



# ITU/ITC Regional Seminar for the CEE, CIS and Baltic States



## Radio aspects of convergence

Colin Langtry  
Counsellor, ITU-R Study Group 8

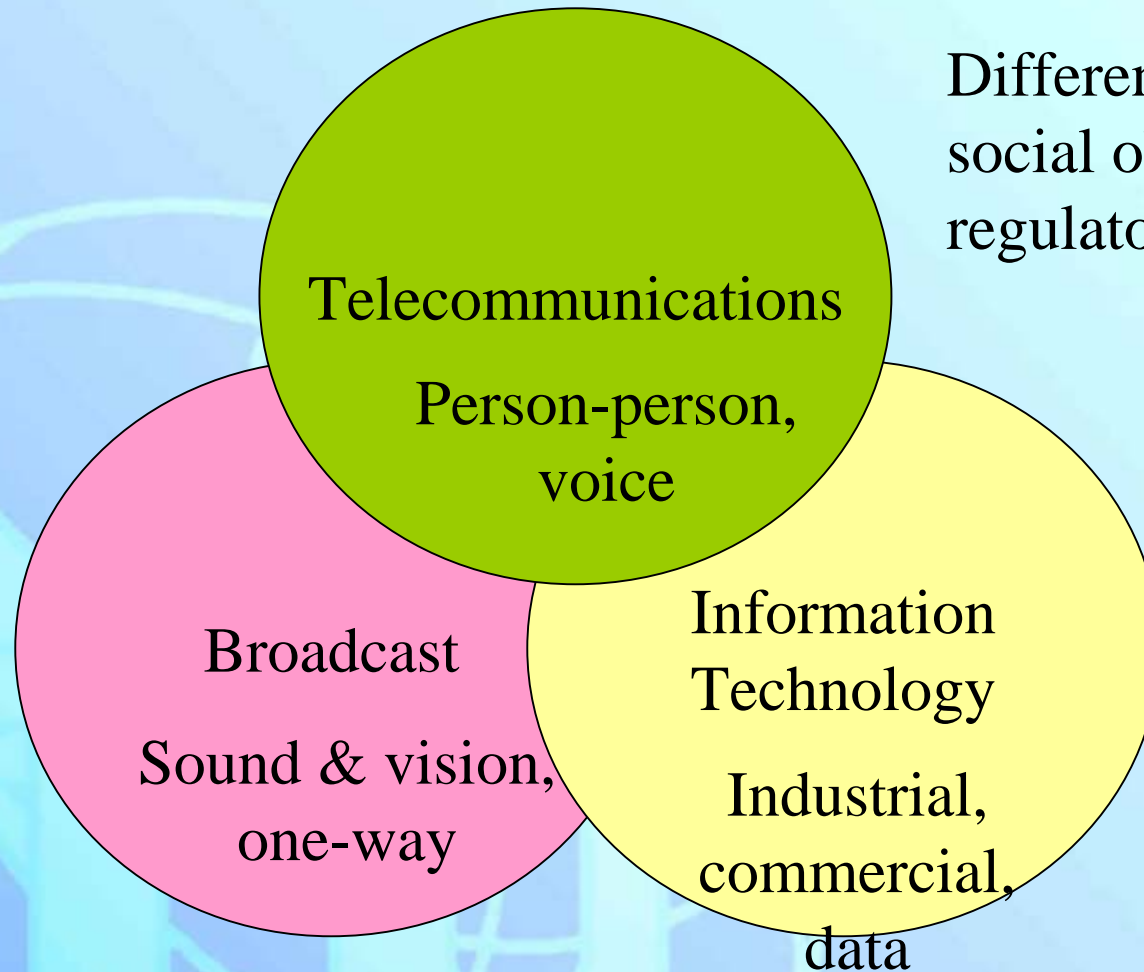


# Contents

- **Converging markets, services and technologies**
- **Growth in mobile, Internet and broadband access**
- **Mobile access – IMT-2000**
- **Systems beyond IMT-2000**
- **Spectrum requirements**
- **Activities of ITU-R Working Party 8F**



