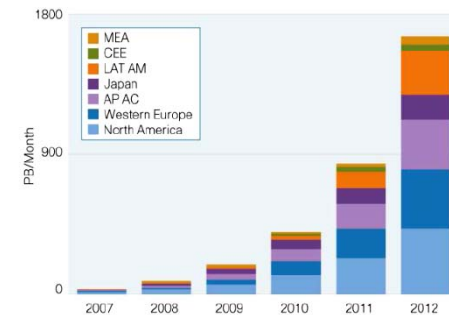
Global IP traffic will nearly double every 2 years through 2012

Global IP traffic



Mobile data traffic will double each year from now through 2012

Mobile Broadband



Source: CISCO

How much more Revenues / **Profitability** can be made?

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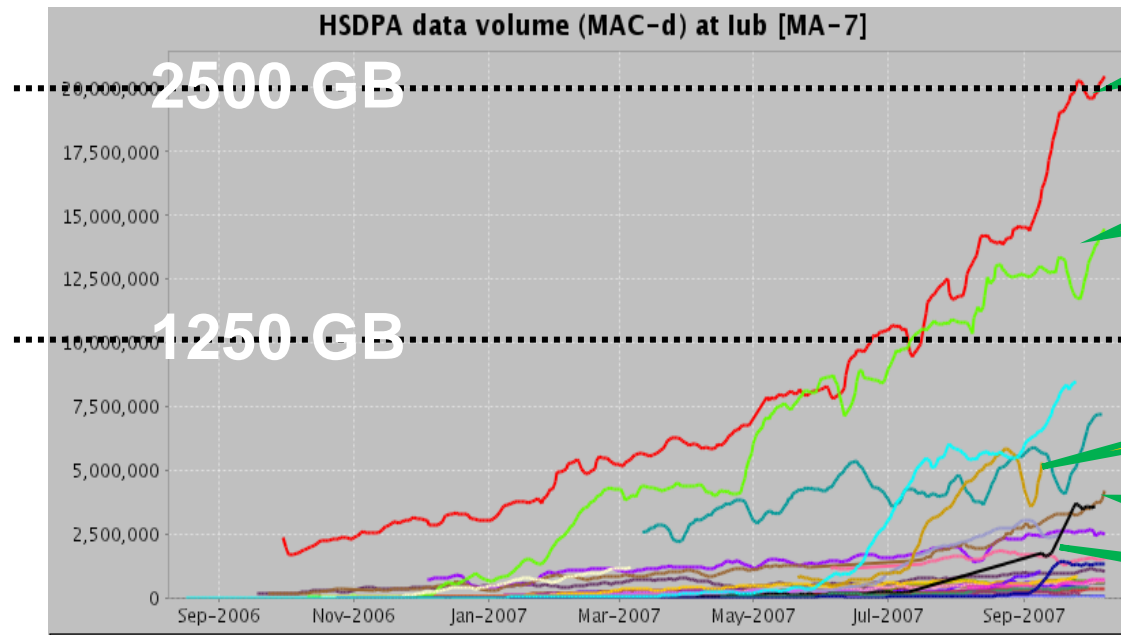
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HSPA delivers traffic growth – and Revenue!

Total HSPA traffic per day



Source: Nokia Siemens Networks analysis

Operator in Europe:
Data Revenue +27%

Operator in APAC:
Data Revenue +29%

Operator in APAC:
Data Revenue
+31%

Operator in Europe:
Data Revenue
+12%

Operator in APAC:
Data Revenue +18%

- With launch of HSPA and introduction of flat-rates data revenues are flattening (constant).
- As traffic still grows faster than revenue, networks must become much more efficient

Source:
Merill Lynch Global
Wireless Matrix. .
Local Currencies.

