Digital Dividend for Mobile: Bringing Broadband to All



Introduction

Mobile phones have had a profound impact on the way people live and work all over the world. The global scale of the industry has made mobile telephony affordable for more than three billion people, changing their lives in the process. The mobile industry is now on the verge of another significant wave of investment, which will bring affordable mobile broadband services and Internet connectivity to people all over the world. For many, mobile will be the first access they will have had to the Internet and the information society. The technology and the investment are in place; all that remains is to secure harmonised radio spectrum.

The mobile industry is seeking an allocation of at least 100MHz of Digital Dividend spectrum in all regions, awarded on a harmonised basis. With such an allocation, the vision of mobile broadband everywhere can be transformed into a reality.



Mobile Broadband

In the developed world, governments are looking to mobile broadband networks to increase Internet penetration. The US acted on this opportunity recently, with the allocation of the Digital Dividend for more use and, in Europe, the EU has established a fund to support broadband development, in which mobile will play a key role.

In emerging markets, policy makers have identified widespread Internet access as critical to the achievement of the 2015 UN Millennium Development Goals for health, education, employment and poverty reduction. The World Information Society Report 2007 found that the digital divide (the gap between those with access to digital and information technology and those without) is shrinking, particularly thanks to mobile telephony. However, the cost and availability of broadband access remains a concern. Although traditional broadband (via ADSL) was available in 170 countries at the start of 2007, it is still often only available in cities and can cost up to 10 times as much in low-income countries as in high-income countries, where little or no competition exists. Mobile is easier, faster and significantly cheaper to deploy than fixed technology, making mobile the only viable solution to closing the digital divide and to bringing affordable broadband access to all.

"When talking about access to information, the future is definitely broadband communications. Broadband is one of the key tools for development, because it increases the potential for generating content that is relevant to communities and produced in their languages. Eventually, people in even the remotest areas could become broadcasters and educators in their own communities and the wider world. We would, in fact, be going beyond information societies to create knowledge societies."

Hamadoun Touré, Secretary General, ITU

Why the Digital Dividend spectrum is so important



Mobile broadband usage is expected to grow exponentially over the next three years, bringing the Internet to more than 1.3 billion people globally by 2012[1]. However there is an opportunity to grow this number much, much further, as new spectrum becomes available as a result of the switchover from analogue to digital television – this 'bonus' spectrum is known as the Digital Dividend. The Digital Dividend spectrum is in the UHF range, so it has very good propagation characteristics (being less attenuated by obstacles such as buildings). It is approximately 70% cheaper to provide mobile broadband coverage over a given geographic area using UHF spectrum than with the 2100MHz spectrum widely used for mobile broadband today. That characteristic makes this spectrum particularly well suited to providing mobile broadband coverage in rural and suburban areas.

Allocating some of the Digital Dividend spectrum to mobile broadband will allow mobile operators to provide blanket broadband coverage to open up the knowledge economy to everyone, even in rural or hard-to-reach areas. For example, using these lower frequencies, 99% of the Australian population now has broadband access. Using this low frequency spectrum will also help operators to provide dependable mobile broadband service in buildings, thus meeting the high expectations of consumers who are increasingly accustomed to ubiquitous mobile voice coverage and always-on Internet access.

The analogue TV switch-off and the resulting Digital Dividend represent a "once in a generation" opportunity for a significant reallocation of spectrum. The switchover process has already started, so it is vital that governments decide quickly how the freed-up spectrum will be used.

1 Source: Wireless Intelligence, 2008

Spectrum Harmonisation

Spectrum (or frequency) harmonisation, where countries across a region use the same spectrum frequency, is vital. It is critical for the successful, cost-effective deployment of any wireless service as it provides the economies of scale which drive down handset and network equipment costs and encourage innovation. Without such harmonisation, handset costs could be prohibitively high, which would reduce uptake. This would harm not only consumers and the mobile industry, but also reduce the benefits that mobile technologies bring to national economies. If spectrum allocation is not coordinated internationally, then many smaller markets may be neglected by device manufacturers, who would naturally concentrate on larger markets, with greater potential for volume sales and a higher return on investment.

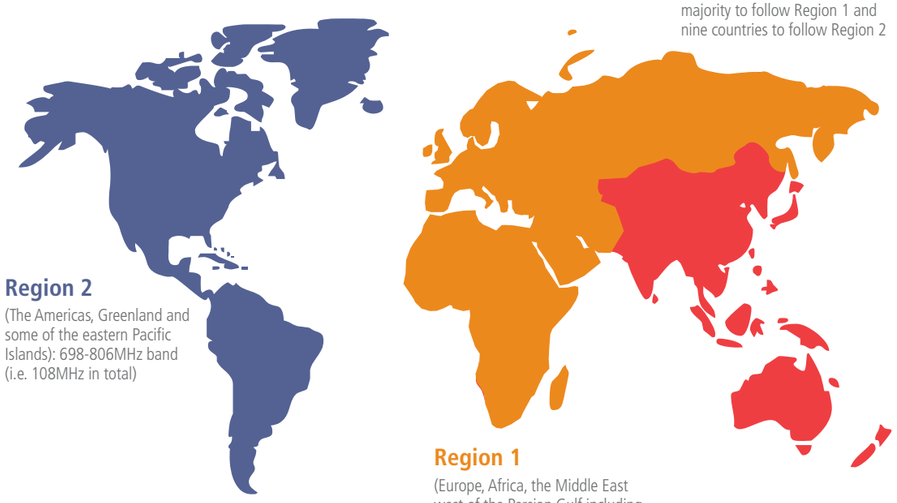
"The debate over the future of the digital divide is now moving away from 'quantity' in basic connectivity and access to ICTs to measures of 'quality' and 'capacity', or speed of access."