# Convergence: market sectors

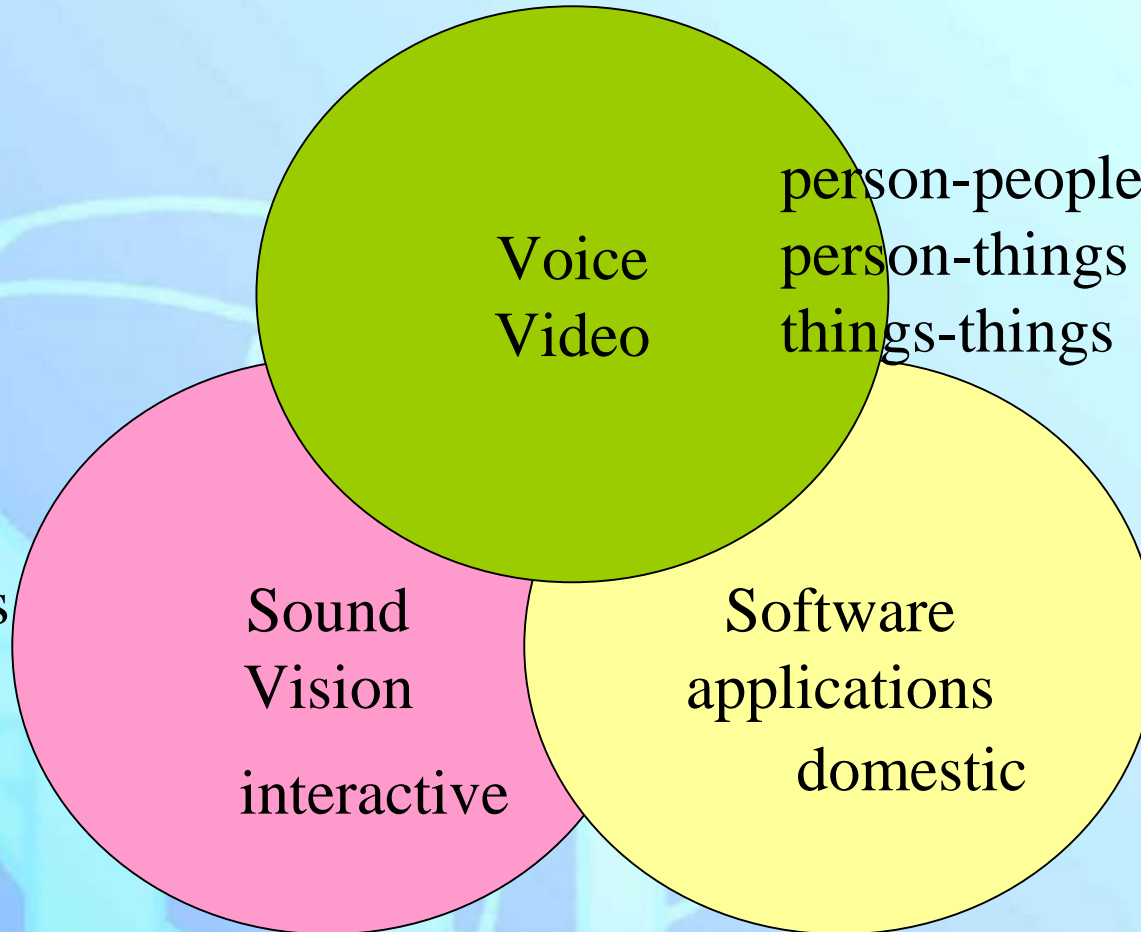


Different structures,  
social obligations,  
regulatory regimes

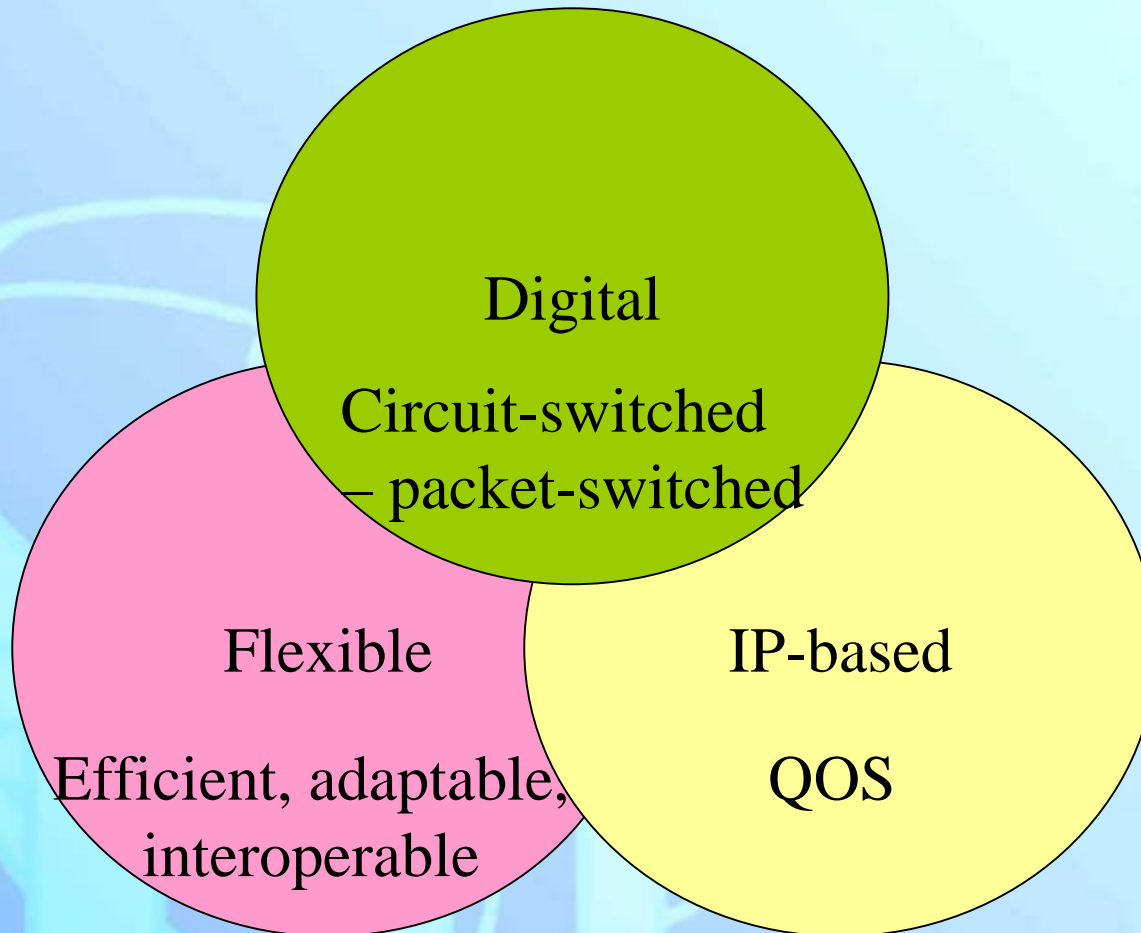


# Convergence: services

Email  
SMS  
digital photos  
video clips

