Стратегия и решения Nokia Siemens Networks для опорной сети SAE. Варианты интеграции опорных сетей GSM/WCDMA/SAE. Реализация голосовых и мультимедиа услуг для сети LTE/SAE

Владимир Шапоров

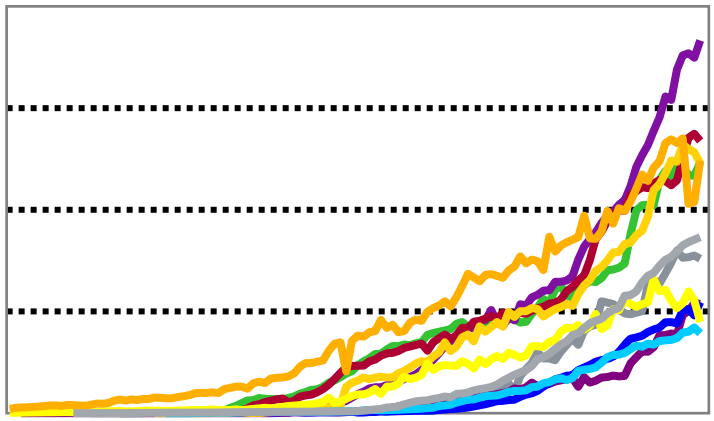
Москва, 09 сентября 2009 года
LTE Road Show 2009

Long term evolution goes live

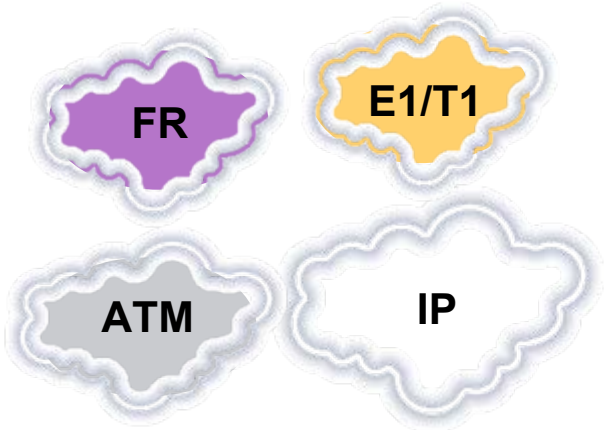
Evolved Packet Core Market needs and trends

How to streamline core network to meet future requirements?

Meet the capacity requirements



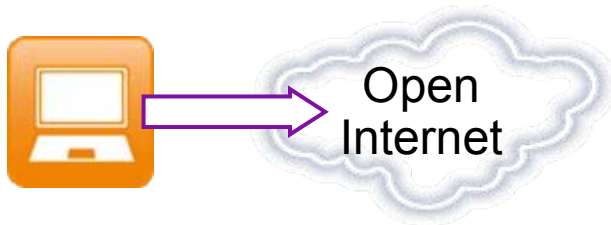
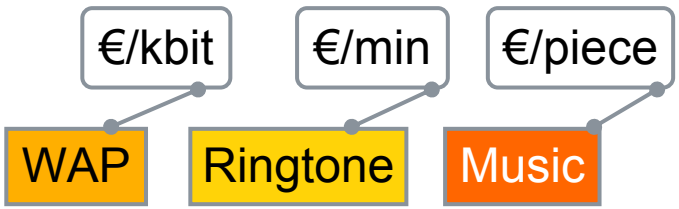
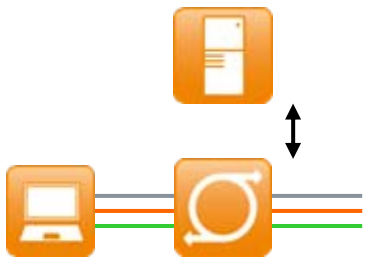
Streamline network architecture



Cost efficiency required

Provide all services over a single networking technology

From walled garden to open Internet services

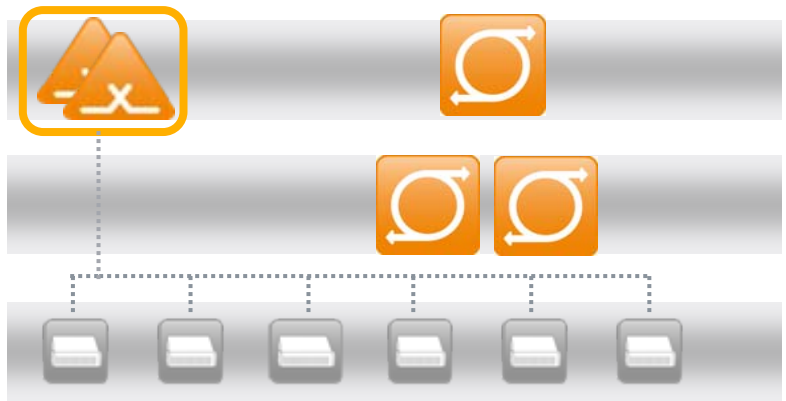
	2G/3G GPRS	Mobile Broadband; HSPA, HSPA+, I-HSPA, LTE
Services		
Charging model		All you can eat max 1Mbit/s 20 €/month Max 5 GB/month 20 €
Service awareness and DPI	Operator and partner services WAP Ringtone Music	KaZaA skype Google talk facebook ebay AIM flickr BitTorrent YouTube Google Maps
Type of control	Differentiated online charging 	Net neutrality Statistics collection for network planning and optimization 

Solutions to meet future core network needs

Evolved Packet Core elements optimized according to their roles in 3GPP R8:

MME:
Mobility management

S-GW and P-GW:
Broadband connectivity
Policy Enforcement



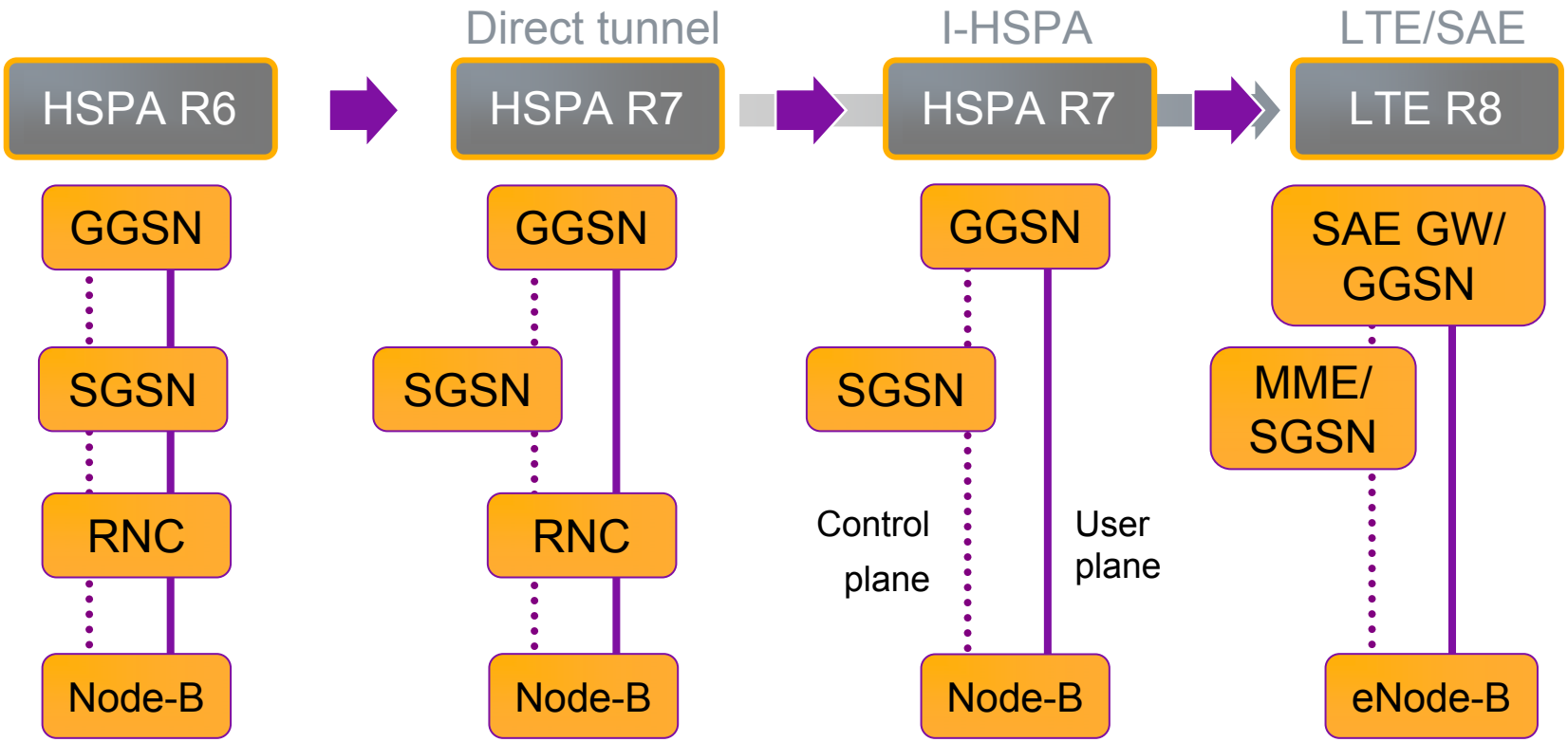
Centralized control
Centralized/distributed gateways