World Information Society Report 2007

How much spectrum does mobile need?



Under the governance of the United Nations, the World Radiocommunications Conference (WRC) in 2007 identified the following blocks of Digital Dividend spectrum for different regions of the world (according to the ITU's system of regional classification):



Region 3
(Asia, east of and including Iran and most of Oceania): The majority to follow Region 1 and nine countries to follow Region 2

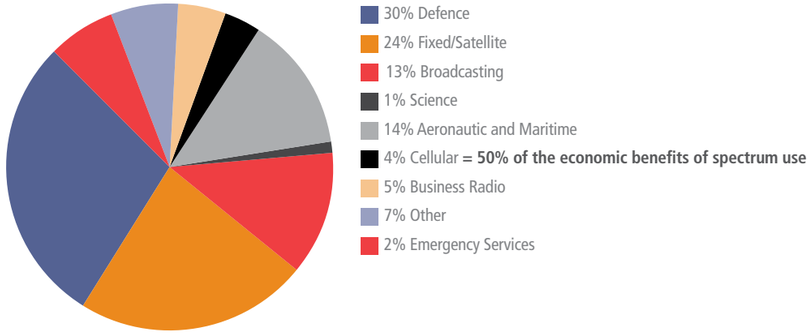
Region 2
(The Americas, Greenland and some of the eastern Pacific Islands): 698-806MHz band (i.e. 108MHz in total)

Region 1
(Europe, Africa, the Middle East west of the Persian Gulf including Iraq, the former Soviet Union and Mongolia): 790-862 MHz band (i.e. 72MHz in total)

The mobile industry considers these identifications to be the minimum amount of spectrum required in each region and believes a larger amount should be allocated – at least 100MHz in all regions. That would be sufficient to enable larger frequency channels to be licensed, which would deliver high data rates and support several operators in each market, ensuring vigorous competition.

100MHz represents only approximately 25% of the spectrum currently used for terrestrial broadcasting – leaving 75% for broadcasters, after the switch to digital. Accepted estimates put the efficiency of digital over analogue broadcasting at between five to 10 times.

Potential of mobile to generate economic benefit



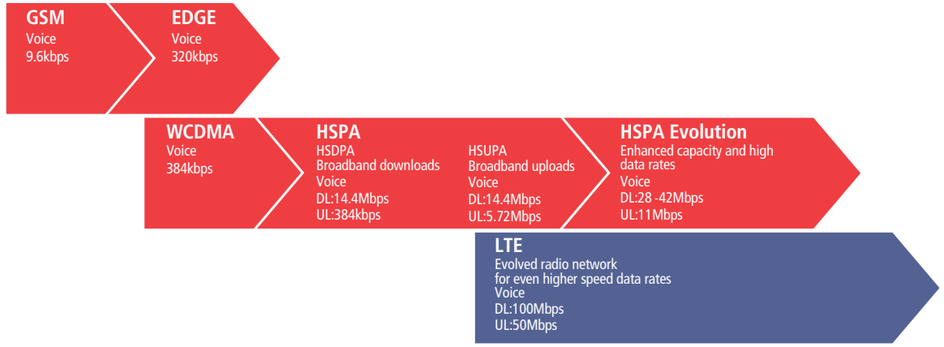
Why is this Urgent?



With analogue switch-off already in progress and spectrum reallocation decisions starting to be made, the risk of fragmentation is immediate, unless a harmonised international plan is followed. Once digital TV deployment is under way, the more expensive and complex it will become to retrospectively open up the frequencies to mobile services. Future complications could include:

- changes or upgrades to set-top boxes or consumer aerials
- re-planning of broadcasting networks

With mobile operators planning to deploy the latest and fastest new mobile technology (LTE) from 2010, spectrum allocation decisions are required now to avoid unnecessary delays.



