3G/UMTS Evolution: towards a new generation of broadband mobile services – Perspectives for the Arab Region

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Summary

- About the UMTS Forum
- 3G/WCDMA/HSPA worldwide market update
- From 2G/GSM to 3G/WCDMA/HSPA – cost-effective steps
- Towards mobile and wireless broadband:
  - UMTS/HSPA and Fixed Wireless Access complementary technologies (WiFi, WiMAX,…)
  - A look to the future: 3G Long Term Evolution (LTE)
- Perspectives for the Arab Region

ITU-D/ITU-T Seminar on Standardization & Development of NGN for the Arab Region
29 April-2 May 2007, Manama, Bahrain

About The UMTS Forum

The UMTS Forum is an international, cross-sector industry body comprising operators, manufacturers, regulators, application developers, research organisations and IT industry players.

OBJECTIVES

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

- by expressing a strong industry voice promoting 3G/UMTS technology and its evolutions through lobbying and promotional actions globally
- by forging dialogue between operators, manufacturers, administrations & regulators, and other market players that can ensure commercial success for all
- by providing market knowledge to aid rapid development and uptake of new services and applications

To provide practical support to industry, administrations and policy-makers:

- by offering guidance to governmental and financial communities, providing marketing input to technical standardization bodies (the Forum is a Market Representation Partner of 3GPP), and advising on spectrum requirements both for the present and future 3G systems
- through its membership of the three sectors of ITU, in the activities of which it participates regularly - such as the ITU-R WP8F – in view of preparation for the next World Radio Conference 2007 (WRC-07)

The UMTS Forum serves the interests of all its members through educational and promotional activities in its role as the voice of the 3G mobile market.

UMTS Forum Key Focus Areas

Work-plan 2007 in summary

Vision, Future Research & Market	Spectrum & Regulation	Technical Issues & Implementation
Evolution of 3G/UMTS	Global spectrum and spectrum arrangements for UMTS/IMT-2000 and its evolutions	Complementary technologies (mobile, Broadband Wireless Access...)
Services & Applications	Preparations for WRC-07	Mobile TV
Market forecasts, customer perspective and trends	Advice to industry and administrations on 3G licensing	3G standardisation and support to 3GPP
Relationships with international bodies (ITU, EC, CEPT/ECC, ETSI...)		
Key growth markets action plan		
Relationships with international media and financial community		
Visibility and participation at conferences, exhibitions, seminars and workshops		

The mass market embraces 3G/UMTS

More than **180 million** 3G subscribers worldwide,

including over **120 million** 3G/UMTS subscribers

More than **2** times as many UMTS/W-CDMA subscribers as CDMA2000 EV-DO worldwide

Over **160** W-CDMA networks launched in **70** countries,

and around **200** EDGE networks in **105** countries…

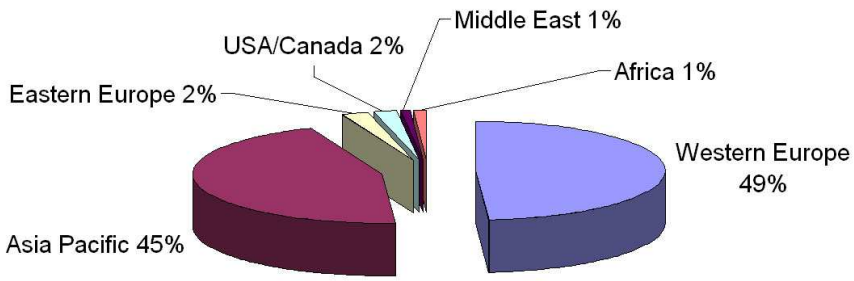
Over **100** HSDPA networks launched commercially

Over **900** W-CDMA/HSDPA devices launched

Industry sources including Wireless Intelligence, April 2007

A regional view

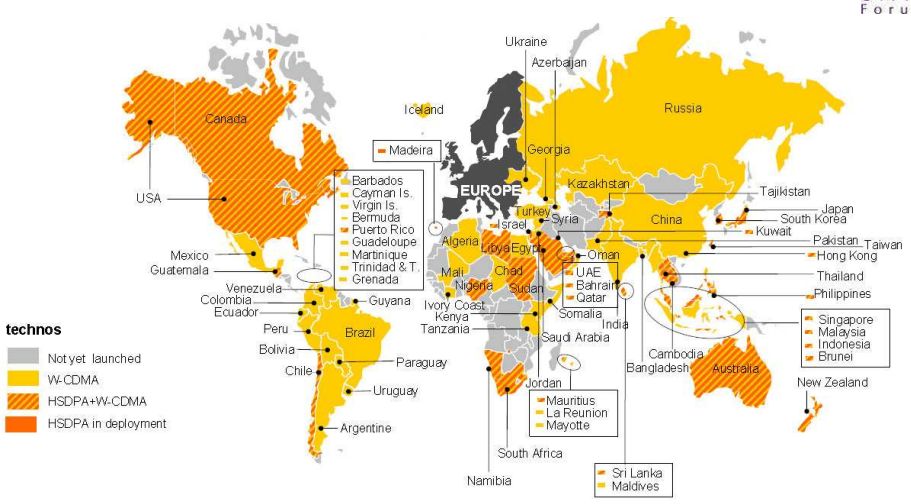
W. Europe and Asia Pacific largest W-CDMA markets



Total global W-CDMA subscriber base: 120 million (April 2007)

