Media Gateway

Mika Ahola
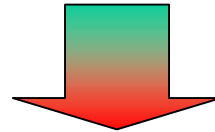
mika.ahola@ericsson.fi

Mobile Switching Systems Unit, L M Ericsson in Finland
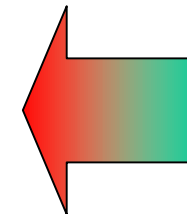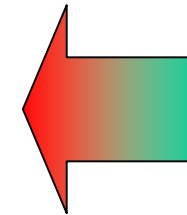
Outline

- **Background**
- **New network architecture**
- **Media gateway**
- **Standardization**
- **Summary**

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Background

Liberalization

Competition

The New Telecoms World

Global customers

- a global marketplace
- a challenge, a possibility
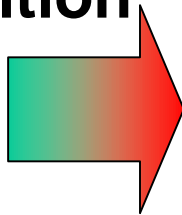
Price pressure
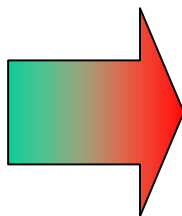
IP & Internet
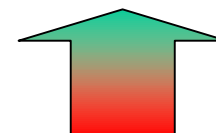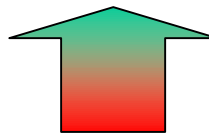
Fixed <> Mobile   **Technologies**

Wireless Internet Services

- **News, weather, sports**

- **Traffic information**

- **Directory services**

- **Time tables**

- **Location-dependant information services, like "find a nearby restaurant"**

GSM/UMTS Network (Phase 1)

PSTN/ISDN

Internet/intranet

GSM/UMTS core network

GSM radio access

UMTS radio access

GSM

GSM/UMTS

UMTS

Narrow band

Wide band

Access to people and information
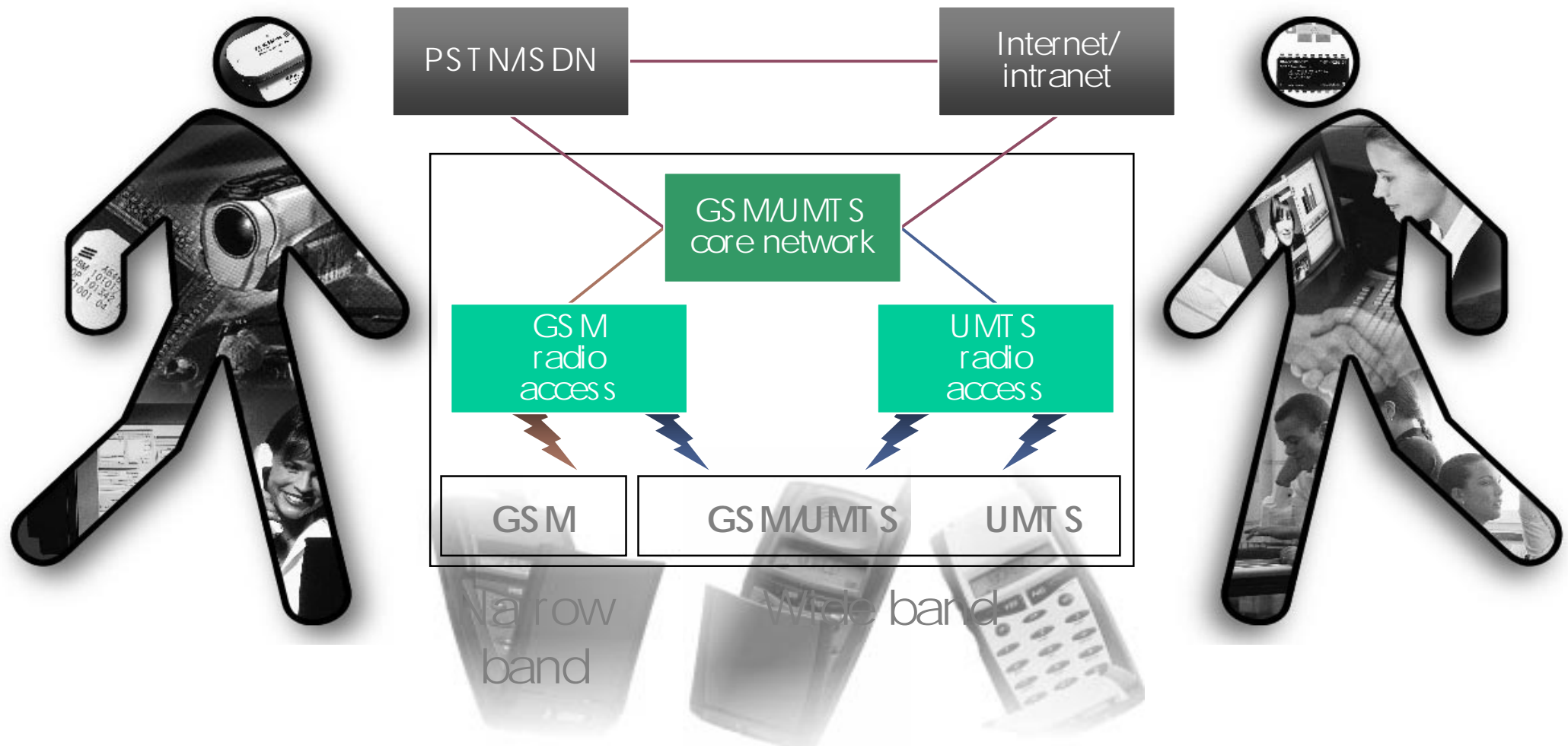
UMTS/GSM Reference Model