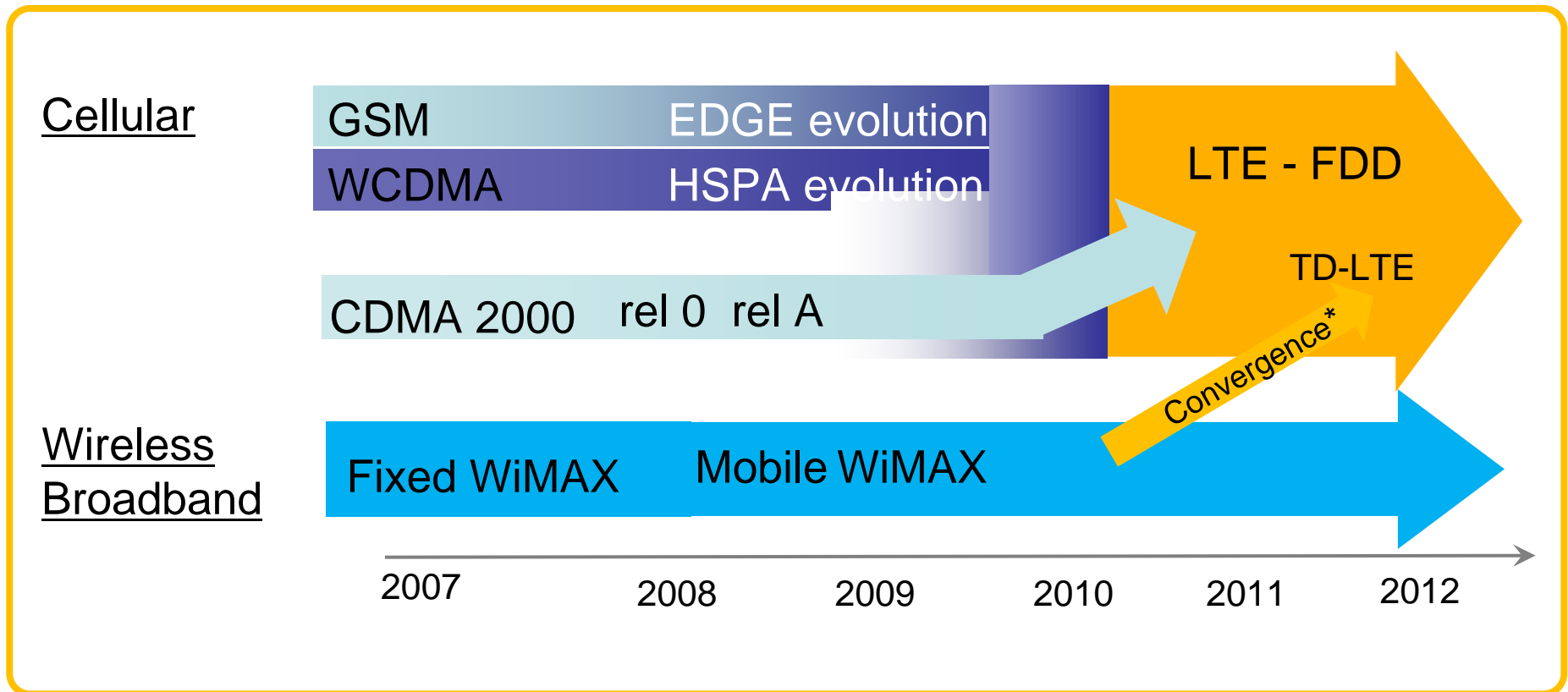
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Technologies converging to 3GPP path



* operators with sufficient spectrum and mobile offering



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Multivendor common management systems

