

# Evolution from GSM to UMTS (IMT-2000)\*

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\* This presentation is a draft submitted by the author and the final version will be available at: <http://www.itu.int/ITU-T/worksem/imt2000/program.html>

# Some Major Mobile Industry Trends

**General**

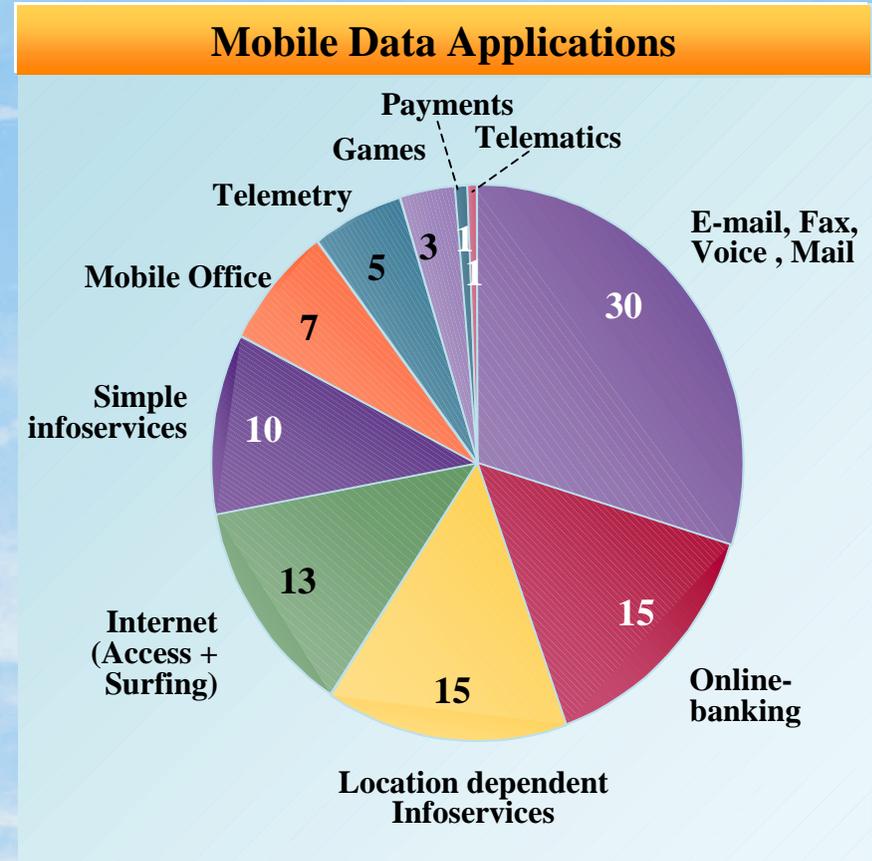
- More than 1 billion mobile users by 2003
- Every second 5 new GSM subscriptions

**2.5G / 3G**

- Mobile overtakes fixed by 2003
- Data services will start with GPRS
- UMTS will start with business customers

**Internet**

- Increase of growth by 2005 due to availability of applications
- 50 % of mobile users will use mobile internet by 2010



Source: INRA-Telcobus, ISM-Survey, Siemens Analysis

# Tomorrows Mobile Traffic will Exceed Expectations

## Challenges on Radio Access Solutions



Number of subscription  
(users and machines)



Type of application  
(voice ... multimedia)