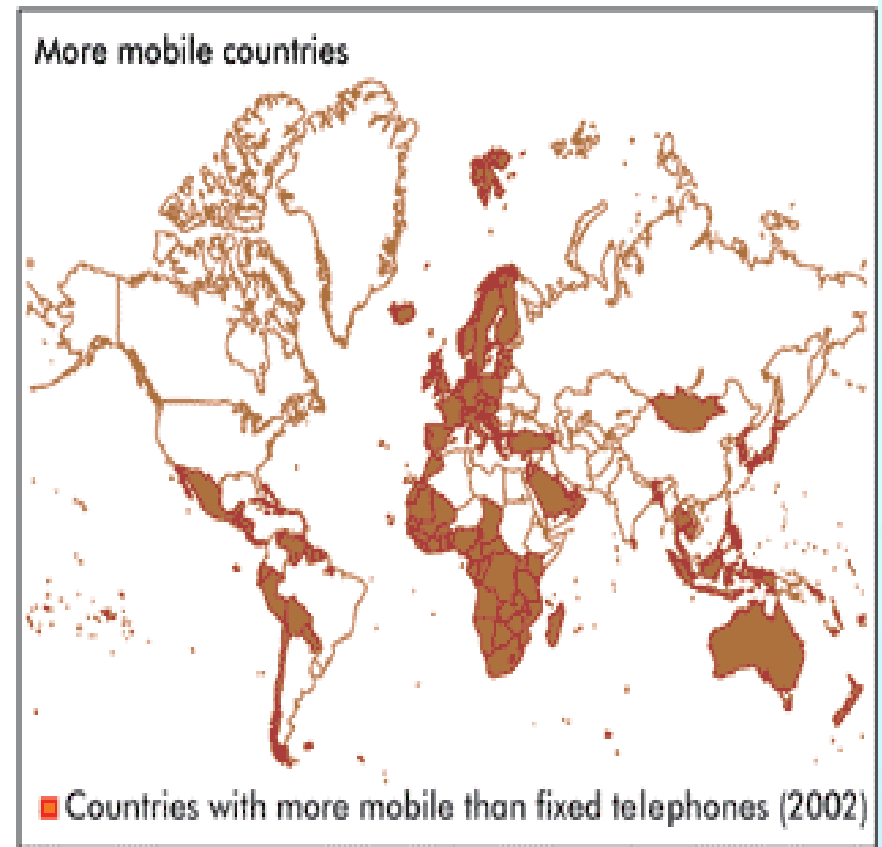
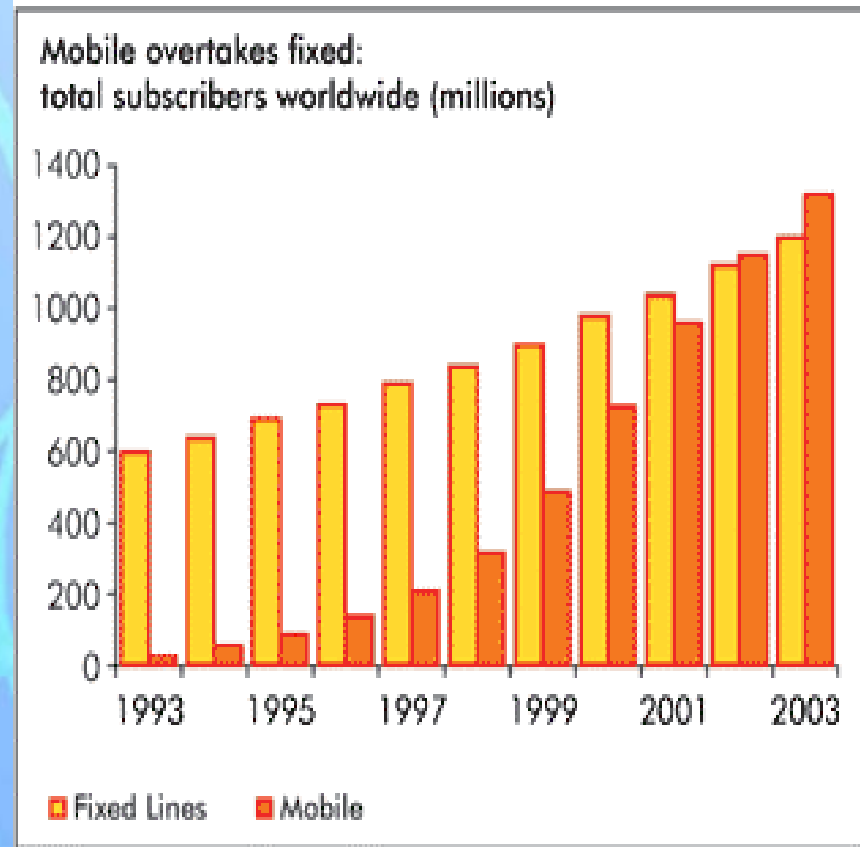


# Convergence: technology



# Growth of mobile

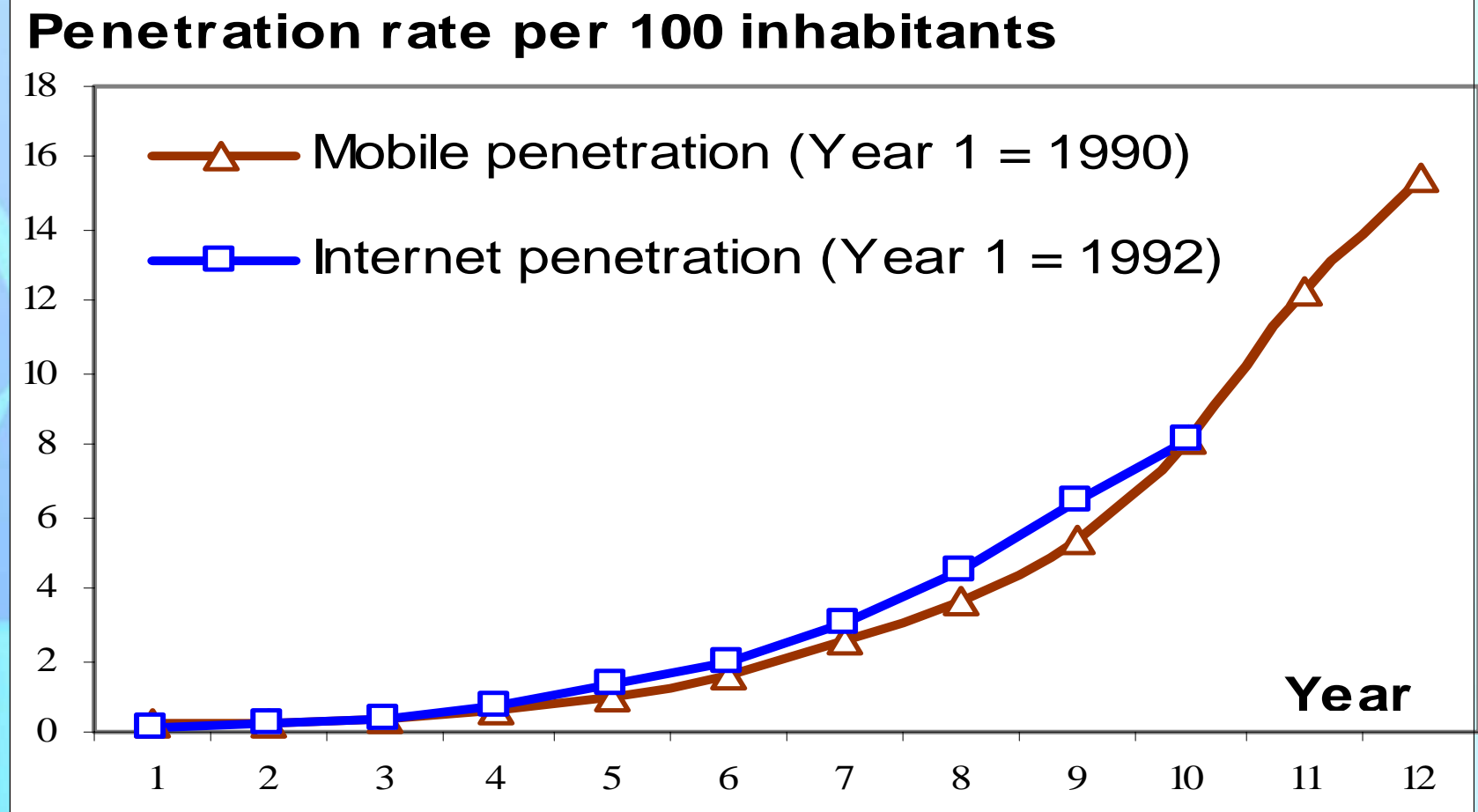
Fixed lines and mobile subscribers (millions) and countries in which mobile has overtaken fixed



