Digital Dividend

Laying the Foundations for Expanded Mobile Service

An interview with François Rancy, Director of the Radiocommunication Bureau, International Telecommunication Union

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The International Telecommunication Union (ITU) plays a critical role in the success of mobile telecommunications through its management of the Radio Regulations treaty, which defines internationally binding conditions on the use of the radio spectrum. Working with governments, regulatory authorities, operators, manufacturers and academia worldwide, the ITU identifies the frequency bands that are ultimately allocated to mobile services at the national level — mitigating radio interference along borders, enabling mobile roaming and creating a mass market for affordable mobile devices.

The GSMA spoke with François Rancy, director of the ITU Radiocommunication Bureau and a leading authority in international spectrum planning, to gain his perspectives on the state of the Digital Dividend and other issues that affect the release of harmonised spectrum for international mobile telecommunications.

In many countries the transition to digital television broadcasting has not yet begun. What will be the consequences for countries that have not met the ITU's June 2015 deadline for the analogue television switch-off?

Rancy: It is important to note that, in many African countries, the VHF band is used more heavily than the UHF for television, and the analogue switch-off date for VHF is 2020 in about half of the African and Arab countries. So although it may look difficult for countries that have not started to deploy digital television, it remains possible for countries that don't have a lot of UHF equipment or networks to switch it over by 2015.

The Regional Radiocommunication Conference of 2006 (RRC-06) that set the 2015 deadline stipulated that the band will not be recognised internationally for analogue television broadcasting. This does not preclude the conclusion of bilateral agreements between neighbouring countries that have not yet switched off analogue broadcasting to continue for a while, but it makes it rather difficult. I would certainly not recommend that path.

What are the barriers to the digital switch-over for these countries?

Rancy: One of the main difficulties is that one country cannot change its frequency plan for broadcasting in isolation because of cross-border interference. The prerequisite is to know the frequency plan you will adopt for the transition, and to have agreements with your neighbours in place. If you don't have that, you are in trouble in all border areas. This is doubly important for countries that have large cities close to the border. For example, Brazzaville and Kinshasa are only 2km apart, on either side of the Congo River.

One of the priority activities in Africa is therefore to sort out the broadcasting frequency plans. In December 2011, at a summit of the African Telecommunications Union (ATU) in Nairobi, a decision was taken to establish a common broadcasting frequency plan in the UHF band for all African countries. The ITU is providing technical support to achieve that. Just recently, in July 2013, the final coordination meeting took place, resulting in an agreement by all African countries to redeploy television below 694MHz using a new frequency plan for digital broadcasting. This plan is intended to satisfy the spectrum requirements of broadcasters and provide all African countries with a clear and certain path for realising the Digital Dividend.

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Why is harmonisation so desirable?

Rancy: Facilitating international harmonisation of the radio spectrum is one of the ITU's primary objectives. When the WRC-12 took the decision to open the 700MHz band to the mobile service in Region 1 [Europe, the Middle East and Africa], the primary purpose was to achieve global harmonisation. Deferring the opening of the band for mobile until the end of 2015 was also a means to achieve this goal. If we had opened it right at that time, people would have been unsure about which frequency plan to use to achieve harmonisation.

The ITU strives to connect all people in the world — not only to telephone service, which is nearly achieved, but to broadband access to the internet. For mobile broadband, we're at about 2 billion people now, and we want to get to 7 billion. You can't achieve that by expecting everyone in the world to buy a €700 smartphone. What you need is something like €50 or less. If every country used different frequency plans, it would be impossible to build handsets that reach the necessary level of cost. Harmonisation allows mobile devices to be simpler because they don't need to support numerous frequency plans, and in a harmonised world, terminals can be manufactured for the global market, not simply one country or even one region, driving costs down.

The highest priority for the mobile industry, in terms of spectrum, is the release of the Digital Dividend. However, mobile operators require access to a portfolio of frequency bands to deliver affordable, high-quality service. What is the right balance of spectrum holdings to achieve both coverage and capacity?

Rancy: According to the laws of physics, the higher the radio frequency, the smaller the range, and therefore the coverage. But the higher you go, the more bandwidth you get. If you need a lot of bandwidth, you will need to rely on higher frequencies. So each operator will need access to a variety of bands — in the lower, middle and higher frequencies in order to have both coverage and bandwidth. It is difficult to say what the right balance is, other than we need the maximum possible in each band identified for mobile. Meanwhile, we must recognise that services other than mobile also need access to spectrum.

Regional bodies such as the CEPT, ATU, ASMG and APT play an important role in the identification and allocation of spectrum. How do you think they could work together more effectively?

