3G/UMTS: An evolutionary path towards mobile broadband & personal Internet

An update on UMTS Forum activities

Regional Workshop for the Arab Region on Guidelines on the smooth transition of existing mobile networks to IMT-2000 for Developing Countries

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www.umts-forum.org

Summary

- **About the UMTS Forum – key areas of activity**
- **3G/UMTS update – services, terminals, offers, strategies**
- **Expanding the 3G vision**
- **Recent UMTS Forum studies**
- **Conclusions and recommendations for the Arab region**

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 evolutions, and to ensure its worldwide commercial success.**

Our publications

➢ **Since 1997, more than 40 reports on Spectrum & Regulation, 3G/UMTS vision, Customer behaviour, Market evolution & Forecasts, Technical studies & Implementation. Recent issues: Strategic Considerations for IMS – the 3G Evolution, Coverage Extension Bands for UMTS/IMT-2000 in the bands between 470-600 MHz, Magic Mobile Future 2010-2020…**

UMTS Forum Key Areas of Activity in 2005

Spectrum & Regulation

Studies and contributions on harmonisation of global spectrum and additional spectrum arrangements for IMT-2000 and its evolutions, in the perspective of European decisions and in preparation of WRC-07

In particular, the UMTS Forum has contributed to the development of the European decision harmonizing the frequency band 2500-2690 MHz for IMT-2000/UMTS and defining the channelling arrangements

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

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, CEPT, GSMA, 3G Americas, A3G Russia,…)
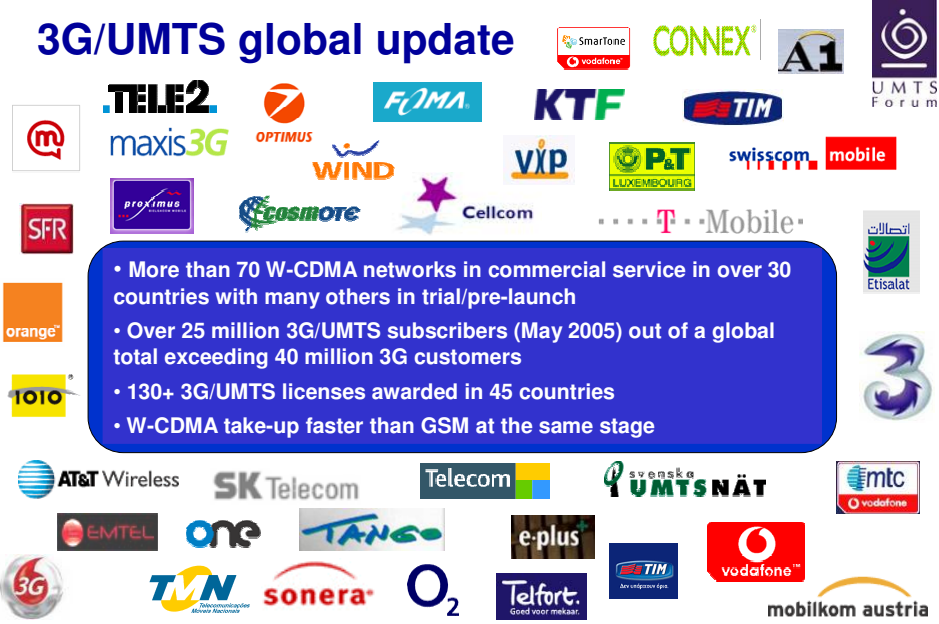
3G/UMTS update

- **Network launches**
- **Terminals**
- **Services**
- **Operator strategies**
- **3G/UMTS in context**

3G/UMTS global update

- **More than 70 W-CDMA networks in commercial service in over 30 countries with many others in trial/pre-launch**
- **Over 25 million 3G/UMTS subscribers (May 2005) out of a global total exceeding 40 million 3G customers**
- **130+ 3G/UMTS licenses awarded in 45 countries**
- **W-CDMA take-up faster than GSM at the same stage**

Global launch status

As of 26th of May 2005, there were 71 W-CDMA operators in 34 countries worldwide

EUROPE

country	operator	launch	market	country	operator	launch	market
Austria	mobilkom	Apr-03	both	Luxembourg	Tango (Tele2)	Jun-04	both
	H3G Austria	May-03	both		voxmobile	May-04	both
	Connect	Dec-03	both		LuxGSM (P&T)	May-04	both
	Tele.ring	Dec-03	both	Netherlands	Vodafone	Jun-04	both
	T-Mobile	May-04	business		KPN Mobile	Jul-04	both
Belgium	Proximus	May-04	business	Norway	Telenor	Dec-04	both
Croatia	VIPnet	Jan-05	business	Portugal	Vodafone	May-04	both
Denmark	H3G Denmark	Oct-03	both		TMN	Apr-04	both
Germany	Vodafone	May-04	both		Optimus	Jun-04	both
	T-Mobile	May-04	both	Poland	Polkomtel	Sep-04	both
	e-plus	Aug-04	both		PTC	Apr-04	both
	O2	Jul-04	both	Romania	MobiFon (Connex)	Apr-05	both
Finland	Telia sonera	Oct-04	both	Slovenia	Mobitel	Feb-04	both
	Saunalahti	Jan-05	both	Spain	Vodafone	May-04	both
	Radiolinja/Elisa	Nov-04	business		Telefonica Moviles	May-04	both
France	SFR	Jun-04	both		Amena	Oct-04	both
	Orange	Sep-04	both	Sweden	Hi3G Sweden	May-03	both
Greece	Vodafone	Jul-04	both		Vodafone	Feb-04	both
	Cosmote	May-04	both		Telia Sonera	Mar-04	both
	TIM	Jan-04	both		Tele 2	Jun-04	both
Ireland	Vodafone	Jul-04	both	Switzerland	Swisscom	Sep-04	both
Italy	H3G Italy	Mar-03	both	UK	H3G UK	Mar-03	consumer
	TIM	May-04	both		T-Mobile	Feb-04	business
	Vodafone	May-04	both		Orange	Jul-04	both
	Wind	Oct-04	both		Vodafone	Feb-04	both
					O2	Sep-04	business

