# Global Perspectives on 3G/UMTS

- Worldwide developments
- Lessons for the Indian market


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**www.umts-forum.org**


# About The UMTS Forum

## Who are we?

➢ **An international, cross-sector industry body comprising operators, manufacturers, regulators, application developers, research organisations and IT industry players.**

## Our mission…

➢ **To promote a common vision of the development of 3G/UMTS and of its evolution, and to ensure its worldwide commercial success.**

# UMTS Forum Key Areas of Activity

## Spectrum

**Studies and contributions on harmonisation of global spectrum and additional spectrum arrangements for IMT-2000 and its evolution.**

## Regulation

**Guidance to regulatory authorities and national administrations on licensing and other 3G-related issues.**

## UMTS Vision, Future Research & Market

**Studies into services & applications; market drivers; customer behaviour.**

## Technical Studies & Implementation

**Studies and reports on (e.g.): complementary technologies (inc. WLAN, TDD), security, IMS, mTLD, portals, billing & payments.**

## Promotion

**Dialogue with media, investment communities and public authorities; presence at leading industry events; partnerships with international standards institutions and other industry bodies (ITU, EC, 3GPP, ETSI, GSMA, 3G Americas,…).**

# GSM: The World's #1 Choice

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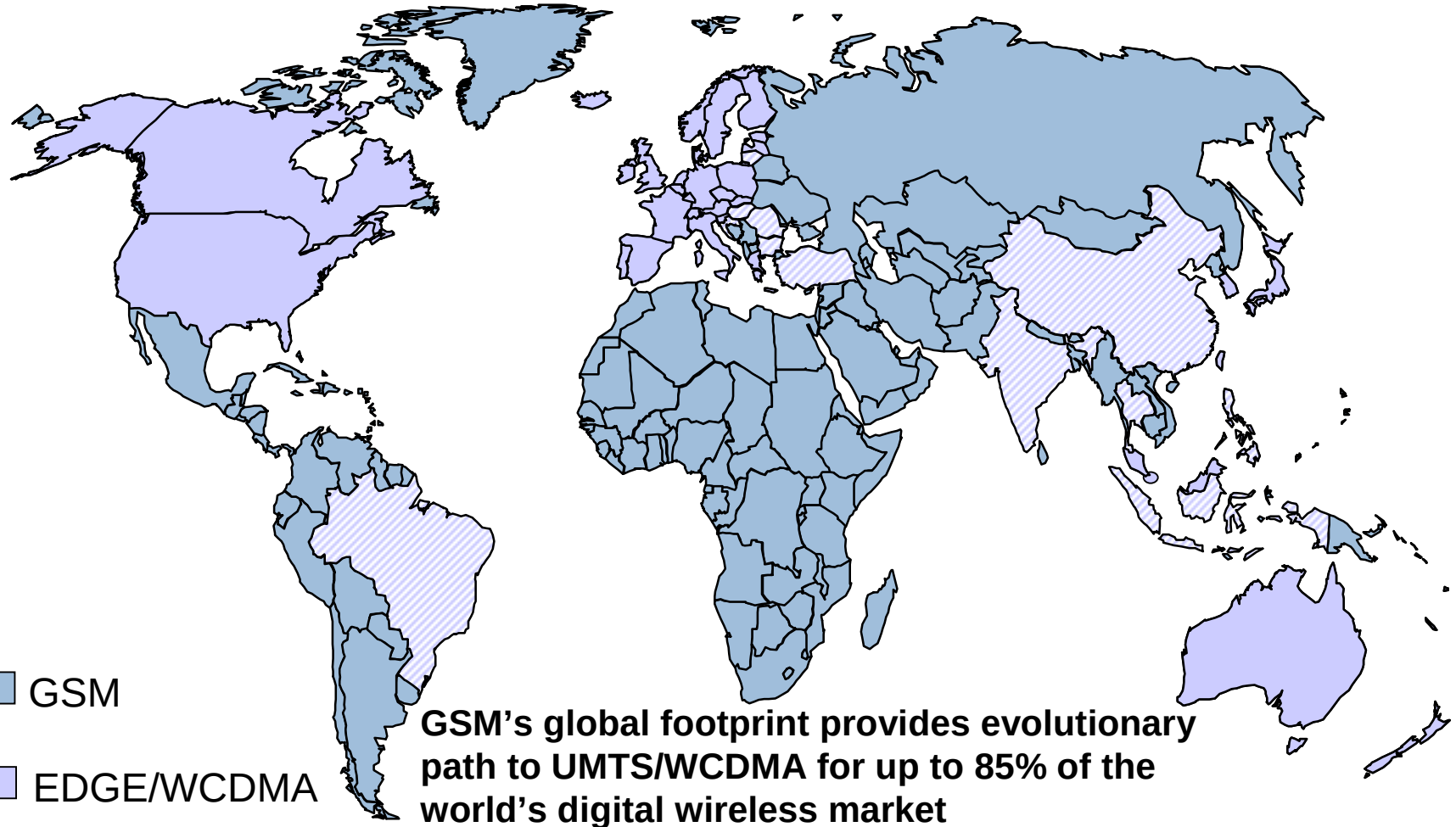
- **GSM now exceeds 1 billion customers worldwide, adding 15 million new customers every month**
- **With more than 620 GSM operators in over 200 countries, GSM accounts for approaching 75% of all mobile customers worldwide, generating US$ 277 billion revenues in 2003**
- **Rapid GSM growth in many world regions: e.g. 100% annual growth in The Americas; 240+ million Chinese GSM customers, grew 60 million in 2003**
- **International roaming on GSM networks in over 200 countries boosts operator revenues by up to 20%**
- **GSM is an OPEN STANDARD – benefiting operators, manufacturers & end users by offering INTERNATIONAL ROAMING, ECONOMIES of SCALE and INTEROPERABILITY.**

