

Mobile Technologies & Services

Stanford Computer Forum
Annual Meeting: POMI 2020 Workshop
April 14, 2009

Dr. Jan Uddenfeldt
Senior Vice President and
Senior Technology Advisor to the CEO, Ericsson

Agenda

- Ericsson in Silicon Valley
- Mobile Broadband - a runaway success in the world
- Open applications – Vertical or Horizontal ?
- Ericsson Research & Stanford

Our Strategy - Internet and Mobile

Internet Leaders are in Silicon Valley, USA



Mobile Leaders are in Europe



Ericsson Silicon Valley – Focus on Mobile Broadband

Ericsson Silicon Valley Technology

Position



- Ericsson is
 - Infrastructure Provider
 - Chipset provider for Devices
- Ecosystem needs
 - Applications, Devices, Developers ...

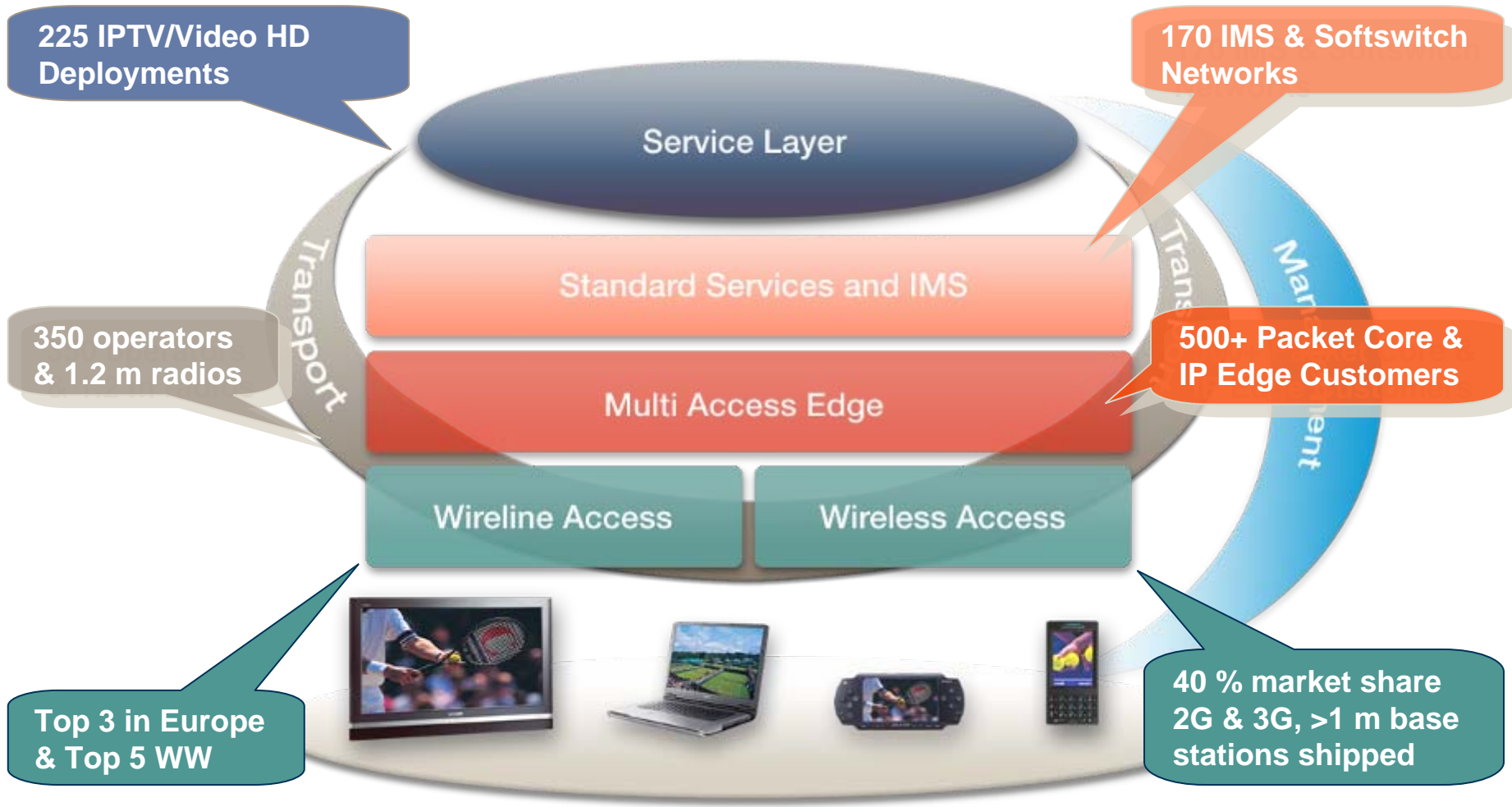
Ericsson Complements Silicon Valley Companies in Ecosystem

Global Scale

- Present in more than 175 countries
- Global leader in Telecommunications
 - 76,000 employees
- 19,000 in Research and Development
 - 30,000 in Global Services
 - Sales 30 billion USD

Top Telecom Vendor to Operators

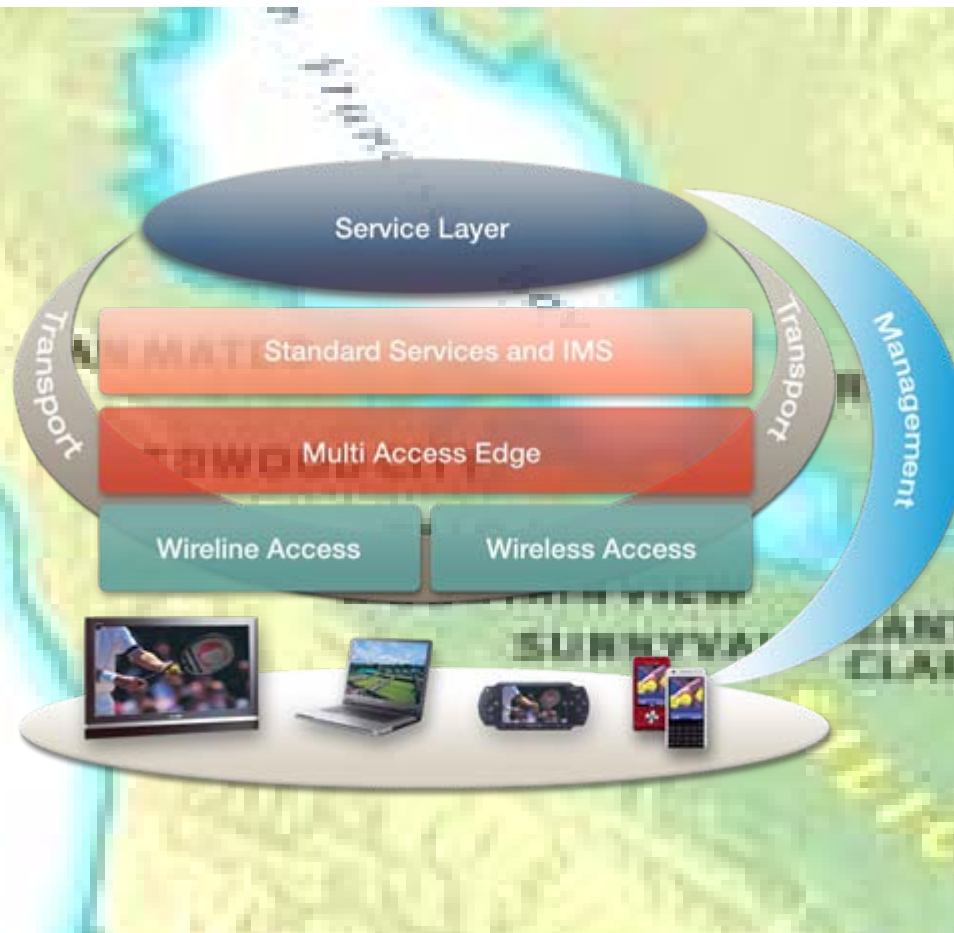
Market Position in Full Service Broadband Architecture