UMTS Standardization

GSM
BTS

Abis

GSM
BSC

A

Iub

UMTS
BTS

UMTS
RNC

Iu

Core network

GSM based
evolution to
UMTS

-circuit switched
evolution

-packet switched
(GPRS)
evolution

Revolution   Evolution

Migration Roadmap

Core network
- GPRS
- GGS N+
- S GS N
- HS CS D
- MS C

Packet s witched

Circuit s witched

Bandwidth

R adio network
- UT R AN WCDMA
- E DGE
- GS M

Bandwidth

1998　　　1999　　　2000　　　2001
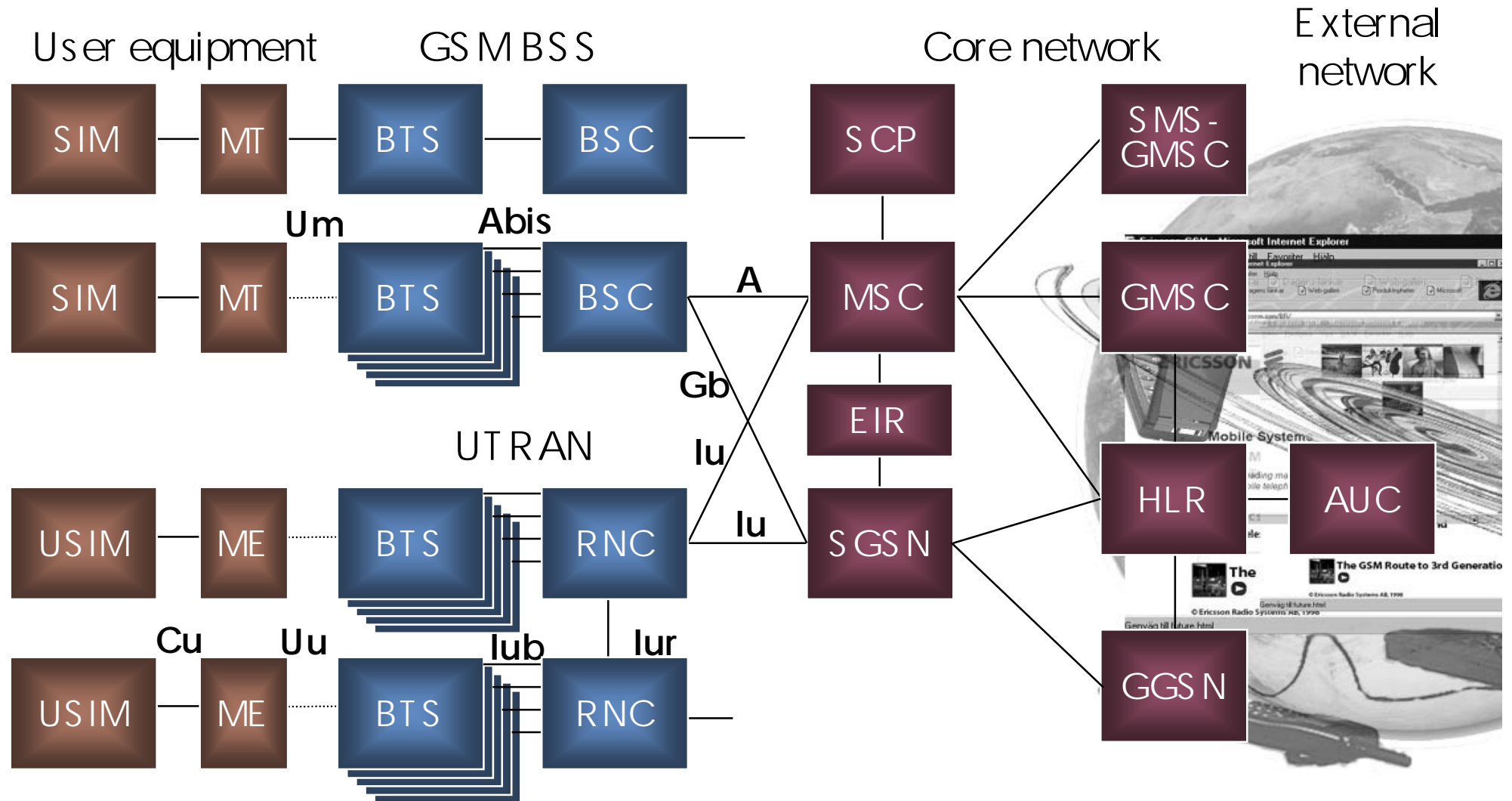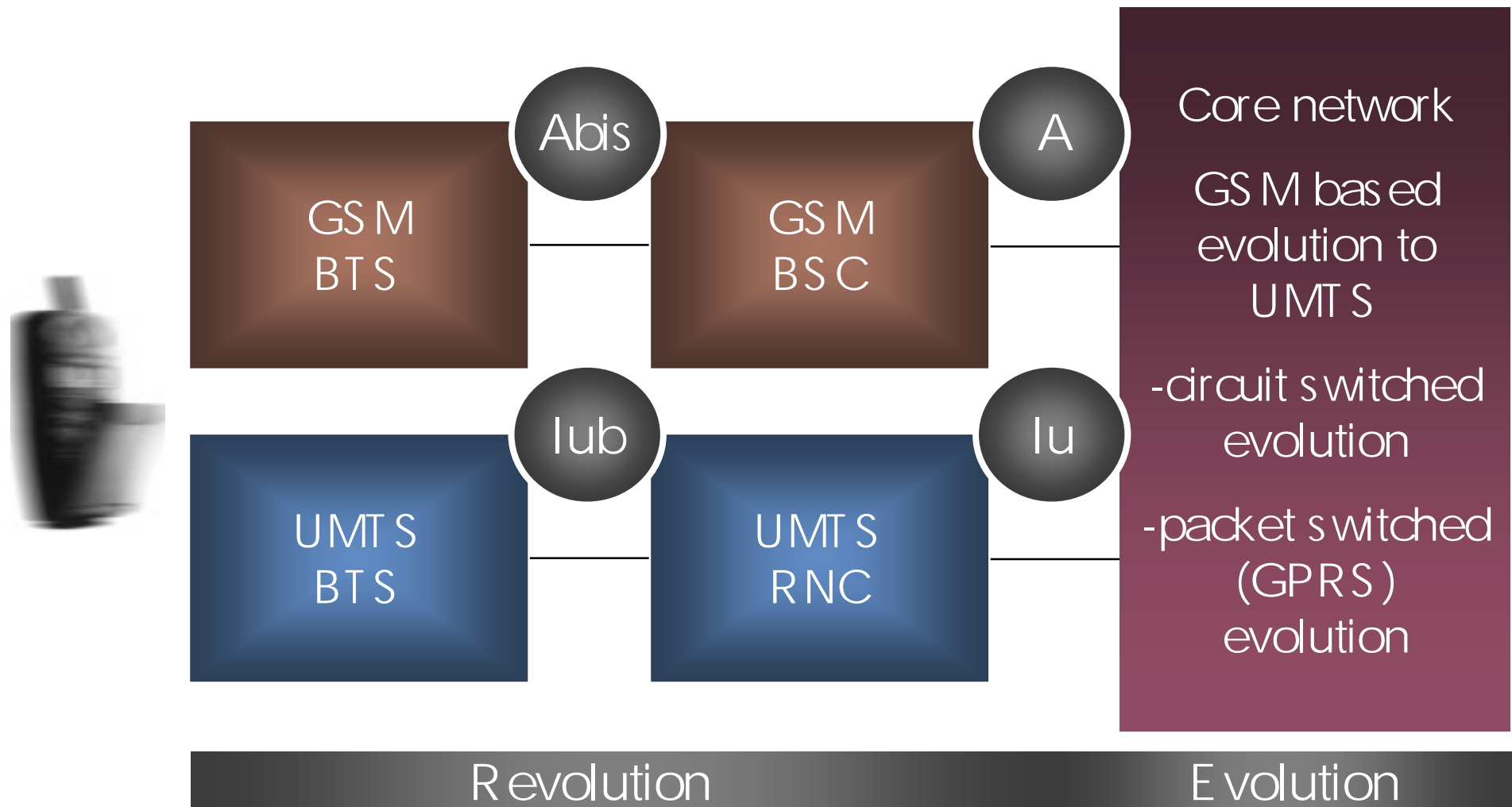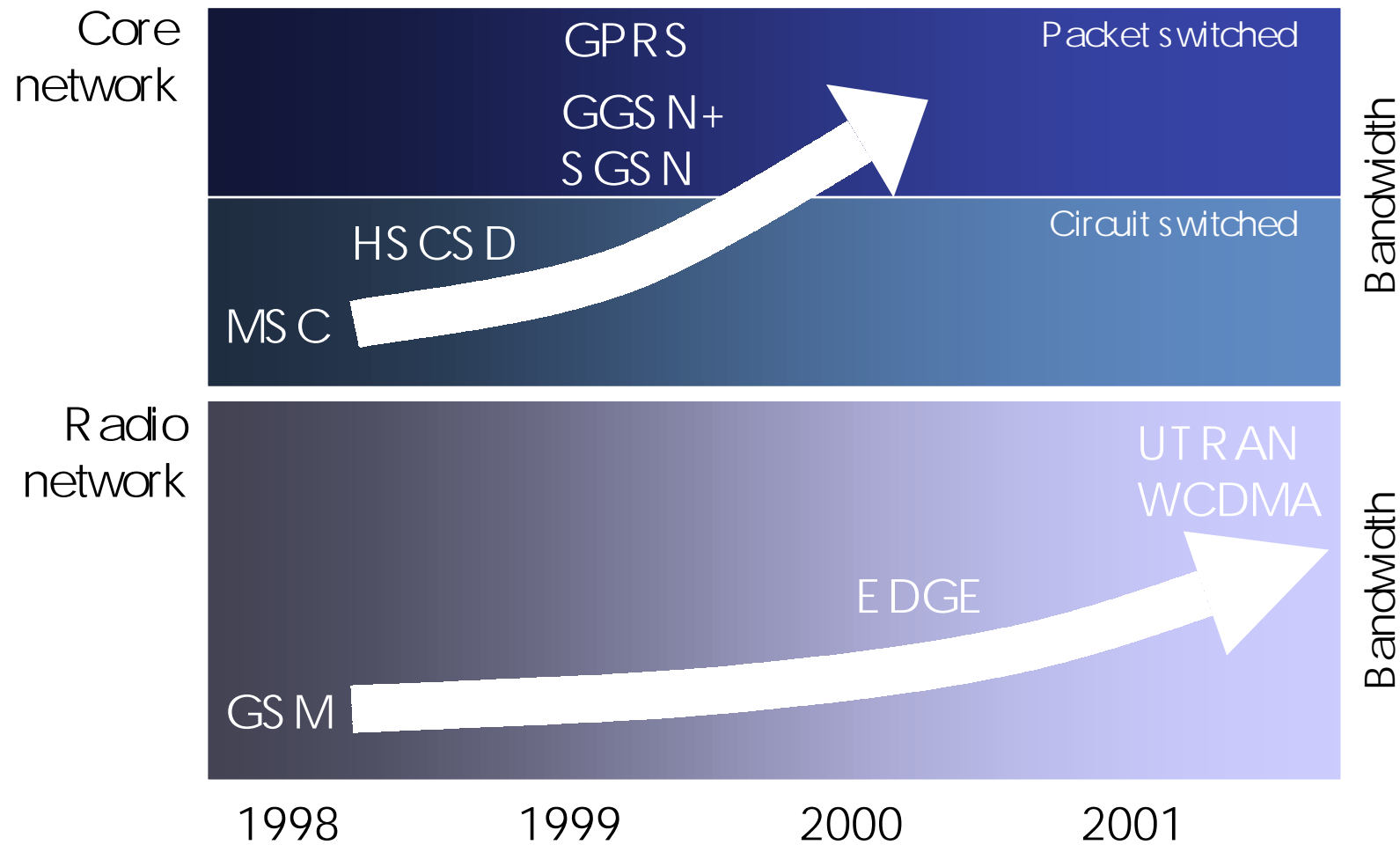
Service Production

