ERICSSON

IPv6 in Wireless infrastructure and Terminals

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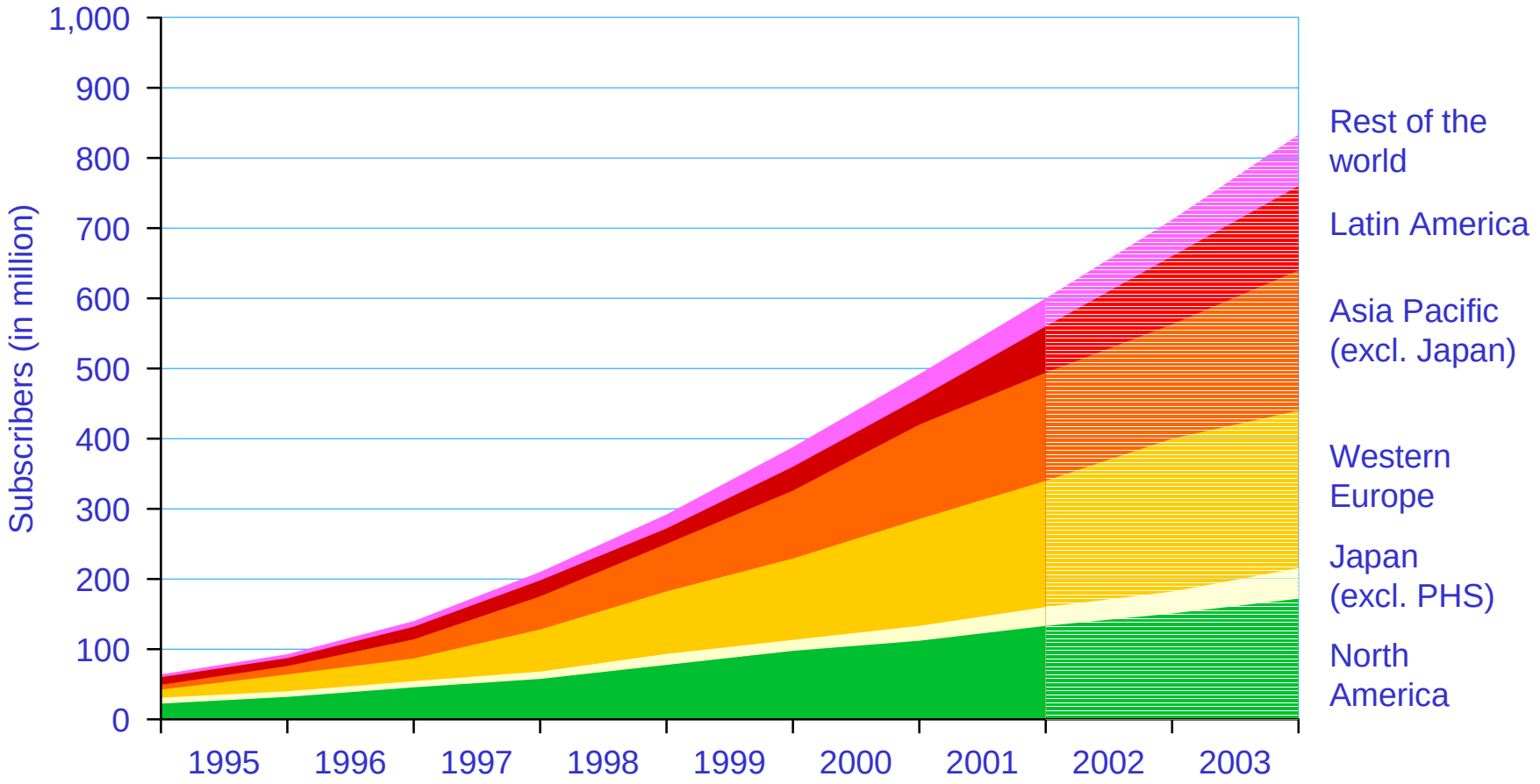
EN/FAD 109 0015