And... #1 in Professional Services, Top 10 Green companies

Ericsson Silicon Valley

Campus for Next Generation Ecosystem



IP Networks & Broadband Products (P&L)

Mobile Broadband Apps

Ericsson Research

Technology & Business Leadership for the new era

Ericsson Complements the Companies in the Valley

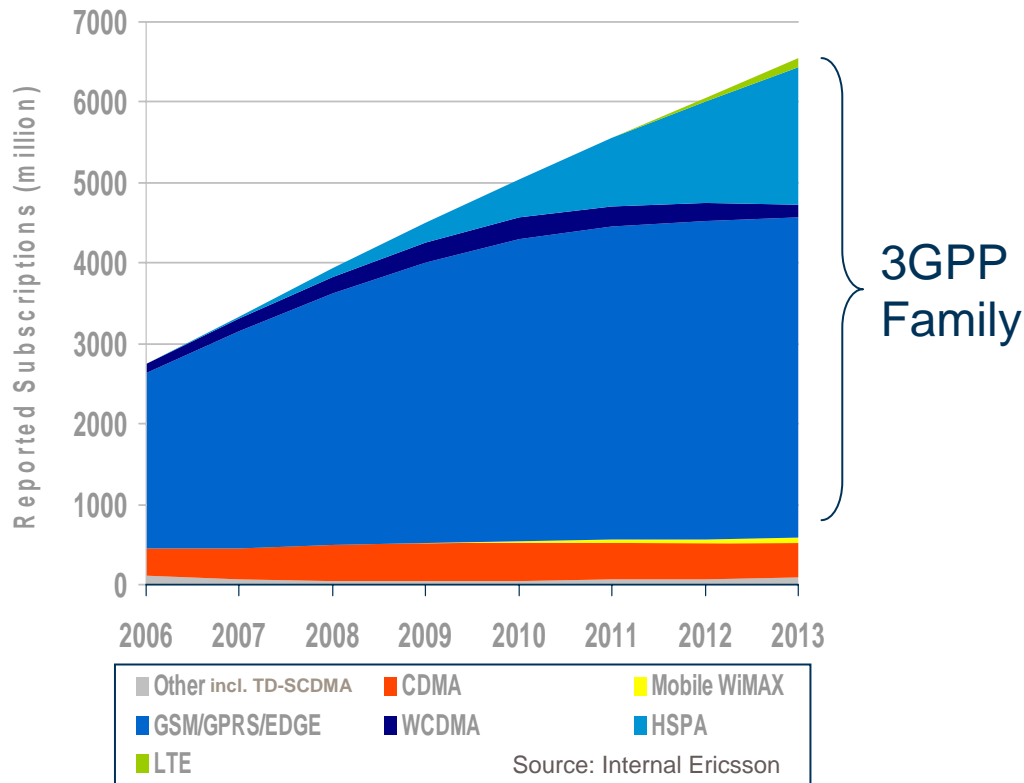
Decade of Technology Disruptions



Mobile Broadband – from niche to mass market

Mobility Driven by 3GPP

Reported subscription forecast by standard

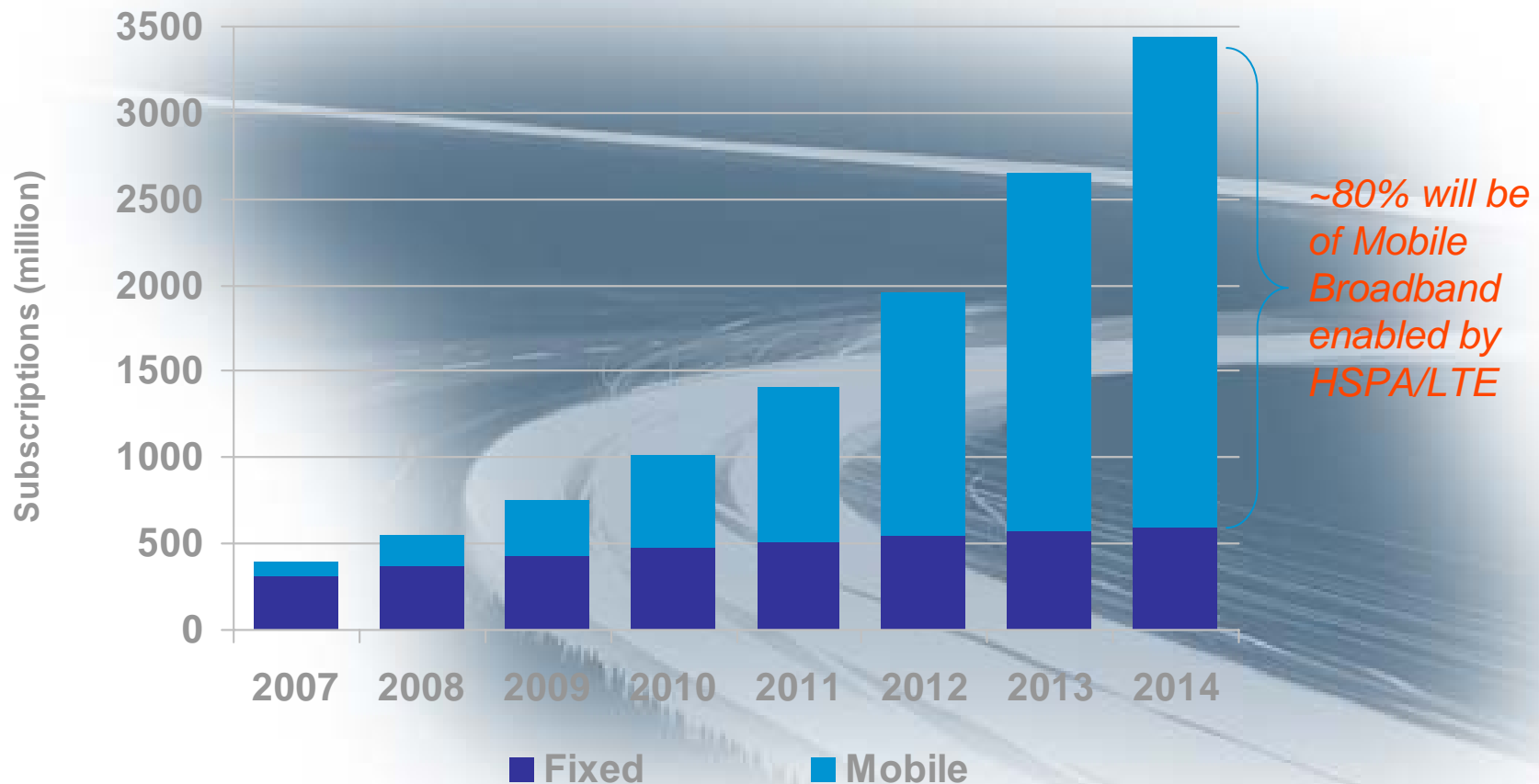


GSM Worldwide Penetration



3G/HSPA Dominates Mobile Broadband

Strong Mobile Broadband Growth



Mobile Broadband includes: CDMA2000 EV-DO, HSPA, LTE, Mobile WiMAX, TD-SCDMA
Fixed broadband includes: DSL, FTTx, Cable modem, Enterprise leased lines and Wireless Broadband