Unified NetAct OSS

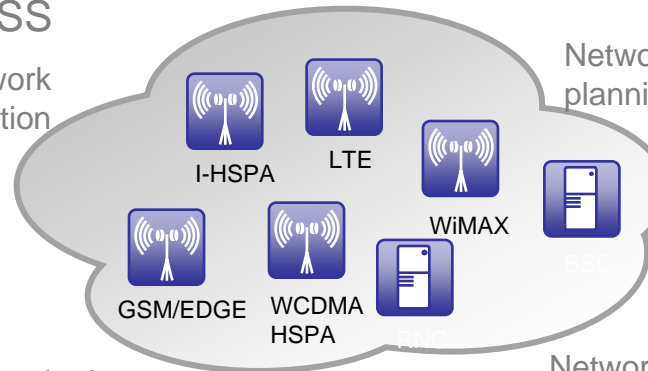
Network optimization

Refarming support

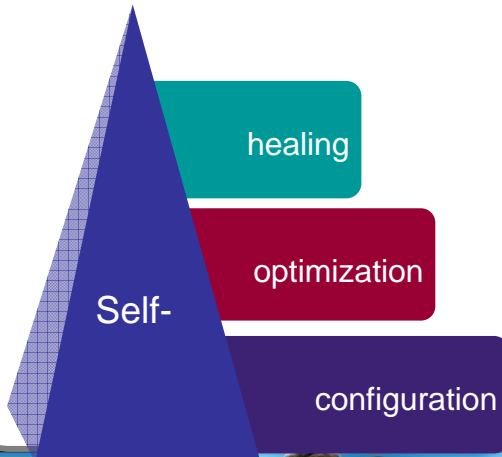
Performance monitoring, reporting and analysis

Network planning

Network configuration management



SON Self Organizing Network



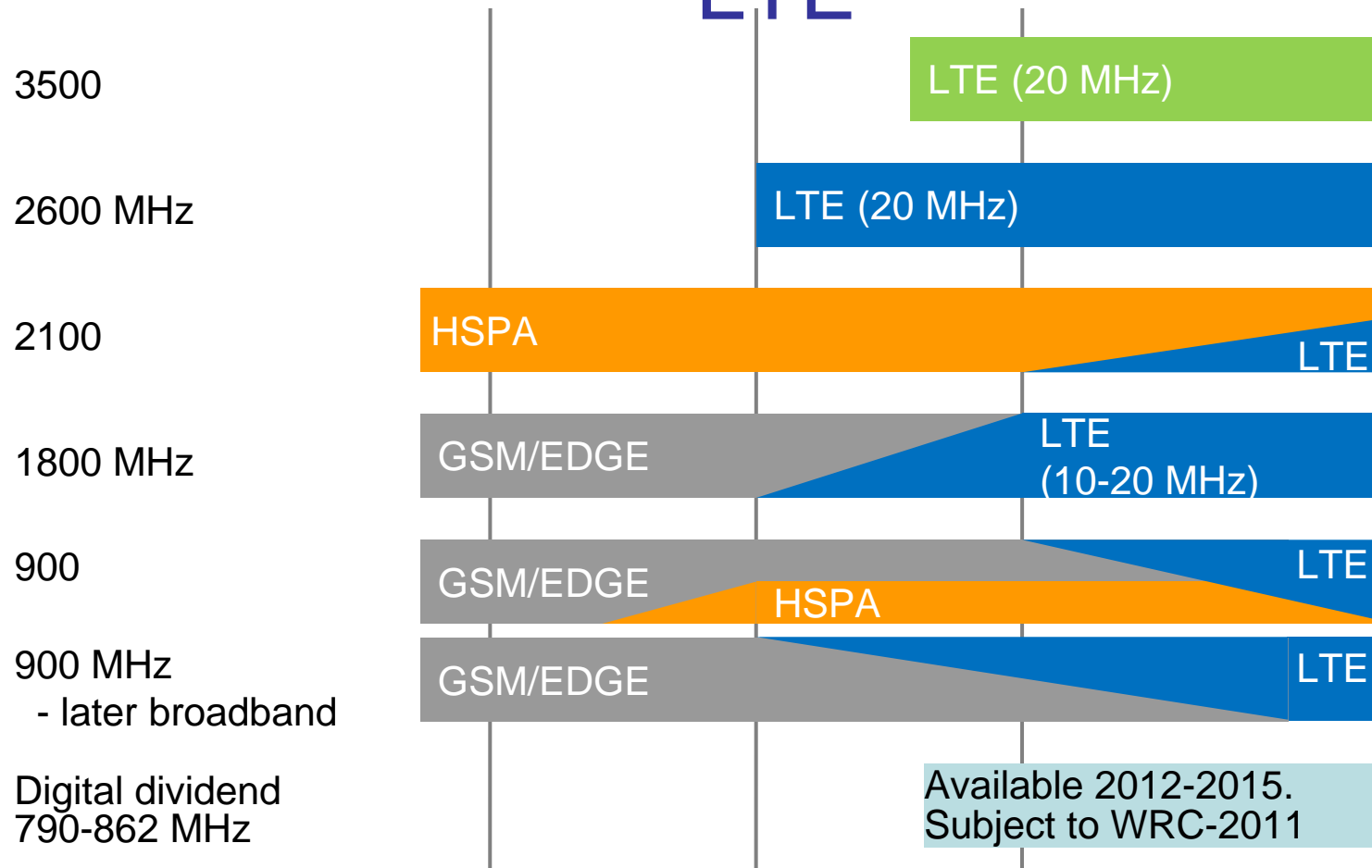
- ➔ Configure & optimize the network automatically
- ➔ Automatic adjacent cell planning
- ➔ Better network interworking
- ➔ Reduction of the manual effort