Requires efficient  
and intelligent  
use of resources

Demand on  
bandwidth

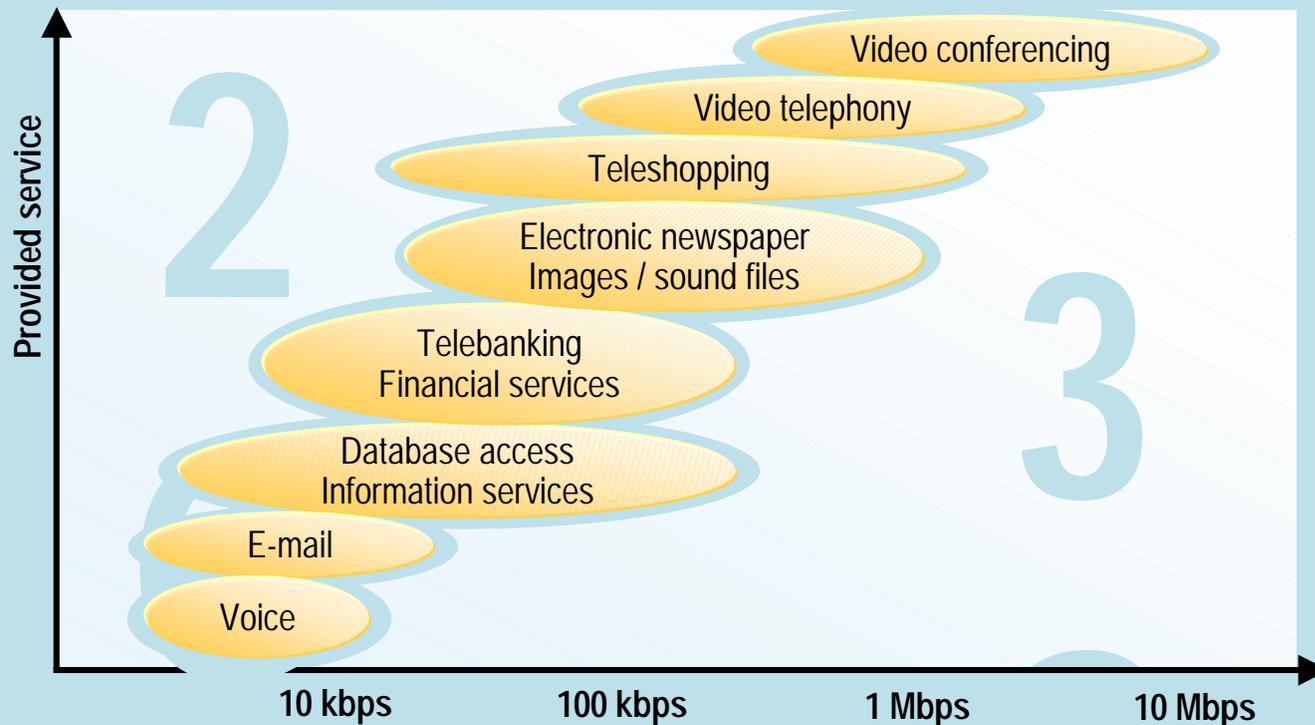


Limited Spectrum



# Tomorrow's Services Require High Data Rates ...

## Bandwidth Demand of Different Service Types

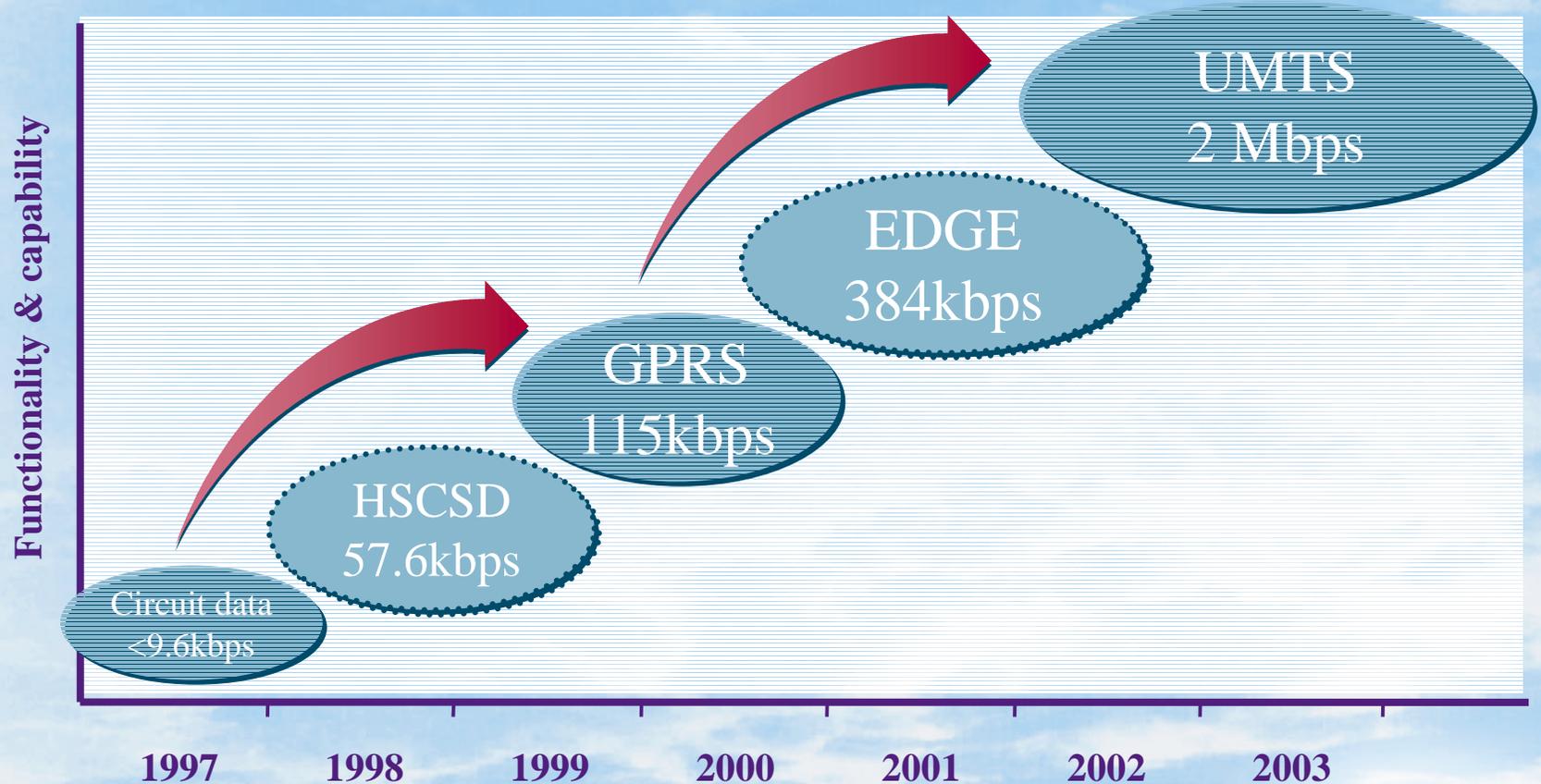


**Our Radio Access Solutions will deliver seamless services from narrowband to broadband and will support flexible bandwidth on demand up to 2 Mb/s**

# Network Evolution Towards 3G



The main road towards UMTS goes through GPRS  
 Edge might be used as complement in areas without UMTS coverage



## From GSM to UMTS

- GPRS as phase 0 for UMTS
- Start of IP backbone
- ATM based platform
- GPRS opens mass market for data applications
- Converging platform (HW + SW) for GSM, GPRS, UMTS
  - ease of operability and maintainability
  - saving of investment by using installed base

# Cost Efficient Migration to GPRS Operator Benefits

- Reuse of installed base of Radio Equipment
- Cost Efficient
- Fast time to market and
- Full coverage with GPRS according to GSM
- Scalable according to number of subscriber and data volume demand



# GPRS is a Key Element to Removing Barriers to Mobile Data Usage

## GSM

No capability