Source: Ericsson Q4 2008

80% of Broadband subscribers are mobile in 2014

ST- Ericsson Joint Venture

The New Leading Chipset provider



Sony Ericsson

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NOKIA
CONNECTING PEOPLE

SHARP



TOSHIBA

DELL



lenovo

ERICSSON 



Consumer electronics is going mobile

Three waves of embedding mobile broadband

1 The notebook

- Already here
- Bundled offerings with notebook and mobile broadband



2 The consumer PC

- Netbooks
- Starts to happen now
- Will be sold like a mobile phone



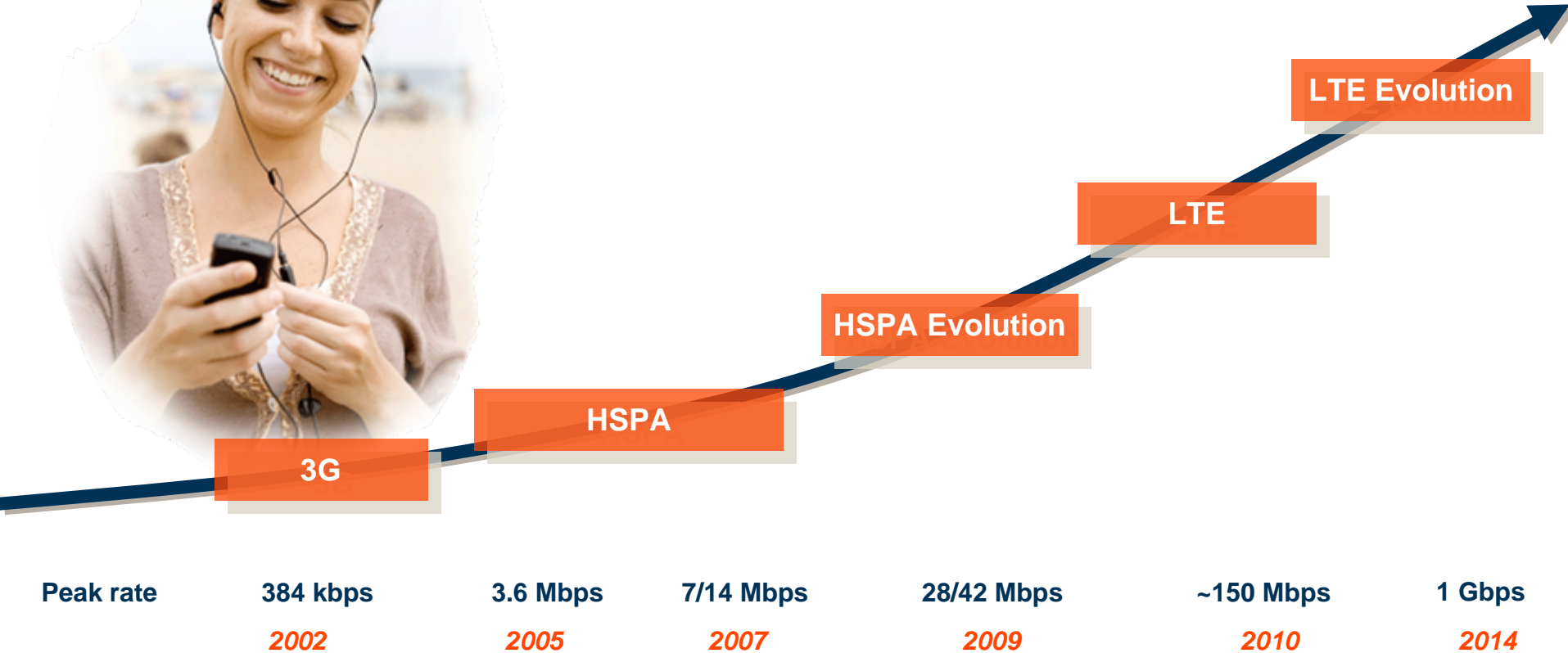
3 Consumer devices

- MIDs, navigation, gaming, cameras, car entertainment
- Early stages yet
- Start to see volumes 2009



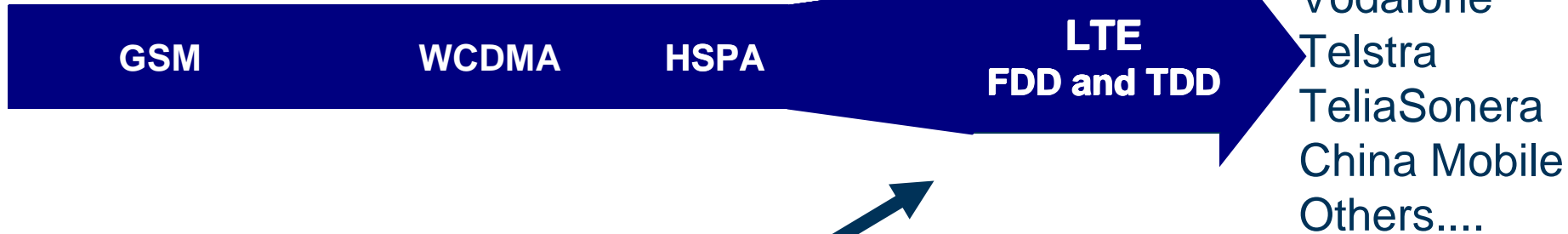
2008 the tipping point – going from niche to mass market

Mobile broadband evolution



Mobile System Evolution into LTE

GSM Track (3GPP)



CDMA Track (3GPP2)