Functionality

IT based services

Value Added
Services

SIM
toolkit

?

WAP

Applications

Service
enabling
technology

SERVER

VOICE
MAIL

IN

GSN

Infrastructure

MSC

BSS

Time
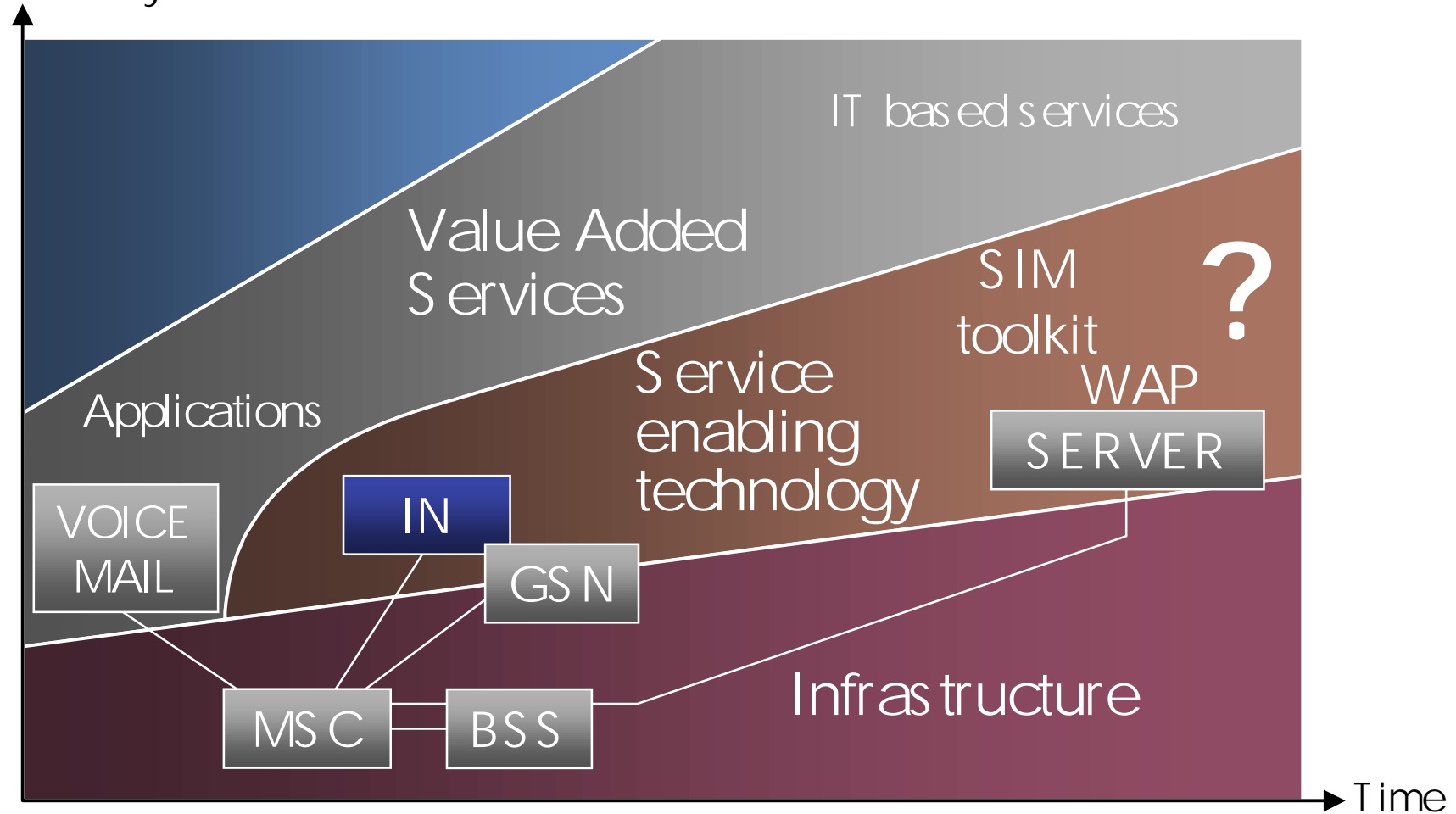
Next-generation Network Structure

Today
Single-service networks
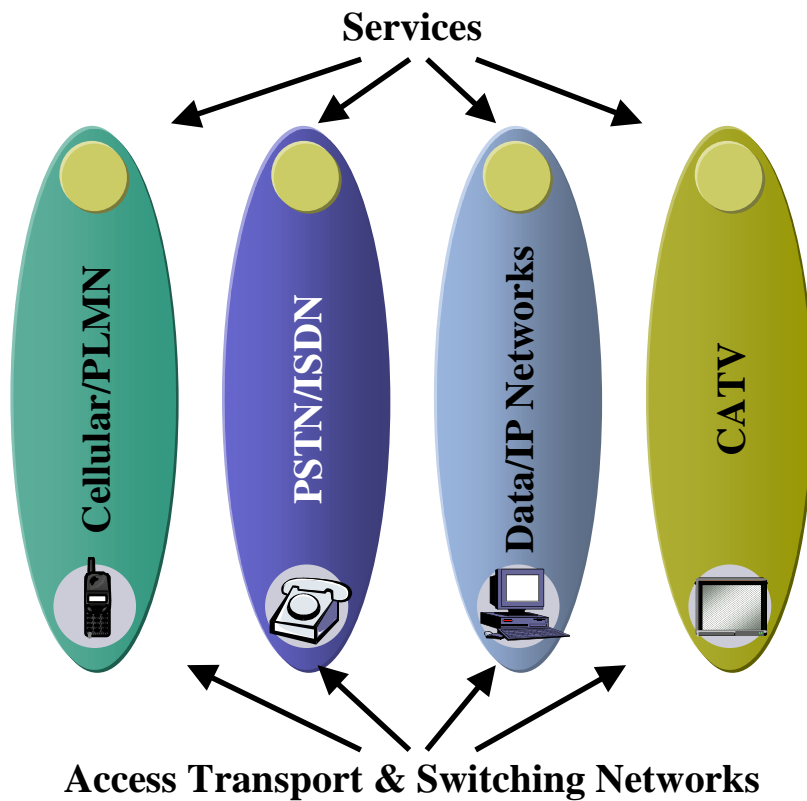
Future
Multi-service networks/client-server