ASIA-PACIFIC

country	operator	launch	market
Australia	H3G Australia	Apr-03	both
	Optus	May-05	business
Japan	NTT DoCoMo	Oct-01	both
	Vodafone KK	Dec-02	both
Malaysia	Maxis	Dec-04	business
	Telekom Malaysia	May-05	both
Hong Kong	H3G HK	Jan-04	both
	CSL	Dec-04	both
	Smartone	Dec-04	business
Singapore	SingTel mobile	Dec-04	both
	M1	Feb-05	consumer
South Korea	SKT	Dec-03	both
	KTF	Dec-03	both
Taiwan	Taiwan Mobile	May-05	both

REST OF THE WORLD

country	operator	launch	market
Bahrain	MTC Vodafone	Dec-03	business
Israel	Cellcom	Jun-04	both
Mauritius	Emtel	Nov-04	both
South Africa	Vodacom	Nov-04	both
USA	Cingular AT&T	Jul-04	both
UAE	Etisalat	Dec-03	business

Business = PC Card available // Both = Business +consumer launch(es)

Source: UMTS Forum, Sofrecom (23th may 2005)

GSA - EDGE OPERATORS WORLDWIDE - Status of deployments (16th May 2005)

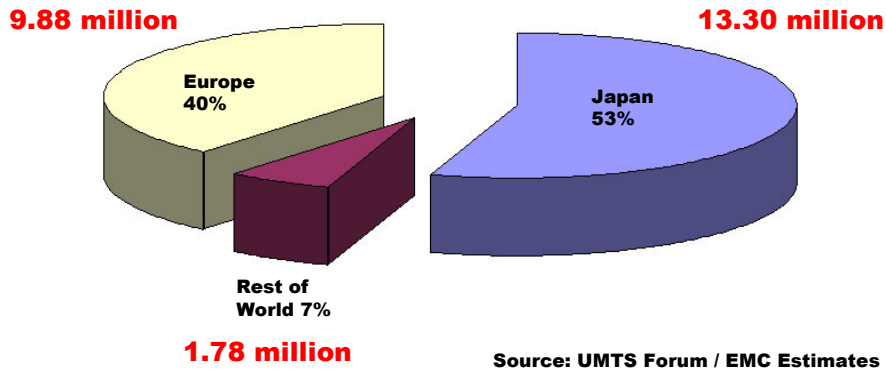◢ Operator that drives W-CDMA and EDGE deployments

ITU Regional Workshop
Damascus, 13-15 June 2005
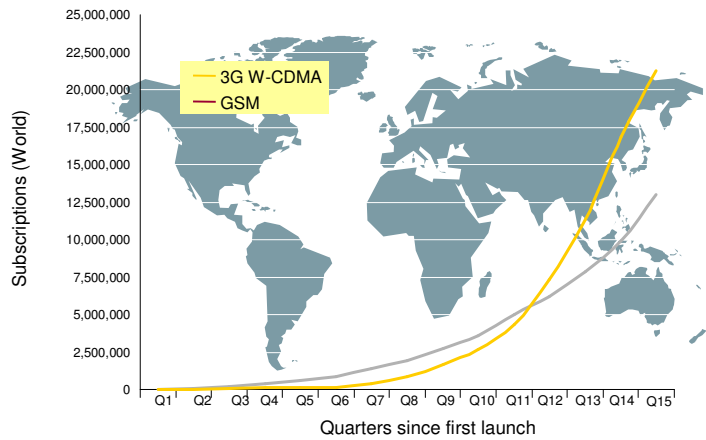

Worldwide W-CDMA subscriber base

WORLD TOTAL 24.96 million (End April 2005)

9.88 million

13.30 million

Europe 40%

Japan 53%

Rest of World 7%

1.78 million

Source: UMTS Forum / EMC Estimates

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Early GSM vs. W-CDMA Growth Comparison
Rapid W-CDMA subscriber growth

Subscriptions (World)

- 3G W-CDMA
- GSM

25,000,000
22,500,000
20,000,000
17,500,000
15,000,000
12,500,000
10,000,000
7,500,000
5,000,000
2,500,000
0

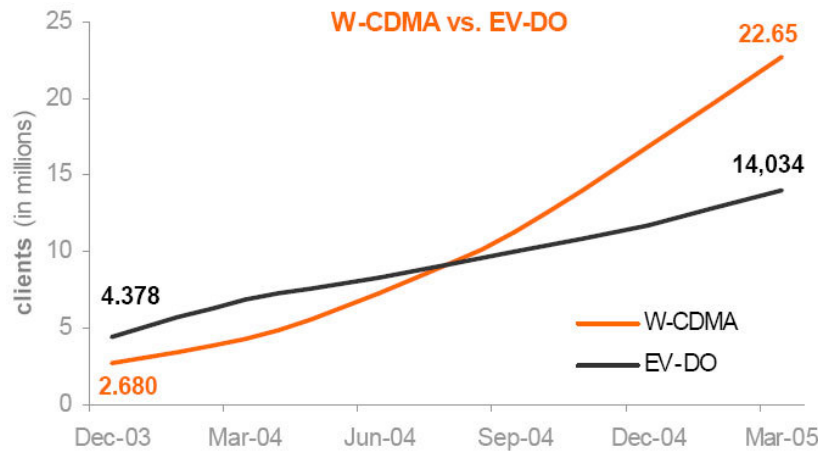Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15