Transaction and signaling capacity to support mobility

Throughput capacity to support data services' growth

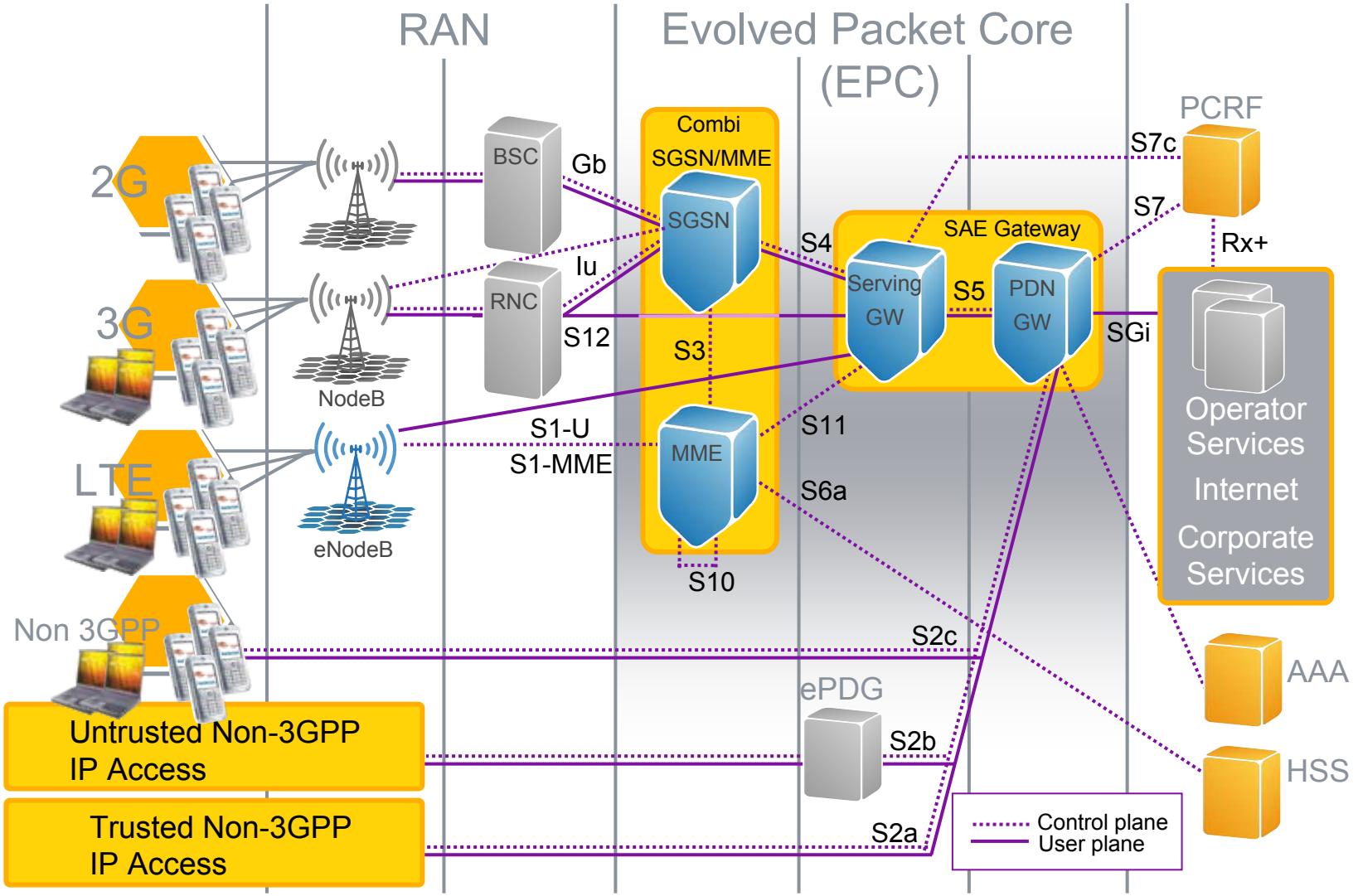
Packet processing capacity to support real-time services

Packet Core Evolution in 3GPP network



- Direct Tunnel is mandatory in 3GPP R8
- As the only vendor in the idustry we already support direct tunnel as optional SW feature in Nokia Siemens Networks SGSN
- Our SGSN is SW upgradable to MME
- SAE GW functionality will be introduced on Next Generation Flexi ISN hardware platform

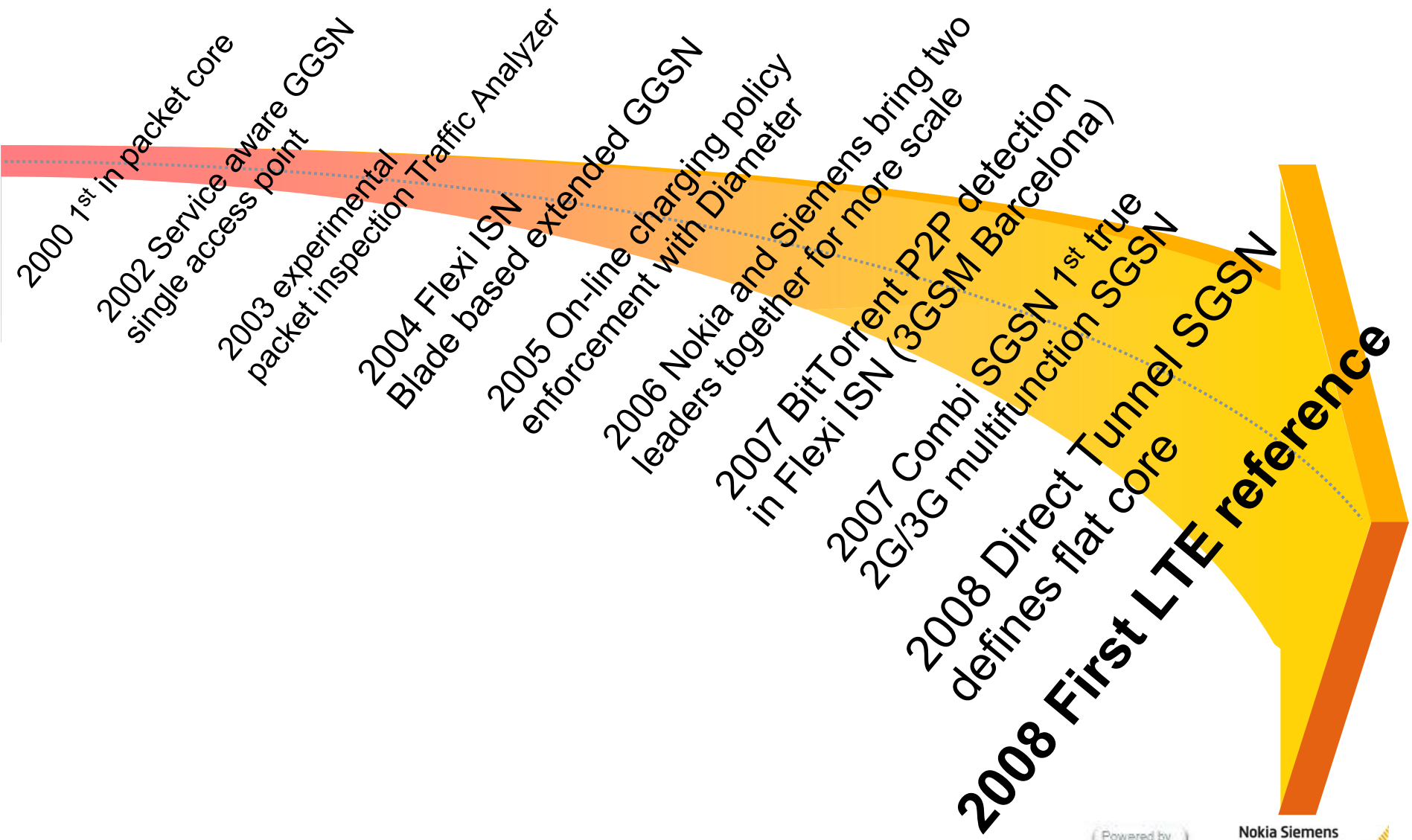
Packet Core Evolution
LTE Network Architecture – 3GPP



Long term evolution goes live

Evolved Packet Core
NSN Vision and Solutions

Key milestones
Nokia Siemens Networks packet core



New Platforms!