Ericsson forecast:mobile subscribers grow faster than Internet subscribers



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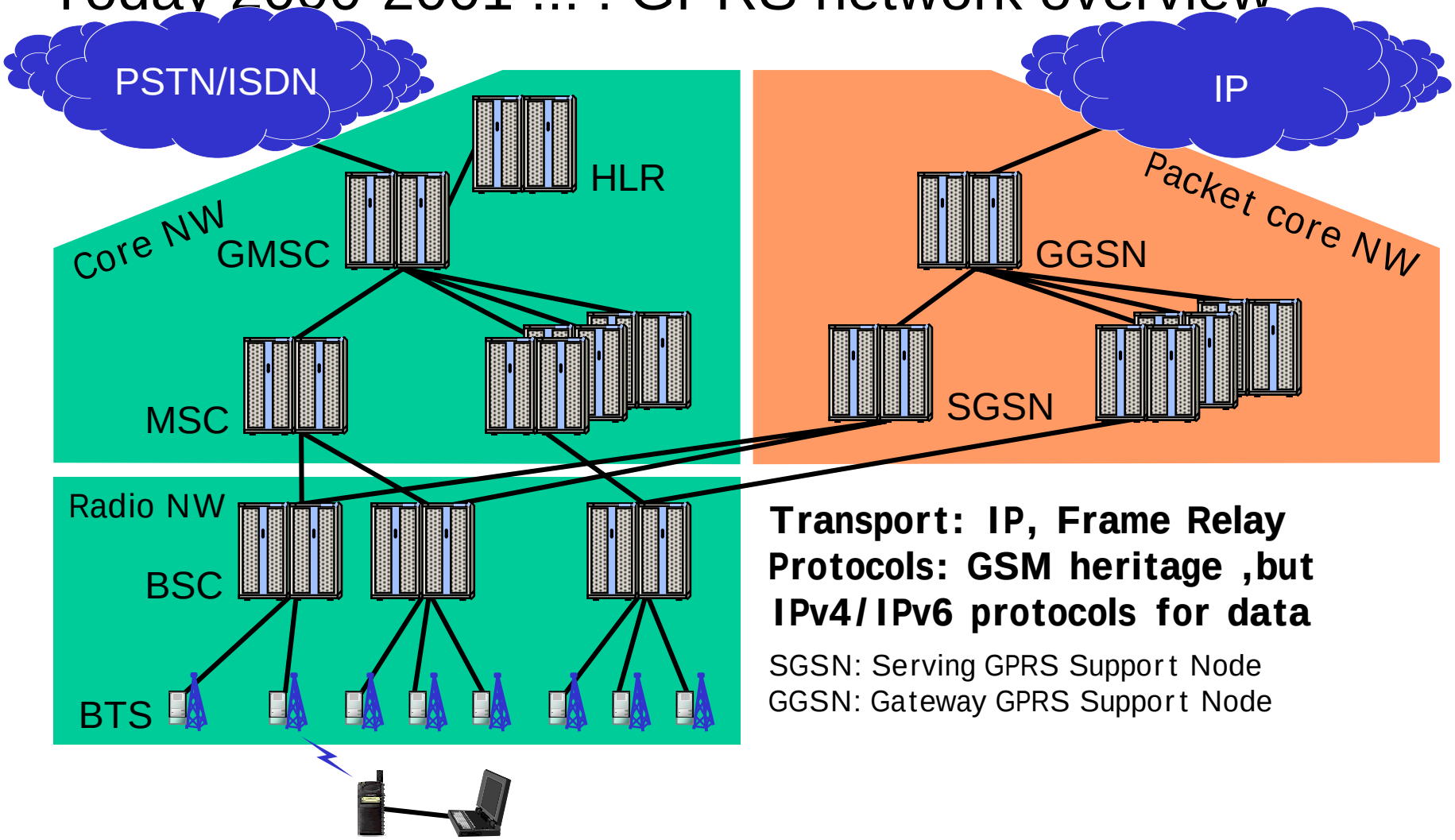
Today 2000-2001 !!! : GPRS network overview