**GSM offers a smooth evolutionary path to 3G/UMTS for up to 85% of the world's mobile market**

# Markets committed to GSM evolution to 3G/UMTS




**GSM's global footprint provides evolutionary path to UMTS/WCDMA for up to 85% of the world's digital wireless market**

# The UMTS Proposition

## UMTS: Designed as a complete, end-to-end mobile SYSTEM

- **UMTS offers cost efficient, WIDE AREA network coverage**
- **UMTS is universally standardised via 3GPP, using licensed radio spectrum, globally harmonised in common bands (paired and unpaired)**
- **UMTS offers user bit rates up to 384 kbps in high mobility situations / 2 Mbps stationary, with a roadmap to >14 Mbps for low mobility/indoor use**
- **UMTS supports a rich choice of services and applications optimised for fully mobile environments**
- **UMTS supports international roaming, plus a growing range of attractively priced handheld terminals**
- **UMTS offers integrated charging and billing functions**
- **UMTS offers integral security**

# Why UMTS? Benefits to operators

## 3G/UMTS follows on naturally from 2G/GSM deployments

### Network Optimisation

• UMTS builds on investments in GSM providing a network optimisation opportunity for operators. Operators can retain legacy 2G core network, IT and service platforms; can also re-use existing sites and implement site sharing

### Cheaper Additional Capacity

• UMTS will give operators additional capacity compared with 2G to support more subscribers (especially in urban centres) as well as greater speeds and ability to support new multimedia services including video…

• UMTS will allow operators to add additional network capacity at a cost up to 8 times lower than providing incremental 2G capacity. This will give operators the opportunity to reduce the proportion of investments in relation to total turnover

### Medium to Long-term Increase in Revenues

• UMTS may not in itself significantly increase ARPU in the short term, but it will provide an opportunity for operators to strengthen their free cash flows

• UMTS will generate new revenues in the medium/long term when all actors (clients, operators, service providers, media/content developers,…) have assimilated this new technology