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▶ 9

Our view of spectrum Evolution towards LTE



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▶ 10



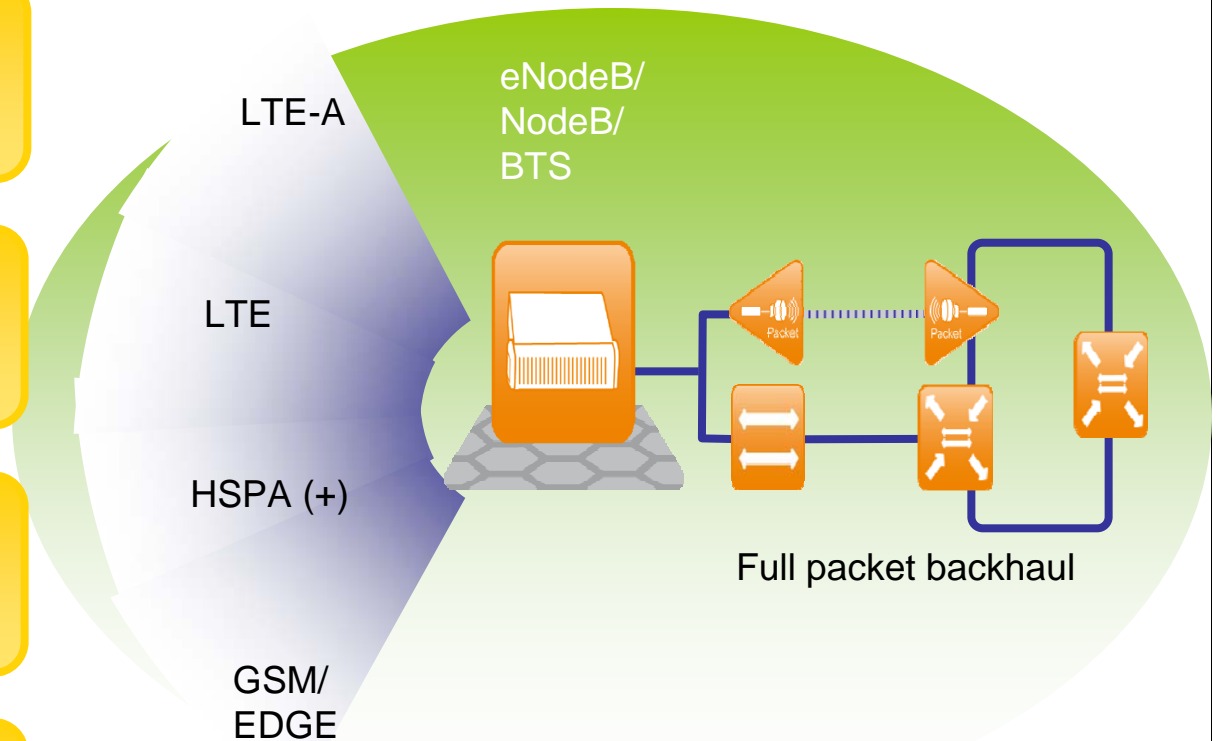
Evolving to One multi-radio access – Single RAN