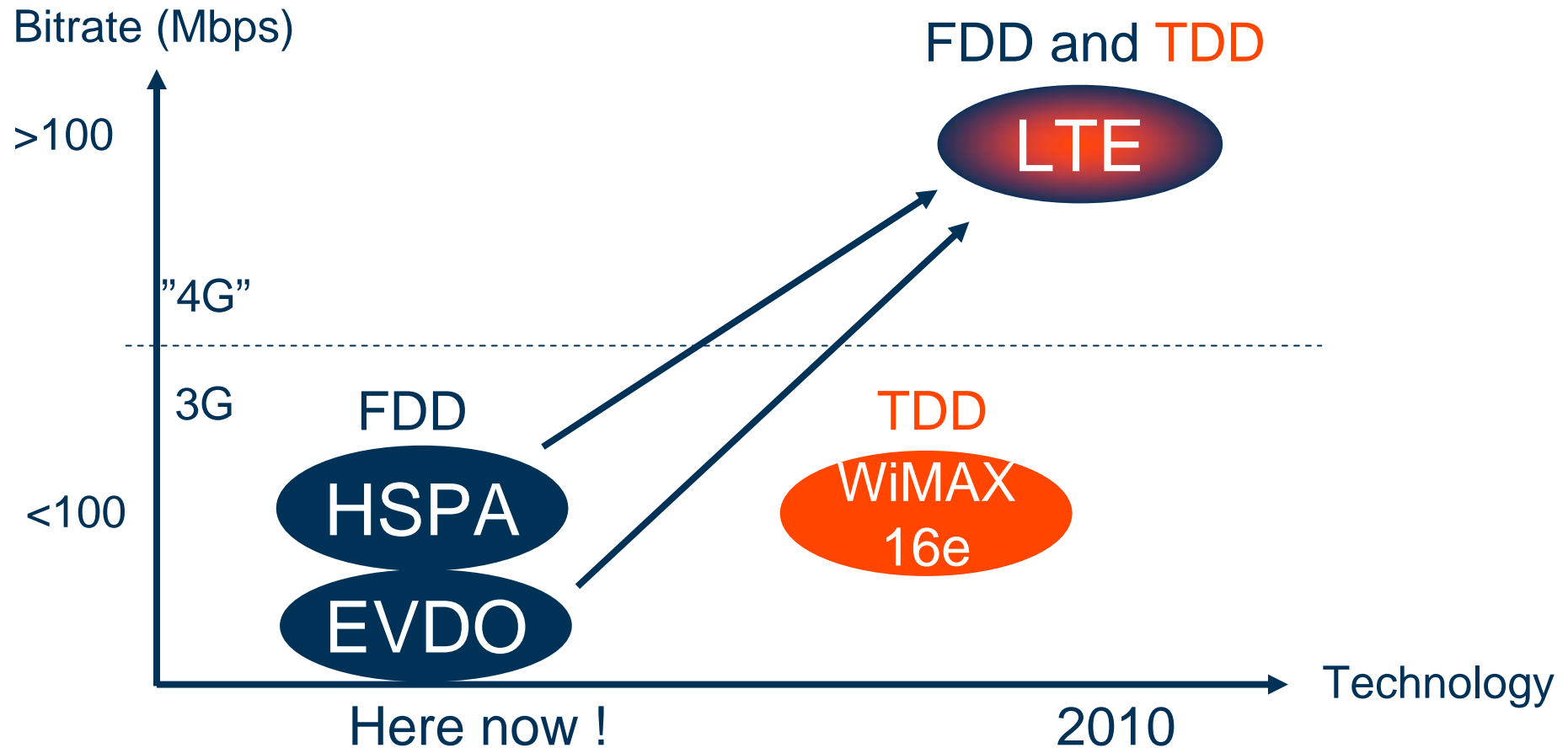
WiMax Track (IEEE)



LTE is the Global standard for next generation

Bitrates and technologies

OFDMA does not mean 4G

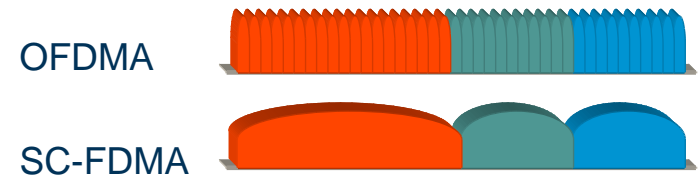


4G is defined as data rates over 100Mbps

Key LTE radio access features

■ LTE radio access

- Downlink: OFDM
- Uplink: SC-FDMA



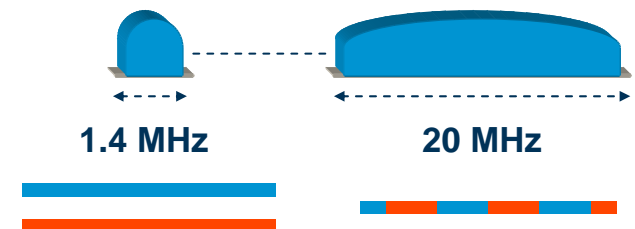
■ Advanced antenna solutions

- Diversity
- Beam-forming
- Multi-layer transmission (MIMO)