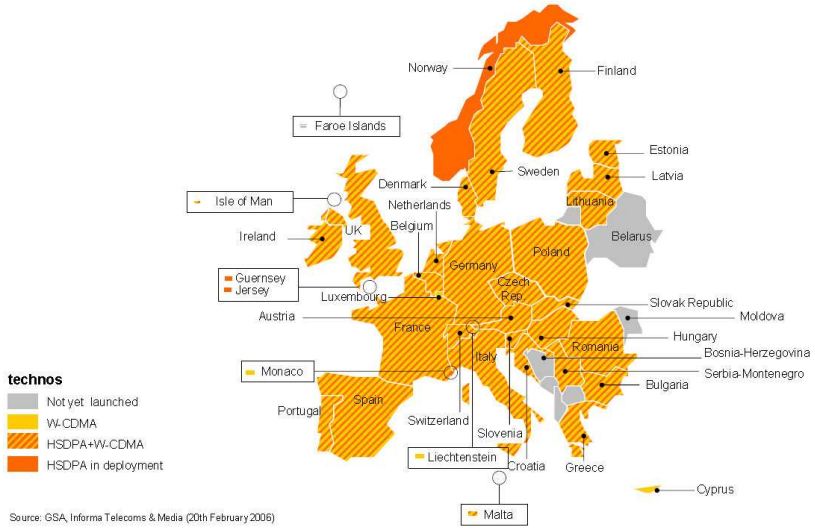
Source: Wireless Intelligence

HSDPA and WCDMA: Global deployments



Source: GSA, Informa Telecoms & Media (20th February 2006)

European regional focus: HSDPA and WCDMA deployments



Source: GSA, Informa Telecoms & Media (20th February 2006)

3G/UMTS Terminals

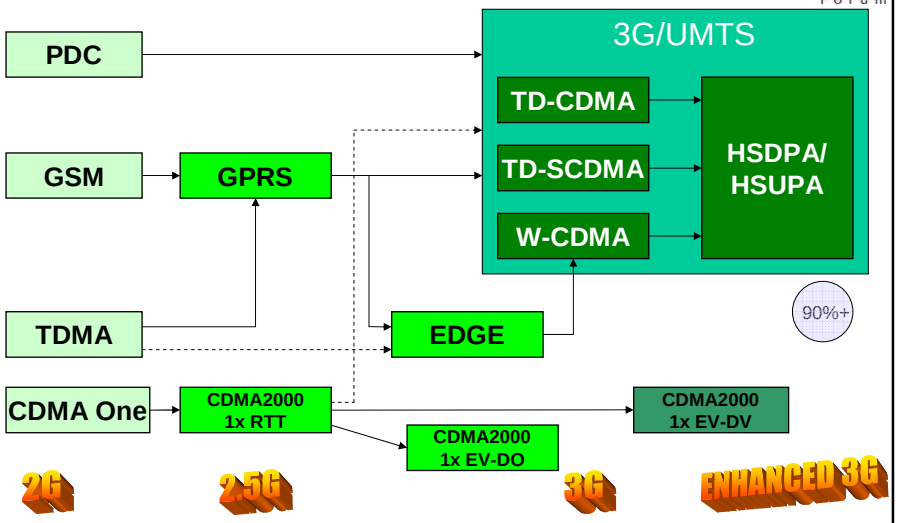
- April 2007: Over 900 3G/W-CDMA/HSPA terminals (handsets and PC cards) commercially available by a growing range of European, Asian and US vendors
- Latest models compare with 2G handsets in terms of battery life, weight and size

Growth driven by an improved customer experience

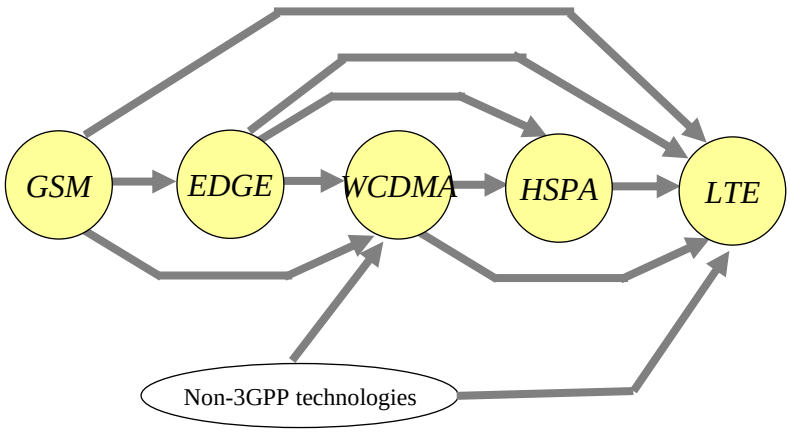
Increased 3G/UMTS market uptake driven by:

- Increased choice of terminals
- Smaller size and lower weight
- Improved battery life
- Reduction in entry cost (e.g. Christmas promotional offers by operators)
- Strong customer incentives through attractive tariff plans (e.g. pre-pay and fixed-price packages) – often aligned with 2/2.5G pricing
- Better customer experience through improved network coverage

3G Operator Evolution Options



Many Upgrade Paths



From GSM to GSM/UMTS
The efficient path to 3G

- **For GSM operators, UMTS offers a smooth migration from 2G to 3G**
  - **Dual mode mobile stations**
  - **Core Network common to GSM and UMTS**
  - **Reuse of 2G services**
- **Since MAP is common to GSM and UMTS, the success of GSM roaming can be kept and extended**
  - **UMTS subscribers will benefit from the GSM foot print + Japan**

3G/UMTS: The benefits to operators

➔ 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 gives 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 allows operators to add additional network capacity at a cost up to 8 times lower than providing incremental 2G capacity. This gives operators the opportunity to reduce the proportion of investments in relation to total turnover**