Evolving LTE/LTE-A beyond 100 Mbps*

HSPA evolution towards 100 Mbps*

Managed traffic & resource optimization

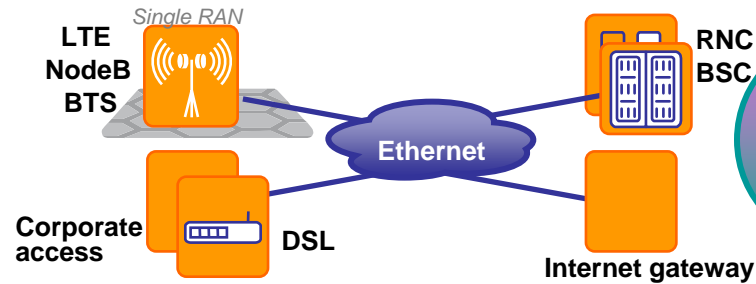
Carrier Ethernet backhaul via microwave or fiber



* Single user peak data rate

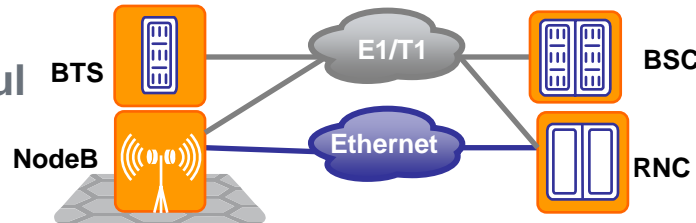
Technology evolves to a packet-based mobile backhaul network

Full packet backhaul for 3G and LTE



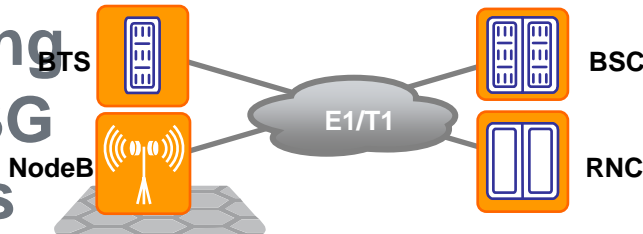
Simplify

Hybrid backhaul for 2G and 3G



Lower cost

Optimizing 2G and 3G networks



Optimize

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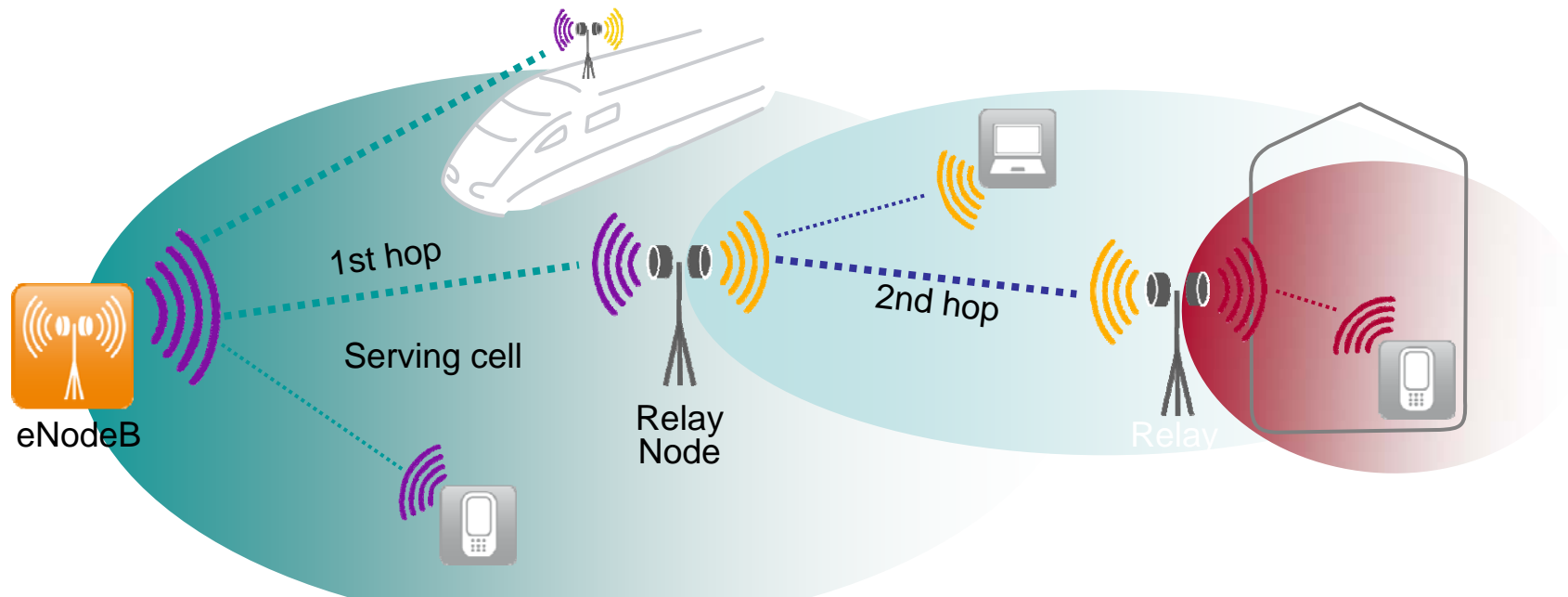
LTE-Advanced Relays: improve the coverage of high data rate connections