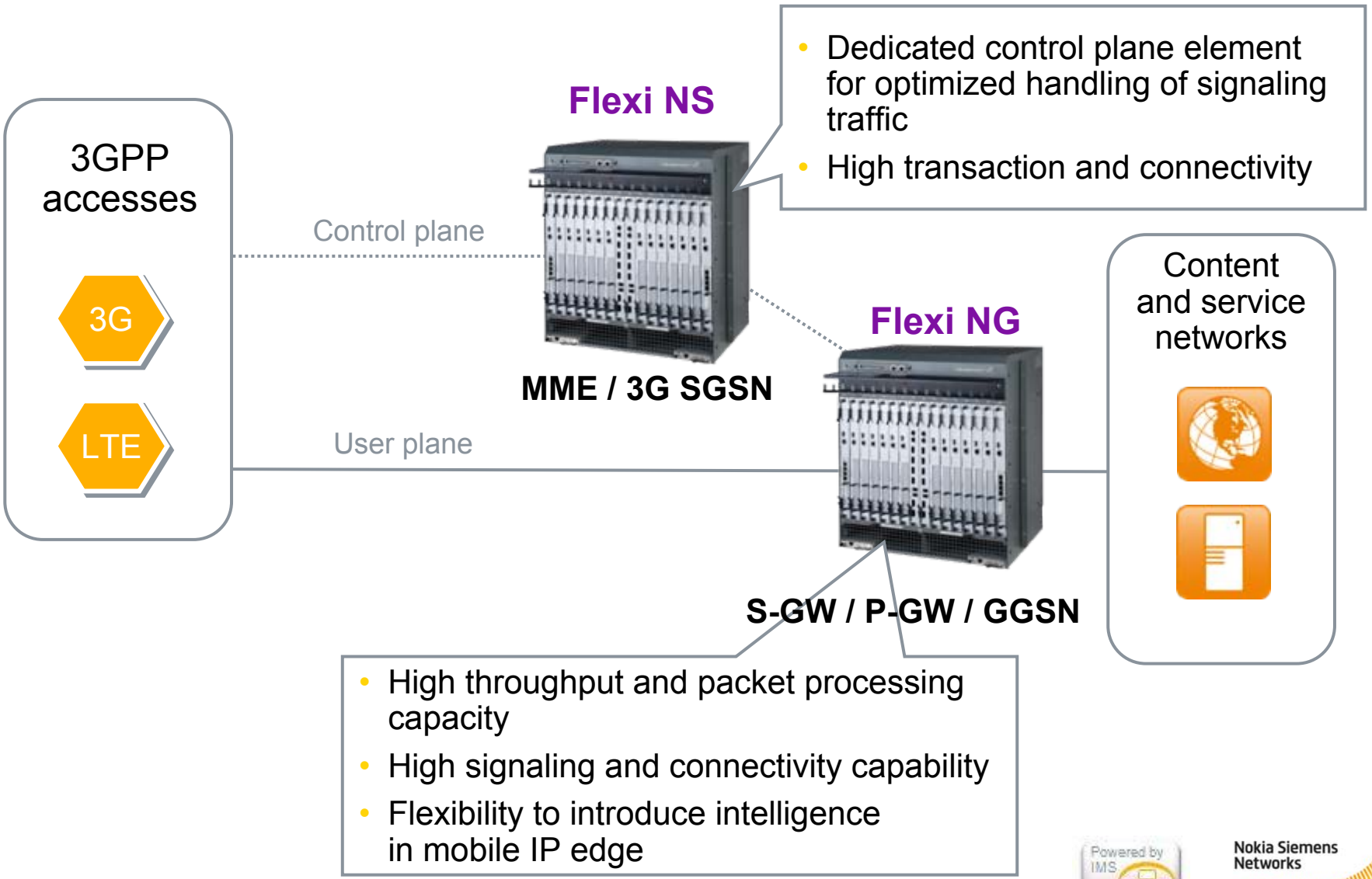
Flexi Network Server

- “SGSN in LTE”
- ATCA platform
- 2M subscribers/bearers
- 20 k eNodeBs
- Builds on SGSN SW

- “GGSN” in LTE
- ATCA platform
- Up to 50 Gbps
- Up to 5M bearers
- Scalable from small to large

Flexi Network Gateway

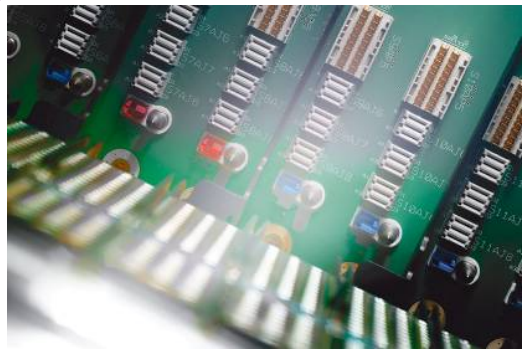
Introducing 3GPP R8 compliant Evolved Packet Core for mobile broadband



Telecom class ATCA platform

Flexible deployment options, multiple chassis sizes

Fast time to market with commercial off the shelf HW



New technology updates available with industry evolution

ATCA is one of the strategic platforms in NSN.
For high capacity GGSN and S-GW/P-GW an ATCA platform was preferred over router based platforms due to better cost performance and more flexibility.