Too complicated

Too expensive

Too slow

Mobile extension of corporate/intranet/internet applications, mobility trend

Emerging standards: WAP, Java, PDA, Smart Phones

Efficient transmission, Volume-dependent charging

Channel combining Enhanced coding schemes

## GPRS

Value-added services

True plug and play

Reasonable costs

High speed

WAP: Wireless Access Protocol  
PDA: Personal Data Assistant

# GPRS Satisfies Mobile Data Applications Requirements

Requirements	GPRS provides	Suitability
Sufficient Bandwidth	<ul style="list-style-type: none"> <li>■ Up to 100 kbps</li> </ul>	
Packet-oriented	<ul style="list-style-type: none"> <li>■ GSN for Transfer of IP</li> </ul>	
IP Technology	<ul style="list-style-type: none"> <li>■ IP at Gi-Interface</li> <li>■ IP in GPRS Backbone</li> </ul>	
Access to Internet	<ul style="list-style-type: none"> <li>■ Transparent and Non-Transparent Access</li> </ul>	
Reasonable Tariffs	<ul style="list-style-type: none"> <li>■ Volume-dependent Charging</li> </ul>	
Server Integration	<ul style="list-style-type: none"> <li>■ Gi-Interface</li> </ul>	
Services	<ul style="list-style-type: none"> <li>■ SMS over GPRS</li> </ul>	