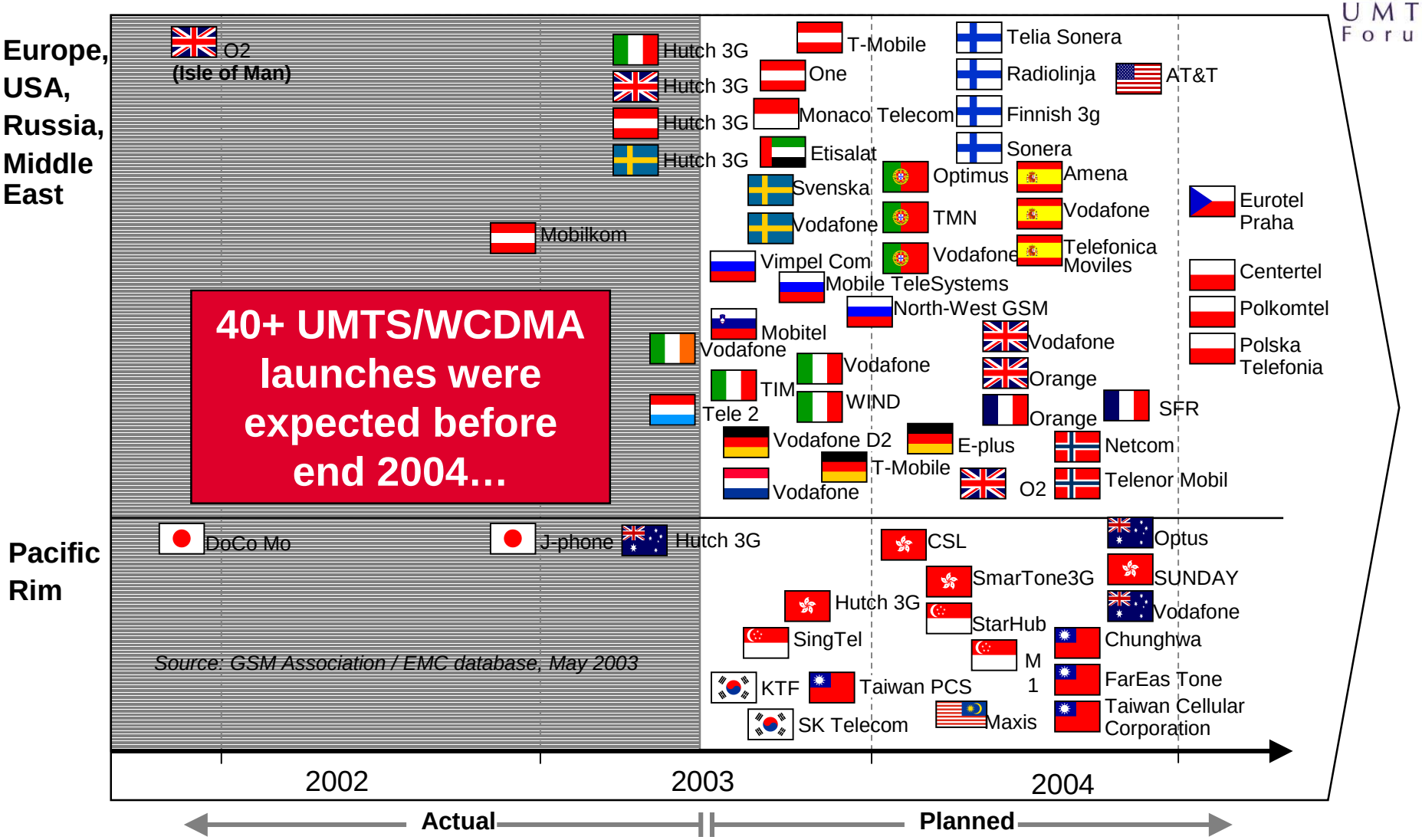
# The Growing Success Story

- 3G/UMTS customers exceed 4 million globally…
  - NTT DoCoMo FOMA: over 3 million
  - Vodafone KK: 0.2 million
  - Europe (Hutchison '3' plus others): approx. 1 million
- UMTS Forum predicts 12-15 million 3G/UMTS customers by end of 2004 with 50%+ Europe / 50% Asia.
- 15 3G/UMTS networks already launched in Austria, Australia, Denmark, Greece, Hong Kong, Italy, Japan, Netherlands, Slovenia, Sweden & UK.
- 119 out of 121 IMT-2000 3G licenses awarded in 39 countries so far specify UMTS/WCDMA technology: licensing continues in other world regions.

# UMTS Deployments

- 15 operators in Asia and Europe have already launched commercial UMTS services
- Dozens more launches scheduled before end 2004
- Some major operators currently 'testing the water' by offering trial services/soft launches to consumers or to business customers with access via laptop PC and WCDMA data card

# UMTS deployment roadmap: 2003 plans




# UMTS key operator deployments ’04

**Selected service launch announcements based on recent operator statements**

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## GERMANY

| | |
|---|---|
| e-plus | Q2 2004 |
| Vodafone | Q3 2004 |
| T-Mobile | Q2 2004 |
| O2 | Q4 2004 |

## SPAIN

| | |
|---|---|
| Amena | Q4 2004 |
| Vodafone | Q3 2004 |
| TEM, Xfera | before end ’04? |

## FRANCE

| | |
|---|---|
| Orange | Q3 2004 |
| SFR | Q4 2004 |
| Bouyges | expected 2005? |