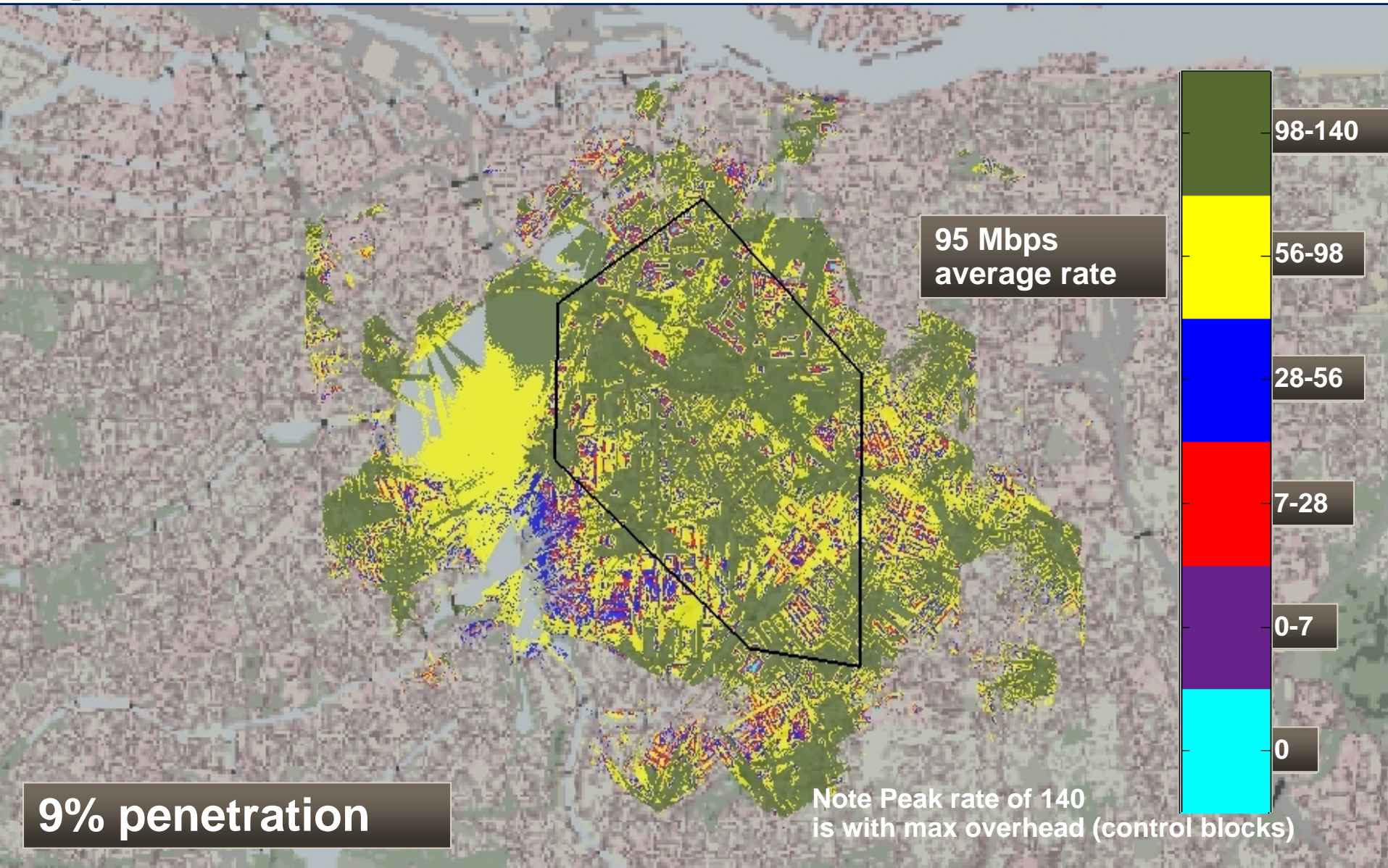


■ Spectrum flexibility

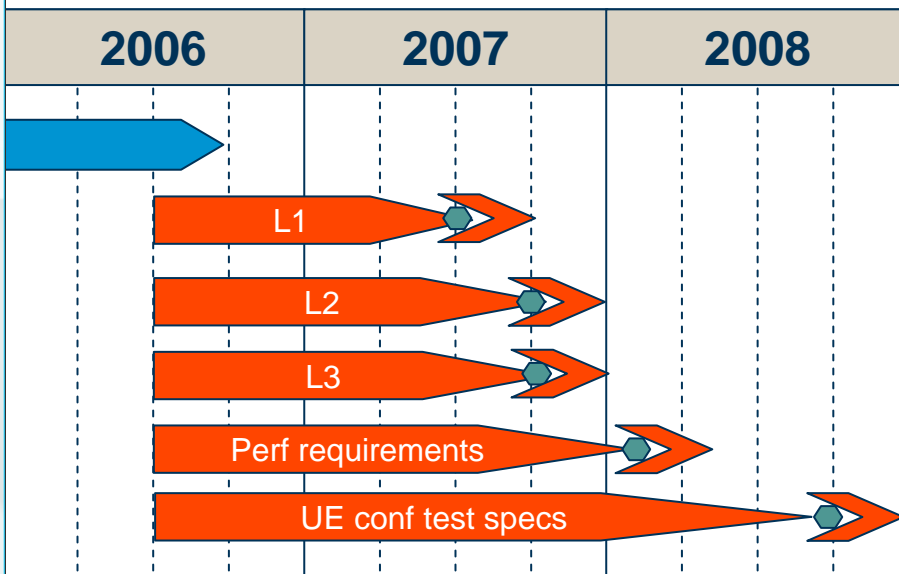
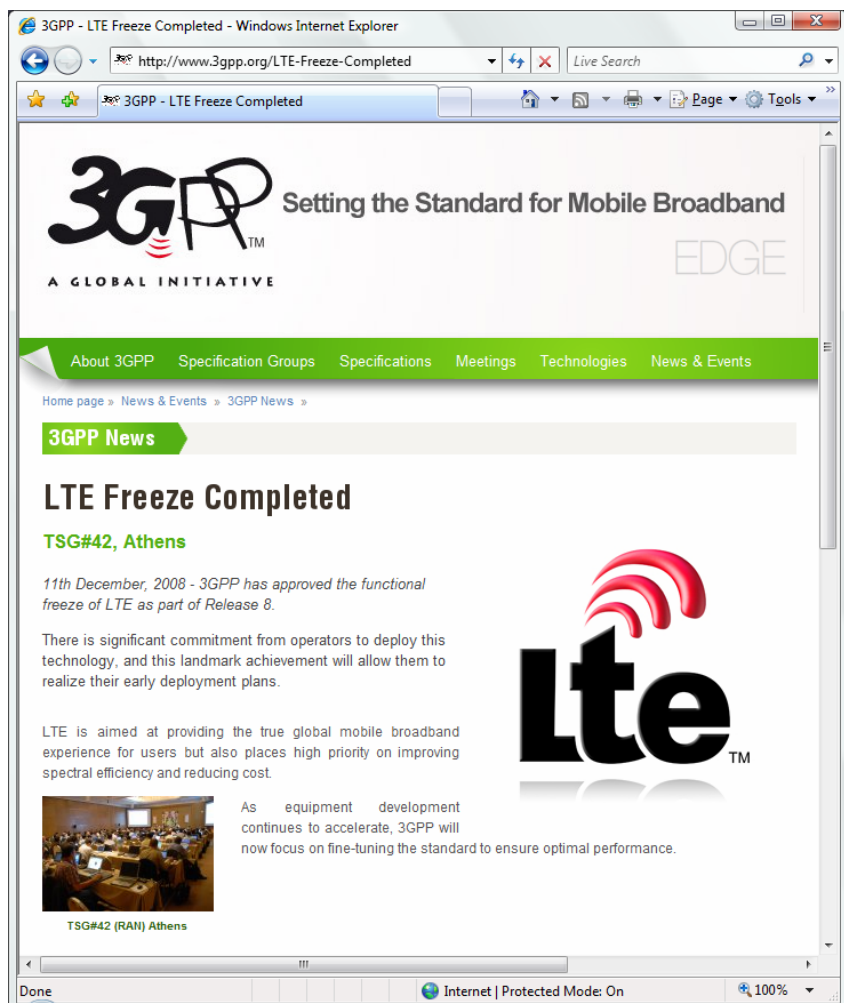
- Flexible bandwidth
- New and existing bands
- Duplex flexibility: FDD and TDD



LTE Data speeds [Mbps] in Urban Network



LTE Standardization timeline



January 2008, Rel-8 specifications approved

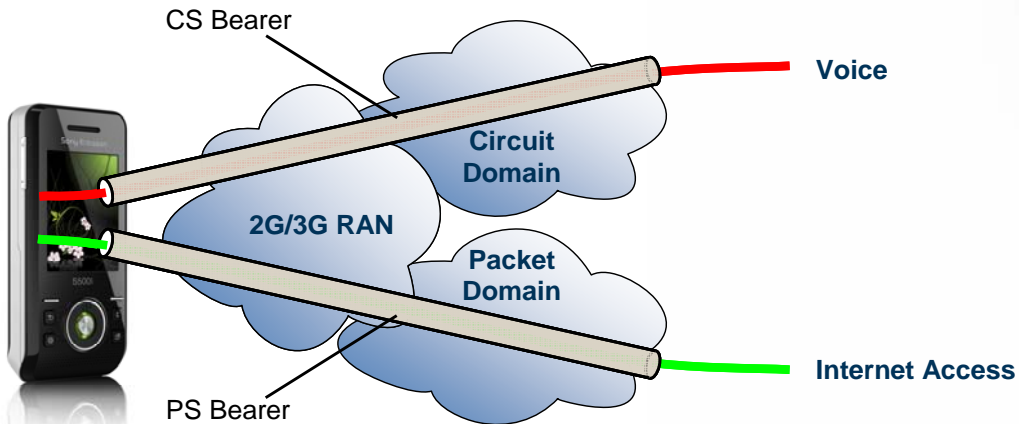
December 2008, Rel-8 specification frozen