Source: ITU World Telecommunication Indicators Database



# Growth of Internet

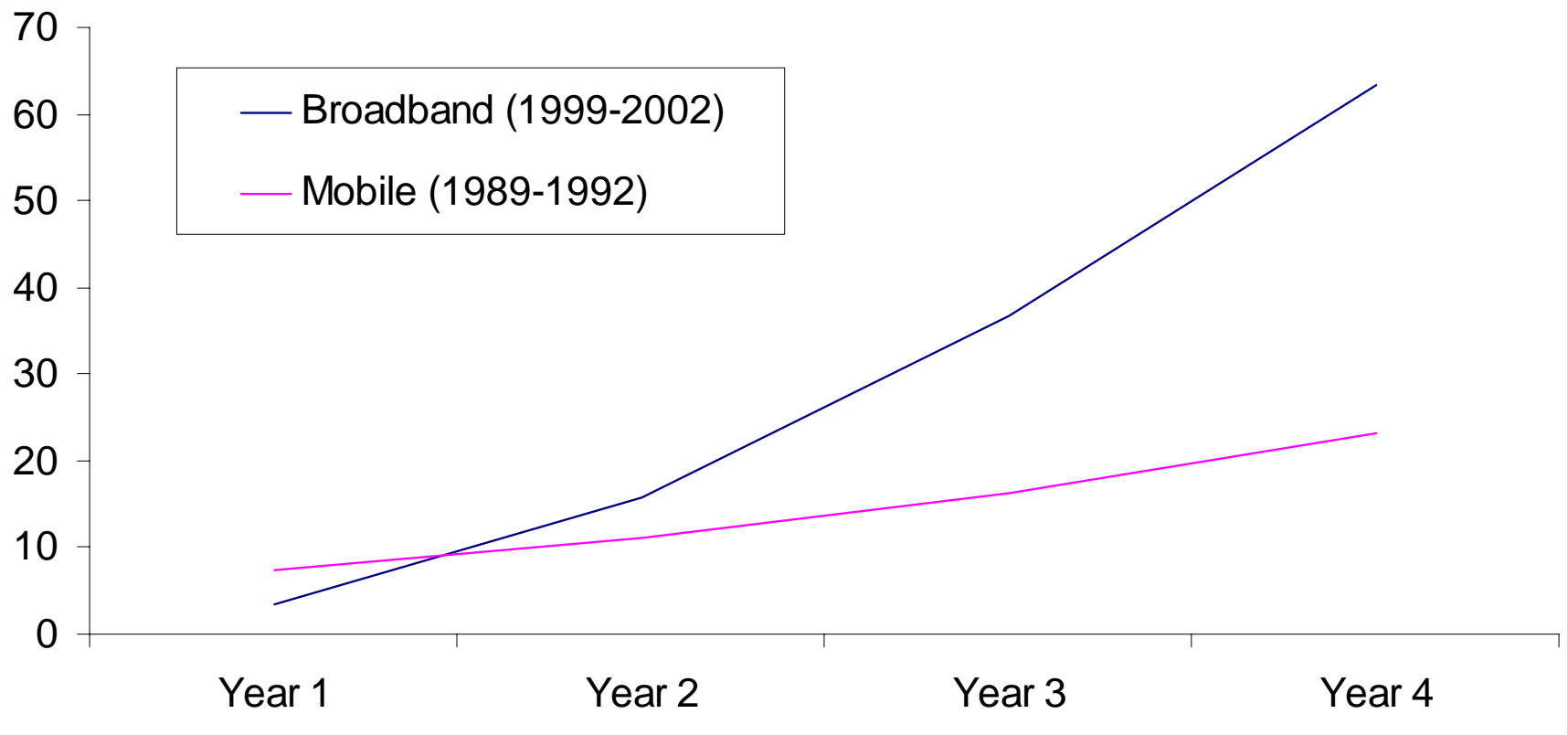


Source: ITU World Telecommunication Indicators Database



# Growth of broadband

Broadband and mobile growth, millions, world



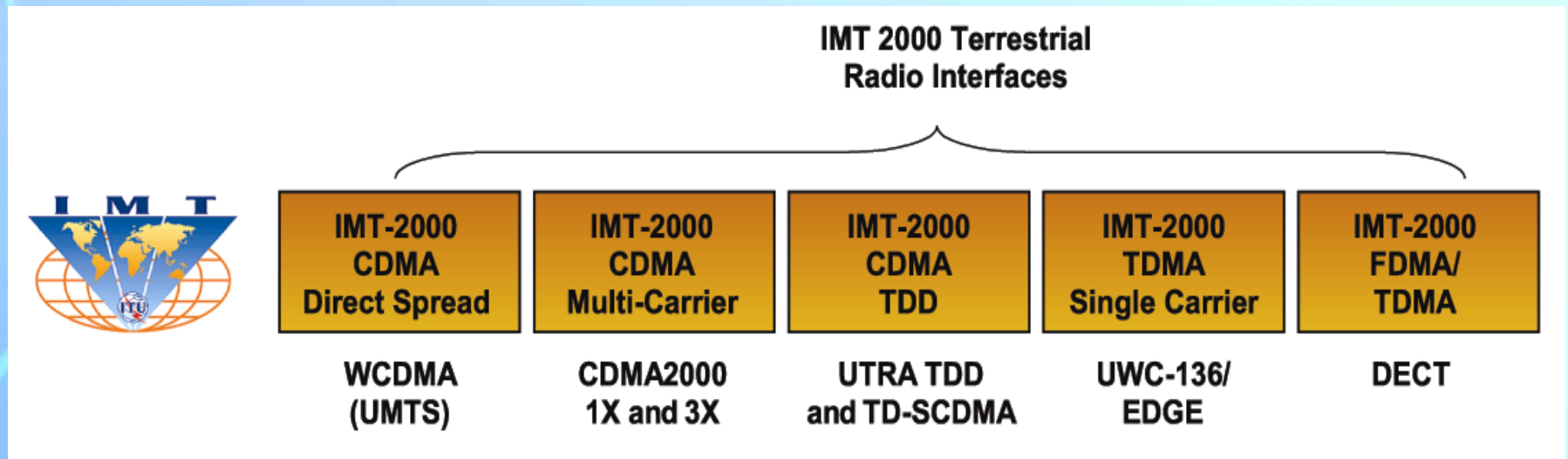
Source: ITU World Telecommunication Indicators Database