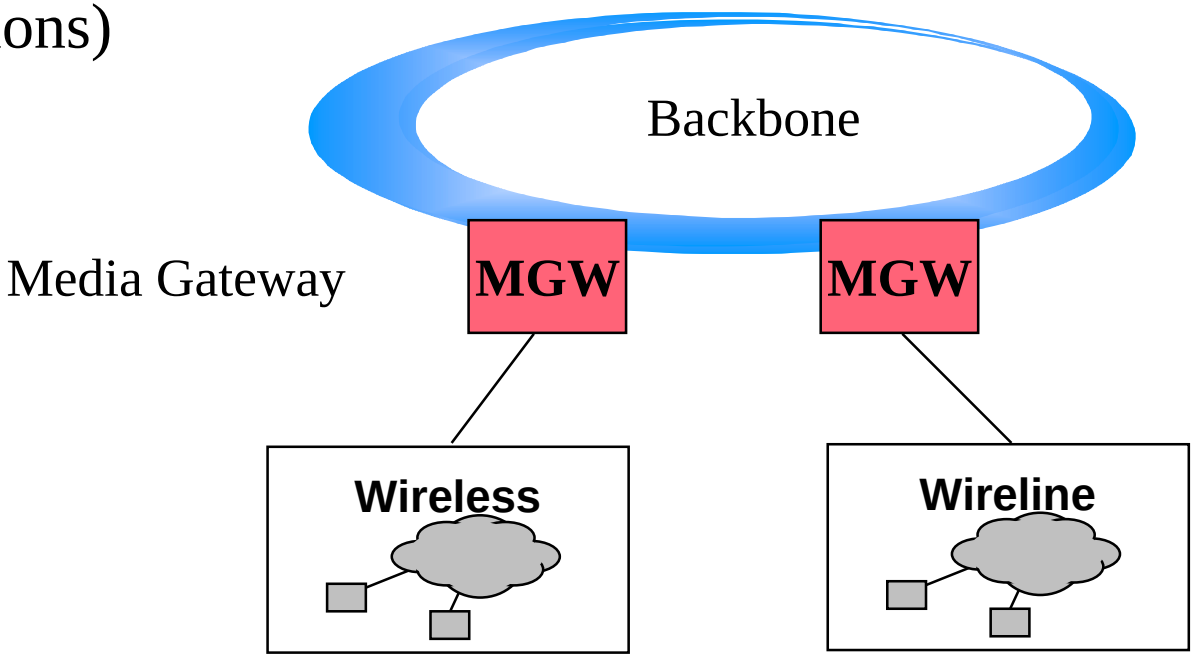
Transport: IP, Frame Relay
Protocols: GSM heritage ,but IPv4/IPv6 protocols for data