March 2009, ASN.1 code ready and backwards compatibility secured

LTE Device Introduction

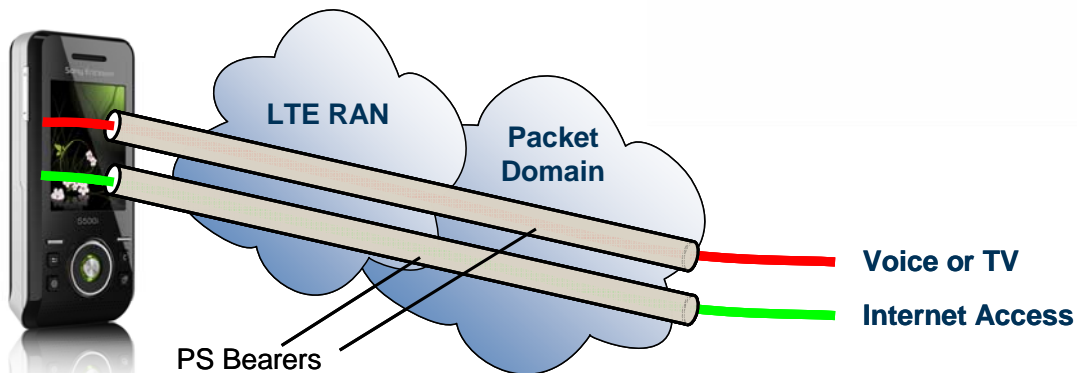


LTE is Packet Only



- **Legacy:** Traffic Differentiation split into packet and circuit

-
- **LTE:** Packet only



Openness in devices

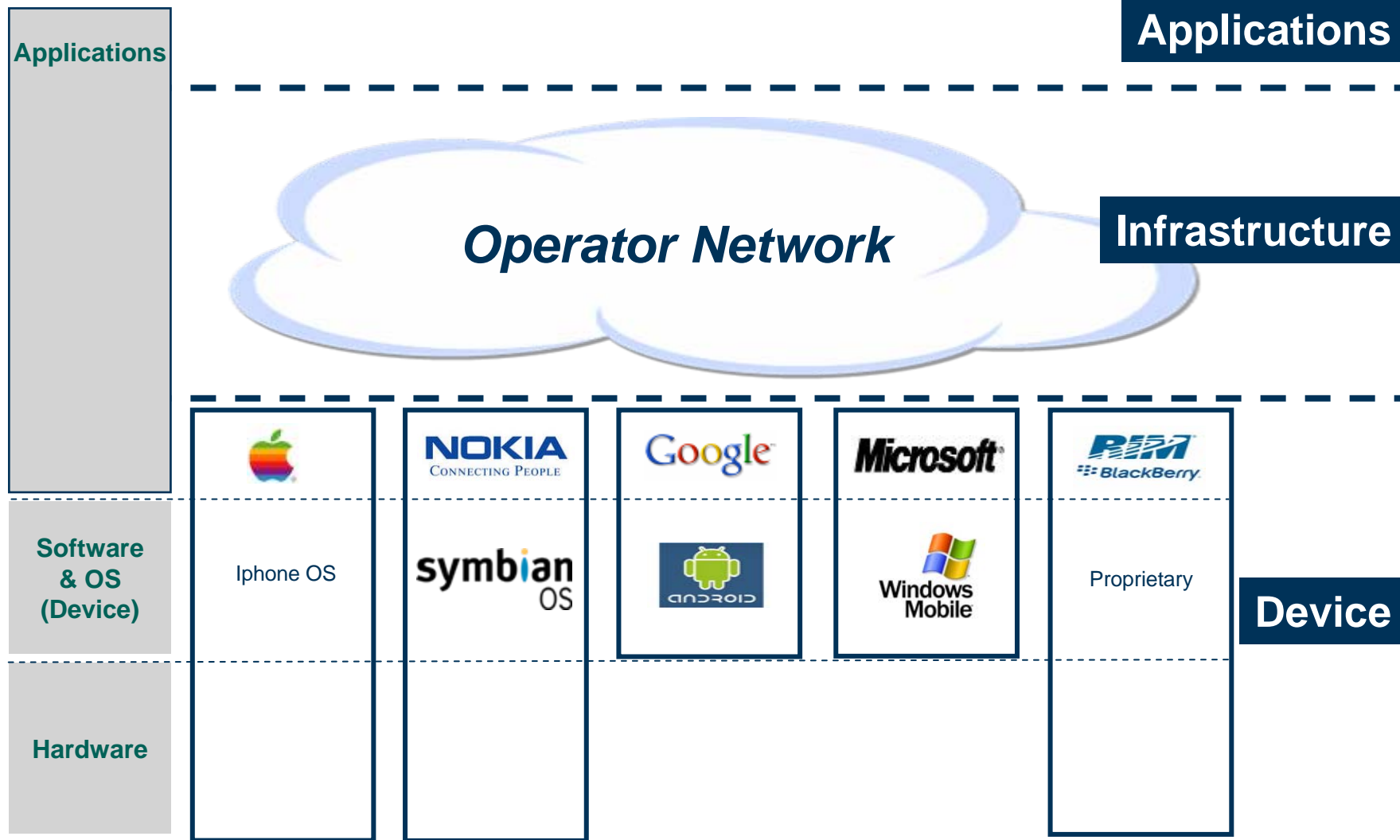


open handset alliance



sybian
foundation

Device Oriented "Open" Vertical



Verticals will drive the market through advanced applications

Device Oriented "Open" Vertical

<10 Apps interoperable (voice, sms, mms, email)

Applications

Infrastructure

Operator Network

Ericsson

Applications

Software & OS (Device)

Hardware



Iphone OS

NOKIA
CONNECTING PEOPLE

symbian
OS

Google



Microsoft



Proprietary



Sony Ericsson



+



Device

Verticals kick starts the market through advanced applications

Device Oriented "Open" Vertical

From 10s of apps to thousands

Applications

Infrastructure

Operator Network

Open API : Presence, Messaging
e.g Interoperability, Hosting,
Internet Service Brokering

Applications

Software
& OS
(Device)