Perfect

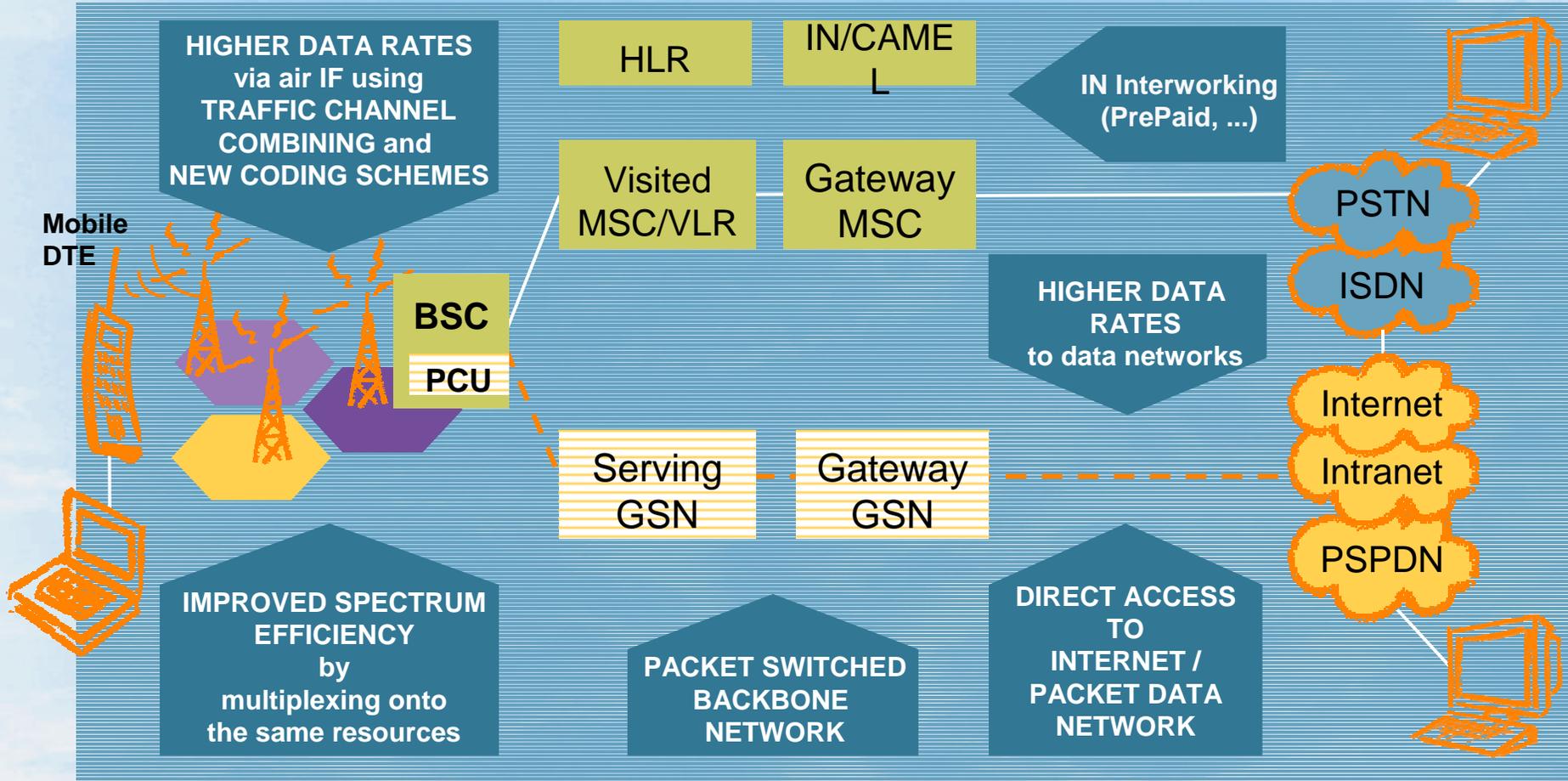


Suitable



Less suitable

# GPRS: Improved GSM