Concept of self-backhauled base stations

Backhaul provided by an in-band connection

Each really looks like an independent cell

Main focus on single-hop relays

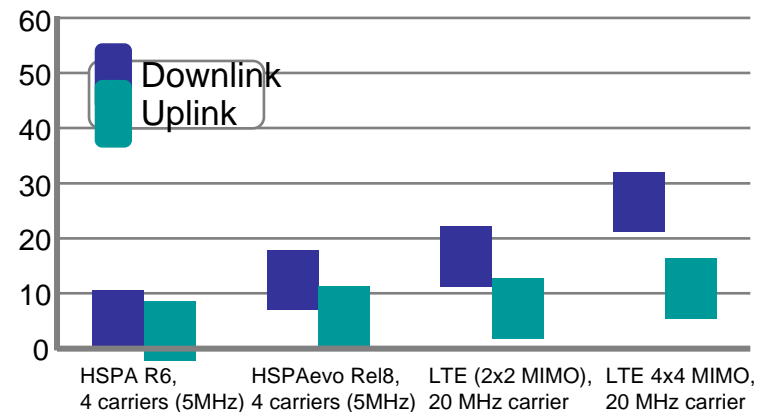


Applicable for urban hot spots, dead spots, indoor hot spots, rural areas, and group mobility

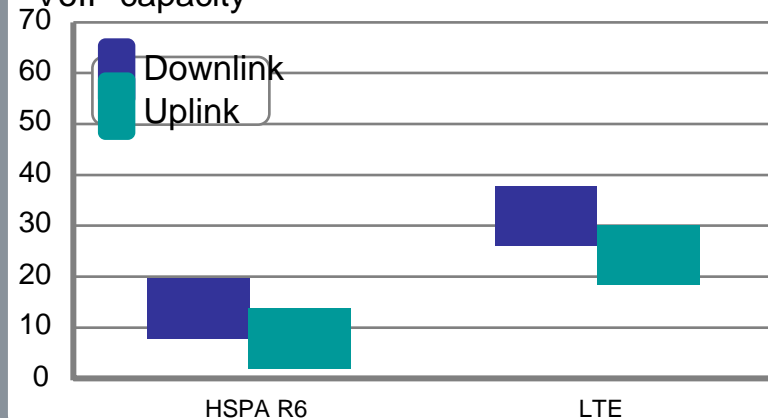
Drivers for Voice over LTE (VoLTE)

- LTE is full-IP thus voice must be handled over IP
- Voice service is mandatory and desirable with increased voice efficiency with LTE
- CSPs' unique proposition:
 - Superior end-user experience and Quality of Service (QoS)
 - Voice service continuity between different accesses
 - Rich Communication Services
- Voice over LTE will become the mainstream mobile voice technology

Average call throughput (macro cell, 20 MHz**)

