

# HSPA.

MOBILE BROADBAND TODAY

## Spectrum Requirements for HSPA Mobile Broadband Access

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ITU/BDT Regional Seminar on Broadband Wireless Access (BWA)  
for CIS, CEE and Baltic Countries  
26 - 29 November 2007 - Moscow, Russian Federation

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## Agenda

- 1. Spectrum demand for 3G HSPA**
- 2. Infrastructure & Devices**
- 3. 3G Traditional & New Services and Applications—The Impact of HSPA and innovative pricing for mobile broadband access**
- 4. Consideration of the new devices, new applications and new services that exploit HSPA Mobile Broadband which are driving exponential demand for mobile data**
- 5. How opening up more 2.1 GHz bands in local markets will increase the global economies of scale to reduce the price of 3G handsets**
- 6. The essential requirements of securing access for FDD technologies to the 2.5GHz band**
- 7. Conclusion**

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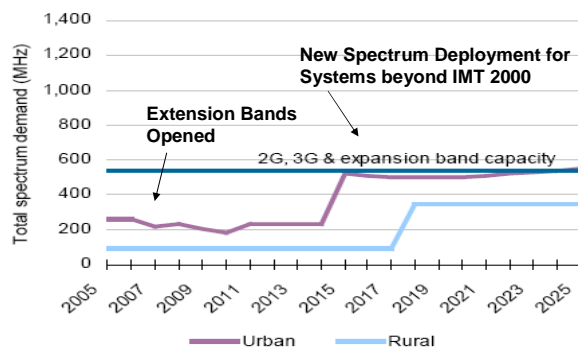
## HSPA Mobile Broadband Access Demand on 3G Core and Extension bands

- 3G HSPA services are placing new and unprecedented demands on Spectrum
- Studies such as 'Magic Mobile Future' (UMTS Forum), scoping future demand against available 3G Spectrum and subsequent analysis, led to a figure of 1.6GHz of spectrum demand, while ITU-R official forecasts are 1.3GHz to 1.7GHz by 2020
- The 2005 Cave Spectrum Audit report produced by Mason Analysys, commissioned by the UK regulator Ofcom, provided 2 scenarios for future Spectrum demand:
  - A low data demand scenario
  - A high data demand scenario
- The GSMA and the mobile industry consider that with new services and the introduction of HSPA Mobile Broadband the high data usage scenario is becoming the reality quite soon.



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## Cave Spectrum Audit Low Data Traffic Scenario



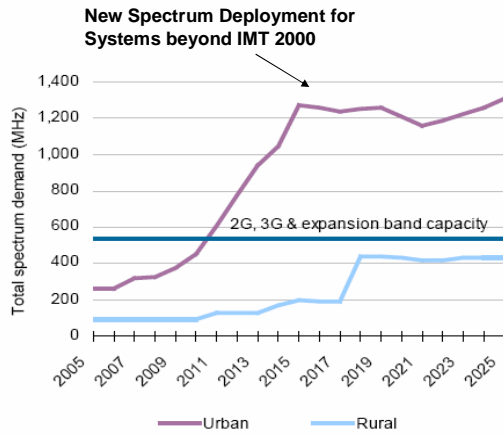
**Exhibit 0.1:**  
Total spectrum demand – low traffic scenario  
[Source: Analysys, Mason, 2005]

The Cave report indicates that 3G Extension Band Capacity is needed to be accessed by 2008 to take up Data demand.



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## Cave Spectrum Audit High Data Traffic Scenario



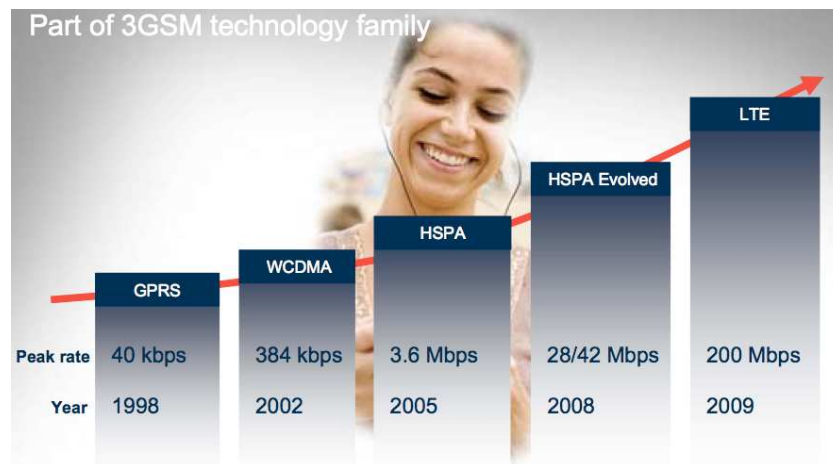
**Exhibit 0.2:**  
Total spectrum demand – high traffic scenario  
[Source: Analysys, Mason, 2005]

Urban demand could exhaust all available 3G Spectrum by 2012 **including extension bands.**