Services

Cellular/PLMN
PSTN/ISDN
Data/IP Networks
CATV

Access Transport & Switching Networks

Content
Content

Servers

Communcation applications
Control

Backbone Network

Media Gateways

Wireless Access
Wireline Access
Cable Access

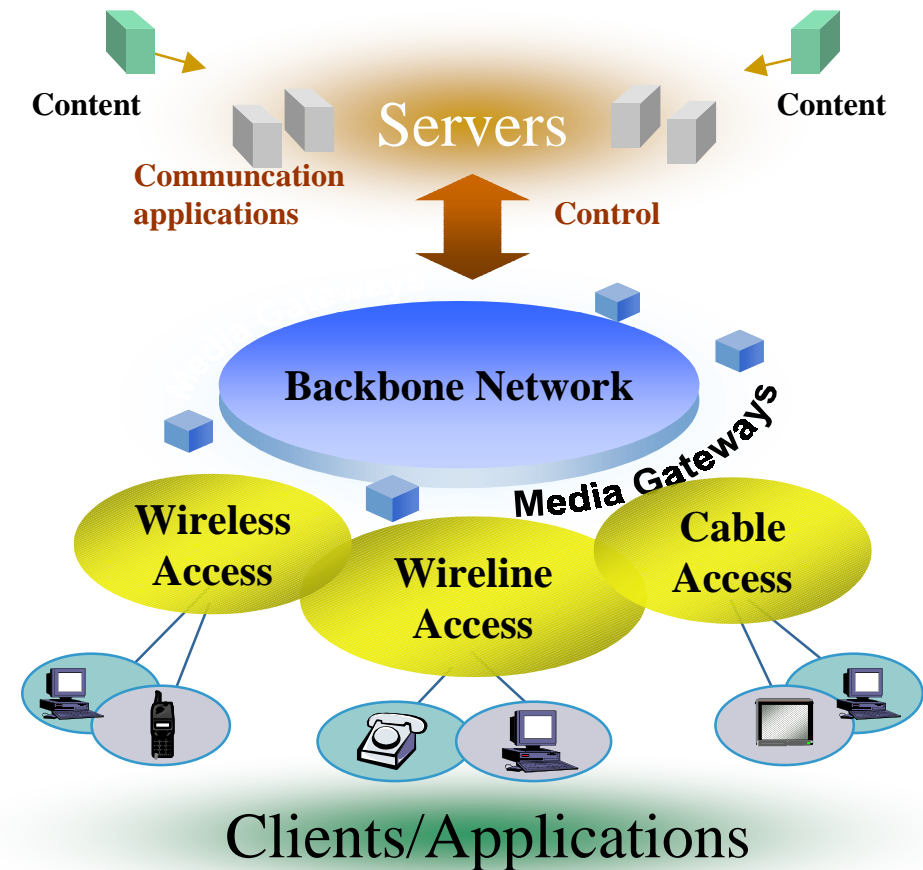Clients/Applications

Ericsson Network Architecture

Application

Appl Servers

SCP

SCS

Control

HLR

MSC Server

GSN Server

Connectivity

Resource Node

MGW

MGW

MGW

MGW

Connectivity backbone (STM, ATM, IP, …)

Internet Intranets

PSTN/ISDN/ PLMN

Wireless AN

Wireline AN

Media Gateway, handling User Plane

Server, handling Control Plane & Applications
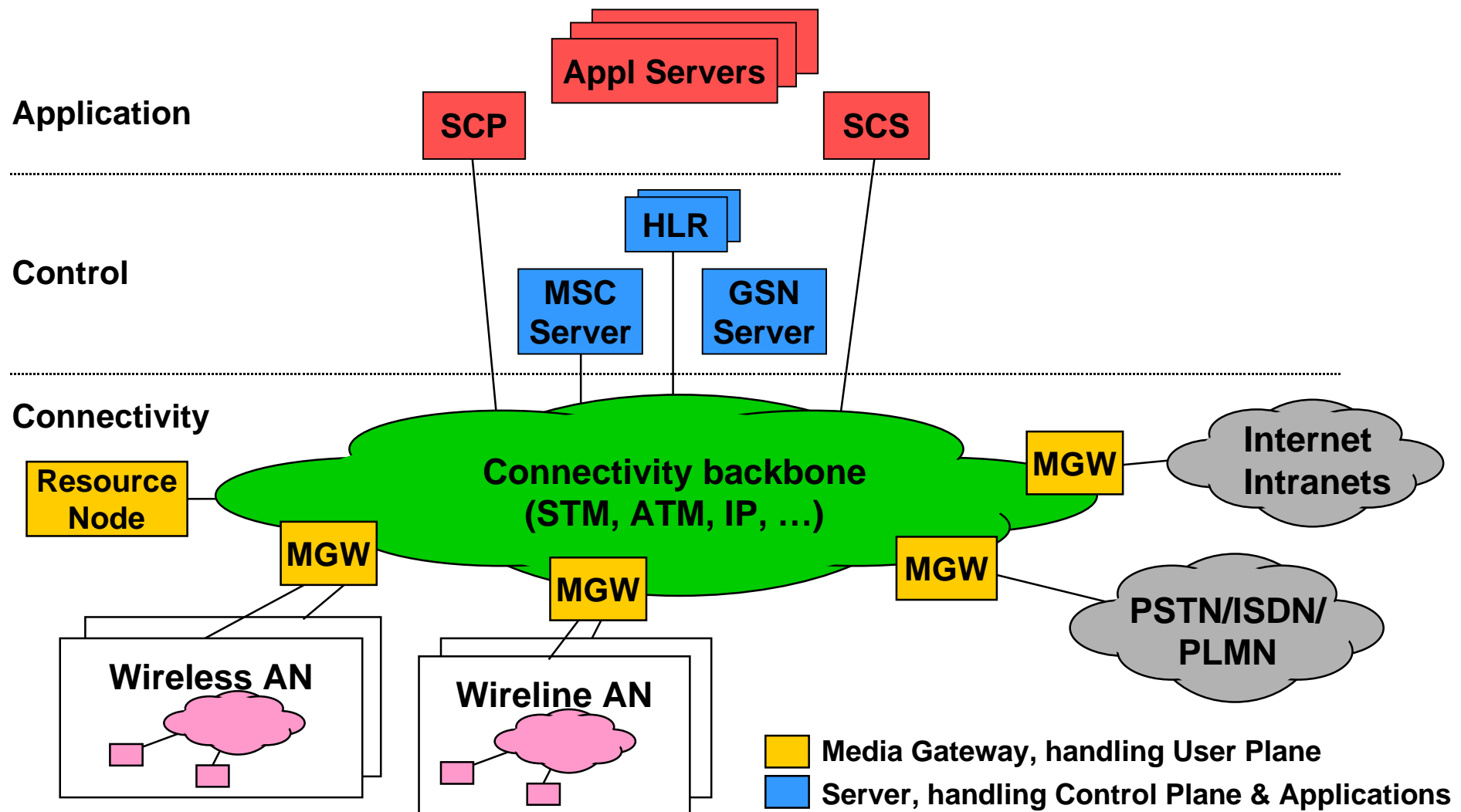
Features of New Architecture:

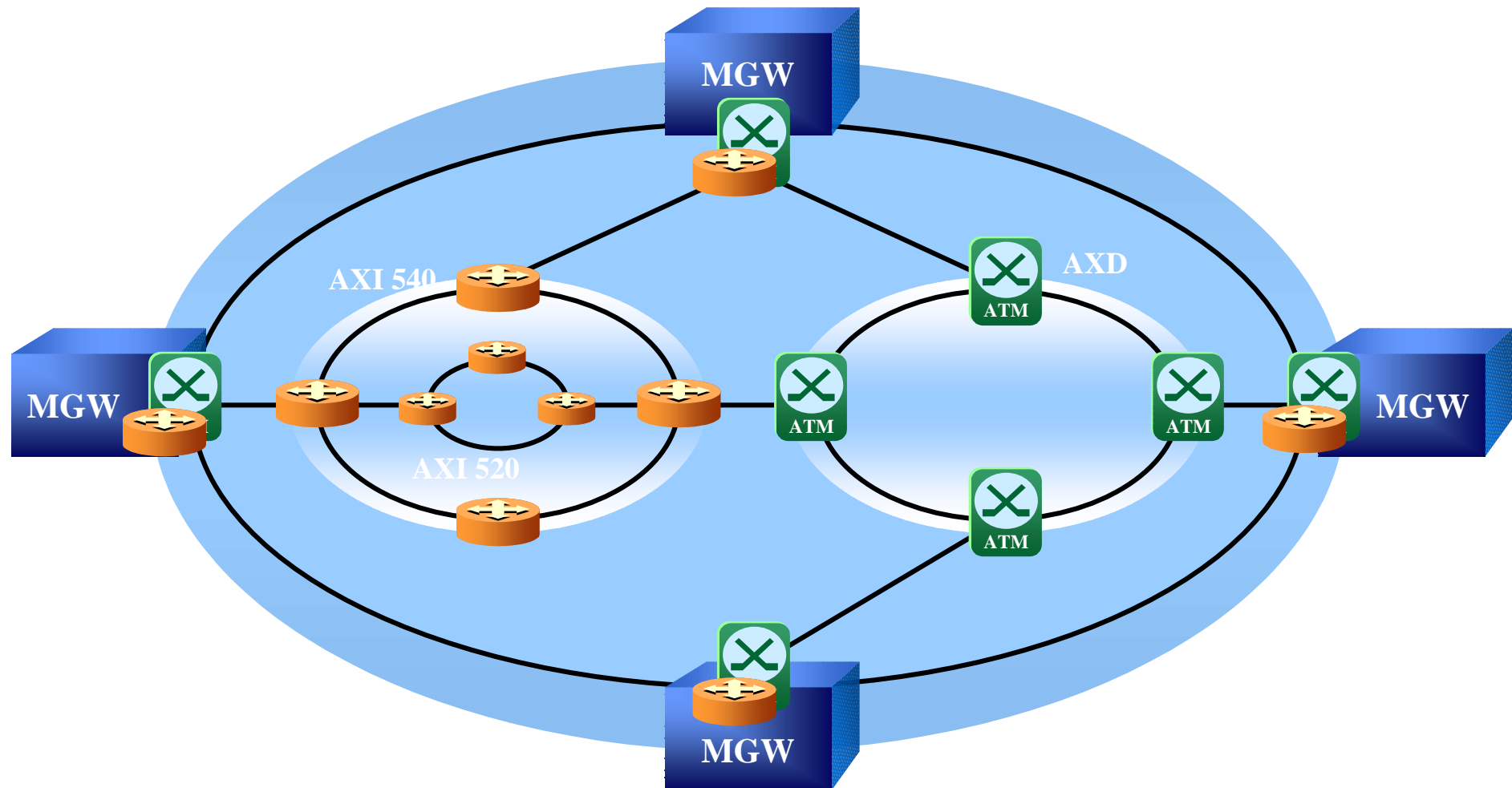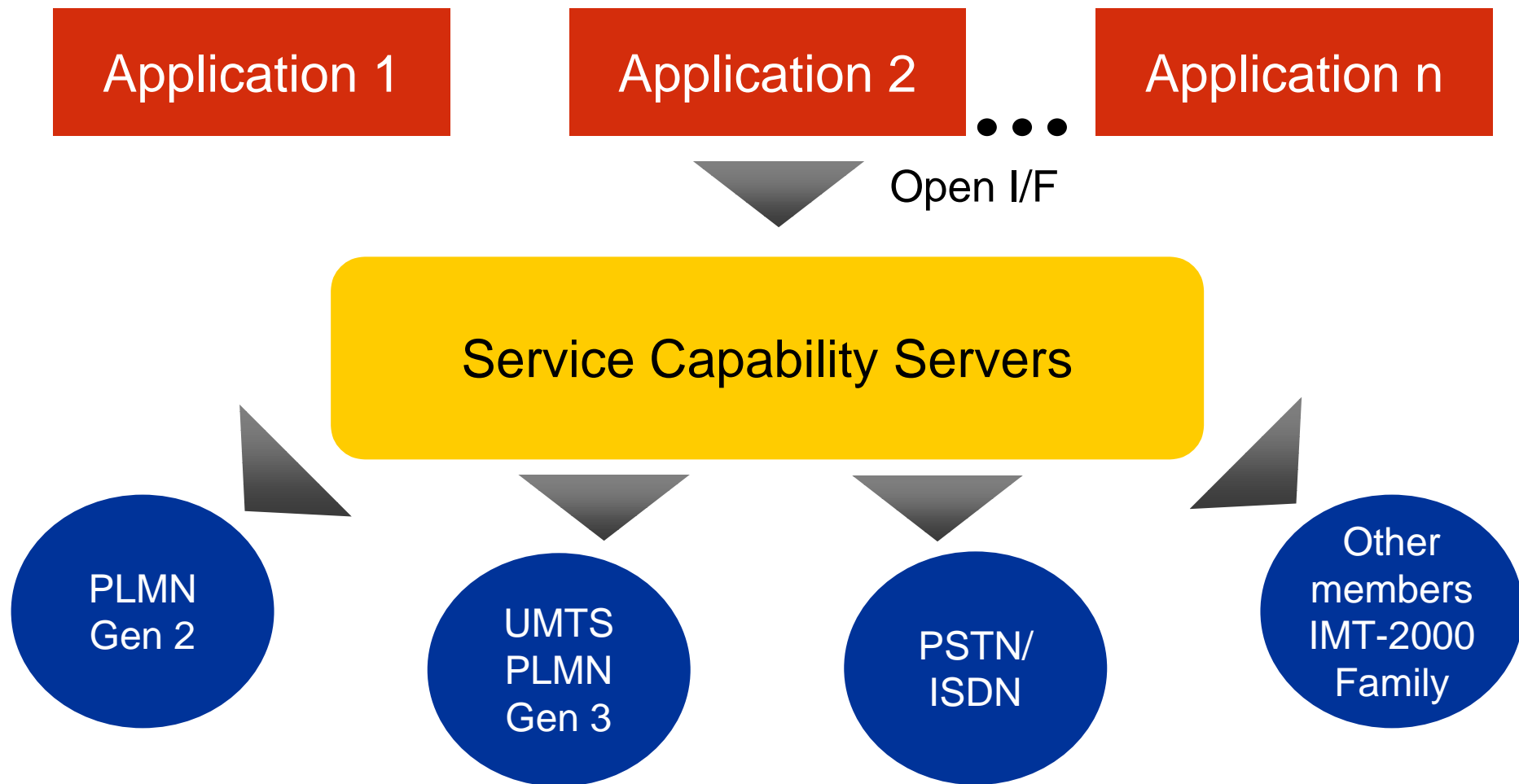- Separation of call control and connectivity/bearer control
- Flexible architecture that is possible to use for any connectivity (ATM, IP, STM)
- Keep the N-ISDN/GSM service paradigm. Use MAP, ISUP, etc.
- All devices needed for user plane manipulation are moved to the Media Gateway (echo cancellers, codecs, etc.)
- Possible to place infrequently used equipment in centralized resource nodes
- Transmission efficient to have coded speech all the way to the rim of the PLMN
- UTRAN and the Iu interface is ATM based. A good way to bring in ATM in the core network is needed
- Allows stable and mature introduction of UMTS networks since building on GSM products
- New protocol to control media gateway remotely
- Services/applications outside core network enables service convergence
- In line with standardization trends