SGSN: Serving GPRS Support Node
GGSN: Gateway GPRS Support Node

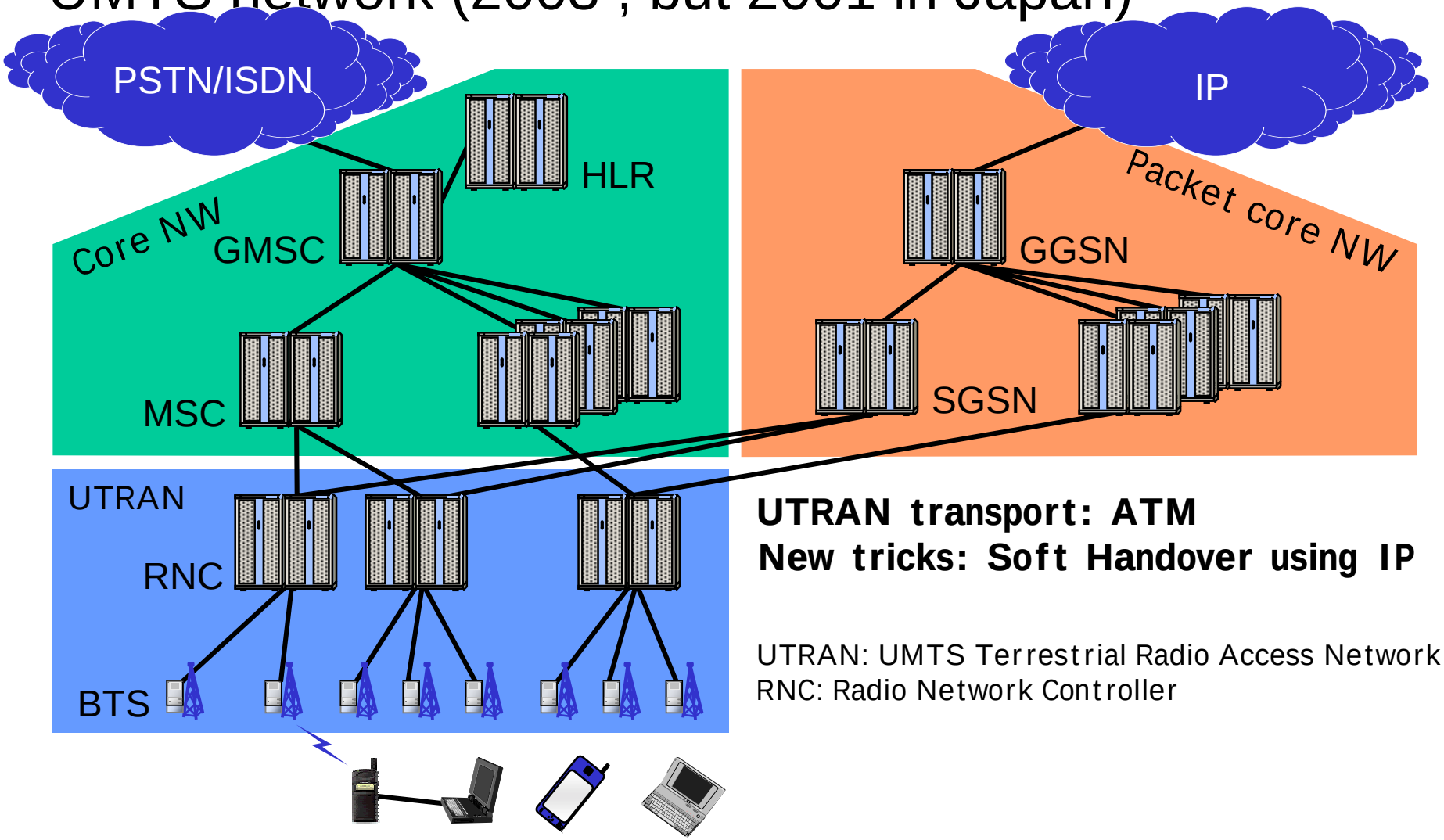
Common architecture 2003

-Ericsson 3G Network based on the same Server/Gateway architecture for wireline & for wireless

-IPv6 supported in 3G Release 2000 standards, with implementations now and widely available 2003 (ETSI , 3GPP decisions)



UMTS network (2003 , but 2001 in Japan)



UTRAN transport: ATM
New tricks: Soft Handover using IP

UTRAN: UMTS Terrestrial Radio Access Network
RNC: Radio Network Controller

But in fact ....by end 2003 access will be :

- 1 B fixed IP nodes
- 1 B mobile nodes
- 1 B circuit switched and high bandwidth nodes

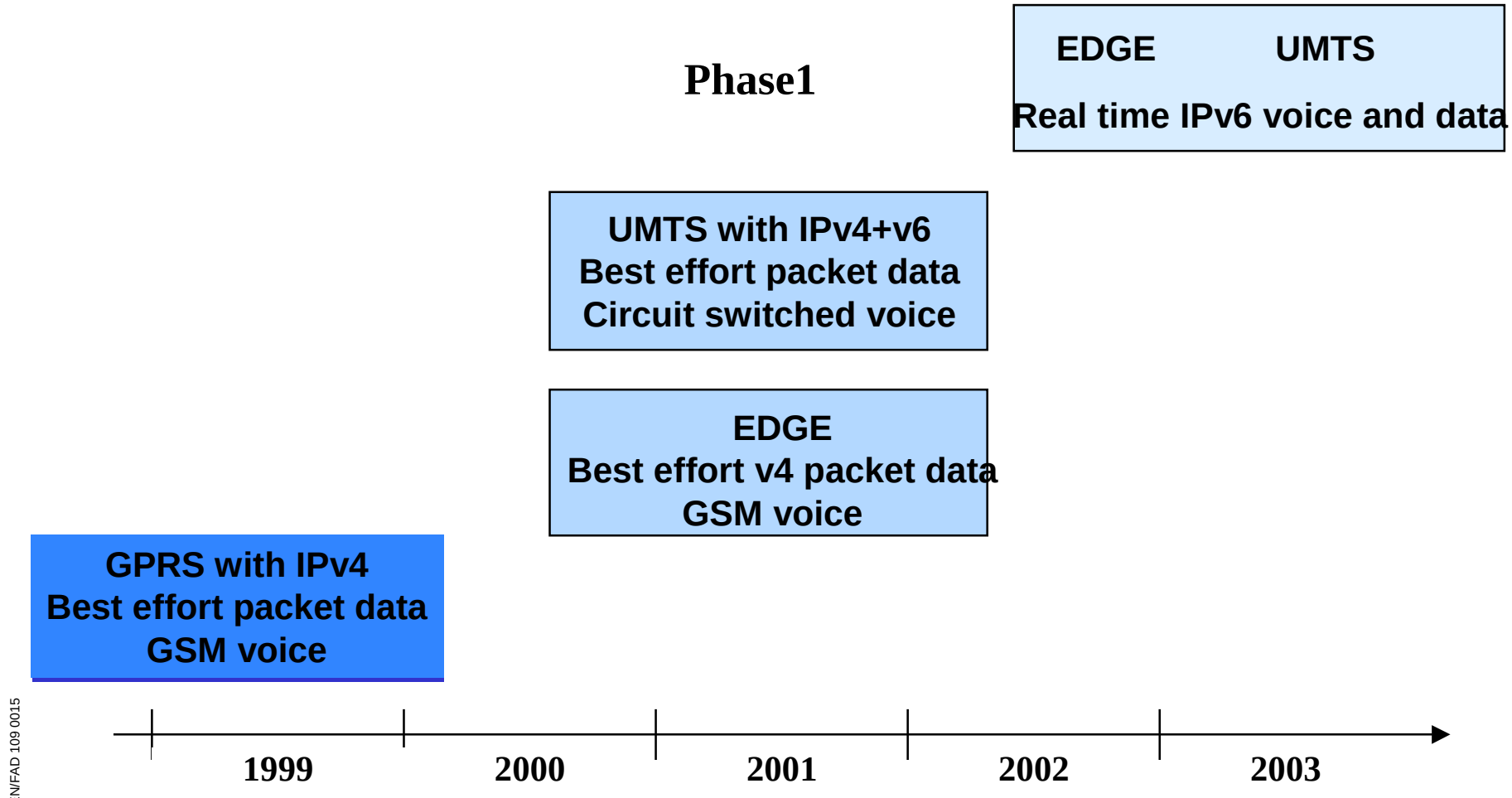
and combinations thereof for various convergence services