Data Services



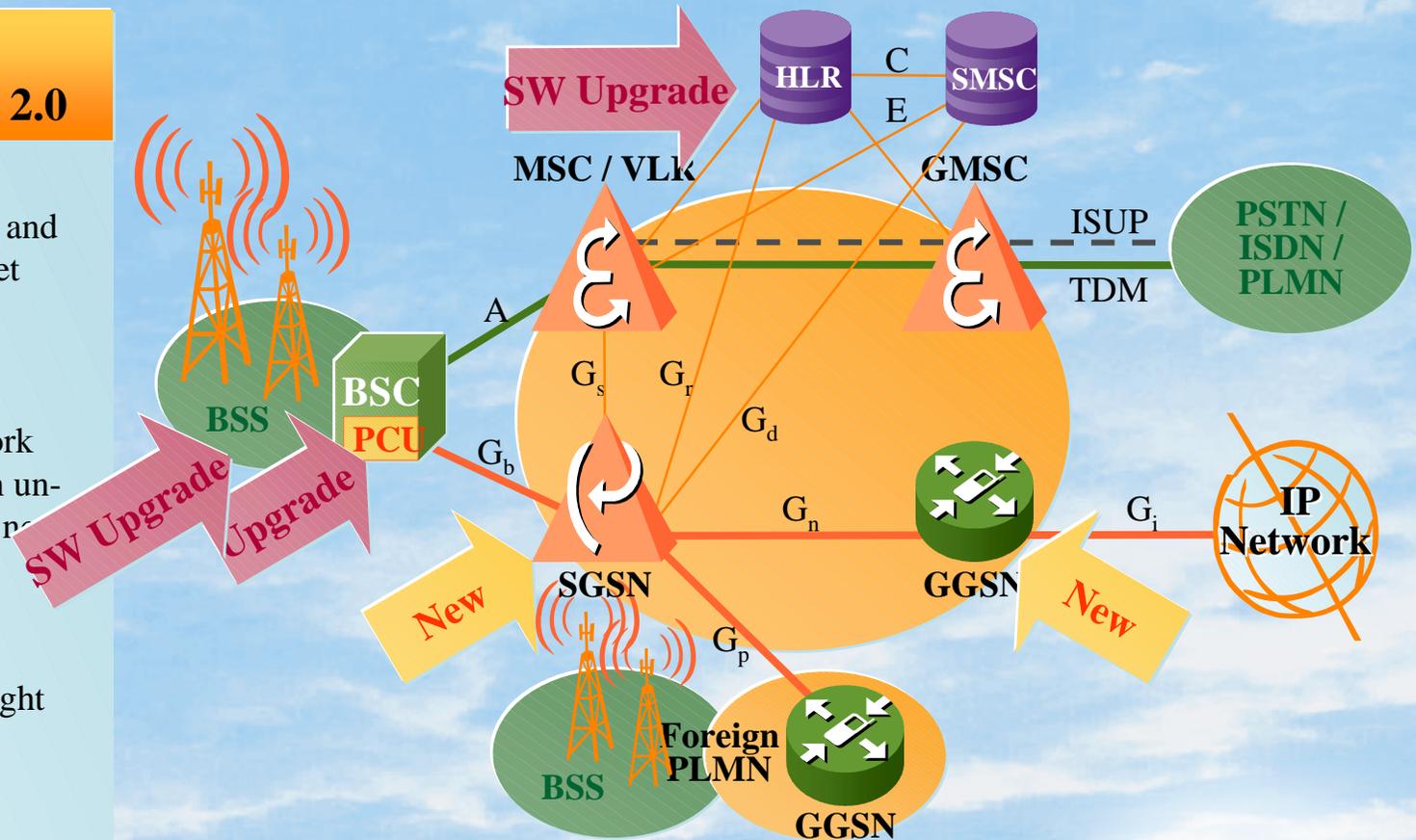
# GPRS: Easy Integration into a GSM Network