Cost efficiency in the key dimensions

MME

Subscribers
Transactions

Scaling according to your needs

S-GW / P-GW

Throughput in Gbit/s and pps

Flexibility in network design

MME

S-GW

P-GW

S-GW/P-GW

Cost efficiency

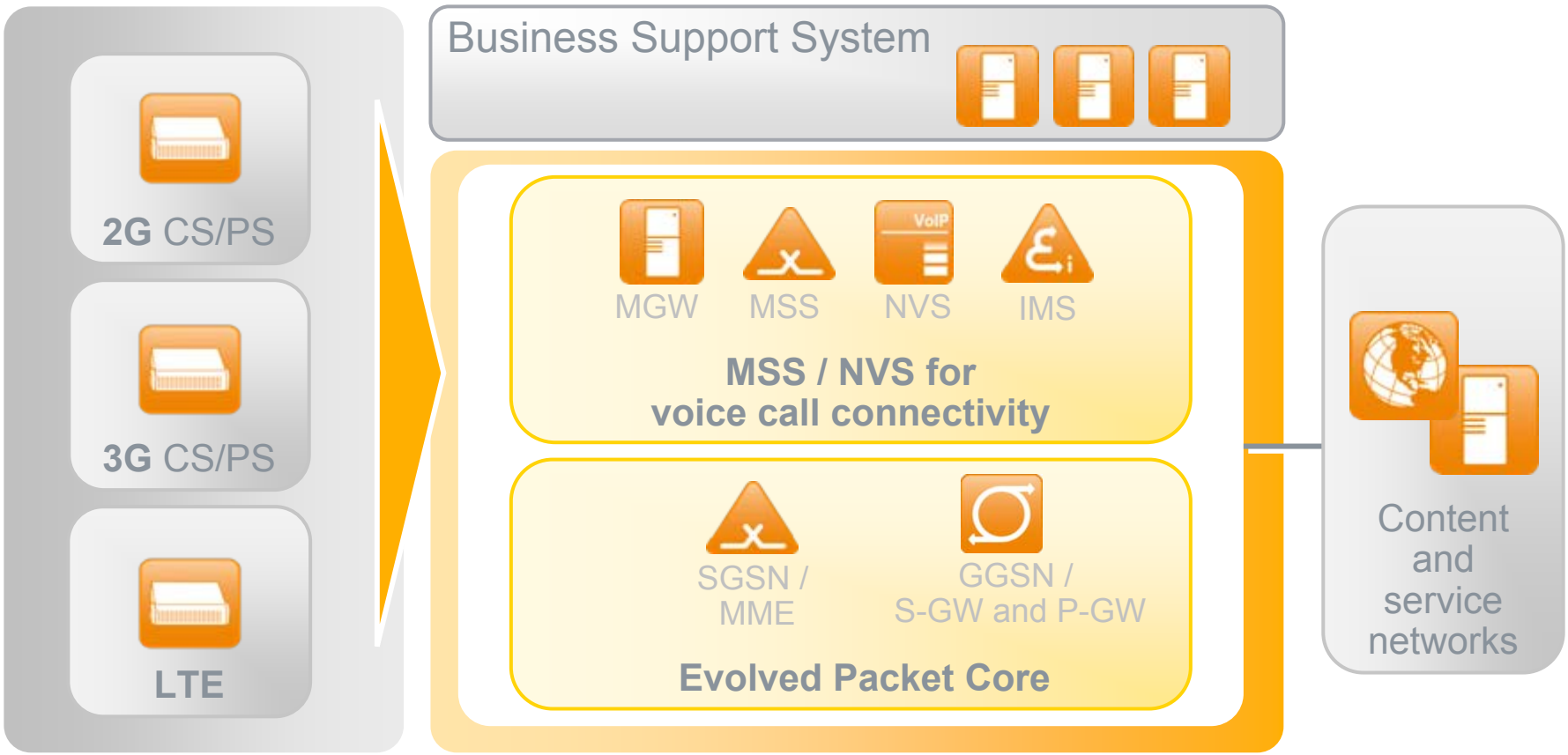
All-IP

High capacity, low latency network to provide all services

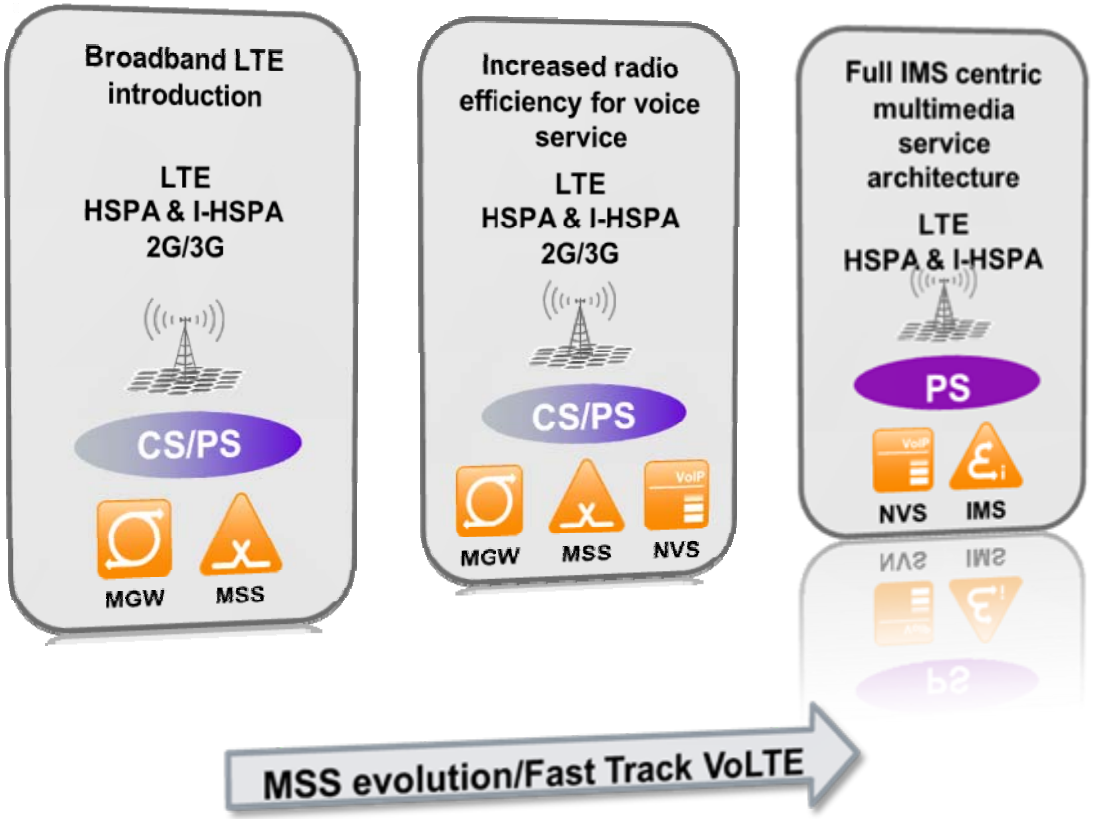
Long term evolution goes live

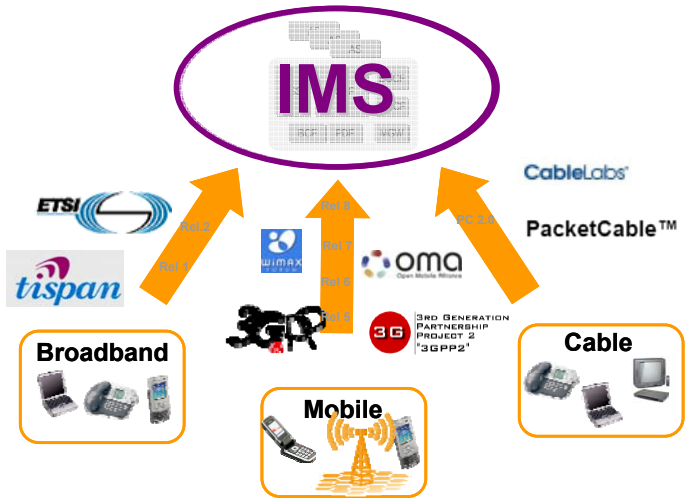
Evolved Packet Core
Evolution to Voice over LTE

Common voice control solution provides smooth evolution to voice over LTE



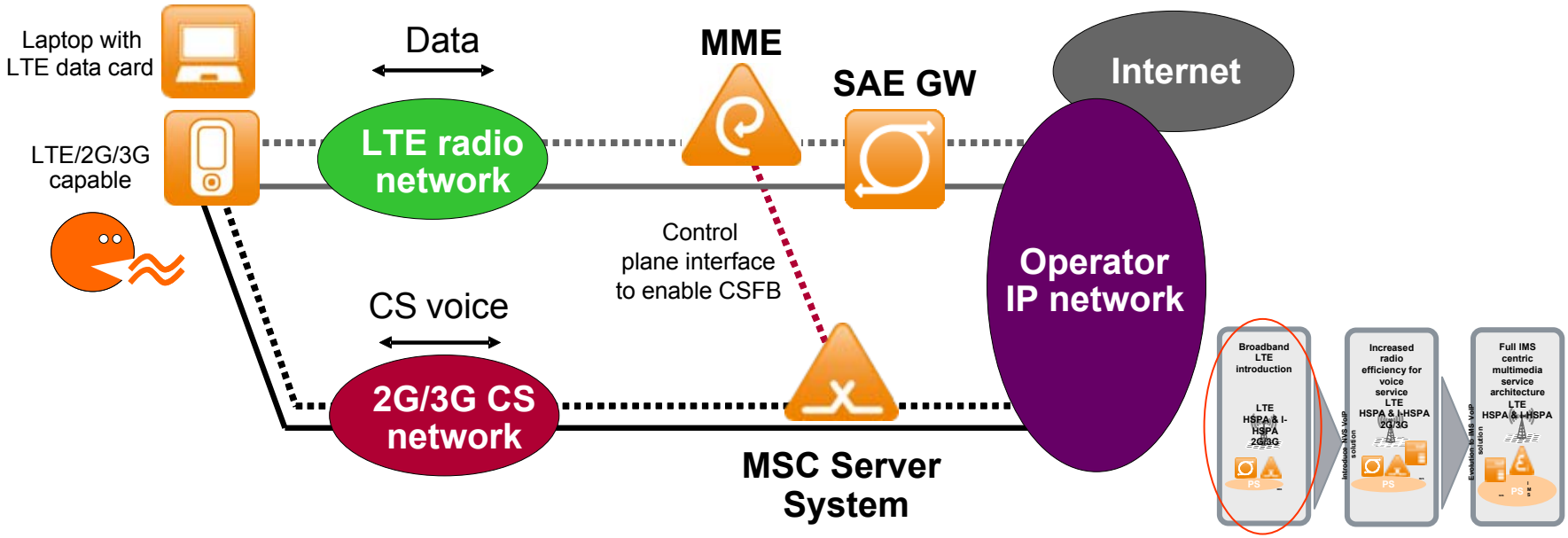
Inside NSN Voice over LTE Solution
“Fast Track Voice over LTE”





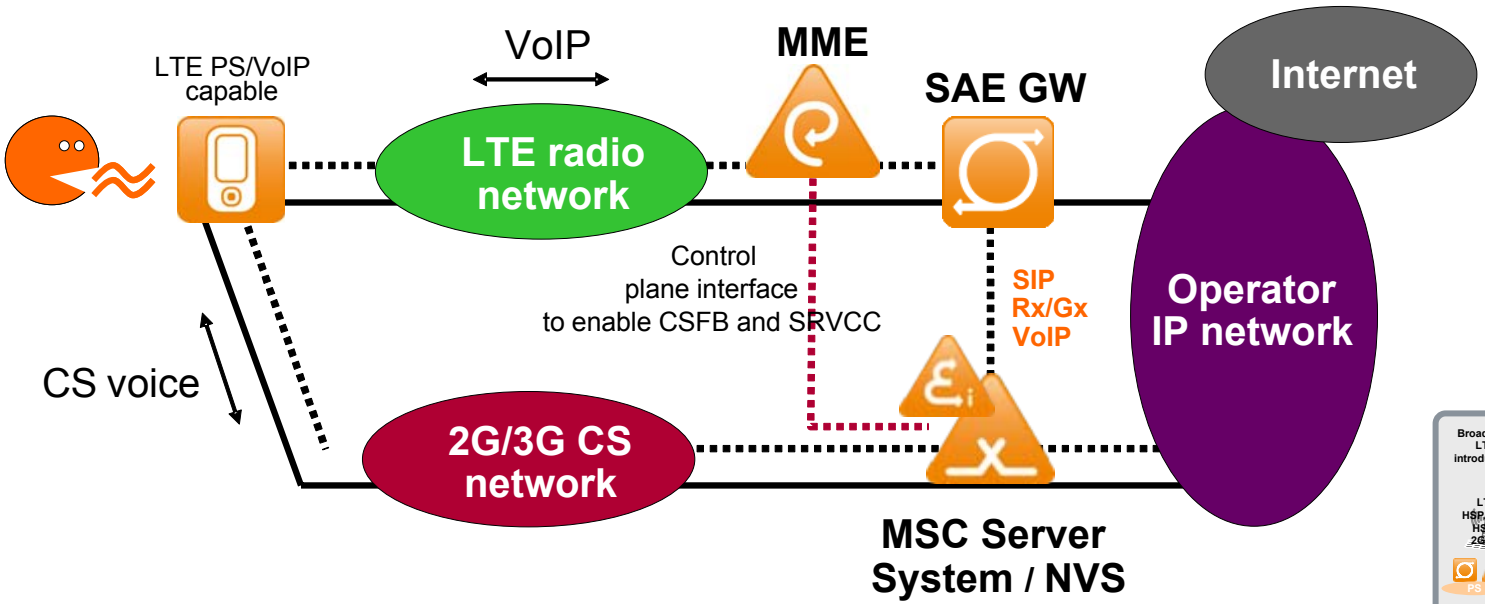
All Standards point to IMS and SIP technology as key drivers for converged networks