➔ Increase in Revenues

• **3G/UMTS drives ARPU: 3G customers at NTT DoCoMo in Japan spent €21 each month more than DoCoMo's 2G customers, i.e. an ARPU of €65 for 3G compared with €44 for 2G [Sept. 2005] Average 3G customers in the UK also spent €21 each month more than 2G customers, i.e. an ARPU of €64 for 3G compared with €43 for 2G [Sept. 2005]**

HSDPA (High Speed Downlink Packet Access)

The next step in evolution of the 3GPP air interface

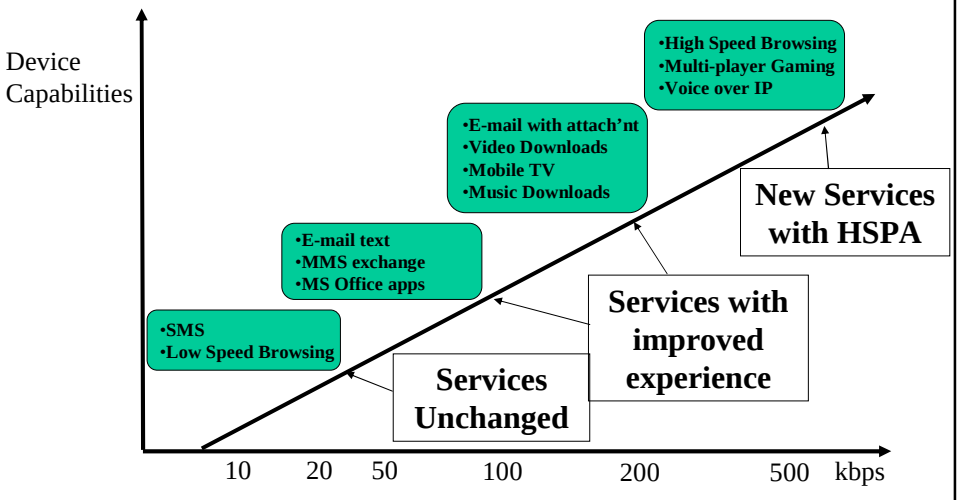
HSDPA = high speed mobile broadband, enabling a wide variety of high bandwidth multimedia services including:

- high quality streaming video,
- fast downloads of high resolution images and large files,
- interactive e-mails & gaming,
- telematics,…

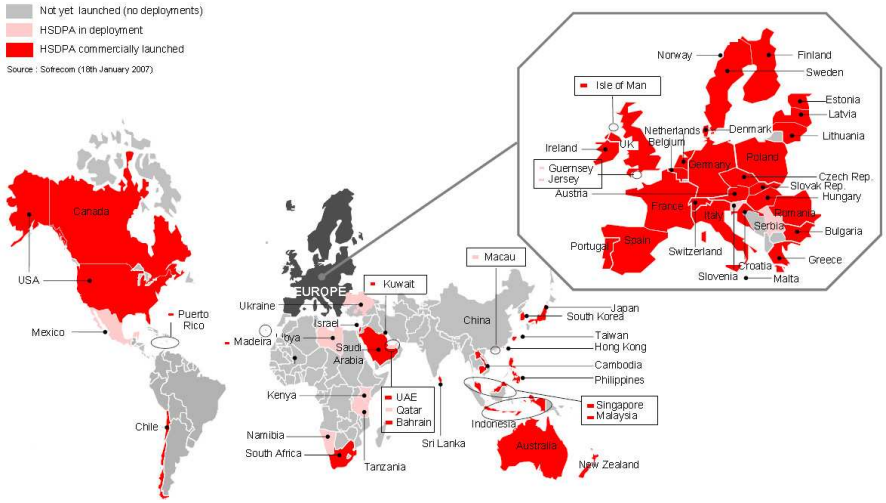
Compared with WCDMA, HSDPA:

1. increases throughput (2→14.4 Mbps): total and average per user
2. reduces latency
3. increases data capacity up to 5x in dense urban environments (micro-cells)

HSPA Service Impact



HSDPA: Global deployment status



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HSDPA: Now a market reality

- 100+ HSDPA networks already in service
- 50+ HSDPA networks planned, in trial or in deployment…

EUROPE

- Orange France launched September 06
- T-Mobile Germany-Austria & Hungary launched March 06 & May 06
- Mobilkom Austria launched Jan 06
- H3G Italy launched Feb. 06
- Amena (Spain) launched June 06
- Vodafone Germany-Portugal & Italy-Spain-UK-Romania launched Mar. 06 & June 06
- SFR (France) launched June 06
- Optimus Portugal launched April 06
- Elisa Finland & Estonia launched April 06
- Swisscom Switzerland launched Mar. 06
- TIM (Italy) launched May 06
- Mobiltel Bulgaria launched March 06
- Eurotel Czech Rep. launched Apr. 06
- Cosmote Greece launched June 06

ASIA PACIFIC

- NTT DoCoMo (Japan) launched September 06
- SmarTone Hong Kong launched June 06
- SKT & KTF Korea launched May & July 06
- Dialog Telecom Sri Lanka launched August 06
- TIME dotCom & Celcom (Malaysia) June 06
- Smart Com & Globe (Philippines) April 06

MIDDLE EAST / AFRICA

- Wataniya Kuwait launched Feb. 06
- Etisalat UAE launched April 06
- MTN & Vodacom (RSA) launched March 06
- Mobily Etisalat & STC (Saudi Arabia) June 06

NORTH AMERICA

- Cingular AT&T US launched Dec 05
- Rogers Wireless Canada launch Nov 06

…plus HSUPA launches from February 2007

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HSDPA already live in emerging markets!

Kuwait's number 2 cellular operator Wataniya Telecom has launched the Middle East's first HSDPA network.