Rancy: The role of these groups is extremely important, not only by building consensus in their region, but by meeting regularly among the regions. I think they work very effectively in preparing for WRC conferences. In this, we have progressively improved the efficiency of preparations since 1995.

In addition to working for the WRCs, they could work more closely to harmonise frequency plans. Until now, this has been decided by each region, but we now have the example of Latin American countries adopting the APT 700MHz band plan, and this is the result of discussions between the regional groups. So I think this is something we will see more of.

There is increasing debate and activity related to the shared use of spectrum, whether through TV white spaces or other forms of licence-exempt access. What is your view on spectrum sharing?

Rancy: Spectrum sharing in this sense is not new. For example, WRC-03 tried to promote shared use for Wi-Fi in the 5GHz band, which was used for meteorological and military radar. The conference imposed restrictions on Wi-Fi devices to protect radar from interference by Wi-Fi devices.

In the case of white spaces, unlike in the 5GHz case, the device is not deciding which channel to use. This is done through a spectrum database that allocates channels on a case by case basis, in real time. The question, then, is what is the certainty associated with that? If you are an operator that provides a service using TV white spaces, you are never sure of having access to the spectrum you need, when you need it. Without that certainty, there could be a problem attracting investment for this model. So I think the question is still open. It will largely depend on the role of the spectrum manager and the type of licence and service that is foreseen.

Several countries have now completed the transition to digital television and assigned the Digital Dividend spectrum to mobile. Are you convinced this has been a win-win situation for broadcasters and mobile operators, as well as consumers?

Rancy: I am even more convinced now. Digital broadcasting networks costs broadcasters a lot of money, and the more spectrum they use, the more multiplexers, transmitters and maintenance costs they have to bear. It is always a painful decision for broadcasters to reduce the spectrum they use, but they have an economic incentive to adopt the latest, most spectrum-efficient technology. If you compare the technologies available five or six years ago to what is available now at the same cost, you find that the required spectrum can be divided by two or even four. This is where it is a win-win situation. Of course, arrangements have to be found to make sure that the transition is managed properly.

What are the critical needs for international spectrum management in the coming years?

Rancy: The most critical need is to provide mobile operators with the amount of spectrum they require to face the exponential growth of data traffic, which results from smartphones, tablets, PCs and portable computers. There are also other services that require access to spectrum, and they need to be satisfied as well. Although mobile requirements are very important, equally important are governments' spectrum needs — for public safety, weather forecasting and mitigating the effects of climate change, air traffic control and radionavigation.

Do you think there will come a time when we don't have enough spectrum to meet the needs of society?

Rancy: The spectrum available to mobile services will certainly never expand at the rate of mobile traffic growth. Most of the efficiency gains will come from technological improvements, in other words, the densification of spectrum use. This is what the ITU has been working on, in fact. At the beginning of last year, the ITU adopted the specification of IMT Advanced, and this offers high level of improvement compared to the current generation, providing not only greater spectrum efficiency but much more capacity and throughput. I'm confident the technology will enable us to cope with the spectrum crunch.

The ITU's well-established processes for reaching consensus among its members have been crucial to the development of the mobile sector. That said, mobile innovation and up-take continue to accelerate. Do you think the ITU is responsive enough to this pace of change?

Rancy: I remember 20 years ago when I started attending WRCs, there was the same kind of thinking. This is why we decided, at that time, to have WRCs every two years. But we soon realised that this frequency was not sufficient for consensus building and decision making because the discussion had not gone deep enough in two years. So in regard to the current four-year preparation process, there is no way we can move more quickly to deliver consensus decisions.

The question is why do we need consensus decisions? To attract investment into the mobile sector, there must be market confidence and regulatory predictability. Consensus decisions on spectrum at WRCs create that level of certainty. Imagine we were considering the identification of the 700MHz band for mobile through a process other than consensus. At WRC-12 we may have ended up with a vote of 49% opposed and 51% in favour of the decision. Without consensus, there is no guarantee that, at the next conference in 2015, the same vote wouldn't produce a different result. Through consensus, every member country has to sign the final acts at the end of the conference. This creates certainty that the decision is not going to change at the next conference, because everyone is committed to that decision. It may take time, but this is the only way.

Typically, it takes about 10 years between the WRC decision and the time when you see the operators actually delivering the service. I don't think the issue is the ITU. The system works, and it is well oiled. It provides market certainty for operators, and we see the results — the growth of mobile broadband services worldwide. As you can see, we have many reasons to be quite satisfied with it.

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Securing the Digital Dividend for a Mobile Future

This is one of a series of interviews conducted by the GSMA that aims to capture the experiences, insights and advice of industry regulators, government officials and others who have spearheaded the transition from analogue to digital television broadcasting, and released part of the surplus spectrum, known as the Digital Dividend, for mobile broadband.

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