Hardware



iPhone OS

NOKIA
CONNECTING PEOPLE

symbian
OS

Google



Microsoft

Windows
Mobile

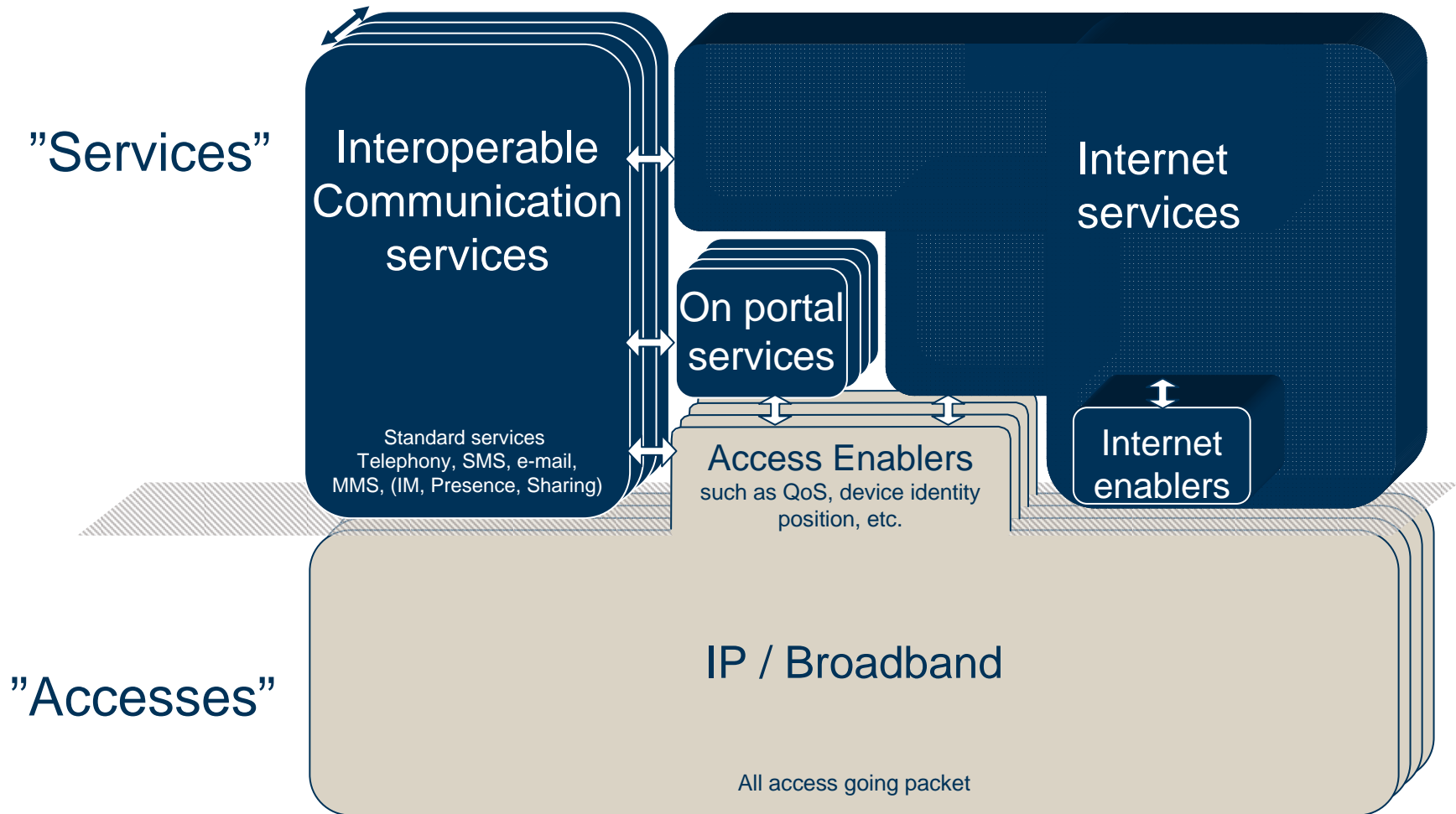
BlackBerry
BlackBerry

Proprietary

Device

Horizontal API (Vendors+Operators+Ecosystem) needed for mass market

Service architecture



Ericsson opens up the telecom world for software development!

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Developer Program Ericsson Mobility World

Succeed with our developer program

Ericsson opens up the telecom world for software development.

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A tool for developing and testing client-server IMS apps. SDS supports Nokia S60 phones and C++ APIs. [Download SDS 4.1 now >>](#)

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A series of articles about six partners to the Ericsson Developer Program — all working with IMS.

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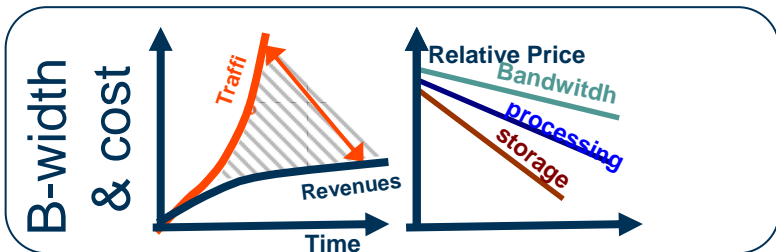
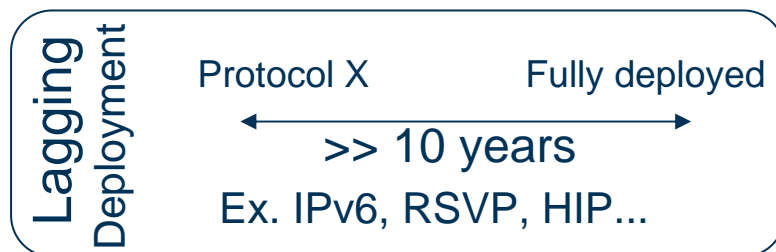
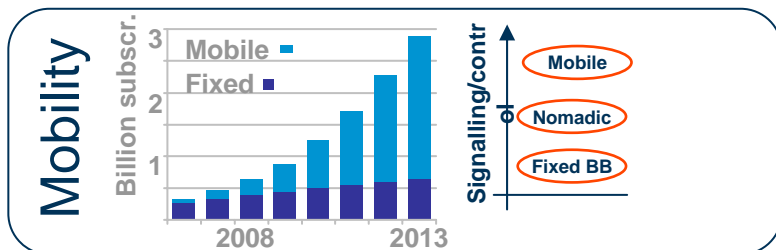
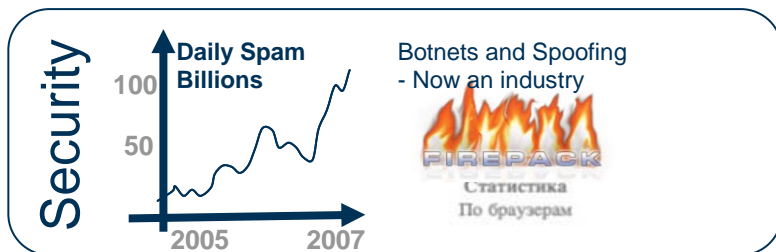
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play, join and innovate with
try applications and us

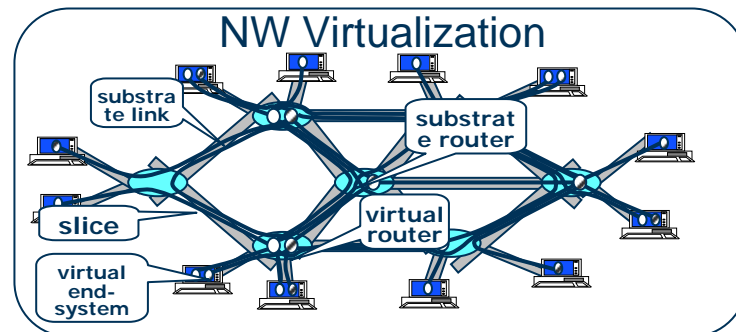
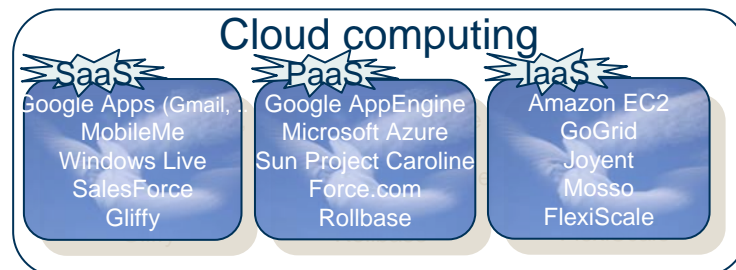
Welcome to Ericsson Labs

Next Generation Internet

Trends & Issues



New Technologies



How to use the new technologies for a new network paradigm
- without a clean slate deployment