## GPRS Release GR 2.0

New network elements SGSN and GGSN for packet switching

The other network elements remain untouched or only need a software upgrade

coverage overnight

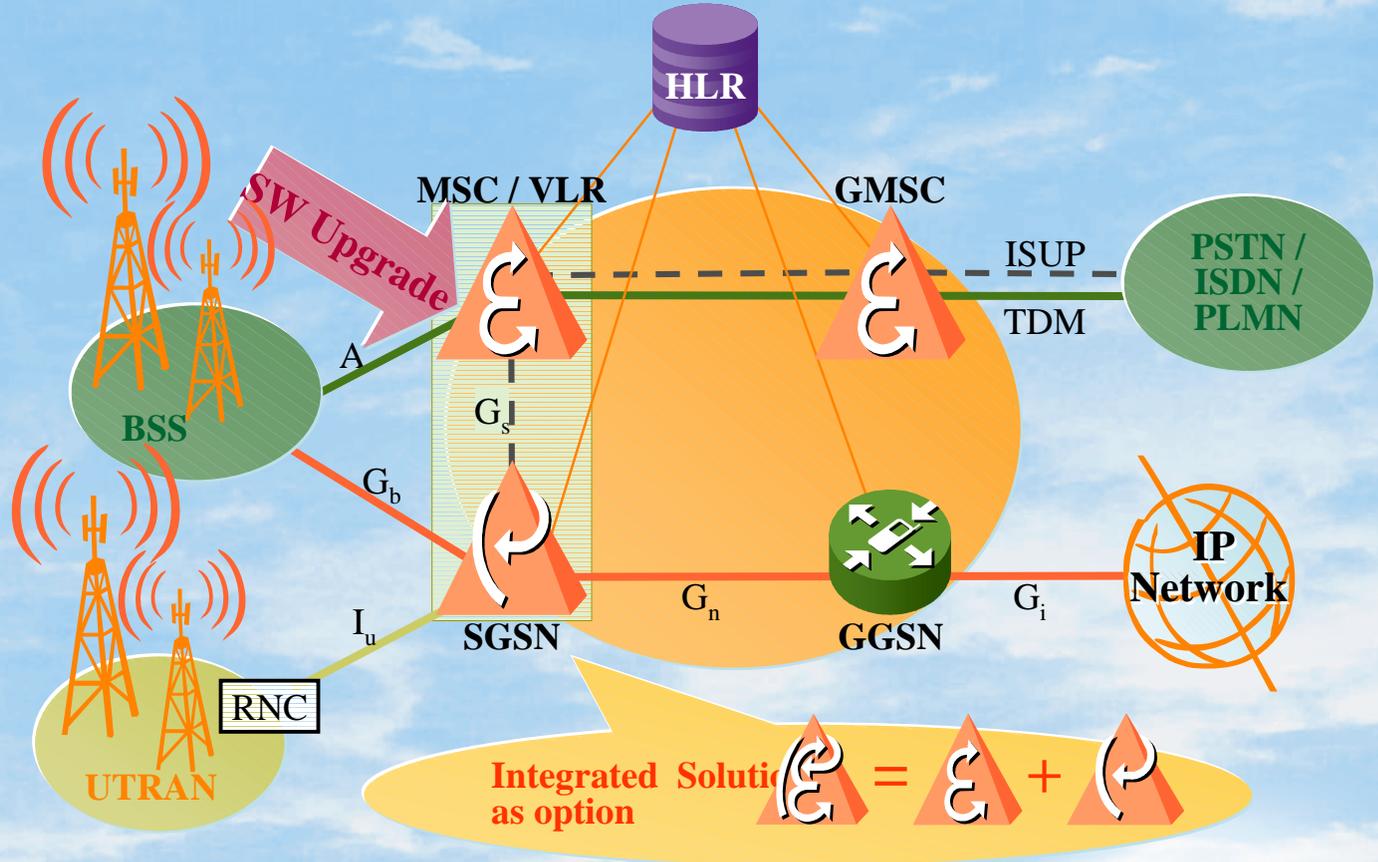