Quarters since first launch

Source: Siemens

Status: March 2005

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W-CDMA growth outpaces EV-DO

W-CDMA vs. EV-DO

clients (in millions)

25

20

15

10

5

0

Dec-03   Mar-04   Jun-04   Sep-04   Dec-04   Mar-05

22.65
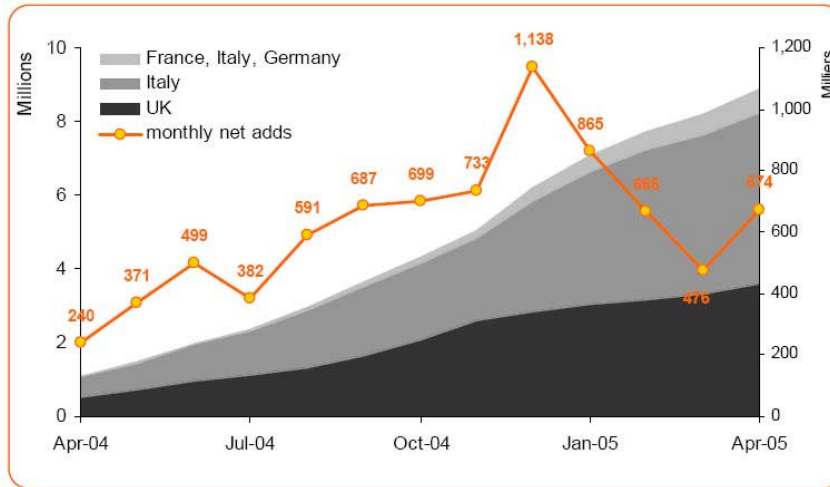
14,034

4.378

2.680

- W-CDMA
- EV-DO

Sources:
W-CDMA – EMC
EV-DO – operators, SOFRECOM

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European W-CDMA subscribers

Source : EMC Database, Sofrecom (May 2005)

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 Group	GSM	→	UMTS/ WCDMA
China Unicom	GSM/CDMA	→	to be confirmed
T-Mobile International	GSM	→	UMTS/ WCDMA
Orange SA	GSM	→	UMTS/ WCDMA
TIM Group	GSM	→	UMTS/ WCDMA
Telefonica (TEM + BellSouth)	GSM	→	UMTS/ WCDMA
Cingular / ATT Wireless	GSM/TDMA	→	UMTS/ WCDMA
NTT DoCoMo	PDC	→	UMTS/ WCDMA
Verizon Wireless	CDMA	→	CDMA2000
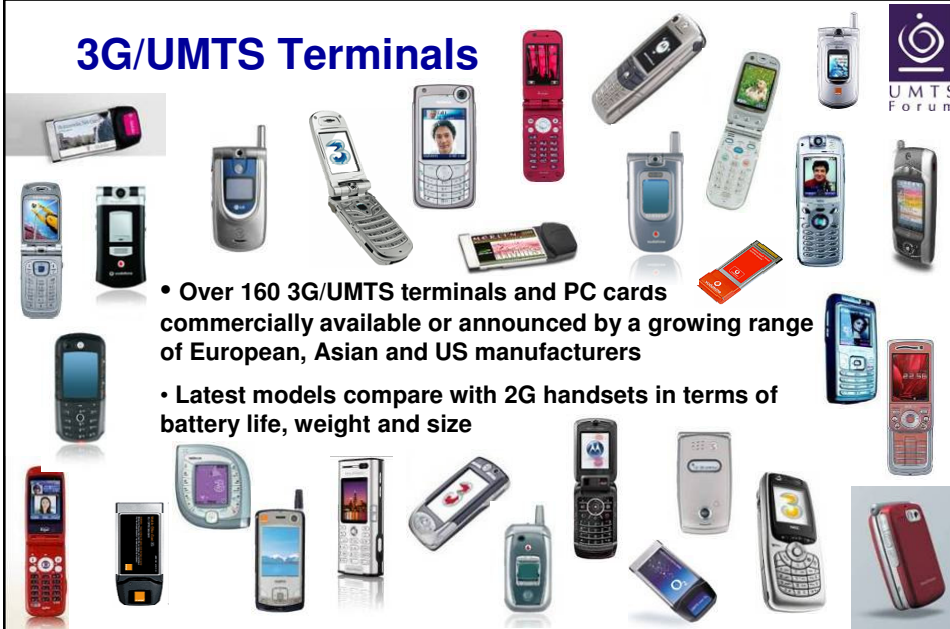
3G/UMTS Terminals

- **Over 160 3G/UMTS terminals and PC cards commercially available or announced by a growing range of European, Asian and US manufacturers**

- **Latest models compare with 2G handsets in terms of battery life, weight and size**

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A world of 3G/UMTS services

Information, entertainment, news, interactive games, video & movie clip downloads, high quality streaming video, video telephony and conferencing, mobile TV, video messaging, sports highlights, audio, ringtones, location-based services, mobile Internet & email, voice… *AND MORE*

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3G Operator Strategies
An integrated offering for business users

FRANCE
Orange/France Telecom offers "Business Everywhere" package, with seamless access to fixed/wireless broadband services via ADSL, Wi-Fi, 3G/UMTS and EDGE with one integrated bill.