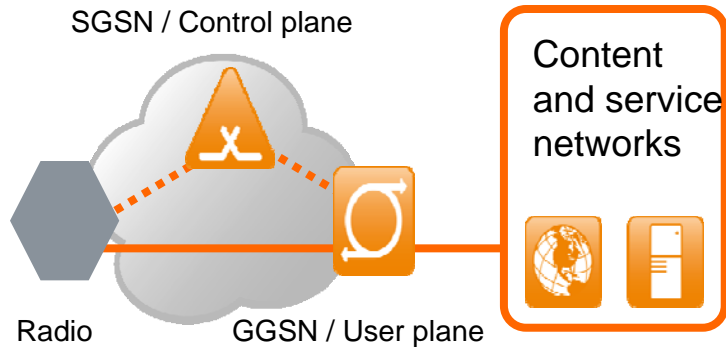


VoIP capacity

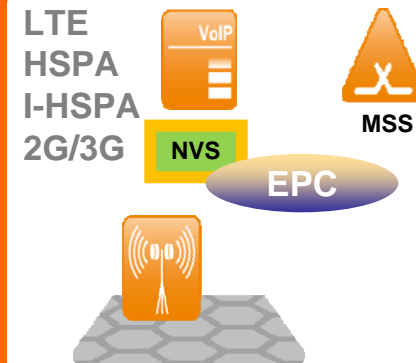


Paving the Voice path in LTE

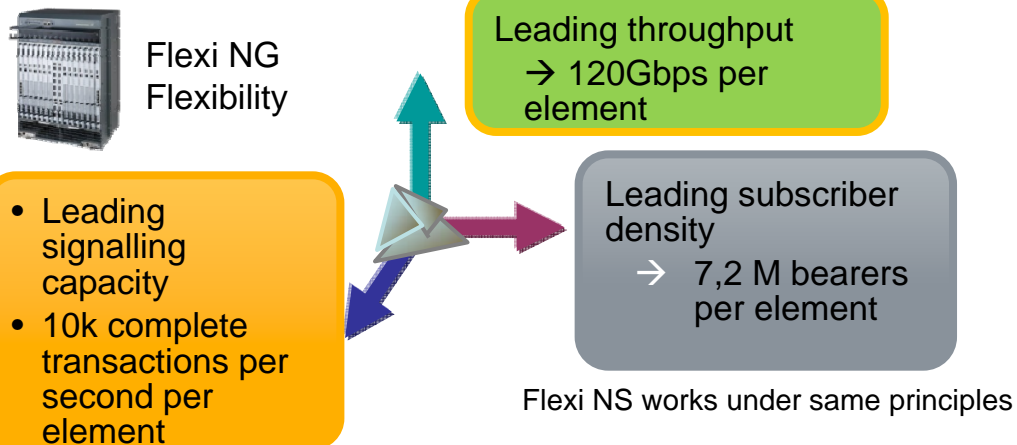
First step towards flat architecture: Direct Tunnel



Fast-Track VoLTE



Evolved Packet Core – Leading performance



- Simple upgrade of Mobile softswitch with NVS (VoIP) function
- Fully IMS compatible reuse of CS infrastructure for LTE VoIP capable handsets
- Seamless 3GPP voice service continuity

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▶ 15

Summary

- **Mobile broadband carries high stakes for the future of Communications Service Provider's.**
- **World wide 39 Operators are committed to driving the commercial uptake of LTE starting 2010 with the first 14 networks and 31 LTE commercially launched by 2012.**
- **Communications Service Providers need new Business Models and service options to win and will leverage LTE characteristics to do this.**
- **The addresses the challenges of the CSP's.**
 - LTE boosts service experience
 - Faster access
 - Better quality
 - Personalized services
 - LTE cuts costs
 - 70% less hardware
 - 55% energy savings
 - 25% lower site costs



Thank you

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▶ 17



HSPA Status

- More than 1,000 new HSPA devices were introduced onto the market since July 2008.
- Twelve HSPA+ devices have been launched by 6 suppliers, supporting peak data speeds up to 21 and 28 Mbps.
 - 329 HSPA network commitments in 135 countries/territories
 - 283 commercial HSPA operators in 119 countries/territories
 - More than 150 million HSPA customers/subscriptions
 - 144 commercial HSPA networks (almost 51%) support 7.2 Mbps or higher peak downlink speed
 - 26 HSPA Evolution (HSPA+) networks in commercial service in 19 countries, supporting peak downlink speeds up to 28 Mbps