• Enables customers to access the Internet and obtain audio and video services, with initial speeds ranging between 1 Mbps and 2 Mbps / Accessed initially via PC data card.

• Additional upgrade to the operator's network (provided by Nokia) creates an EDGE layer, supporting mobile data service provision outside areas of WCDMA-based 3G coverage.

MTN Group and Vodacom have launched commercial HSDPA services to users in South Africa, initially in Johannesburg, Bloemfontein, Cape Town and Port Elizabeth.

Both provide, for consumers, mobile & interactive TV, video calls & video mail, multiplayer gaming, sport, music (from "MTNLoaded" portal) and information sharing, as well as, for business & SME, internet-based email account, SMS and connect to the corporate VPN

Making the business case (1)

HSDPA reduces network delivery costs per bit

HSDPA increases data capacity of 3G/UMTS networks by a factor of 5, offering a reduced network cost for data services. *At maximum use of the network,* Radio Access cost per Mbyte in USD (source Analysis Research):

- **GSM/GPRS: 0.07**
- **EDGE: 0.04**
- **UMTS/WCDMA: 0.02**
- **UMTS/HSDPA: 0.01**

Smooth, seamless upgrade at incremental cost

• Implementation of HSDPA is achieved via a simple overlay, which in most cases is only a software upgrade in the RAN with no additional sites, plus use of same carrier for voice and data.

• HSDPA can be smoothly implemented in co-existence with already deployed UMTS/WCDMA networks.

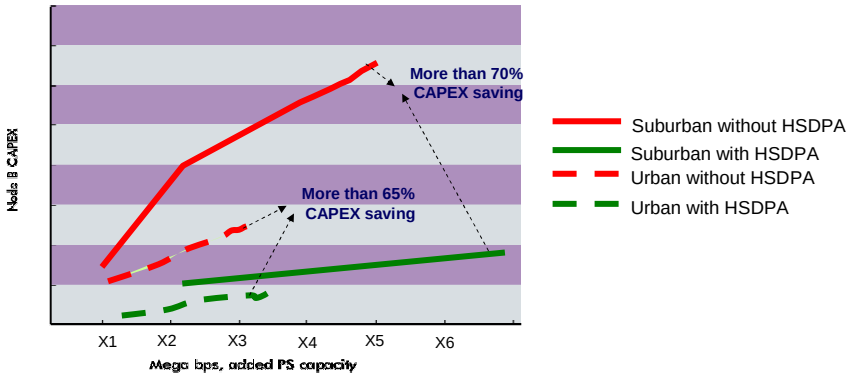
• Most equipment shipped today is already HSDPA compliant.

Making the business case

- Deploying HSDPA requires:
  - New Node B and RNC software
  - Additional Node B processing hardware
- Deploying HSDPA ***does not*** require:
  - Changes to network architecture
  - Introduction of new network elements
  - Equipment to be changed out
  - New frequency allocations
- The cost of upgrading an existing 3G network with HSDPA is << than the cost of deploying a new network to support Wireless Broadband services: ~10% additional Capex if 100% of 3G sites upgraded with HSDPA

"HSDPA is the most cost effective network for the delivery of Mobile Broadband services" – O2

HSDPA – CAPEX Saving



A cost effective solution for network capacity expansion (Node B CAPEX saving)

HSxPA / HSPA

High Speed (Downlink/Uplink) Packet Access

- ✓ **Technologies on 3GPP evolution path, natural evolution of current 3G**
  - **Rel.5 → HSDPA**
  - **Rel.6 → HSUPA**
- ✓ **Reuse of already invested 3G spectrum**
- ✓ **Reuse of 3G network infrastructure**
  - **Same Node B and RNC**
  - **Same Core Network**
  - **Same site/mast/antennas**
  - **Saving on time and cost in site acquisition and planning for new nodes**
- ✓ **Additional capacity by only simple S/W upgrade**
  - **Most vendor's current UTRAN products are H/W ready**

Significantly reduced investment for capacity expansion

Source:NEC

HSPA: a Win-Win Solution for Mobile Operators

CAPEX & OPEX savings

- ✓ **Greater total system capacity at significantly lower investment cost**
- ✓ **Capacity expansion at lower cost by an easy S/W upgrade**
- ✓ **Saving on time and cost in site acquisition and planning for new nodes**
- ✓ **Reduced maintenance cost due to same O&M platform**

Improved user experience

- ✓ **Higher data speed comparable to fixed DSL on the move - Faster download and upload time**
- ✓ **Wider service availability for high speed data – Seamless broadband services**
- ✓ **Better service quality and connectivity**

Performance boost

- ✓ **Improved cell capacity and cell throughput**
- ✓ **High user throughput, data rate and reduced latency**
- ✓ **Extended coverage for higher data rate**

Revenue boost

- ✓ **Increased ARPU due to addition of a new lucrative user segment (mobile business & heavy data consumer user)**
- ✓ **Additional revenues by converting fixed DSL user**
- ✓ **Additional revenue from new service generation**
- ✓ **Additional revenue due to early deployment**