FRANCE
SFR offers Vodafone's integrated 3G/Wi-Fi/GPRS service accessed via Mobile Connect Card

SWITZERLAND
Swisscom offers PC card access to three mobile broadband networks: UMTS, EDGE and WLAN

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3G Operator Strategies – targeting consumers

HONG KONG
CSL 1O1O offers "Integrated 3G" GPRS/EDGE/UMTS network with 'Infotainment' Channels – News, Finance, Music and Entertainment – accessed via Nokia 6680 videophone

News   Finance   Entertainment   Music

UK
"O2 Active" portal allows downloads or streamed news, sport, music and comedy videos plus 3D games, ringtones, wallpapers and info services

ITALY
"TIM Turbo" offers sport, TV channels, games, music, news, finance and more via UMTS/EDGE

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Recent European Developments
Fresh Offers, New Entrants and EDGE Rollout in 1H 2005…

SPAIN
April: Telefonica introduces mobile TV channel to Movistar 3G subscribers with streamed news

GERMANY
March: Vodafone expands its consumer offer with 500,000 downloadable music tracks plus mobile TV

ROMANIA
April: Connex offers UMTS coverage in 8 cities supported by choice of phones with introductory discounts

NETHERLANDS
April: Telfort launches EDGE PC card while readying its UMTS network for launch

AUSTRIA
January: mobilkom announces UMTS & EDGE offering to reach 95% POP by end '05

SWEDEN
January: TeliaSonera announces increased coverage to 90% POP through EDGE/UMTS rollout

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A look at Asia – Japan
Rapid adoption of mobile multimedia (April 2005)

NTT DoCoMo FOMA
WCDMA
12.24 m customers

Biggest ever increase in March 2005, due to new FOMA handset launches, including models priced competitively with 2G/PDC handsets

Source: TCA

KDDI AU
EV-DO
3.63 m customers

Continuing "WIN" growth thanks to enhanced handset line-up, flat rate price plans and full-track music download service

VODAFONE KK
WCDMA
1.059 m customers

Sharp increase during Q1 2005 due to introduction of competitively priced new handsets (hi- and lo-tier) plus unlimited flat rate access price plan

Source: TCA

Japan's W-CDMA subscribers now account for 14.3% of total customer base

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3G/UMTS in context
The complementary role of other technologies

- EDGE rollout continues, either as a substitute for 3G/UMTS or as 'fill-in' to complement operator's W-CDMA coverage
- May 2005: 82 EDGE networks commercially deployed in over 50 countries (Source: GSA/EMC)
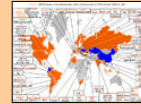
- Now more than 60,000 Wi-Fi hotspots worldwide
- Interoperability agreements: e.g. Orange France and SFR share access to 7,000 hotspots (90% of total)
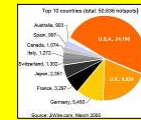
- Joint development partnerships and initial trials of WiMAX broadband wireless access announced
- Customer trials from 2006?

- HDSPA partnerships and trials continue…
- E.g. Feb 2005 Vodafone KK began Tokyo field trials at 2GHz
- T-Mobile and mobilkom independently demonstrate HSDPA in Germany and Austria

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Expanding the 3G vision

- 3G/UMTS Technology roadmap
    - HSDPA
    - IMS
- Other complementary technologies

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3G/UMTS service evolution roadmap
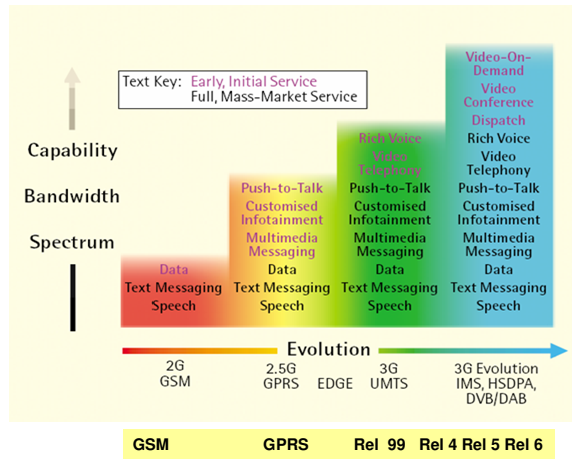
Future enhancements to UMTS (3GPP Release 5 & 6):

• HSDPA (High speed downlink packet access) increases downlink speeds to 14.4 Mbps, and 5.8 Mbps for HSUPA (uplink)

• IP multimedia subsystem (IMS) provides advanced IP capabilities for mobile multimedia services

• Multimedia Broadcast / Multicast Service (MBMS)

• Interworking with other networks such as DAB and DVB will take advantage of content offerings that can be delivered efficiently to mobile 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

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3G Operator Evolution Options
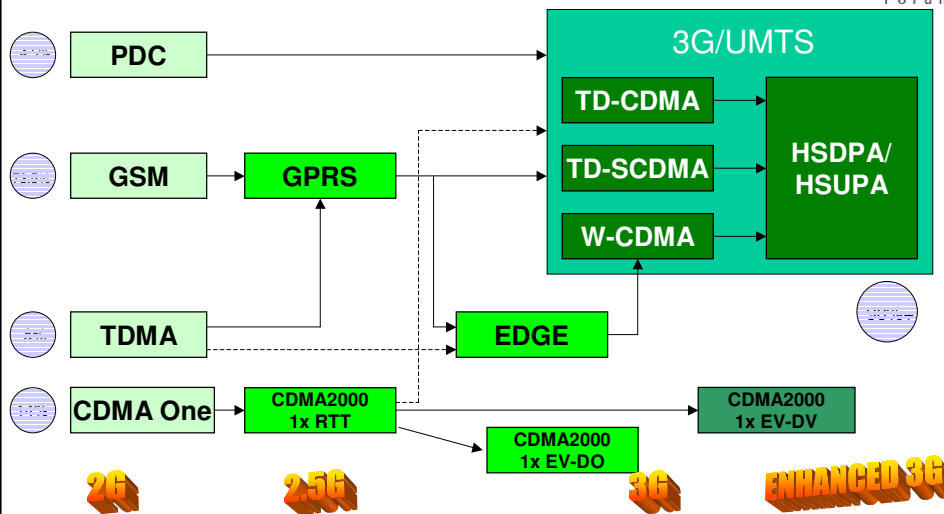
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HSDPA