- plus x Million Bluetooth machine-machine communications
- plus x Million xDSL etc nodes with n>10 logical users per node
- plus x Billion roaming sessions for Mobile IP services across networks

IPv6 evolution with interoperability mandated

- Technical : 128 bit addresses in terminals
- Acceptance,user friendliness and support : auto configuration
- Services: always connected anywhere
- Business models : flow labels
- Bandwidth and mobility : header compression and soft hand over
- Interoperability fixed/mobile
- Commerce: IPSec,PKE/AAA and encryption

Network Evolution time plan (also as 3GPP,ETSI,etc evolve..finally)



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GPRS/UMTS R00

- Includes All-IP Architecture Option with IPv6 adopted May 2000
- GPRS as basis
  - Includes GPRS Core Network
  - Home Subscriber Server (HSS) instead of HLR
- New Entities - Voice over IP infrastructure (IPv6 based)
  - Call State Control Function (CSCF)
  - Media Gateway Control Function (MGCF)
  - Media Gateway Function (MGW)
- New Interfaces
- New Protocols

Multiple levels of mobility (examples)

- Access level
  - classical cellular
- Network level
  - Mobile IP and soft handover
- Roaming level
  - ROAMOPS
- Application level
  - H.323 mobility, POP3,WAP Gateways,etc

Mobility user concepts

- **The user does not want to know!**
- True mobility: always the best access
  - depends on subscription, coverage, terminal capability
- The way to get there:
  - Unobtrusive, hidden, seamless across access forms
  - World wide, access technology neutral

Ease of use of terminals and client applications

- IPv6 self configuring nodes (PDA’s, terminals , xDSL nodes)
- possibility to use policy servers at network level

EVOLUTION

For mobile and convergence networks , no doubt about :

-the need for v6

-v6 advantages

-v6/v4 coexistence and migration need

but :

-lack of importance in IETF and some regions of the world as to a realistic migration driven by cost of ownership and competitive advantages at service level

-the absolute need for quality implementations

-reduce fears as to retraining , legacy , etc...

SOME CHALLENGES...

- Address management with mobility support and authentification
- The slow eye-opening of most legacy ISP´s and Mobile ISP´s

B.t.w some Ericsson implementations/initiatives using IPv6

- AXI 820 mobile real time IPv4/IPv6 router announced @ GSM Cannes (Ericsson Radio) and fully operational
- AXI 46x dual IPv4/IPv6/ATM/FR router products for enterprises and infrastructure (Ericsson Telebit); early supply of OSPF v3 and IPSEC in IP
- NewBit experimental router (Ericsson Telebit)
- IPv6 in Ericsson/Juniper router products (joint venture)
- Key role in 6INIT , 6WINIT, NGI project in Europe and others
- IPv6/IPv4 in terminals,base stations and PDA's
- "Life " IPv6 VOIP trials such as Smart Tone (HK)
- IPv6 in 4G research
- Interoperable IPv4/IPv6 applications for military needs (NATO,IPANEMA,Swedish NetDefence)

And some other IP initiatives at Ericsson...

- Joint venture with Electrolux around IP in washing machines and home appliances (large scale field trials in Denmark)
- Joint venture with Volvo on Internet car (already demonstrated)
- IP in Bluetooth components and systems (Ericsson Microelectronics, Bluetooth company)
- IP in building management (JV with Skånska and others)
- and more to come...

IPv6, conclusion

- Technology maturing
- Inevitable in mobile networks, co-existence in others
- Good Business models with IPv6

- Business /traffic/infrastructure/service business models for IPv6 mobile traffic and services
- Billing solutions (EHPT)
- Collaborations with operators and new users