Source:NEC

Network Infrastructure Sharing Opportunities

- ***Main Objectives for the Operator:***

  - to save network costs & minimise capex

  - to speed up 3G network roll out, notably into the rural market

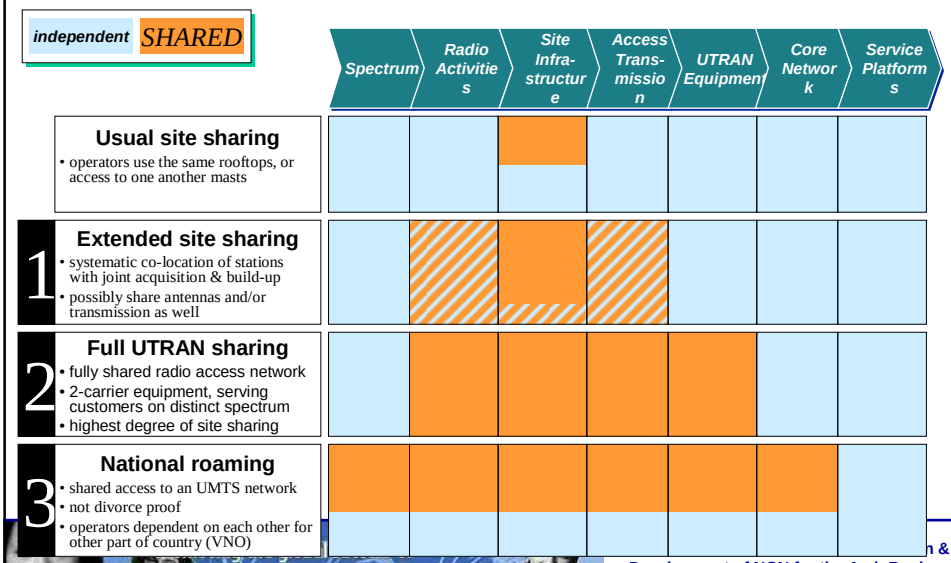
  - while preserving its ability to differentiate and offer better products & services than its competitors…

- ***Policy guidelines from the Regulator should:***
  - **require the sharing operators to be able to operate independently of each other in providing services to the main part of the areas they are licensed to serve**
  - **allow network sharing agreements, freely and commercially agreed on a flexible way, on a non-mandatory basis**

Network Sharing Solutions

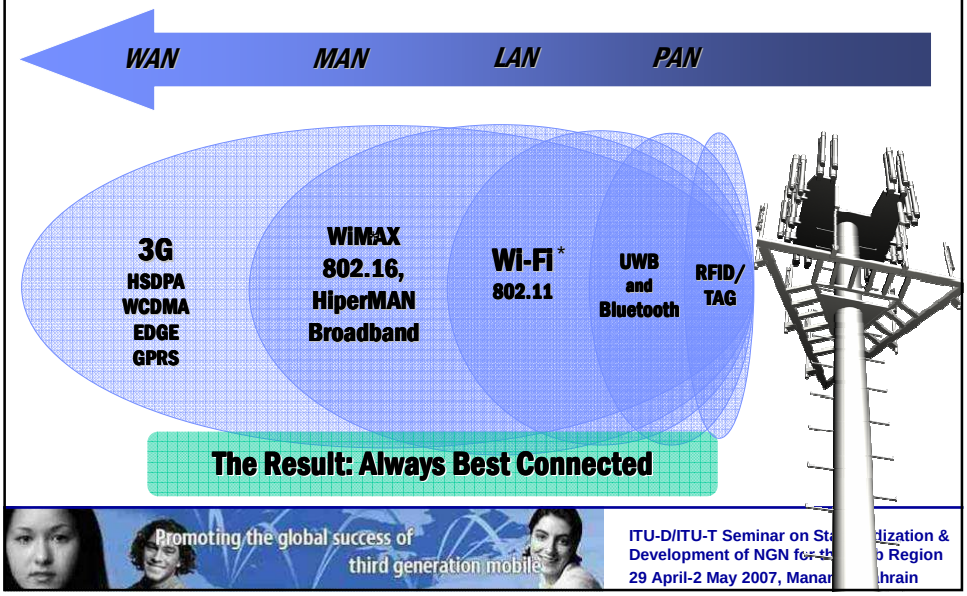
Option	Applicability for the operator, given the local context	Conclusion
1. Site sharing extended, including transmission	• accepted for fulfilling license coverage requirements • no competition issue as long as radio design remain independent • can be used on top of other options	**Backup Option ?**
2. RAN sharing sites, node-B and transmission shared, virtual RNC	• accepted for fulfilling license coverage requirements = LT option • subject to approval regarding effects on competition • higher savings than ext. site sharing	**Preferred option ?**
3. NetCo sharing the complete network through a JV	• Depending on conditions for fulfilling license coverage requirements • Depending on competition authorities	**Applicable ?**
4. Roaming Club split coverage with 2-ways national roaming	• Depending on conditions for fulfilling license coverage requirements • no coverage planned beyond this area	**Attractive ?**

Generic options for 3G network sharing



Wireless Networks Will Co-Exist

Source: WiMAX Forum

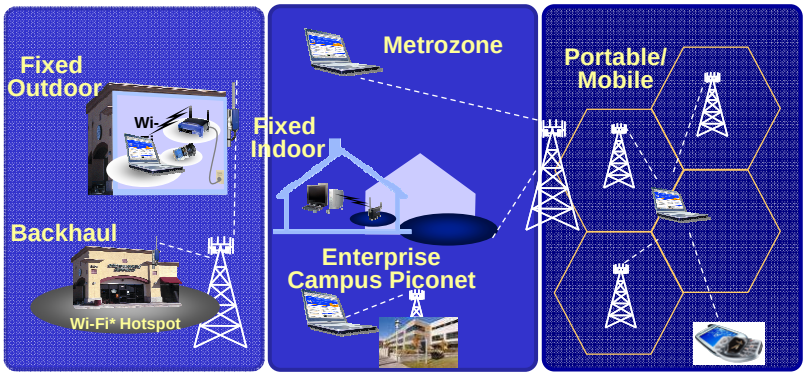


WiMAX Services & Applications Roadmap

2005: Fixed Outdoor
- –E1/T1 level service for enterprises
- –Backhaul for hotspots
- –Limited residential broadband access