Economies of scale

Handsets	Network Infrastructure
There are almost one billion handsets made in total every year, by a number of global vendors. They must focus their investment on making better and cheaper handsets for the big markets, thus optimising their return on investment. As well as driving down handset costs by 50%, frequency harmonisation provides superior phones and greater choice.[2] For example, for a manufacturer facing investment choices, a $1 per handset saving on a market of 100 million units ($100m) is a better option than a $10 profit per handset on a market of one million units ($10m) – the opportunity cost of $90m for the latter would be difficult to justify.	The mobile industry is a very capital-intensive business with long pay-back times on investments. A piecemeal and delayed decision-making on UHF could adversely affect investment decisions on the other frequencies. This would further complicate the situation where services are offered across multiple frequency bands to provide coverage and capacity. These bands (900,1800, 2100, 2500/2600MHz) are complementary, so it is hard to make investment decisions on one without knowing what will happen in relation to the others.

"Only with economies of scale will we have an efficient use of spectrum, affordable handsets and rapid consumer take-up."

Viviane Reding, EU Commissioner for Information Society and Media

2 Source: RTT, 'The advantages of common frequency bands for mobile handset production', 2007

Economic Consequences



Allocating some of the Digital Dividend spectrum to mobile operators would have a significant positive global economic impact, driving innovation, job creation, productivity and competitiveness. In comparison, investment in yet more broadcast TV channels would have a smaller and increasingly marginal economic impact.

To illustrate this point, we will consider Europe in more depth. In Europe, allocating up to 100MHz of UHF spectrum to mobile (representing 25% of the Digital Dividend) would generate between €63bn and €165bn[3] in extra economic value (this is in addition to the estimated €2.5 + trillion of value that mobile generates for the European economy without any UHF spectrum).

The current WRC identification of 72MHz of UHF spectrum for mobile operators in Europe would be close to the allocation most likely to maximise additional value for the European economy as a whole. Estimates indicate that accumulated effects over the next decade or more might generate as much as an additional 0.6% GDP growth per year for the EU economy by 2020, in the case where mobile shares the spectrum with broadcasters compared to the case where broadcast TV alone occupies the band.

For many emerging markets, the Digital Dividend represents a unique opportunity to leapfrog into the broadband world. Studies have shown that a 10% increase in mobile penetration leads to a 1.2% increase in GDP; our hypothesis is that mobile broadband is likely to have an even greater economic impact.

Comparison of economic benefits in the EU, in 2007: mobile versus broadcast TV[4]

	Mobile	Broadcast TV
The economic output per MHz of bandwidth	€168 million	€28 million
Direct economic effects in the EU (services, revenues, product sales etc)	€208 billion	€43 billion
Sales by suppliers	€87 billion	€30 billion
Indirect economic effects	€165 billion	€95 billion
Jobs generated by sector spending	2.3 million	1.8 million

3 Source: Spectrum Value Partners, 'Getting the most out of the Digital Dividend', 2008

4 Source: SCF Associates, 'The Mobile Provide', 2007

The Vision of Mobile Broadband Everywhere



Consumers are now demanding mobile broadband with the same ubiquitous geographical coverage as they have come to expect from mobile voice services and with the same high performance characteristics as fixed-line broadband. In mature markets, there is soaring demand for BlackBerrys, iPhones and other high-end mobile broadband handsets, dongles for laptops and mobile broadband-enabled laptops. In many developing markets, as with voice, mobile networks will be the only effective means of delivering broadband to many people and the Digital Dividend spectrum will play a key role in making this possible.

For the consumer, mobile broadband offers a genuine alternative to fixed ADSL, providing services for leisure, education and business, as broadband connectivity expands employment opportunities in rural areas. And consumer demand is growing. There are now over 70 million global connections for HSPA, the technology that is just one small step from tomorrow's super high speed LTE. That number is growing by four million every month. During 2007, the EU mobile data market, excluding text messaging, grew by approximately 40%[5]. AT&T, the largest American mobile operator, saw wireless data revenues grow 52% year-on-year to US$2.5 billion in the second quarter of 2008. While Telstra in Australia reported in August 2008 that its mobile broadband business had grown into a half-billion dollar business in just two years.

Examples of new and enhanced mobile broadband services:

- Internet commerce
- Outsourcing
- Virtual enterprises
- Home working
- E-government
- Medical diagnosis performed remotely
- Video on demand
- IPTV
- Social networking & Web 2.0
- Mobile instant messaging
- Mobile gaming
- Mobile advertising
- Mobile banking
- Remote data processing

5 Source: A T Kearney















Conclusion

In conclusion, the mobile industry is seeking an allocation of at least 100MHz of Digital Dividend spectrum in all regions, awarded on a harmonised basis. With such an allocation, the vision of mobile broadband everywhere can be transformed into a reality.

The mobile industry needs clear and timely decisions on Digital Dividend spectrum allocation at a national and regional level. This will enable the industry to invest early and with confidence in the future of mobile broadband and the services that it will deliver. This kind of future-proofing is essential if the industry is to continue to deliver the social and economic benefits that are being enjoyed by both developed and developing nations.

Mobile broadband is already gaining significant momentum in developed markets. The challenge is to develop and enhance mobile broadband services to deliver exciting and empowering services to as broad a consumer base as possible. Harmonised spectrum allocation will make this possible and economically viable across all markets – developed or developing; large or small.





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