The next step in evolution of the 3GPP air interface

HSDPA = high speed mobile broadband, enabling a wide variety of high bandwidth multimedia services including:

- high quality streaming video,

- fast downloads of high resolution images and large files,

- interactive e.mails & gaming,

- telematics,…

Compared with WCDMA, HSDPA:

1. increases throughput (2→14.4 Mbps)

2. reduces latency

3. increases data capacity up to 5x in dense urban environments (micro-cells)

HSDPA
A new paradigm for packet data

• **Integrated voice on a dedicated channel (DCH)**

• **High Speed Data (up to 14.4 Mbps) on downlink shared channel on the same carrier (HS-DSCH) and can be deployed in both FDD & TDD modes**

HSDPA introduces:

• Dynamic adaptive modulation & coding, multicode operation,

• Fast scheduling of packet data, fast physical layer retransmission of data packets.

…This is accomplished by incorporating many of the key scheduling & control processes at the base station – as opposed to the Radio Network Controller (RNC) – and thus closer to the air interface.

HSDPA System Architecture

AMC = Adaptive Modulation and Coding
MAC = Medium Access and Coding

Core Network

Radio Network Controller (RNC)

To other RNCs

Base Station (NodeB)

Fast Layer1 Scheduling, AMC and H-ARQ

To other NodeBs

In UMTS Release 99, entire MAC resides in RNC (i.e. slow scheduling and feedback)

Fast Layer1 ACK/NACK and Channel Quality Feedback (CQI)

Terminal (UE)

In Release 5 HSDPA, key MAC functions (MAC-HS) reside in the NodeB (i.e. fast scheduling and feedback)

Upgrading from Release 99 WCDMA to HSDPA is smooth since – from an air-interface perspective – HSDPA can coexist on the same RF carrier with Rel.99 WCDMA; only Node B (base station) is affected.

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IMS (IP Multimedia Subsystem)

✓ **REAL TIME…**

✓ **PERSON TO PERSON…**

✓ **MULTIMEDIA…**

✓ **MULTIPLE, SYNCHRONISED SERVICES**

• **Simultaneous delivery of multiple real-time services**

• **An enhanced person-to-person communication experience with interactivity and integration of services**

• **A standardized solution across fixed and mobile networks**

• **A cost-effective enabling technology for service differentiation and new revenue opportunities**

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Why IMS?

- **IMS provides a flexible architecture for the rapid deployment of innovative features. It enables users to communicate with video/voice/text via a single client on the handset**

- **Vision for the IMS core network is maximum flexibility and independence from the access technologies. This is accomplished in part via the separation of access, transport and control**

- **IMS enables support for IP multimedia applications within the 3G/UMTS system**

- **IMS enables mobile operators to offer their subscribers multimedia services, built upon Internet applications, services and protocols, including SIP (Session Initiation Protocol), which is used to manage IP multimedia sessions**

IMS separates RAN, transport and control functions

- **The Radio Access Network provides the over-the-air connection from user equipment to core network plus low level mobility management**

- **The Packet Core Network provides transport for signaling and bearer plus high level mobility management**
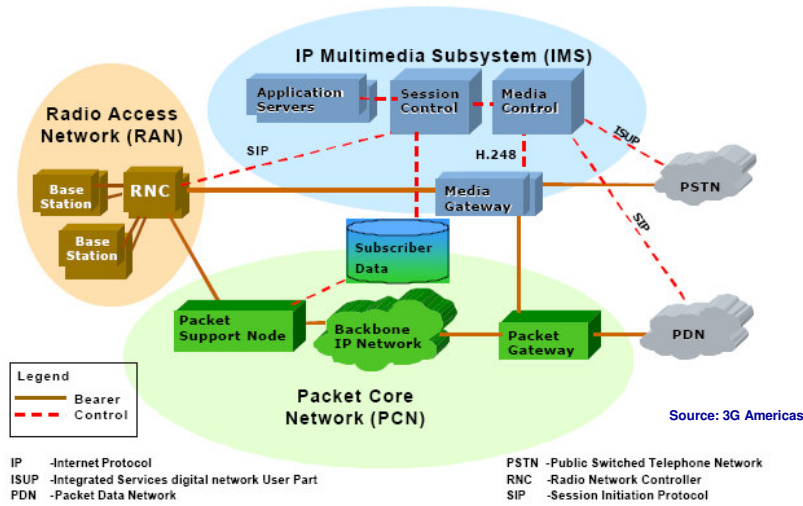
- **The IMS provides control of applications, plus control of session and media conversion.**

With IMS, media control, session control and application control are separated as distinct entities.