2006 (802-16d): Fixed Indoor
- –Indoor 'last mile' access for consumers
- –Wireless DSL
- –Metrozone / Enterprise campus piconet

2007/2008 (16e): Portable/Mobile
- - 'Portable' broadband access for consumers
- - Always best connected



Upgrading 3G/UMTS with HSPA

The natural evolution for UMTS to deliver true mobile broadband experience

- **For an existing 3G/UMTS operator, it is always less expensive to deploy HSDPA compared to an overlay network (Mobile WiMAX/UMTS TDD/Flash OFDM)**
- **WiMAX would be an overlay network with:**
  - **Significantly increased engineering due to technology change**
  - **Higher site density required for 3.5GHz (or even 2.6GHz) to achieve similar performance**
  - **Licensed spectrum and associated fees**

Complementary opportunities with Fixed Wireless Access

➔ **Complementary public WiFi hotspot coverage:** providing high speed access in specific indoor locations

➔ **Fixed Wireless Broadband in some markets:**

- Latent demand for residential & small business broadband connectivity, where DSL is not open or is uneconomical
- Fixed wireless enterprise connections
- UMTS TDD suitable for residential fixed wireless broadband
- Fixed WiMAX suitable for high quality wireless enterprise links

WLAN / WiMAX: complementary to 3G/UMTS

- WLAN gives "hot spot" coverage
- WiMAX extends coverage to metropolitan area networks
- 3G/UMTS gives full mobility

• WLAN is useful for high-speed Internet/Intranet access for low mobility & stationary users (especially corporates)

• WLAN coverage of a major city may require typically approx 100:1 as many access points compared with number of UMTS base stations for equivalent coverage; WLAN also requires substantial investment in backhaul capacity

• Concerns regarding WLAN performance when hot spot capacity is shared by a large number of simultaneous users

• WiMAX – broadband wireless access (BWA) system for metropolitan area networks

•3G/UMTS offers benefits of wide area coverage, full mobility, integral security, roaming, full integration with charging/billing systems

WLAN & WiMAX coupled/combined with 3G/UMTS/HSPA will offer mobile broadband for EVERYBODY and EVERYWHERE, whatever the technology and access mode

3G/UMTS Long Term Evolution (LTE): basic principles (1)

- HSPA is the first progressive step toward delivering 'triple play' (telephony, broadband and TV) in a mobile broadband environment
- The 3GPP RAN Long Term Evolution (LTE) task force was created at end 2004, notably considering the 'Super 3G' proposal of NTT DoCoMo
- LTE focus is on enhancement of the Universal Terrestrial Radio Access (UTRA), and on optimisation of the UTRAN architecture
- The proposed RAN architecture, placing increasing functionality within the NodeB, will be based on IP routing with existing 3G spectrum, providing speeds up to 100 Mbps by using channel – transmission bandwidth between 1.25MHz and 20MHz
- 3GPP Evolved UMTS specifications should target availability of commercial products around 2009-2010

LTE Basic principles (2)

➔ **3G Mobile broadband is an evolutionary process, that will optimise the networks, spectrum and investments of the operators during a complete cycle, before going towards new systems, new network radio interfaces and new spectrum: LTE project aims *to ensure the continued competitiveness of the 3GPP technologies for the future.***

GSM, UMTS and evolutions are built in a compatible and evolutionary manner which allows to protect the investments and to migrate smoothly customers and networks according to the markets requirements while keeping the benefits of GSM (security, worldwide coverage)

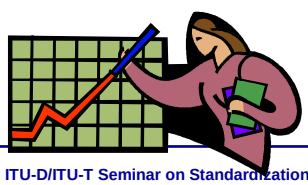
➔

UTRAN LTE

- ***Technical Objectives***
  - **Downlink Capacity:** Instantaneous data rate of 100Mbps in 20Mhz (variable channel bandwidth)
  - **Uplink Capacity:** Instantaneous data rate of 50Mbps in 20Mhz
  - **Latency:** Less than 5ms in ideal conditions
  - **User throughput:** 4-5 times HSDPA, 2-3 times HSUPA
  - **Mobility:** Optimised for low speed but supporting 120kmh
  - **Architecture:** Support QoS & reduce single point failures

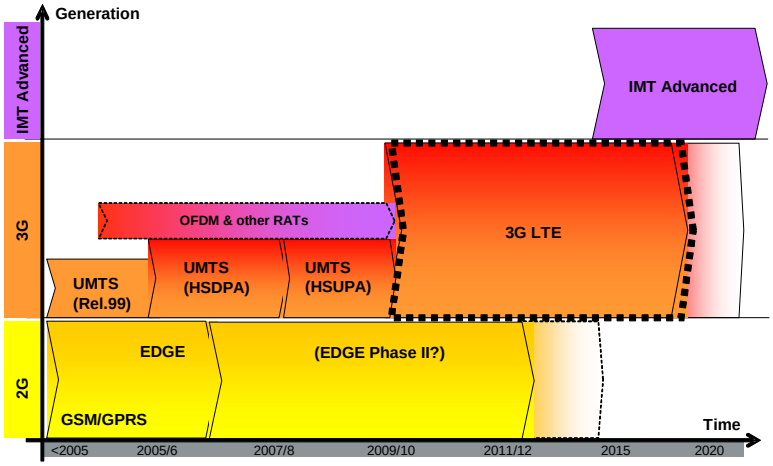
3GPP System Architecture Evolution (SAE) philosophy