## ITALY

| | |
|---|---|
| TIM | H2 2004 |
| Vodafone | Q3 2004 |
| Wind | before end ’04? |

## UK

| | |
|---|---|
| Vodafone | Q3 2004 |
| Orange | Q3 2004 |
| O2 | Q2 2004 |
| T-Mobile | Q2 2004 |

**Also…**

**Vodafone: announced launches during Q1 2004 (Germany, Italy, Netherlands, Portugal, Spain, Sweden, UK) for "data only" services via PC datacard.**

**Similarly…**

**T-Mobile: initial service has been announced in the UK, Austria and Germany, accessed via PC datacard rather than portable UMTS handset.**

***And also outside Europe…***

**Korea: SKT and KTF will launch by Q2 2004**

# UMTS: The Leading 3G Choice

## 8 of the world's 10 biggest operators have already selected UMTS/WCDMA...

| Operator | 2G technology | | 3G choice |
|---|---|---|---|
| China Mobile | GSM | → | UMTS/ WCDMA |
| Vodafone | GSM | → | UMTS/ WCDMA |
| China Unicom | GSM/CDMA | → | to be confirmed |
| T-Mobile | GSM | → | UMTS/ WCDMA |
| Orange | GSM | → | UMTS/ WCDMA |
| NTT DoCoMo | PDC | → | UMTS/ WCDMA |
| TIM | GSM | → | UMTS/ WCDMA |
| Verizon Wireless | CDMA | → | CDMA2000 |
| Telefonica | GSM | → | UMTS/ WCDMA |
| Cingular Wireless | GSM/TDMA | → | UMTS/ WCDMA |

# UMTS Terminals





















- 3G/UMTS terminals available from a growing range of European, Asian and US manufacturers
- Latest 3G models comparing with 2G handsets in terms of battery life, weight and size
- Public commitment from major operators to support commercial UMTS launches in Q3/Q4 2004 with large quantities of terminals

# UMTS Markets in Western & Central Europe

**Austria**
**Belgium**
**Czech Republic**
**Denmark**
**Estonia**
**Finland**
**France**
**Germany**
**Greece**
**Guernsey**
**Ireland**
**Isle of Man**
**Italy**
**Latvia**
**Liechtenstein**
**Luxembourg**
**Malta**
**Monaco**
**The Netherlands**
**Norway**
**Poland**
**Portugal**
**Slovenia**
**Slovak Republic**
**Spain**
**Sweden**
**Switzerland**
**UK**
**Åland**

More than **80 operators in 27 European markets** have chosen UMTS/WCDMA as their 3G standard