# IMT-2000 Radio Access Standards

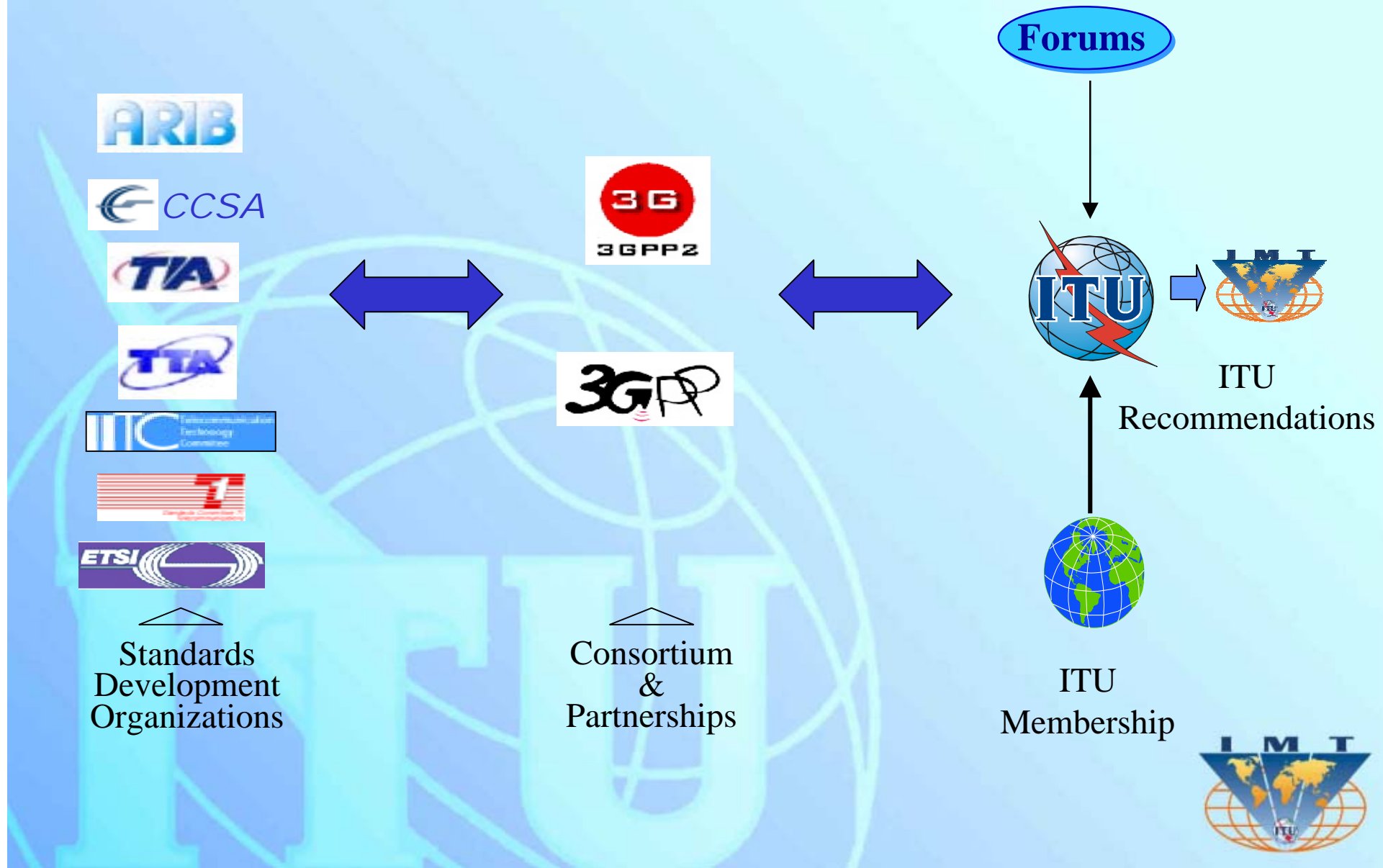
- A reminder .....



- Designed mainly in response to market, technology & regulatory opportunities & segments
- Many of these standards are already being enhanced



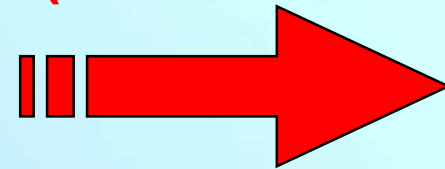
# IMT-2000 Standards Development



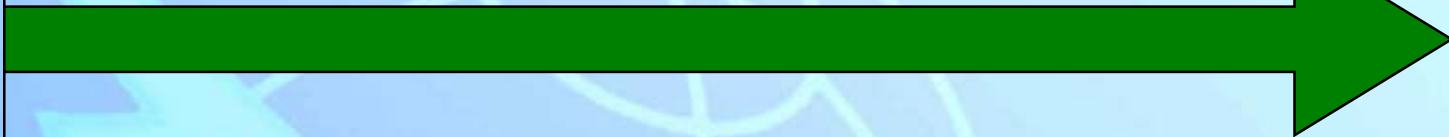
# Radio Access - Three Main Phases



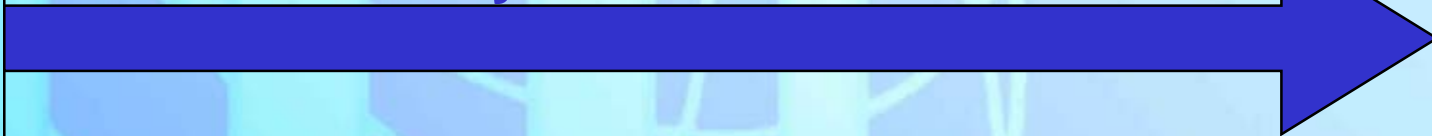
**New radio interface(s)**  
i.e. research target 100 – 1000 Mbit/s (full to low mobility)