- **SAE focus is on:**
  - **enhancement of Packet Switched technology to cope with rapid growth in IP traffic, i.e.**
    - **higher data rates**
    - **lower latency**
    - **packet optimised system**
  - **through**
    - **fully IP network**
    - **simplified network architecture**
    - **distributed control**
- **Supporting multiple radio access technologies (wireless and wired)**



3G Long Term Evolution (LTE)

schematic positioning in time and generation



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3G Long Term Evolution (LTE)

distinction by characteristic parameters

Generation : RAT	Spectrum	Carrier-Bandwidth	Radio-Principle	RAN (other than air-if)
2G : GSM [HSCSD] GPRS EDGE	900+1800 850+1900 [450 refarmed]	200 kHz	TDMA	GERAN
3G / IMT2000 (UMTS) : Rel.99 W-CDMA HSDPA HSUPA	1920-21xx (coreband) 2500-2690 (ext. band) [+2G refarmed]	5 MHz	CDMA	UTRAN
LTE		"n"*5 MHz n=(¼,)1,2,3,4	OFDM(A) (expected)	evolved UTRAN
" IMT Advanced" (beyond IMT2000) :	NEW, t.b.d. (expected)	Up to 100 MHz (expected)	OFDM(A) (expected)	NEW, t.b.d. (expected)

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Mobile Wireless Access Performances … The 4 Pillars

	Speed	Mobility	Interactivity Latency	Cost per Megabyte*
GSM	• 128			• 0,06 €
WCDMA	• 384kb/s			
	• 2Mb/s			• 0,03 €
HSPA	• 14.4 Mb/s			
	• 100 Mb/s			• 0,005 €
3G LTE				




*Source: Analysys Research, 2006

What will HSPA and 3G LTE bring ? *To the end-users (1/2)*

opportunities for new applications

Advanced gaming and real-time person-to-person gaming

– with Game console quality and performance;

E-commerce (travel services and electronic ticket on your mobile, stock exchange, …) with requested QoS and security

Machine to Machine

Industry: Maintenance, Military, Assistance

- **3D information availability**

Source: Alcatel


What will HSPA and 3G LTE bring ?
To the end-users (2/2)

Increased QoS

- Increase the number of subscribers with service differentiation (incl. **VoIP & IMS**)
- For legacy services like downloading faster audio & video

Broadband Services

Broadcast or Multi-cast Services

For Mass Market and not only for few simultaneous users!

•Video Telephony
•Multimedia conferencing,
•Net meeting (video conference with real time office applications)

For Legacy Services: Downloading Audio/Video

User or Device Location Based Services

Source: Alcatel

What will 3G LTE bring to the operators ?

Technical Benefits

- **Smaller frequency granularity (from 1.25 to 20 MHz)**
  - More flexible spectrum usage
  - Faster introduction of 3G LTE
- **Less Nodes**
  - **Simpler O&M** Self and assisted tuning

Economical Benefits

- **Decrease of the cost per Mb/s**
  - Better spectrum efficiency (> factor 2)
  - Simpler architecture (less nodes)
  - Optimized backhaul

+ *Strong willingness* **to change current industry rules**

- Improved IPR regime → more competition between the suppliers and better products at lower price

Source: Alcatel

MENA – the mobile landscape (March 2007)

TUNISIA
Tunisiana
Tunicell (Tunisia Telecom)
Population: 10m
Mobile penetration: 74,97%
Fixed lines: 12.46%

ALGERIA
Mobilis (Alger Telecom)
Djezzy
Nedjma
Population: 33m
Mobile penetration rate: 71,98%
Fixed lines: 7,82%

MOROCCO
IAM (Vivendi Universal)
Medi Telecom (Telefonica Moviles, Portugal Telecom)
Population: 30.3m
Mobile penetration rate: 54,8%
Fixed lines: 4.42%

EGYPT
MobiNil (FT & Orascom)
Vodafone
Population: 74m
Mobile penetration rate: 25,61%
Fixed lines: 14.04%

LIBYA
MTC
Lybiana
Population: 5.8m
Mobile penetration rate: 77,15%
Fixed lines: 12.82%

ISRAEL
Cellcom
Partner
Pelephone
MIRS Communications
Population: 8,4m
Mobile penetration: 114.15%
Fixed lines: 34,95%

LEBANON
LibanCell
Cellis
Population: 3.58 m
Mobile penetration: 30,87%
Fixed lines: 27,65%

KUWAIT
MTC-Vodafone
Watanyia
Population: 2.6m
Mobile penetration: 95,52%
Fixed lines: 18,97%

IRAN
TCI / MCCI
TRI Isfahan
Population: 69.5m
Mobile penetration: 25,23%
Fixed lines: 27.31%

BAHRAIN
Batelco
MTC-Vodafone
Population: 0.73m
Mobile penetration: 140,84%
Fixed lines: 26,92%

QATAR
Qatar Telecom (QTel)
Population: 0.78m
Mobile penetration: 125,19%
Fixed lines: 26.33%

UAE
Etisalat
du
Population: 4.5m
Mobile penetration: 127,65%
Fixed lines: 27,49%

OMAN
OmanTel
Narwas
Population: 2.57m
Mobile penetration: 73,96%
Fixed lines: 10.32%

SAUDI ARABIA
STC (al Jawal)
Ettihad Etisalat (Mobily)
Population: 24.6m
Mobile penetration: 88,82%
Fixed lines: 15.47%

Shareholders
State-owned
MTC
Watanyia
Orascom
Etisalat
Orange
Vodafone

Mobile penetration rate
<25%
25-50%
50-75%
75-100%
>100%

Sources:
- Population: INED (mid2005),
- Fixed lines: ITU (2005),
- Mobile: Informa Telecoms & Media (March 2007, apart from Iraq, Israel and Libya, estimations from Feb. 2007)