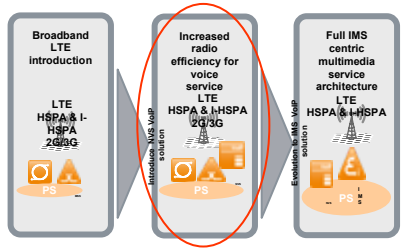
LTE used for high speed data
Primary voice service with Fallback to CS (CSFB)



- LTE deployed as high speed data to address data growth
- Voice mainly circuit switched
- CS Fallback for voice allows to continue using existing MSC Servers

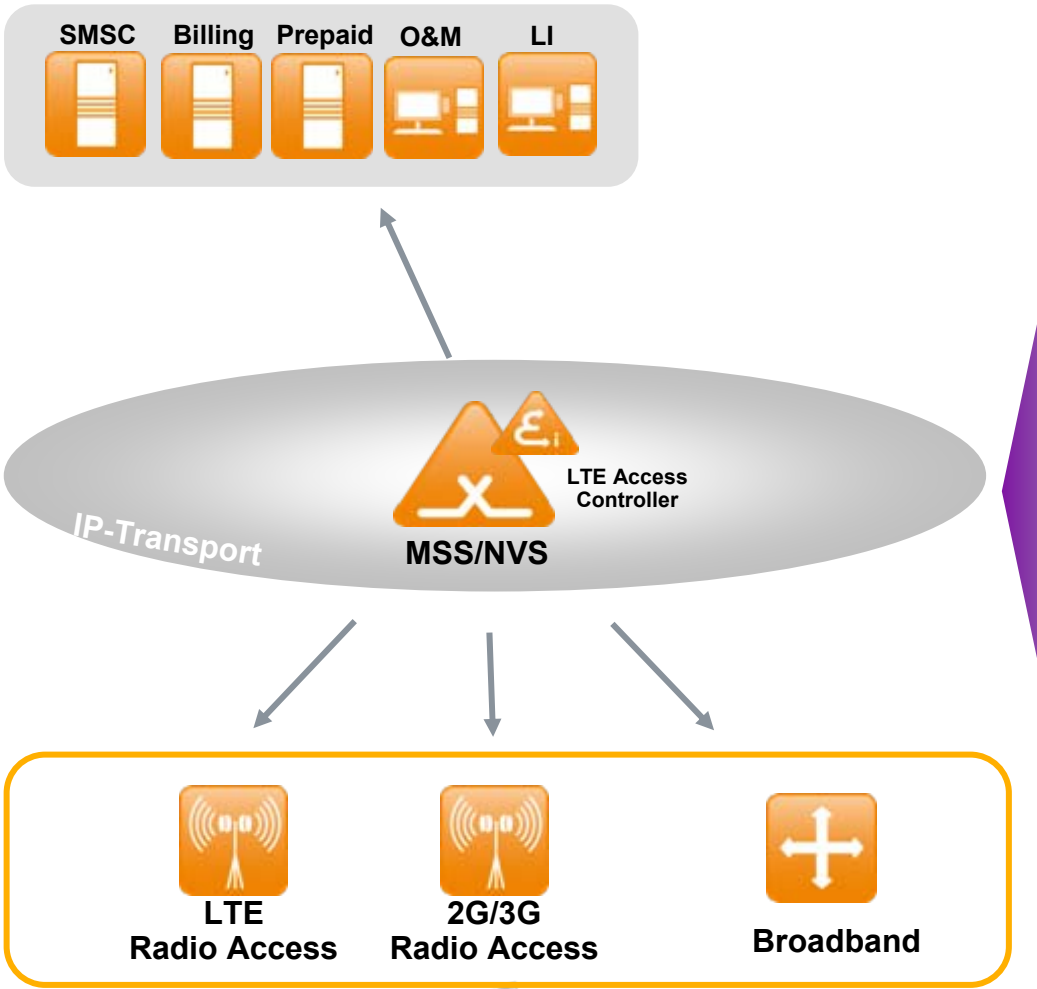
Smooth transition – Fast Track VoLTE (VoIP over LTE)
Primary Voice service to MSC Server with IMS-ready upgrade





- By upgrading MSS with NVS VoIP SW and adding an IMS-ready hw unit secures a fast track to VoIP over LTE – a smooth evolution step towards IMS
- VoIP as primary voice service with QoS and LTE to 2G/3G voice continuity
- Full CS infrastructure and business systems reuse

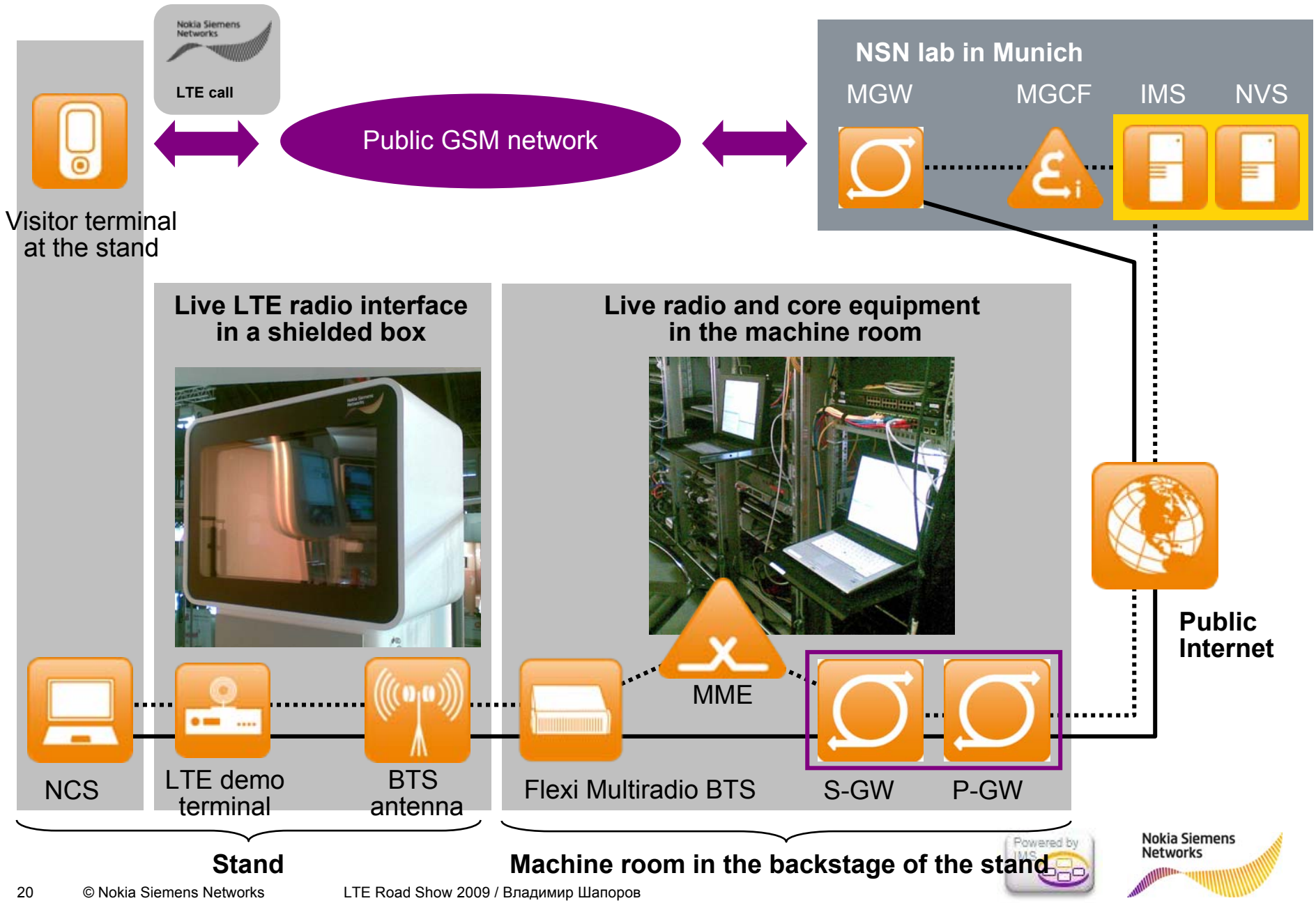
Fast Track VoLTE for MSS based evolution with investment protection and OPEX savings