**Upcoming**

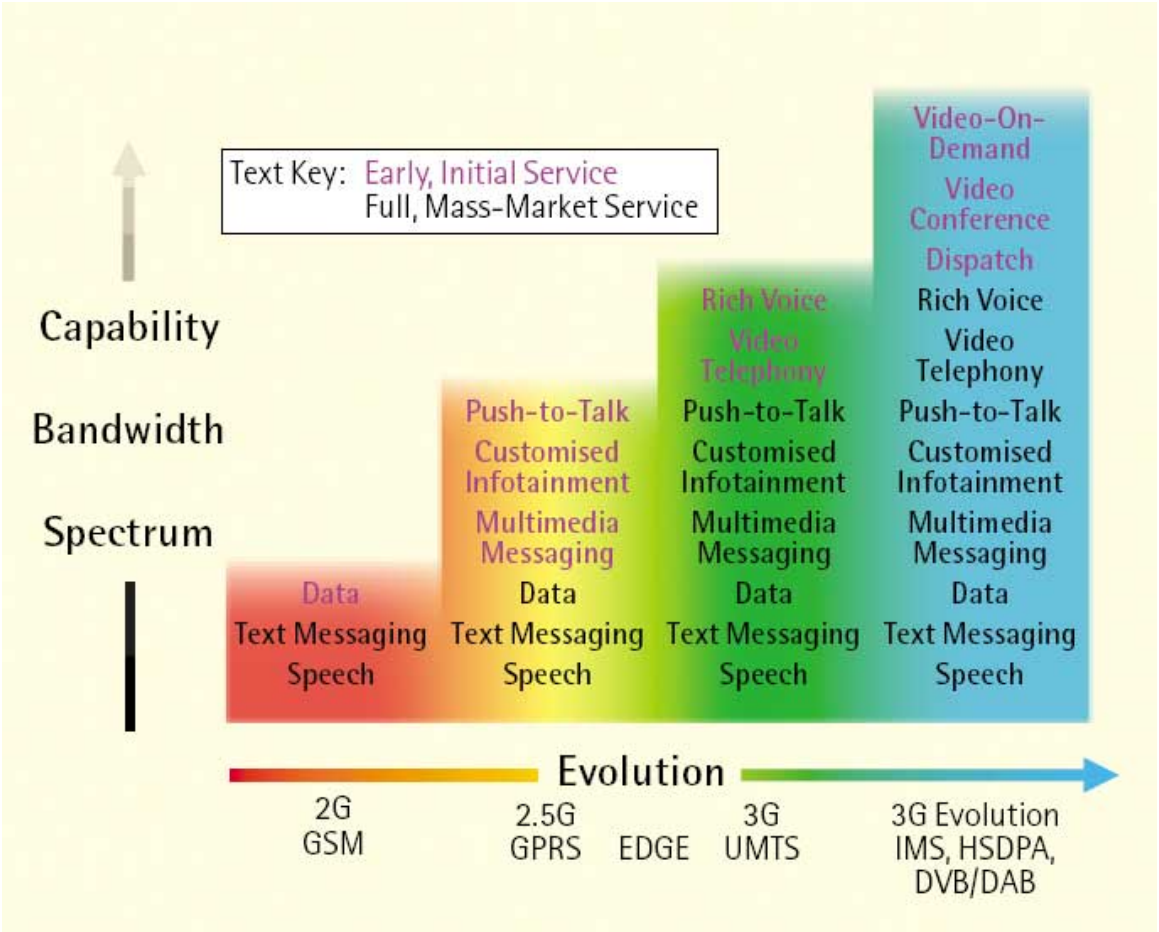
**Bulgaria**
**Croatia**
**Cyprus**
**Hungary**
**Lithuania**
**Romania**

# Two technologies compared…

- **CDMA2000 was originally developed principally for North American market where lack of large blocks of contiguous spectrum requires narrower carrier width (1.25MHz compared with 5MHz for WCDMA)**
- **UMTS/WCDMA 5MHz channel width delivers reliable cell coverage even with high data rate services, e.g. video**
- **Wider bandwidth of WCDMA compared with CDMA2000 promises good service quality and proliferation characteristics**
- **UMTS/WCDMA has room for future growth, with HSPDA evolution offering greater downlink speeds up to 14+ Mbps**
- **UMTS/WCDMA offers straightforward re-use of existing GSM network resources and more cost-effective upgrade to transmission path (e.g. 1xEV-DO requires investment in separate overlay network)**
- **Stable WCDMA standards since Release 99: optimises development platform for operators and handset vendors**

- **3G/UMTS with WCDMA is TRUE 3G… CDMA2000 1X RTT is closer to 2.5G GPRS in terms of real-world speed/performance**