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## Infrastructure is on the Ground--HSPA Offers Broadband Today



**150 3G HSPA networks launched**  
**25 operators offer 7Mbps user speed today**

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## Sample of Devices Available



HTC: Softbank X01HT



HTC: Shift



Huawei: E600



iMate: Ultimate 5150



Novatel Wireless: U730



Option:  
Globetrotter GTMax 7.2 ready



Samsung: A501



ZTE: F850

Broad scope of latest devices keeping up with industry demand

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## HSPA Access Solutions

Handset/PDA  
Access



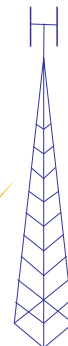
Data Card/USB  
Dongle/USB  
Stick/Modem



Embedded in  
Notebook



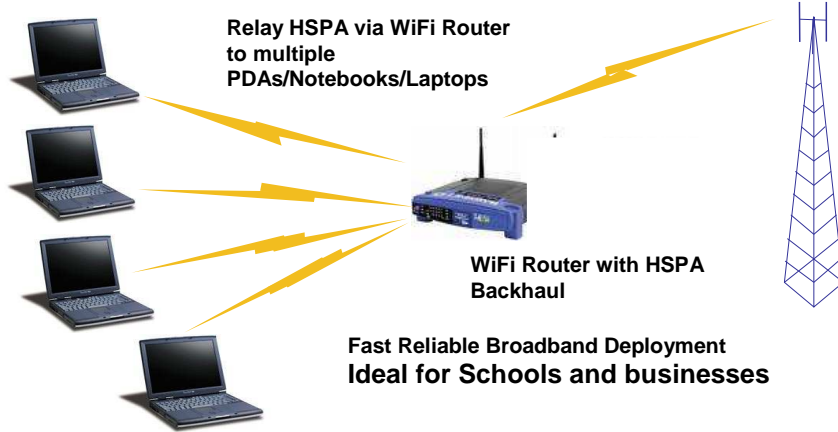
Relay via Handset/PDA  
WiFi/Bluetooth link



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## HSPA Broadband Shared WiFi Distribution



HSDPA Broadband Distribution for Developed and Developing Countries Delivering Broadband

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## Innovative HSPA Pricing on Par with Fixed Broadband

	<p>7.2 Mbps, ~\$30 and <u>no cap</u> (3 in Sweden)</p>
	<p>3.6 Mbps, ~\$20 and 1 GB incl. (3 in the UK)</p>
	<p>3.6 Mbps, ~\$32 and 3 GB incl. (Maxis Malaysia)</p>

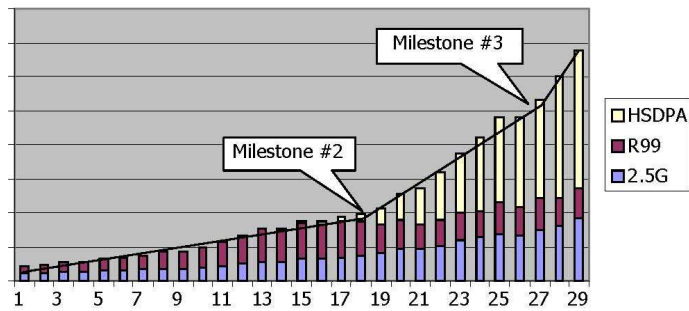
Mobility adds value

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## Exponential growth in the demand for mobile data

**Development of Data Volume in mobile network download, past 30 month**



NOTE:  
Data use increase on an unnamed European Mobile Operator's network  
Milestone #2= HSPA introduced  
Milestone #3= innovative pricing for broadband access

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## Social Networking = New Communications Demands



**Social Networks are the Fastest Growing Communications Segment Achieving Amazing Growth and Valuations**

*The new mass market trend for new connectivity and user generated content which can be uploaded for storage and publication on the Mobile Carriers Network*

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## Replaying the GSM Experience - Impact of economies of scale on GSM handset costs

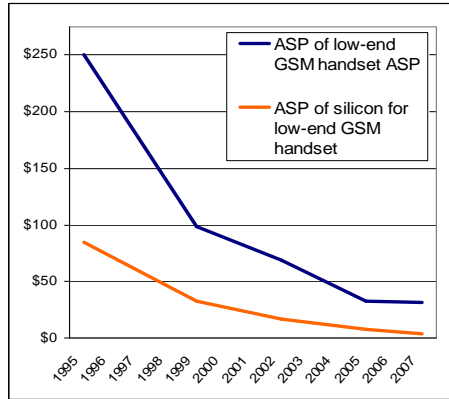
As handset volumes increase, prices fall:

In 1997 : 70 million users

In 2004 : 1.7 billion users

In 2006 : 2.2 billion users

Handset Volumes have been Enabled by the Well Regulated Ubiquitous and Unencumbered Access to GSM Spectrum Bands