Investment protection and OPEX savings

- LTE functionality expansion to existing MSS with Fast Track VoLTE – Nokia Siemens Networks mobile VoIP Server (NVS) upgrade
- No integration costs to existing administrative and support systems: Provisioning, Billing, Prepaid, O&M, Legal Interception, etc.
- Excellent TCO

Live at MWC09: LTE VoIP calls at NSN stand



Communication Suite – the RCS enabler

Let your customers enjoy your services over the Internet

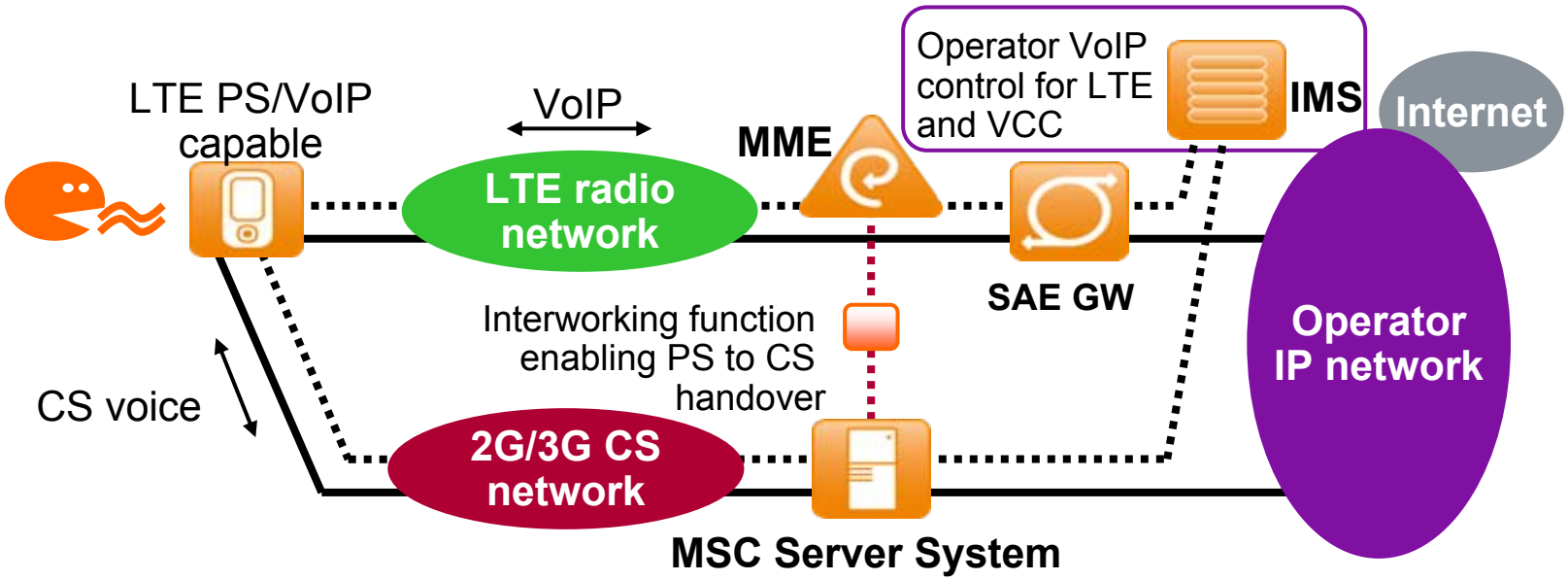
Communication Key

- SIM USB STICK
- One number
- SIM authentication
- Rich communication
- Future services

Powered by IMS

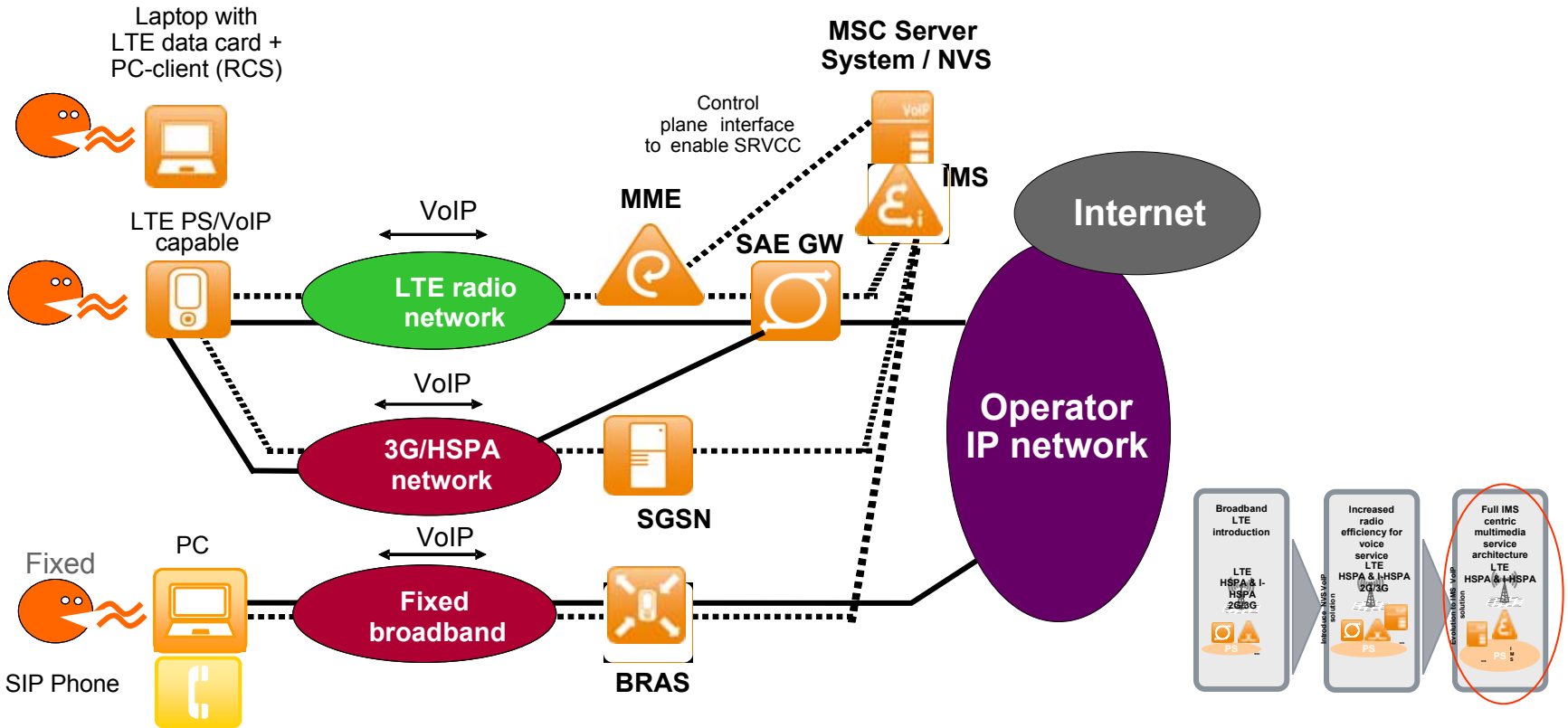
Nokia Siemens Networks

Single Radio Voice Call Continuity (SRVCC)