Upgrading to IMS

IP Multimedia Subsystem (IMS)

Application Servers — Session Control — Media Control

Radio Access Network (RAN)

Base Station — RNC — Base Station

SIP — H.248 — ISUP

Media Gateway — PSTN — SIP

Subscriber Data

Packet Support Node — Backbone IP Network — Packet Gateway — PDN

Packet Core Network (PCN)

Legend
— Bearer
--- Control

Source: 3G Americas

IP	-Internet Protocol	PSTN -Public Switched Telephone Network
ISUP	-Integrated Services digital network User Part	RNC -Radio Network Controller
PDN	-Packet Data Network	SIP -Session Initiation Protocol

Upgrading to IMS separates radio access, transport and control elements, with the IMS handling control of applications, control of sessions, and media conversion

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IMS: The Platform for Convergence

- **IMS offers the platform for 3G evolution and mobile-fixed convergence**
- **Mobile SIP-based IMS is at the heart of both 3GPP (GSM evolved) and 3GPP2 (CDMA evolved) networks…**
- **… so this is not simply a European view …**
- **… tomorrow's _entire_ multimedia mobile world will be IMS-based**
- **SIP based IMS means IP end-to-end:**
  - **Applications and services can be supported seamlessly across all networks**
- **SIP is also at the heart of the Internet**

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Tomorrow… mobile broadcast (DVB-H)

- **Complementary to EDGE and 3G/UMTS, DVB-H brings "broadcast" services to handheld devices:**
  - **From 'one-to-one' to 'one-to-many'**
  - **Simultaneity, speed and capacity**

- **What mobile operators bring to DVB-H:**
  - **True interactivity via cellular networks**
  - **Access to a new range of customers and their mobility usage**
  - **Controlled content distribution to mobile users**
  - **Mass market distribution of UMTS/DVB-H handsets**

Recent UMTS Forum studies

- Market & Services for IMT-2000 and beyond

- Coverage Extension Bands for UMTS/IMT-2000

Market & Services for IMT-2000 and beyond

UMTS Forum Report 37 – published April 2005

TITLE: "Magic Mobile Future 2010-2020"

DISTRIBUTION: UMTS Forum membership, ITU, EC

OBJECTIVE: Assist ITU process for the preparatory work of WRC-07 under agenda item 1.4, concerning long term market forecasts needed to determine spectrum requirements for future development of IMT-2000 and systems beyond IMT-2000.

BACKGROUND: Builds on previous UMTSF market studies to provide forecasts for the next decade (2010-2020) on the evolution of penetration rate (including machine-to-machine applications), expected services and evolution of usage of these services.

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Market & Services for IMT-2000 and beyond

Report #37 'Magic Mobile Future 2010-2020' - KEY MESSAGES

• Ageing population, labour force evolution and improved education, balanced by increasing concerns regarding issues such as security

• Access to broadband connectivity and mobile services will continue to rise; technical breakthroughs will see a proliferation of smaller, smarter devices and interworking between network technologies

• Emerging mobile services will include object identification and sensor networks; health monitoring; location discovery; digital content and entertainment; m-payments, m-government and m-education

• Two disruptive scenarios:

   •N°1: "Low price, voice – dominated growth"

   •N°3: "Pervasive data – driven growth"

• Most likely scenario N°2 "Balanced, Broad-based Growth", with mobile delivering compelling anytime, anywhere new services. Businesses will integrate mobile deeply into their operational practices as quality and interoperability concerns no longer prevail. Other communications industry service providers are effectively converged into mobile-led companies, while content and application providers find a healthy, growing marketplace.

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Report #37: key findings

Total Daily Traffic by Service Category
Representative Western European country 2020

Location Based Services
3%
(160 Tbytes)

Simple plus Rich Voice
23%
(1 338 Tbytes)

Mobile Intranet/Extranet Access
27%
(1 523 Tbytes)

MMS (including Telemetry)
14%
(804 Tbytes)

Mobile Internet Access
21%
(1 217 Tbytes)

Customised Infotainment
12%
(701 Tbytes)
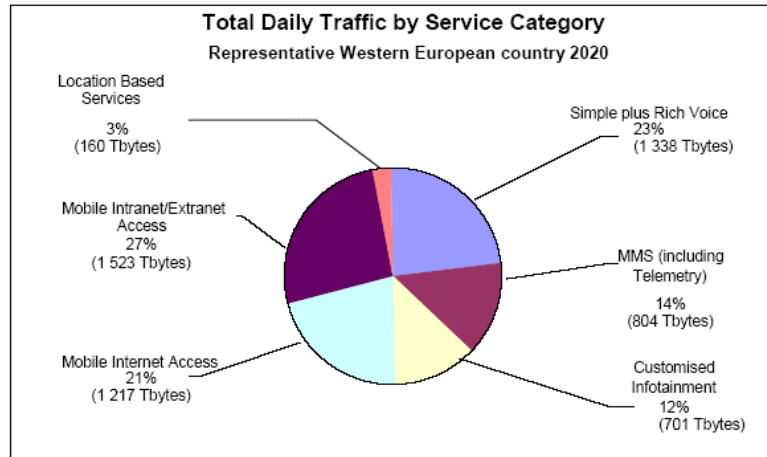
From 2012 to 2020, total daily traffic in a typical Western European country will grow from 250 Tbytes to almost 5750 Tbytes – an increase of 23x

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Recent UMTS Forum Reports

Report 38 – published February 2005

TITLE: "Coverage Extension Bands for UMTS/IMT-2000 in the bands between 470-600 MHz"

DISTRIBUTION: UMTS Forum membership, ITU, CEPT

OBJECTIVE: Provide input to ITU Regional Radiocommunication Conference (RRC) – 2nd session to be held in May/June 2006 – topic on global harmonisation of frequencies suitable for IMT-2000 coverage extension bands

BACKGROUND: RRC-06 has a mandate to develop an agreement concerning digital broadcasting services within band III (174-230 MHz) and band IV/V (470-862 MHz) frequencies. There is an opportunity to bridge the 'digital divide' through the use of the lower bands between 470-600 MHz for IMT-2000 services.