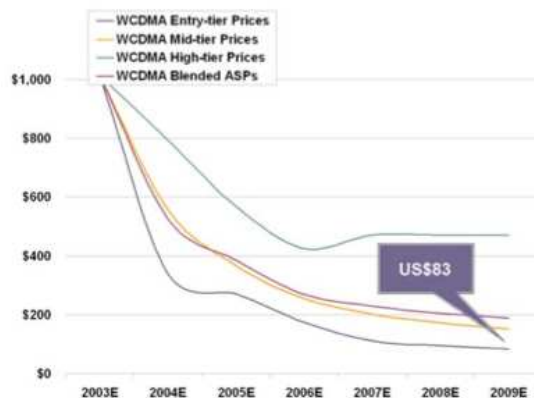
Average sales price (ASP) of low-end GSM handsets and their silicon chip components 1995-2007 (Arete)

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## Wider Availability of Core Band Spectrum will Enable Low Cost HSPA Phones to be Delivered against Volume

### 3G Handset ASP Forecast (2003-2009)

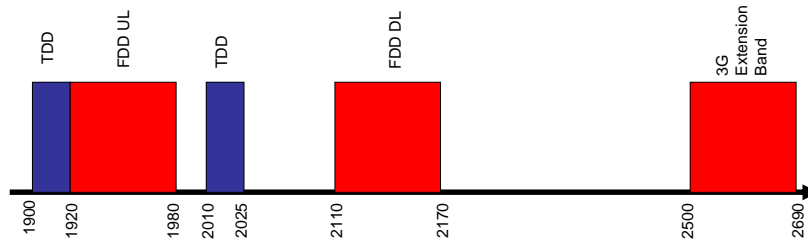


Source: Signals Research Group, LLC, July 2006

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## 3G Core & Extension Bands – European Example

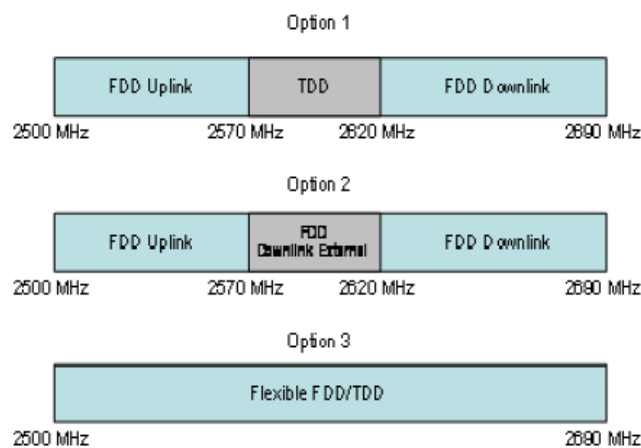


Frequency range (MHz)	Service in the UK
1900 to 1920	UTRA TDD
1920 to 1980	UTRA FDD uplink
1980 to 2010	IMT-2000 Mobile Satellite Service uplink
2010 to 2025	Self-provided TDD applications
2110 to 2170	UTRA FDD downlink
2170 to 2200	IMT-2000 Mobile Satellite Service downlink

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## 3G Extension Bands Channelisation Options

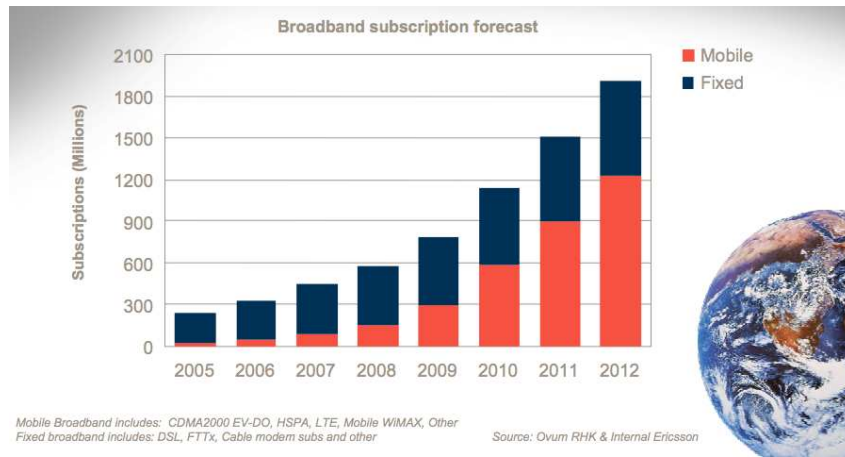


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## First it Was Voice, Now Data



**HSPA 70% of Mobile Broadband Subscriptions**



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## Conclusions

- Mobile Drives Broadband Growth
- 3G HSPA Leads the Pack
- And the Missing Link is... Spectrum Policy
- Economies of Scale Rule
- Supply and Demand Govern Spectrum Pricing
- Keep Supply of Spectrum Up to Achieve Social & Economic Goals
- And Keep it Simple: No Interference, Globally Harmonized Bands, More Lower Cost Services and Devices—Keep Consumers (and Voters) Happy ☺

Conclusion



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# HSPA.

## MOBILE BROADBAND TODAY

**Thank you!**

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