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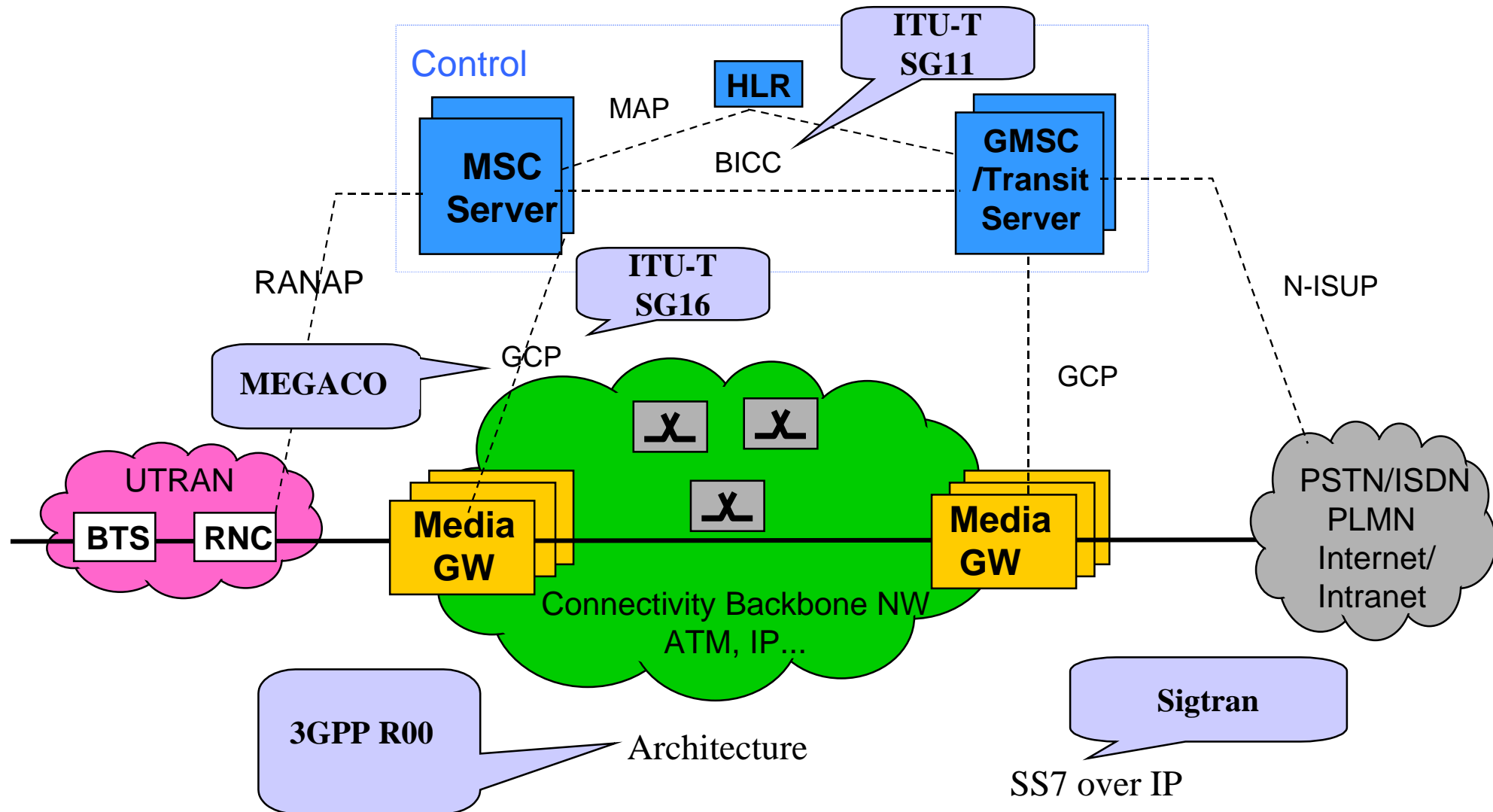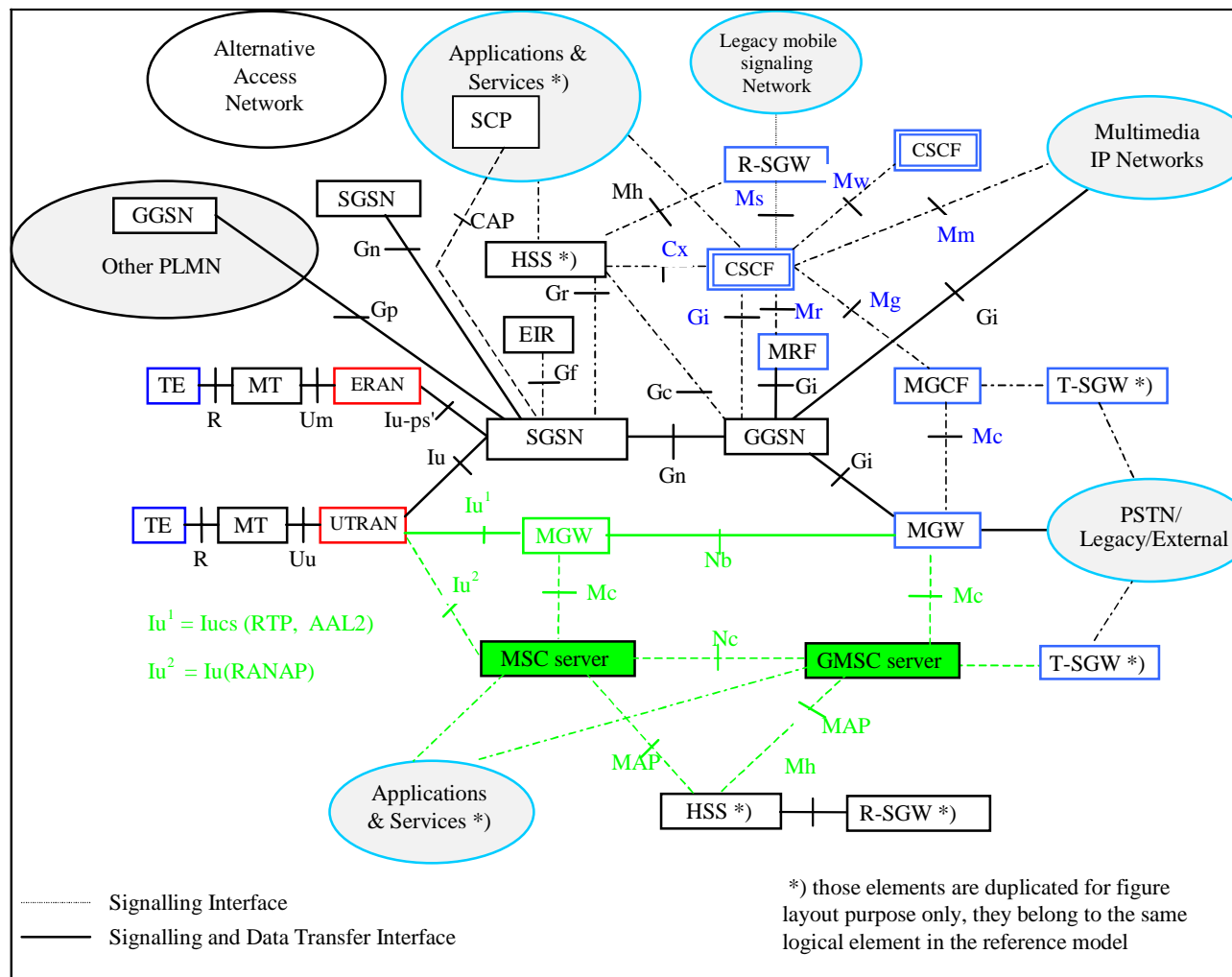
Backbone Network

Services/Applications Outside Core Network

Application 1

Application 2

Application n

Open I/F

Service Capability Servers

PLMN Gen 2

UMTS PLMN Gen 3

PSTN/ ISDN

Other members IMT-2000 Family

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UMTS Standardization Bodies for New Architecture

ITU-T
SG11

Control

HLR

MAP

MSC
Server

BICC

GMSC
/Transit
Server

ITU-T
SG16

RANAP

N-ISUP

GCP

GCP

MEGACO

UTRAN

BTS — RNC

Media
GW

X   X

X

Media
GW

PSTN/ISDN
PLMN
Internet/
Intranet

Connectivity Backbone NW
ATM, IP...

3GPP R00

Architecture

Sigtran

SS7 over IP

Reference Architecture for an All IP Network

Source:

3GPP TR 23.922
V1.0.0 (1999-10)

Summary

- **Ericsson offers via the layered architecture an evolutionary approach to the multi-service network**

- **Ericsson offers deployment of ATM & IP-based transport technologies for both UMTS and GSM/GPRS based on open standards.**

- **A Media Gateway product is introduced handling all user plane data in an integrated way and that connects to ATM & IP backbones**

- **New network architecture will be included in release 00 of 3GPP**