**Relationship with other radio systems**  
e.g. Digital broadcast, RLAN, etc.



**Enhancing IMT-2000**  
e.g. “fast packet” up to 30 Mbit/s by 2005 ?

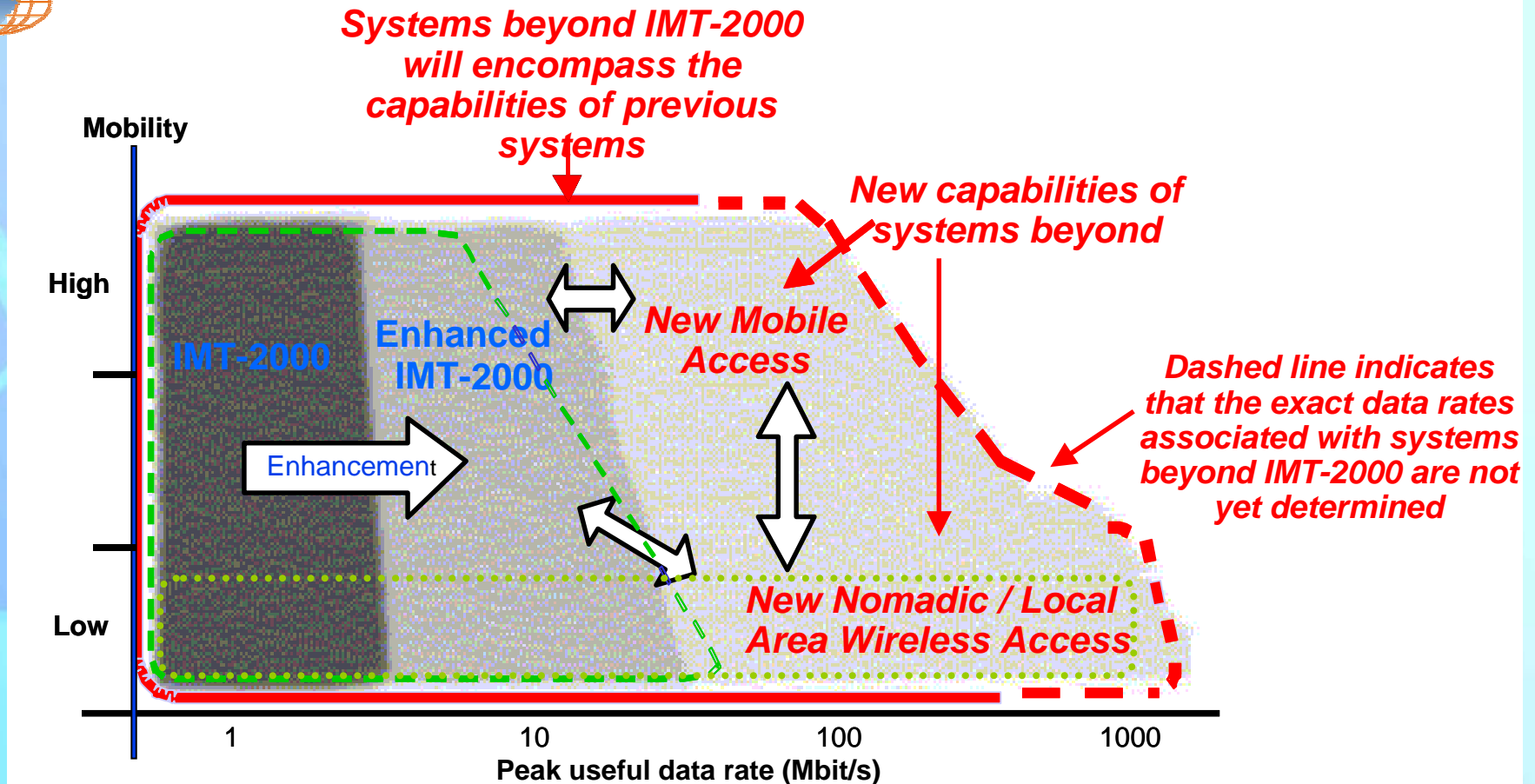


2001

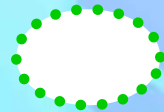
2010



# Capabilities ('The Van')



Interconnection

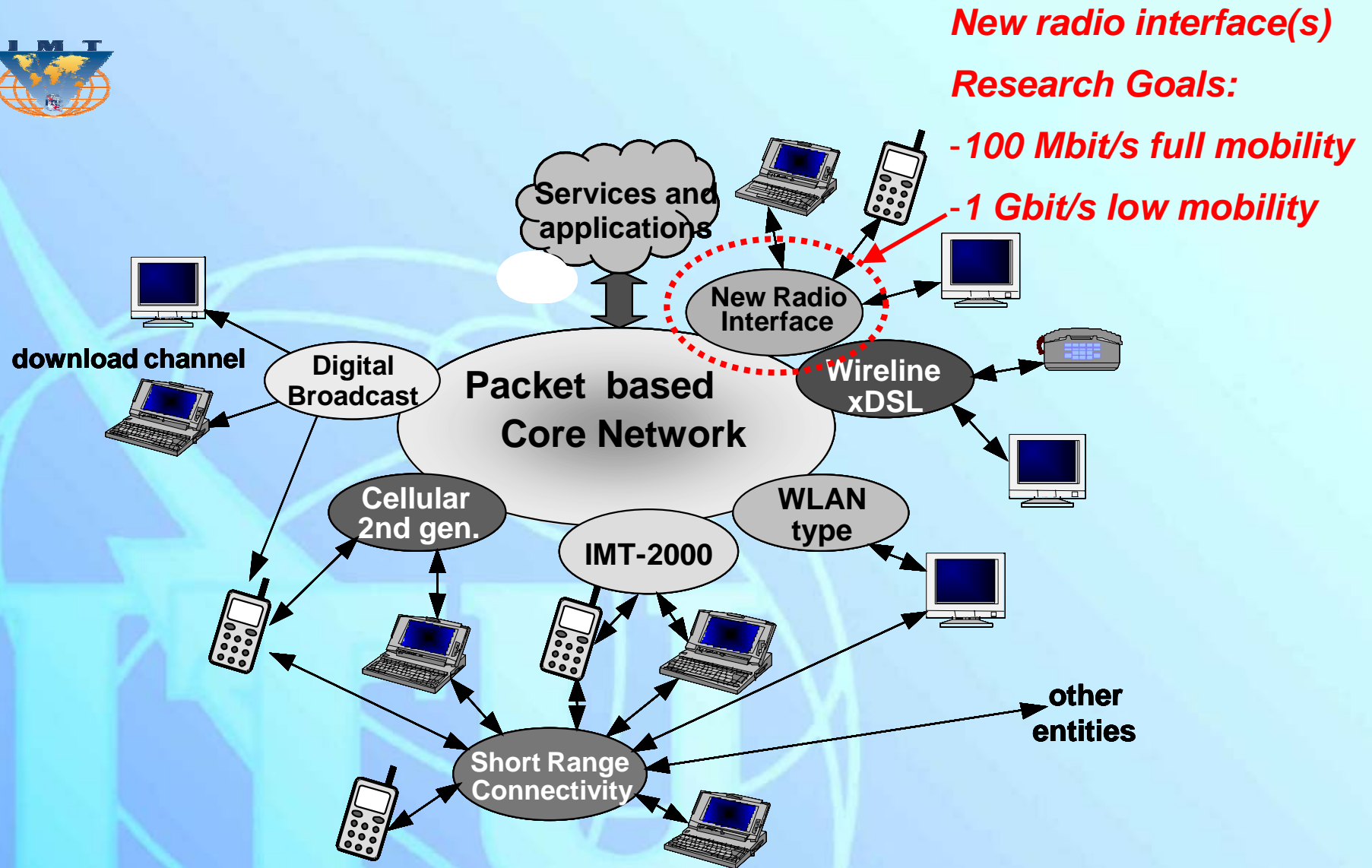


Nomadic / Local Area Access Systems



Digital Broadcast Systems

# Variety of Access Networks



# Domains

Personal Area



Immediate Area



Wide Area



# Fusion

## Recommendation ITU-R M.1645

**"Systems beyond IMT-2000 will be realized by functional fusion of existing, enhanced and newly developed elements of IMT-2000, nomadic wireless access systems and other wireless systems, with high commonality and seamless interworking"**



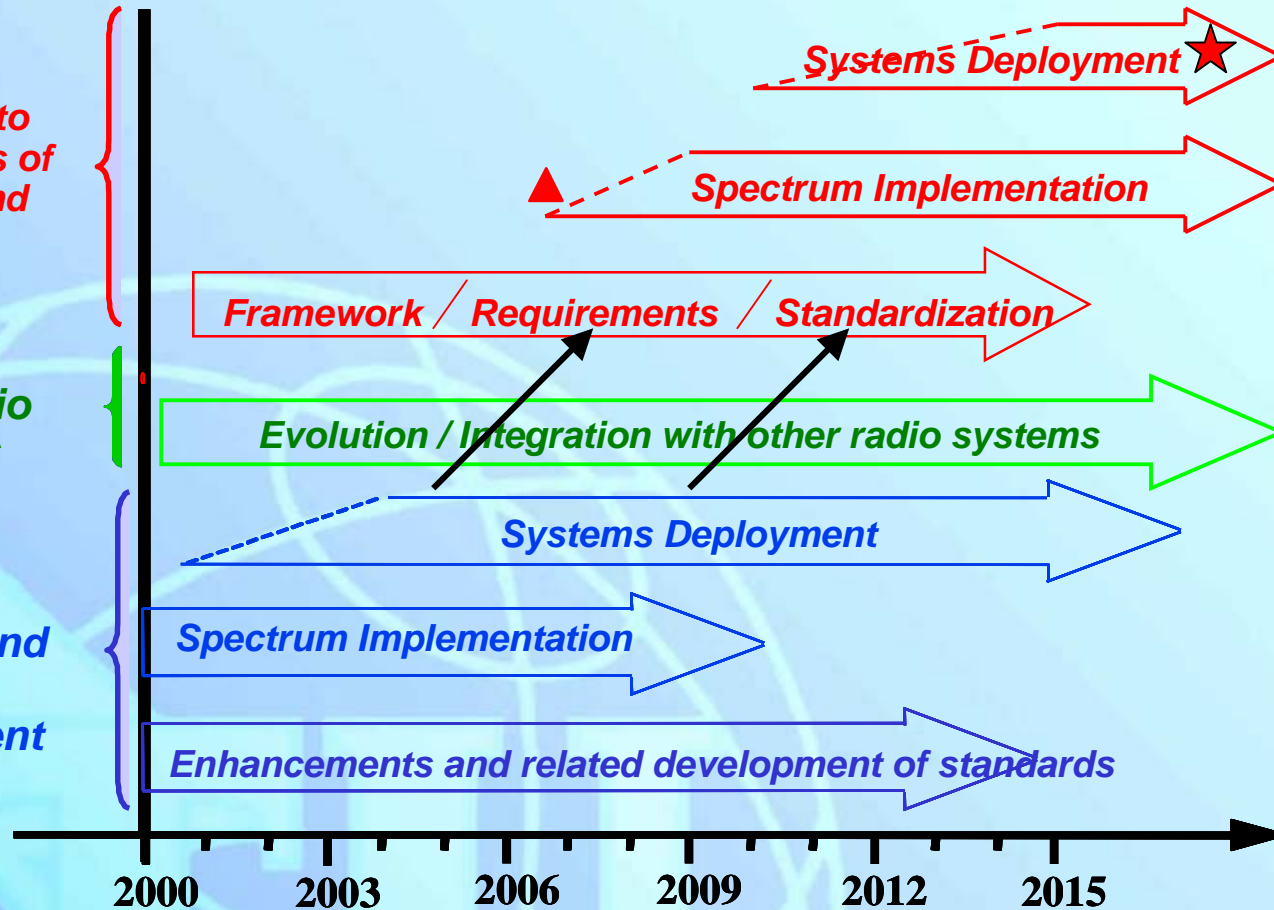
# The Plan



*New elements to offer capabilities of systems beyond IMT-2000*

*Other radio systems*

*IMT-2000 and future development*



*- - - Indicates that the exact starting point is not yet fixed*

*▲ Possible spectrum identification at the WRC-07*

*★ Possible wide deployment around the year 2015 in some countries*



# Spectrum

- Prerequisite for development and operation of radio systems is the availability of spectrum
- Most of the usable spectrum is already allocated
- There is a long lead-time between identification of spectrum and spectrum availability



# Resolution 802 (WRC-03)

**2007 World Radiocommunication Conference**

**Agenda item 1.4**

**“to consider frequency-related matters for the future development of IMT-2000 and systems beyond IMT-2000, taking into account the results of ITU-R studies in accordance with Resolution 228 (Rev.WRC-03)”**