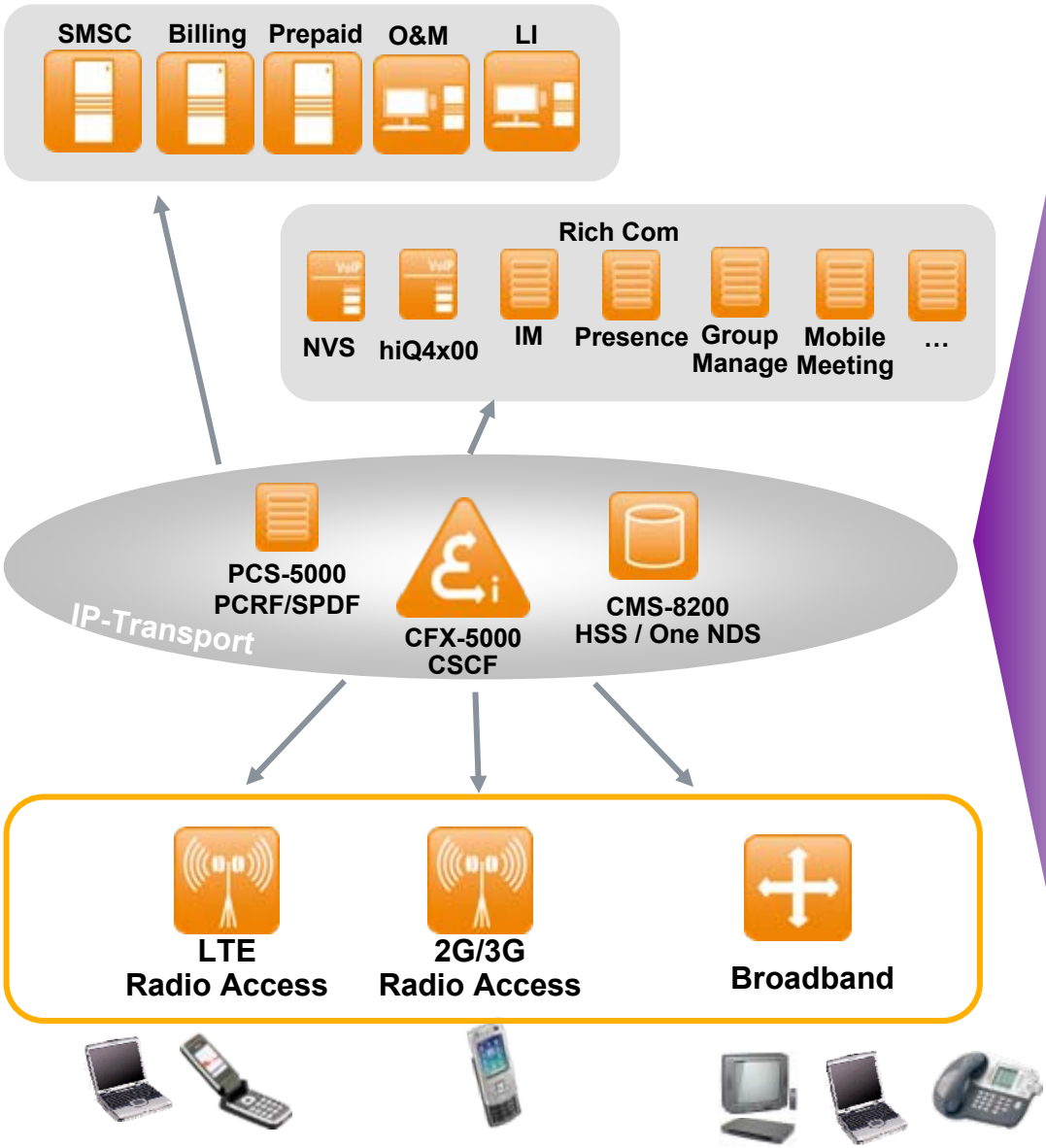
- IMS is the 3GPP standardized connectivity control machinery for voice and multimedia sessions
- MME makes a handover for PS voice session
- Interworking function is needed between MME and MSS
- Voice session is handed over to 2G/3G CS voice, procedure is standardized in 3GPP Rel-8
- Simulatenous voice and data sessions can be supported:
  - In 3G network when multi-RAB is enabled
  - In 2G network when Dual Transfer Mode is enabled

IMS multimedia service architecture



- Voice service provided by NVS as IMS application server
- Enabling Rich Communication Services (RCS) and full Multimedia telephony
- Converged architecture with support for fixed, mobile and cable accesses

IMS for enriched IP multimedia services



Enriched IP multimedia services

- Full Multimedia and Rich Communication Services
- Common Session and Policy Control for any access method
- IMS interworking across operators
- Regulatory and standard compliancy

Interoperable and convergent Rich Communication services

What's our solution?

We provide a fully GSMA RCS Initiative-compliant, end-to-end Rich Communication solution using both mobile and PC terminals.

Mobile client

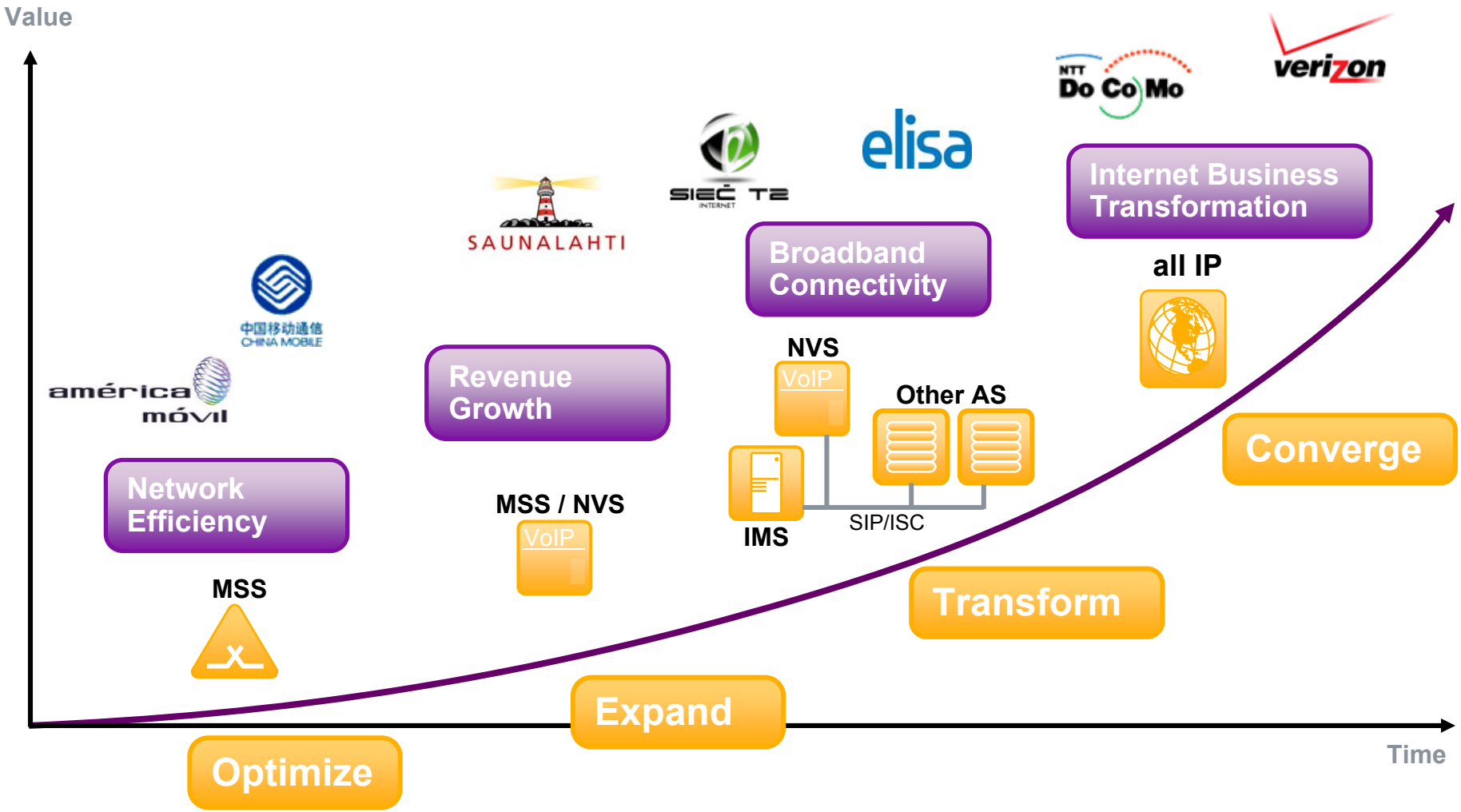
IMS + AS

Communication Key
+ SIM authentication

PC client

Smooth evolution – Smart steps

Fast Track VoLTE upgrade to MSC Server secures future services with smart utilization of current investments



Our Mobile softswitching is # 1 with 220 customers – all ready for the Fast Track VoLTE