Sofrecom (March 2007)

SYRIA
Areeba (Investcom)
Syriatel
Population: 19m
Mobile penetration rate: 26,16%
Fixed lines: 15.25%

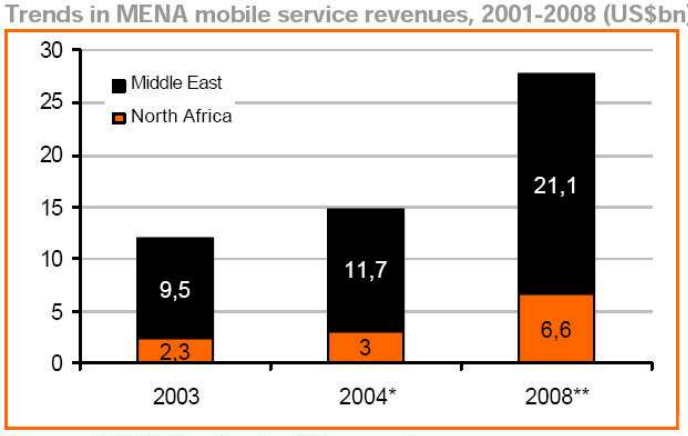
JORDAN
MTS (Fastlink)
MobileCom
Xpress
Umniah
Population: 5.8m
Mobile penetration: 78,10%
Fixed lines: 11,19%

IRAQ
AsiaCell
AtheerTel
Orascom
Population: 26m
Mobile penetration rate: 36,66%
Fixed lines: 3.97%

ITU-D/ITU-T Seminar on Standardization & Development of NGN for the Arab Region
29 April-2 May 2007, Manama, Bahrain

A growing market

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



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 (March 2007)

Middle East	Technologies	3G status	Comments
Bahrain	GSM / EDGE W-CDMA	- MTC-Vodafone **EDGE / W-CDMA**(Dec-03),**HSDPA**(May-06) - Batelco **EDGE**(Mar-05), deploying **W-CDMA** (2007)	-
Israel	GSM / EDGE W-CDMA / HSDPA CDMA 2000 / EV-DO iDEN	- Peplephone **CDMA 2000 EV-DO**(Sept.-04), deploying **HSDPA** (2008) - Cellcom **EDGE / W-CDMA**(June-04), **HSDPA**(June-06) - Partner **W-CDMA** (December-04), **HSDPA**(March-06)	MIRS operates an iDEN network. No information released about 3G upgrade
Jordan	GSM / EDGE iDEN	- Mobilcom **EDGE** (July-04) - Fastlink **EDGE**(June-05) - Umniah **EDGE** (June-05)	-
Kuwait	GSM / EDGE W-CDMA / HSDPA	- MTC-Vodafone **EDGE** (Dec-04), **W-CDMA** (March-06), **HSDPA** (Jan-07) - Wataniya **EDGE**(March-05), **W-CDMA** **HSDPA**(March-06)	-
Qatar	GSM	- Q-Tel **WCDMA** (July-06) and **HSDPA**in Deployment	Monopoly
Saudi Arabia	GSM	- Etilsalat **EDGE** (March-05), **W-CDMA / HSDPA** launched in Jun-06 - STC **W-CDMA** (May-06)/ **HSDPA** (June-06)	-
Syria	GSM	-	no lience attribution project for the moment
UAE	GSM W-CDMA / HSDPA	- Etilsalat **W-CDMA** (Jan-04), **HSDPA**(Apr-06)	-

North Africa	Technology	3G status	Comments
Morrocco	GSM	Maroc Telecom 3G demostration in partnership with chineese manufacturer ZTE (Mar-06)	Call for 3G bids in feb-05. 2 W-CDMA licences were granted in 2006 to Maroc Telecom & Meditel.
Algeria	GSM/EDGE CDMA WLL	Mobilis First experimental **W-CDMA** network in Algeria (Dec-04) in partnership with Chineese manufacturer Huawei, CDMA WLL built by Huawei. Orascom **EDGE** trials with Alcatel (July04)	Licences to be awarded in 2007
Tunisia	GSM	Chineese manufacturer ZTE ran the first ever 3G call in Tunisia (July-04) with Tunisia's PTT CERT(R&D center)	Commercial services was supposed to be launched during 2H 05
Lybia	GSM	Libyana Mobile Phone, **W-CDMA** (Sept-06) deploying **HSDPA** (2007)	Monopoly
Egypt	GSM CDMA 2000 1x WLL	Telecom Egypt deploying **CDMA 2000 WLL,** applied for a 3G licence in partnership with Telecom Italia (May-06)	Call for 3G bids (May-06), a total of 21 companies, which formed 10 major alliances, have applied to bid

Source: Sofrecom, operators / Regulation Authorities (March 2007)

The Arab Region – deploying 3G/UMTS

• **The Middle-East remains one of the few mobile markets to see both fast growth and margins above rock-bottom. The MENA Region has already commercially entered the mobile broadband world with EDGE (Algeria, Bahrain, Egypt, Jordan, Kuwait, Libya, Oman, Saudi Arabia, Syria, UAE) and 3G/WCDMA (Bahrain, Kuwait, Libya, Qatar, Saudi Arabia, UAE) – 3G deployment is under process in Morocco, Algeria, Tunisia, Egypt… and HSDPA is already launched in Bahrain, Kuwait, Saudi Arabia and UAE !**

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

➔ ***simplified international roaming and IPR export opportunities for services and applications***

➔ ***greater economies of scale and wider choice of cost-effective terminals***

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

For more information

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