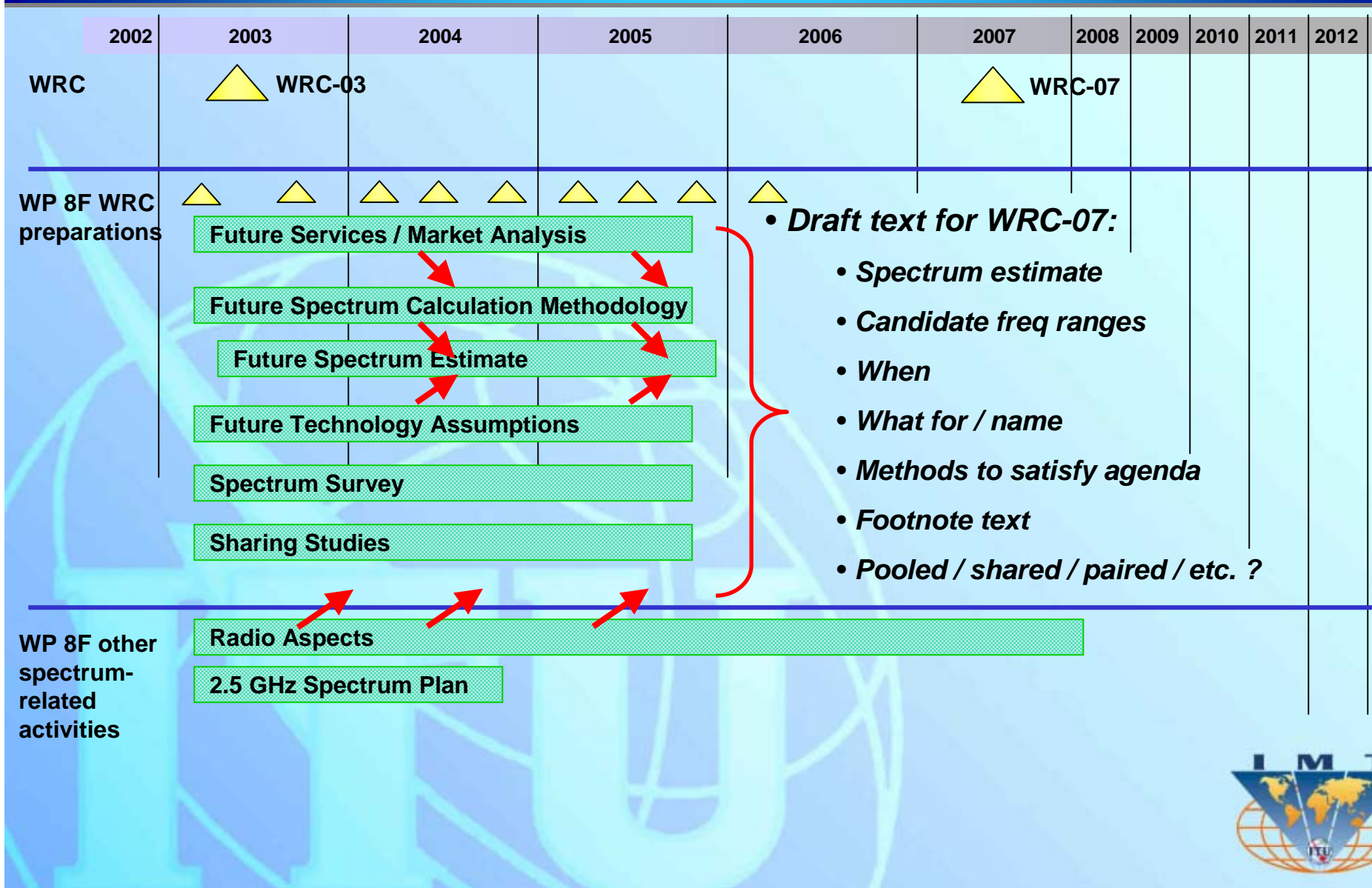
# Resolution 228 (Rev.WRC-03)

## *resolves*

- 1 to further study technical and operational issues ...;
- 2 to report to WRC-07 on the spectrum requirements and potential frequency ranges ...;
- 3 to conduct regulatory and technical studies on the usage of frequencies below those identified for IMT-2000 ...;
- 4 to take into consideration the particular needs of developing countries including use of the satellite component of IMT-2000 ...;
- 5 to include sharing and compatibility studies with services already having allocations in potential spectrum ...;
- 6 that WRC-07 should consider frequency-related matters for the future development of IMT-2000 and systems beyond IMT-2000



# WP 8F WRC preparation



# WP 8F web page

<http://www.itu.int/ITU-R/study-groups/rsg8/rwp8f/index.asp>

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Telecom Standardization (ITU-T)  
Telecom Development (ITU-D)  
TELECOM Exhibitions and Forum  
Membership

**Working Party 8F - IMT-2000 and systems beyond IMT-2000**

- ▶ [Scope](#)
- ▶ [Terms of reference](#)
- ▶ [Chairmen and Vice-Chairmen](#)
- ▶ [Counsellor](#)
- ▶ [Questions](#)

**Documents**

- ▶ [Chairman's Report: 12th meeting](#)
- ▶ [Contributions - Archives](#)
- ▶ [Information Documents - Archives](#)
- ▶ [GCS updates](#) for Rec. ITU-R M.1457

**Next meeting**

- ▶ [ITU-R meeting schedule](#)
- ▶ [Invitation to next WP 8F meeting: 16-23 June 2004 \(Berlin, Germany\)](#)

**Structure and workplan**

- ▶ [WP 8F structure and workplan](#)

**Research activities**

- ▶ [Focus areas](#)
- ▶ [Recommendation ITU-R M.1645 - Framework and overall objectives of the future development of IMT-2000 and systems beyond IMT-2000](#)
- ▶ [Draft Report on Technology Trends](#)

**Other IMT-2000 activities at ITU**

- ▶ [Telecommunication Development \(ITU-D Question 18/2\)](#)
- ▶ [Telecommunication Standardization \(ITU-T Special Study Group\)](#)
- ▶ [Research and Analysis \(SPU\), General Secretariat](#)

**Seminars and workshops**

- ▶ [Working Party 8F Workshop on services and market aspects \(Edinburgh, 8 October 2003\)](#)

**Electronic facilities**

- ▶ [ITU-R electronic facilities](#)
- ▶ [Mailing lists - FTP server](#)
- ▶ [Contributions submission: \[rsg8@itu.int\]\(mailto:rsg8@itu.int\)](#)

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# Summary

- **Convergence is occurring in many spheres**
- **Mobile, Internet and broadband access is expanding rapidly**
- **IMT-2000 has been standardized and will evolve considerably over next 10-15 years – open and market led process**
- **Ongoing relationship with other access methods**
- **New radio interface(s) are expected to be required sometime between 2010-2015**
- **Spectrum aspects will be considered at WRC-07**
- **ITU-R WP 8F is undertaking the work on enhancement of IMT-2000 and development of systems beyond IMT-2000**



# ITU/ITC Regional Seminar for the CEE, CIS and Baltic States



Thank you

*Colin Langtry*  
*Counsellor for Radiocommunication Study Group 8*