Converged core

220

Serving more networks than others

Converged core

36 %

Having more Installations than others

Converged core

900 000 000

Serving more customers than others

Converged core

26 %

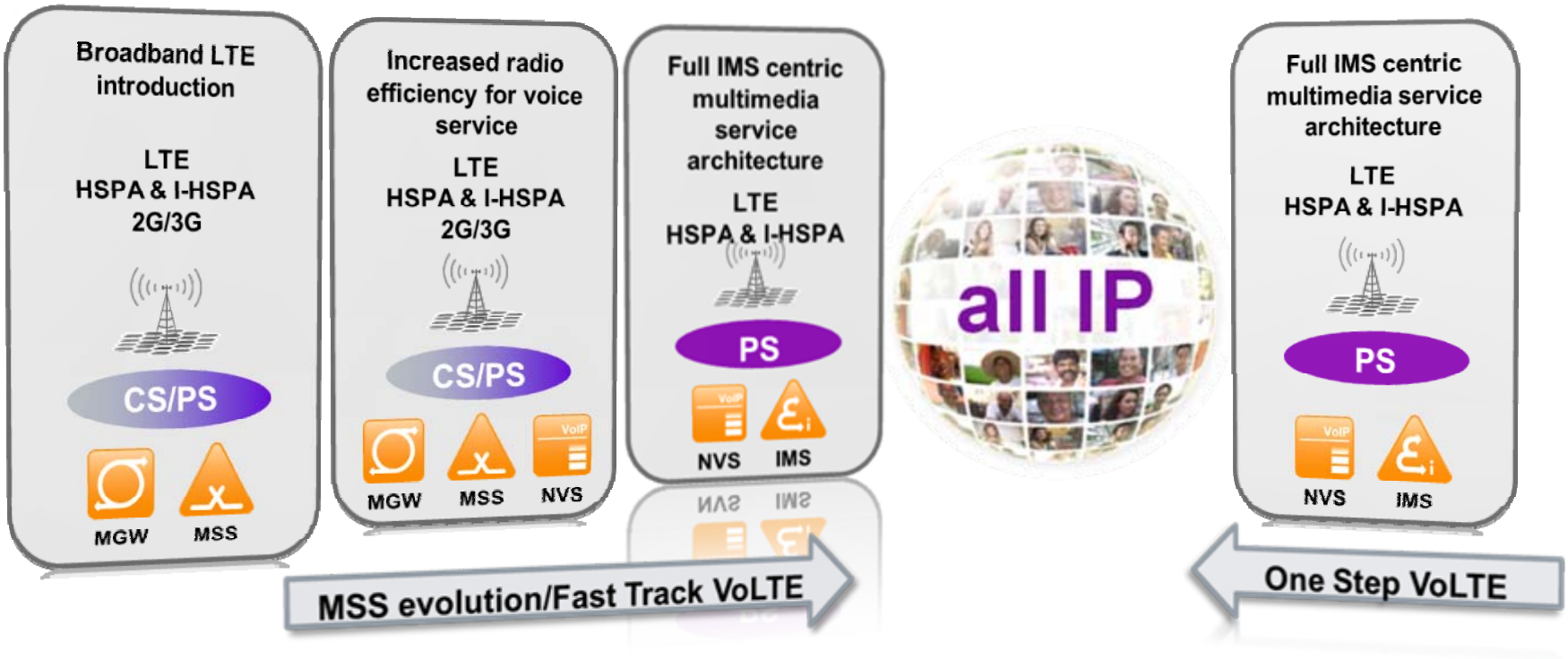
Generating more business than others

Voice evolution over LTE Summary

ARPU — Meet the challenges

5Bn — Connecting billions of people

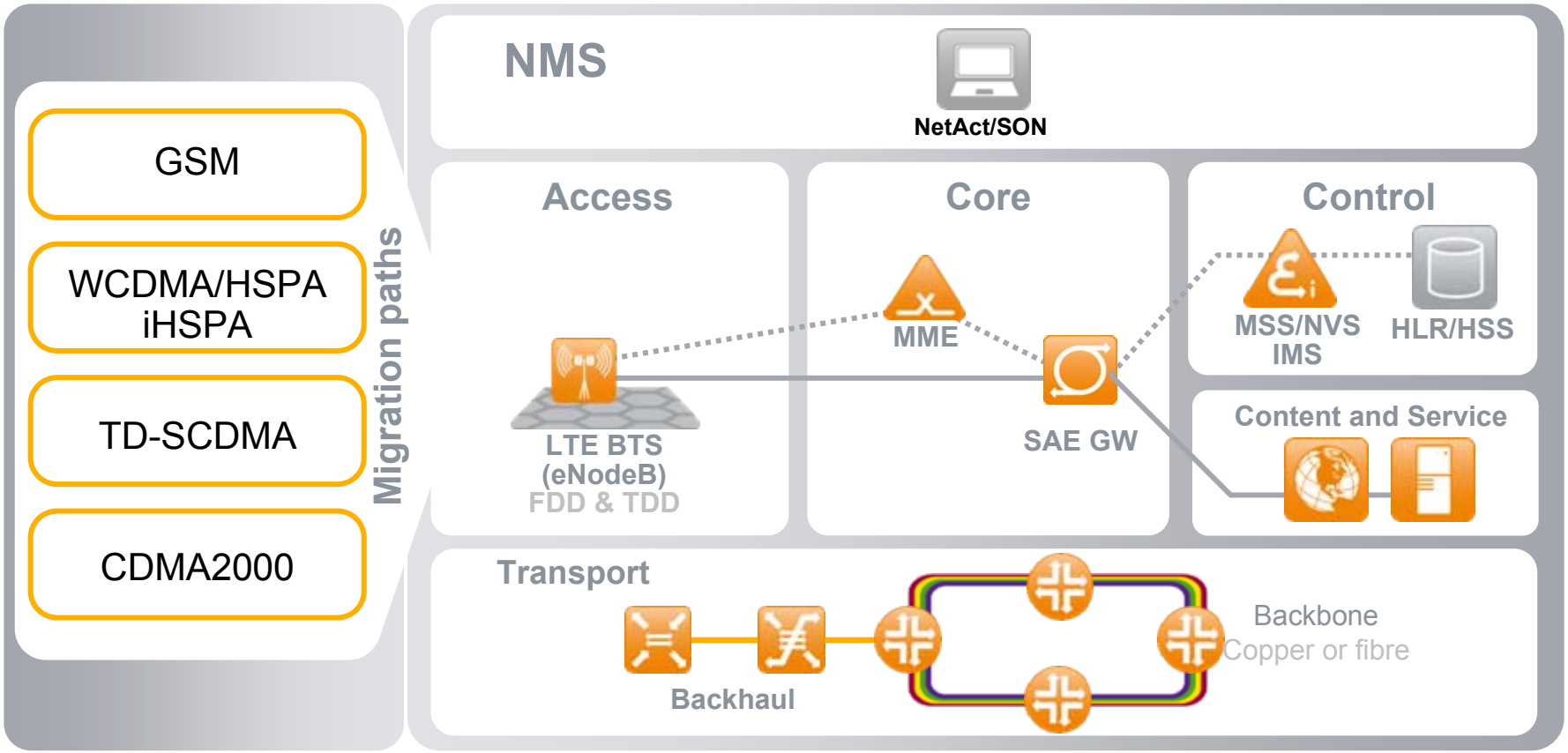
Add value beyond bit-pipe



Smooth evolution – Smart steps: Fast Track VoLTE upgrade to MSC Server secures future services with smart utilization of current investments

Nokia Siemens Networks LTE Products & Solutions Summary

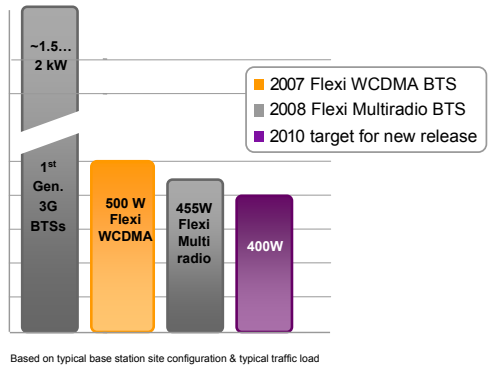
Benefit from our LTE/SAE complete solution for each migration path



Nokia Siemens Networks' LTE solution (1)

Flexi Multimode BTS

- **smallest macro BTS in this class** (50 liter, <50 kg for 3 sectors BTS)
- **Lowest energy consumption** (430W for 3 sector BTS)
- **High output power and high performance** (3x60 Watt, 3x120 W with 2x2 MIMO, 20 MHz)
- **Flexible in deployment** (fits for every site solution)
- **No additional footprint, low installation costs** (no lifting equipment)
- **HW commercially available since Q3/2008**
- **Upgradable to LTE by SW only** (no additional HW boards required)



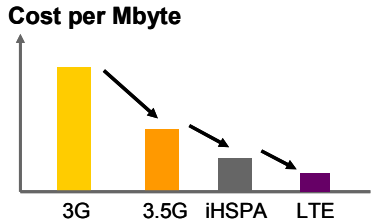
Mobility Manage-ment Entity (MME)

- **High performance ATCA industry HW platform**
- **Based on field proven and highly reliable SGSN SW (99.999 % availability)**
- **Combined MME /SGSN**

Nokia Siemens Networks' LTE solution (2)

SAE Gateway

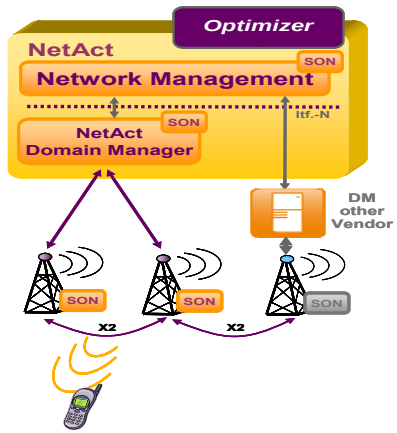
- High performance ATCA HW platform
- High throughput (up 50 Gbps)
- Including GGSN functionality
- Sophisticated traffic management
- Policy control functions



NetAct as Management system

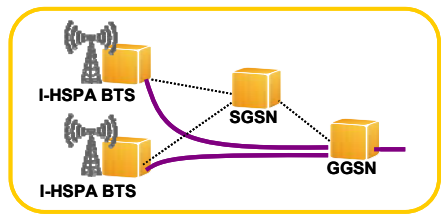
NetAct

- One management system for all technologies and NE (Radio, Core, GSM, WCDMA, LTE,…)
- Support of Multivendor Integration
- All O&M applications for element, network, service management
- Self Organizing Network (SON)



Nokia Siemens Networks flat network architecture experience

- Our SGSN is the first one to support direct tunnel
- I-HSPA supports similar flat network architecture as LTE



Nokia Siemens Networks' unique LTE solution guarantees

- Investment Protection
- Lowest OPEX and CAPEX
- Lowest cost per Megabyte

Thank You For Attention!