# GPRS: Upgrade to UMTS

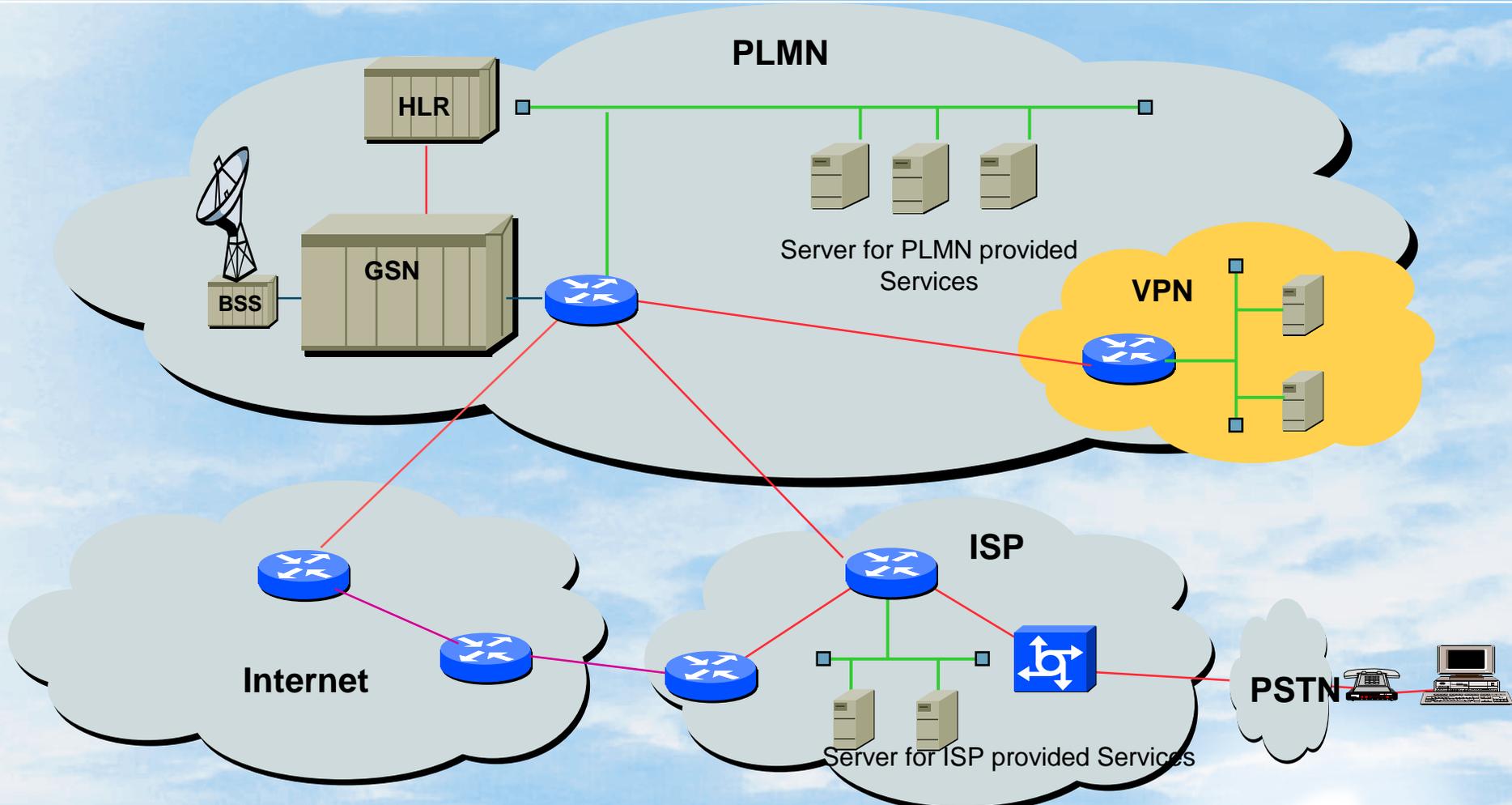
## Release GR 3.0 and beyond

Smooth product evolution with full reuse of GSM / GPRS nodes for EGPRS and UMTS.

An integrated solution (UMSC = MSC + SGSN) saves operating costs and floor space.