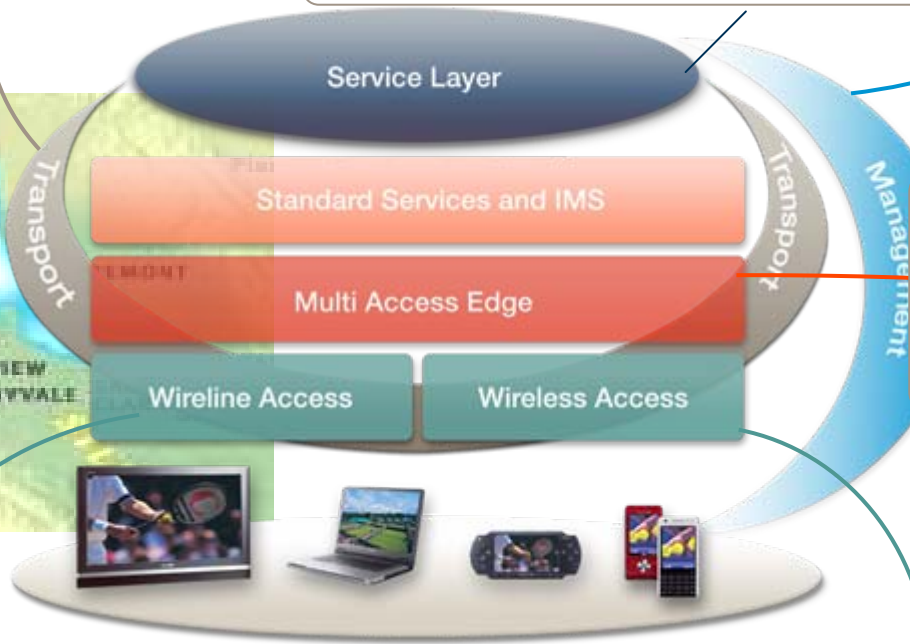
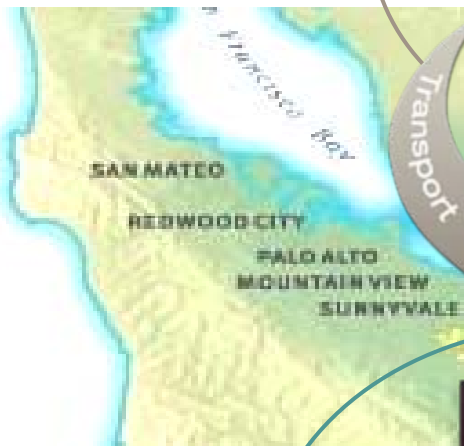
Ericsson Research – a look at future

IP Convergence and Mobile Apps

100G Transport

Open Mobile Broadband Applications 2015

Self Optimized Networks



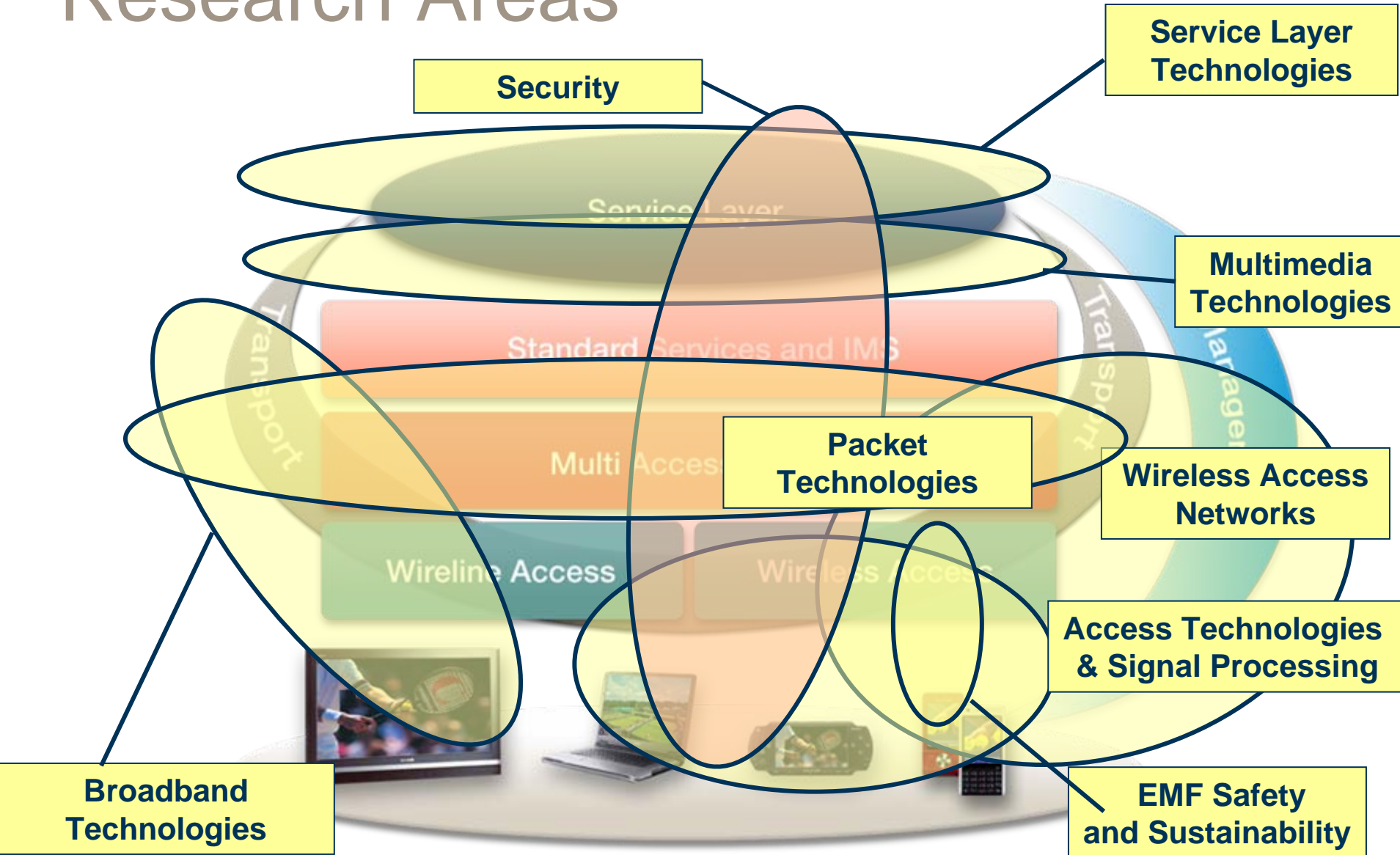
Future Internet
Caching
Evolved Packet Core

10GigB GPON
Control and Signalling - IP

Next Generation LTE evolved for
1GB mobile broadband (IMT)

The launch of labs.ericsson.com

Research Areas



Ericsson Research Silicon Valley

The new star in our global research organization



Ericsson Research

- ~600 people
- GSM, 3G and LTE technologies were invented here
- Leading IP competence in IETF
- Delivers concepts and pre-commercial prototypes
- Files over 50 % of all Ericsson patents

ER Silicon Valley

- Packet Networking
- Open Application environment
- Led by Jan Söderström, V.P. Research USA

Ericsson Research and Stanford

- Our No1 choice for access to US academic community
 - New members of Computer Forum and long collaborations with EE
 - Seminars, meetings, what's hot in the Valley info
 - Access to graduate students and Interns
 - Visiting Ericsson scientists at Stanford
- Next Generation Internet projects
 - Engage in FIND/GENI and other NSF activities
 - Members of Cleanslate&POMI - our first such project in US
 - Plan to take active part involving prototyping and interop
 - Vision: Connect European Framework and NSF program activities with industrial research with partners in the Valley
- Technologies
 - Openflow - and how/if that can fit into public networks
 - NetFPGA – we are already active. e.g. the PSIRP forwarding code
 - POMI fine grain data rights in connection to mobile applications
 - Etc.

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