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Recent UMTS Forum Reports

Report 38: 'Coverage Extension Bands for UMTS/IMT-2000 in the bands between 470-600 MHz'

KEY MESSAGES:

• Harmonised spectrum can provide better coverage for UMTS/IMT-2000 in large areas of low population density. Indeed, lower frequency bands could provide cost effective coverage in such regions where capacity limitations are not typically a problem.

• Digital terrestrial broadcasting switchover will offer a more efficient use of frequency resources. After analogue broadcasting switch-off, a certain amount of spectrum - referred to as the 'digital dividend' - will be released, making possible the implementation of new services.

• The global success of GSM and UMTS systems is based on a harmonised approach that has allowed economies of scale and global roaming. There is therefore a need to concentrate on a broadcasting plan that provides the possibility of a harmonised digital dividend.

Comparison of number of base station sites at 500 MHz, 900 MHz and 2 GHz for various 3G services
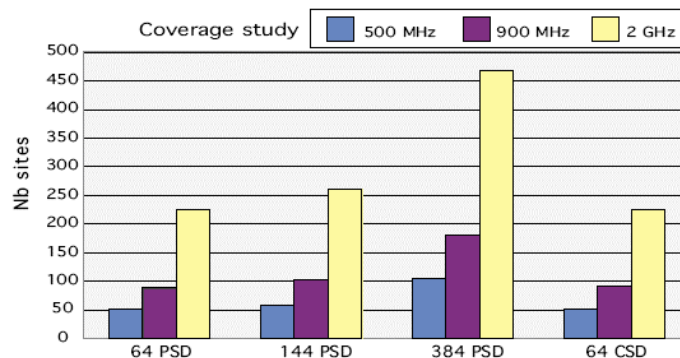
The band 470-600 MHz allows UMTS/IMT-2000 operators to extend coverage of their network in rural areas at significantly lower cost. UMTS/IMT-2000 operators would need to deploy some five times more base station sites at 2 GHz compared to 500 MHz and more than two times more base stations sites at 900 MHz compared to 500 MHz.

Report 38 recommendations

Recommendation 1

ITU RRC should develop the new digital broadcasting plan so that the digital dividend, resulting from digital switchover, is harmonised within the band 470-600 MHz. The UMTS Forum supports to use this harmonised digital dividend, or parts of it, for Mobile Services.

Recommendation 2

The UMTS Forum supports identification of a new Coverage Extension Band on lower frequency bands for IMT-2000, to cover part of WRC-07 Agenda Item 1.4 and its related Resolution 228. This new Coverage Extension Band should be allocated on a primary basis to Mobile Service in all three ITU Regions and identified for terrestrial IMT-2000.

Recommendation 3

The UMTS Forum considers that 2x30 MHz of paired spectrum would provide a viable minimum Coverage Extension Band for UMTS/IMT-2000.

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Lessons learned so far in Europe…

- **Market growth for 3G/UMTS depends on ALL elements (network coverage and quality, terminals, services, customer care…) being successfully in place.**

- **High licensing costs in some territories have imposed a major financial burden on operators to deploy 3G/UMTS. Further licensing should thus be conducted in a way that creates a fertile market rather than placing undue constraints on operators to launch services.**

- **Large-scale availability of attractive, competitively priced terminals is a key enabler for market acceptance of 3G/UMTS.**

- **Operators must offer services to customers that provide a smooth evolution from their current 2G experience.**

- **Appealing data and multimedia services are demonstrated to increase operator ARPUs: customers love 3G/UMTS when they experience it for themselves!**

- **Operators must assess the role of other complementary technologies (WiFi, WiMAX etc) and future enhancements to 3G/UMTS as part of their overall service proposition to customers.**

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MENA – the mobile landscape

TUNISIA	ISRAEL	LEBANON	KUWAIT	IRAN
TUNISIANA (Orascom & Wataniya) * TUNICELL (Tunisia Telecom) Population: 9,974,722 Mobile rate: 20% Fixed lines: 11.67%	Cellcom Partner (Orange) Pelephone MIRS Communications Population: 6,199,008 Mobile penetration rate: 118.7% Fixed lines: 48.5%	LibanCell Cellis Population: 4,558,500 Mobile rate: 19.6% Fixed lines: 14.9%	MTC-Vodafone Watanyia Population: 2,455,200 Mobile rate: 87.2% Fixed lines: 19.8%	* TC1 TRI Isfahan Population: 69,018,924 Mobile rate: 5.5% Fixed lines: 21.1%

ALGERIA
* MOBILIS (AlgerTelecom)
DJEZZY (Orascom)
NEDJMA (Wataniya)
Population: 32,129,324
Mobile. rate: 15%
Fixed lines: 6.85%

BAHRAIN
* Batelco
MTC-Vodafone
Population: 677,886
Mobile rate: 96.7%
Fixed lines: 27.4%

QATAR
Qatar Tel (Q-Tel)
Population: 840,290
Mobile rate: 63.9%
Fixed lines: 22%

MOROCCO
IAM (Vivendi Universal)
Medi Telecom (Telefonica Moviles Portugal Telecom)
Population: 32,209,101
Mobile rate: 24%
Fixed lines: 3.8%