# Integration into the IP world



ISP: Internet Service Provider

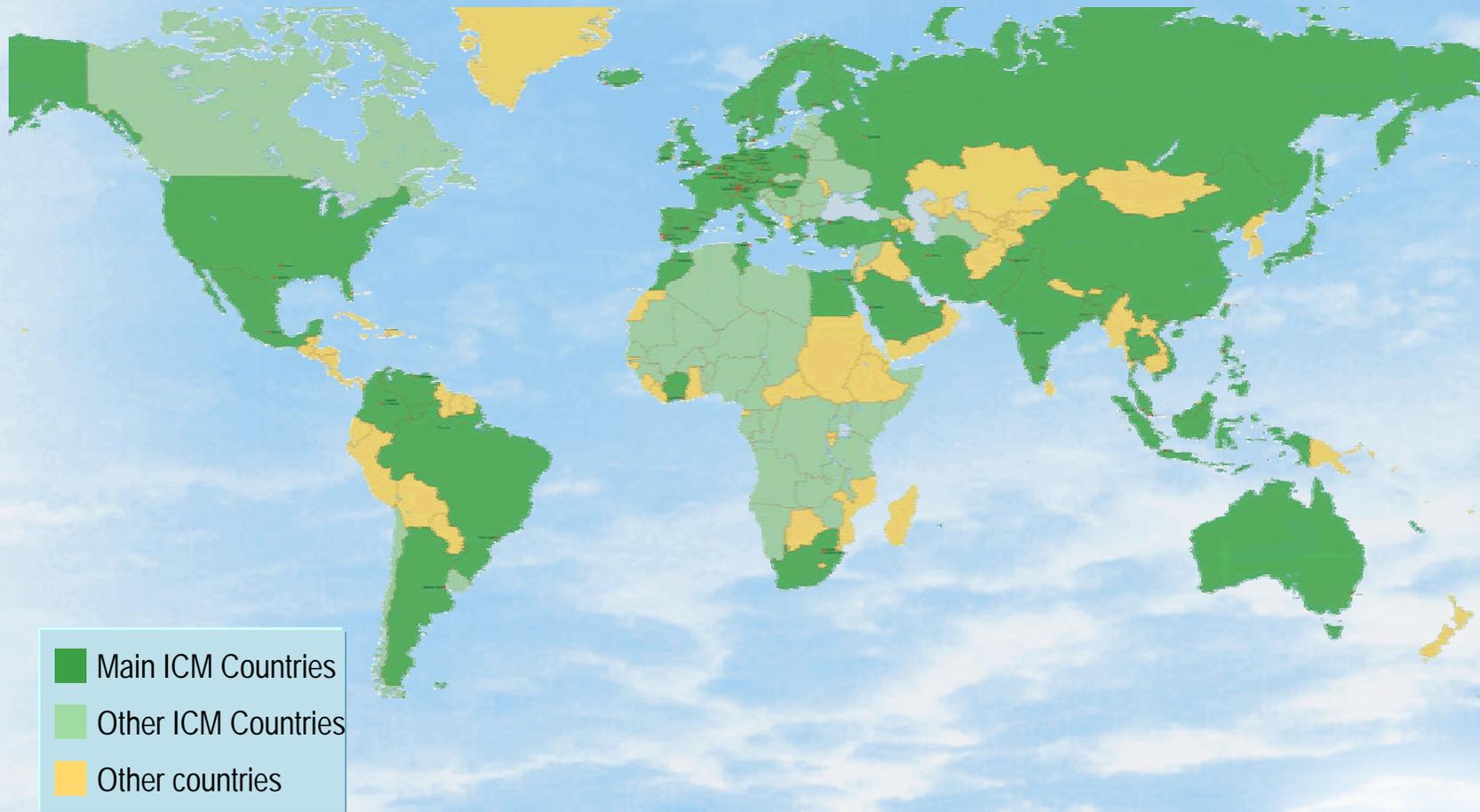
PLMN: Public Land Mobile Network

PSTN: Public Switched Telephone Network

VPN: Virtual Privat Network

# ICM is a Global Player in the I&C Product Market

## Overview: ICM Worldwide Network



# A Set of Alliances and Partnerships Adds to our Product Portfolio

Important ICM Alliances and Partnerships



# We are the Partner Who Understands your Operation

## On the Road to UMTS

### Key Challenges

- Differentiation
- Reduction of operating costs
- Rapid technology change
- Time to market
- Increase of network sophistication
- Change of business culture from voice to data

New Technologies  
GPRS / WAP /  
IP/ UMTS

### Our Services

Turnkey

Network Operation

Systems Integration

Professional Services and Outsourcing