# 3G/UMTS service evolution roadmap

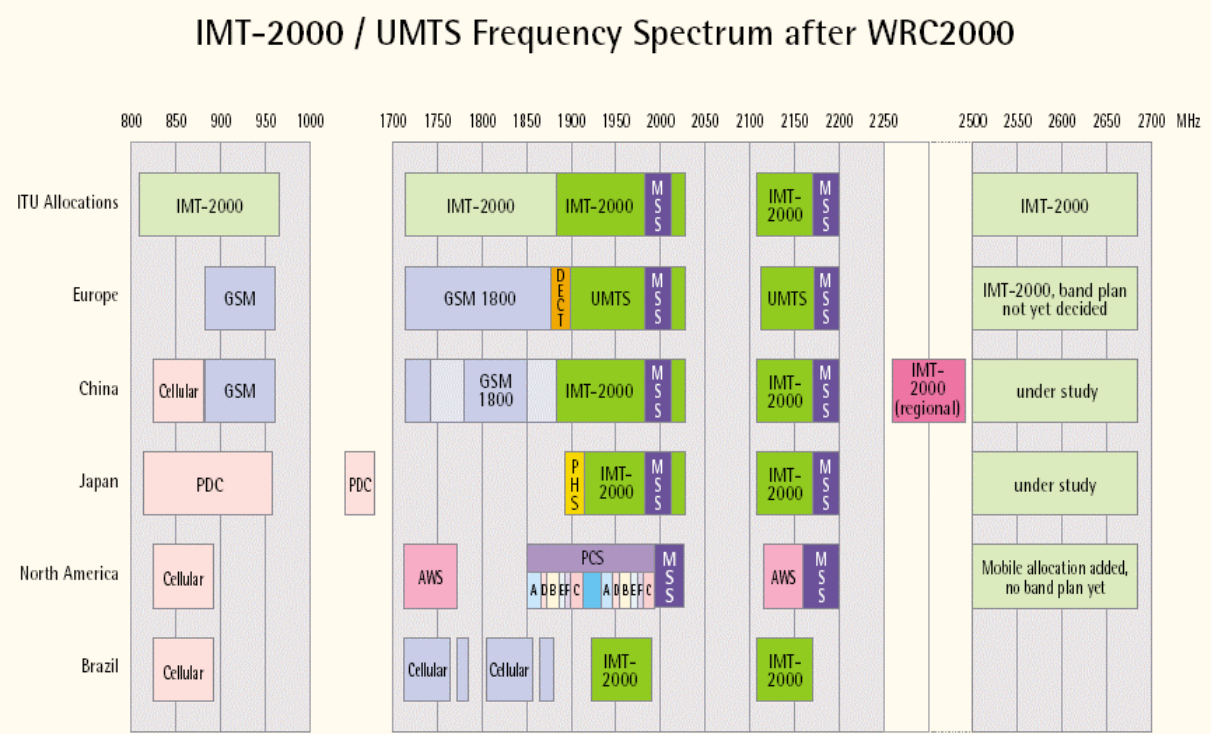



**Future enhancements to UMTS/WCDMA:**

- **High speed downlink packet access (HSDPA) increases downlink speeds to over 14 Mbps**
- **IP multimedia subsystem (IMS) will provide advanced IP capabilities for mobile multimedia services**
- **Interworking with other networks such as DAB and DVB will take advantage of content offerings that can be delivered efficiently to small form-factor devices**

**New services and applications are already being introduced on today's 2G and 2.5G networks, giving operators and customers an early taste of the capabilities of 3G/UMTS**

# IMT-2000 spectrum




- The World Radio Administrative Conference in 1992 (WARC-92) identified the frequency bands 1885-2025 MHz and 2110-2200 MHz (so-called WARC-92 bands) for use by IMT-2000.
- Part of these bands 1980–2010 MHz and 2170–2200 MHz were allocated to mobile satellite service, all other parts being allocated to mobile terrestrial service.
- ITU decision on frequency arrangements in 2500-2690 MHz extension band (identified at WRC-2000) to cope with long term demand is expected in 2004, in order to ensure global harmonization and equipment availability by 2008.

# IMT-2000 spectrum

## The current situation:

– IMT-2000 spectrum licensing has now taken place in approximately 40 countries.

– From a spectrum efficiency point of view, the best solution is to follow the ITU-R identification and implement ALL IMT-2000 technologies within WARC-92 bands.

– Implementing IMT-2000 technologies within IMT-2000 WARC-92 bands in a harmonized manner benefits users and operators alike by facilitating the economies of scale, availability of wide range of equipment and global roaming.

– Globally harmonized frequency bands below those already in use, e.g. in the spectrum range below 600MHz, should be allocated to terrestrial public mobile services to achieve cost-effective geographic extension of mobile coverage in lower population density areas, including and mainly in developing countries.

# 3G/UMTS: The chance for India

- **3G/UMTS "future-proofs" Indian mobile operators' existing investments in GSM, leveraging the enormous economies of an open system and the world's #1 choice.**
- **3G/UMTS offers significant future additional capacity in fresh radio spectrum at lower incremental cost, allowing Indian operators to support new customers and new services.**
- **The best gets better: standardisation roadmap for WCDMA provides a clear path for Indian mobile operators evolving to 3G/UMTS and beyond.**

# Conclusions

- **UMTS: India's best choice for 3G:**

  **– 3G/UMTS means high quality, mass market mobile multimedia communications at realistic cost.**

- **Don't miss out on a global market opportunity:**

  **– India can benefit by exporting its R&D plus software and applications developments skills to the enormous global marketplace that is enabled by 3G/UMTS.**

- **License soon within IMT-2000 spectrum bands:**

  **- Licensing in globally agreed spectrum bands for IMT-2000 harmonises India's mobile future with the rest of the world.**

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# For more information…

# www.umts-forum.org