UAE
* Etisalat
Population[1]: 4,276,000
Mobile rate: 89.1%
Fixed lines: 26.6%

Shareholders
* State-owned
MTC
2Watanyia
Orascom
Etissalat
Orange

Mobile penetration rate
<10%
10-20%
20-35%
35-60%
>60%

OMAN
* OmanTel (Oman Mobile)
Population: 2,903,165
Mobile rate: 28.5%
Fixed lines: 7.4%

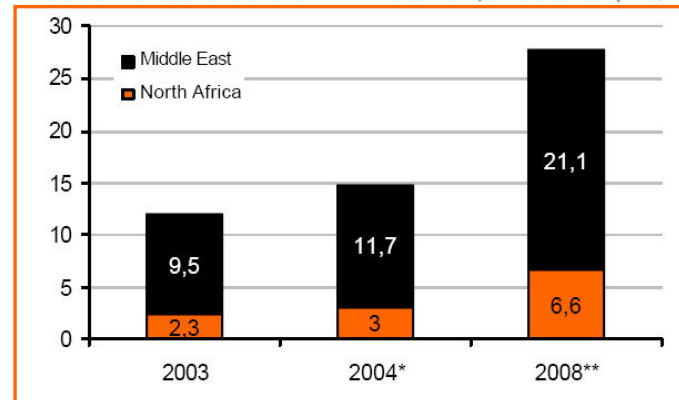| LIBYA	EGYPT	JORDAN	IRAQ	SAUDI ARABIA
* MTC (state owned) * Libyana (state owned) Population: 5,631,585 Mobile rate: 6% (est.) Fixed lines: 13.3%	MOBINIL (FT & Orascom) VODAFONE Population: 76,117,421 Mobile rate: 8% Fixed lines: 11.5%	JMTS (Fastlink) MobileCom Xpress Umniah Population: 5,437,800 Mobile penetration rate: 31% Fixed lines: 11.4%	AsiaCell AtheerTel Orascom Population: 25,374,691 Mobile rate: 6.3% Fixed lines: 2.7%	* STC (al Jawal) Ettihad Etisalat (Mobily) Population: 23,152,500 Mobile rate: 40.8% Fixed lines: 15.1%

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A growing market

Trends in MENA mobile service revenues, 2001-2008 (US$bn)

- Middle East
- North Africa

Year	North Africa	Middle East
2003	2.3	9.5
2004*	3	11.7
2008**	6.6	21.1

Source: IDATE (* estimate ** forecast)

- **MENA mobile market anticipated to more than double between 2004 & 2008**
- **Growth in terms of volume and subscribers**

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Towards 3G – country status

Middle East	Technology	3G status	Comments
Bahrain	GSM / EDGE	MTC-Vodafone EDGE / WCDMA (Dec-03) Batelco deploying EDGE / WCDMA	No launch date released for Batelco
Israel	GSM / GPRS CDMA iDEN	Peplephone CDMA 2K EV-DO (September-04) Cellcom WCDMA (June-04) Partner WCDMA (December-04)	MIRS operates an iDEN network. No information released about 3G upgrade
Jordan	GSM iDEN	Mobilcom EDGE in deployment	Fastlink has applied for a 3G licence
Kuwait	GSM/EDGE	MTC-Vodafone EDGE (end-04) WCDMA trials Wataniya EDGE launch (March-05)	MTC & Motorola 3G trials
Qatar	GSM	Roll-out WCDMA (end 2005)	Monopoly
Saudi Arab	GSM	Etilsalat EDGE trials (March-05) WCDMA in deploylment	STC state owned is autorisied to deploy a 3G network
UAE	GSM	Etilsalat WCDMA (December-04)	Monopoly
North Africa	**Technology**	**3G status**	**Comments**
Marrocco	GSM	Call bid 3G 24 february 2005. 2 licences for current WCDMA operators. Another 3G WLL to be awarded	To be granted in June 2005
Algeria	GSM/EDGE CDMA WLL	Huawei building a CDMA WLL network for Mobilis (Alger Telecom) Orascom EDGE roll out	Licences to be awarded in 2007
Tunisia	GSM	Experimental 3G network for the ITU's 2nd phase of the World Summit on the Information Society	Commercial services to be launched during 2H 05
Lybia	GSM	Alcatel to deliver GSM/EDGE solution and WCDMA	Monopoly
Egipt	GSM CDMA 2000 1x WLL	Telecom Egipt deploying CDMA 2000 WLL Mobile 3G licences to be awarded from 2006 on	Telecom Egypt is moving to access the mobile market

Sources: operators / Regulation Authorities

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Selected 3G/UMTS operator focus
Examples of growth strategies in Arab region

ETISALAT

- Exploring new value-added service options to attract customers
- Enhanced offering will potentially include upgraded content, MMS and other new features
- Feasibility studies currently underway: launch of new services expected in 2005

MTC-Vodafone

- 3G roaming agreements signed with seven global mobile operators in Middle East and Asia
- Enables automatic non-voice roaming for customers in UAE, Singapore, Hong Kong and Japan

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The Arab Region – preparing for 3G/UMTS

• The Arab Region has already entered the mobile broadband world with EDGE (Algeria,Bahrain, Jordan, Kuwait) and 3G/UMTS (Bahrain, UAE)

• With the timely licensing and introduction of 3G/UMTS, the region will have the opportunity to maintain alignment with the GSM/UMTS world and enjoy the benefits of:

- greater economies of scale
- simplified international roaming
- IPR export opportunities for services and applications
- wider choice of cost-effective terminals

Arab region's operators, end users and equipment manufacturers will all benefit from 3G/UMTS

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For more information…

www.umts-forum.org

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