Refarming of 900MHz spectrum
(Based on reports by Analysys Mason and others)

The formal situation


This proposal aims to amend the GSM Directive in order to allow the use of such bands by systems capable of providing electronic communication services not limited to GSM. The objective is to allow a wider choice of services and technologies and thereby to maximise competition in the use of the bands so far covered by the GSM Directive, while ensuring that services remain coordinated and safeguarding the continued operation of GSM. To this end, the use of this spectrum would be allowed not only for GSM, but also for pan-European electronic communication services other than GSM. As a first step, this would include UMTS while acknowledging that other systems may also be able to co-exist in these bands.

The text is available at: http://ec.europa.eu/information_society/policy/radio_spectrum/ref_documents/index_en.htm#gsm

The Background to the Commission’s Moves

These moves are intended to resolve the dispute between the Commission and the Parliament which for the past 18 months has prevented the re-farming of the 900Mhz band. Under the current Directive the band is restricted to 2G GSM services. This means mobile operators are not allowed to deploy 3G services in 900Mhz, even though its superior propagation properties mean this would offer considerable savings by reducing the number of base stations.

The Commission have been trying to change the Directive for over 18 months. The repeal proposal they put forward in July 2007 was rejected by the European Parliament, becoming one of the key battlegrounds in the power struggle between the two institutions over the control of spectrum policy.

The crux of the dispute was that the Commission’s original proposal of July 2007 would have replaced the Directive with a Commission Decision. Although a Decision is drawn up with the assistance of CEPT and requires the consent of the European regulators who make up the Radio Spectrum Committee (RSC) it does not require Parliamentary approval. MEPs can vote to accept or reject Directives, so they saw the Commission’s proposal as an erosion of their power.

The GSM Directive controversy became subsumed into the wider debate over the Telecoms Framework Review where parliamentary input over spectrum policy has also been a key issue. However, most of the MEPs’ proposals to increase their power were deleted from the compromise approved by the Ministers in the Telecoms Council on 27
Nov.

The difference between the two proposals (of July 2007 and November 2008)

The main change in the Commission’s new proposal is that it advocates amending rather than repealing the directive. Beyond that the text of the two documents only differs by a few words. The later version has a greater emphasis on the benefits of using 900Mhz to provide wireless broadband to rural areas.

Moving from repealing to amending means that the Parliament has the option to vote on whether there should be other services in the band. As before the technical implementation of this change will be left to the Commission Decision process described above. Parliament has always been in favour of opening up 900MHz, the challenge has been finding a process which maintains the balance of power between the two institutions.

The revised document is the result of what Commissioner Reding’s spokesman, Martin Selmayr, described as “close dialogue” between Brussels, the Parliament and the Council. The new proposal is “not so much about substance than about procedure,” he said. “This gives the European Parliament a stronger role in the European spectrum policy making process, as it is the intention of Commissioner Reding.”

As Parliament has always been broadly in favour of refarming the real question now is whether MEPs and the Council will find the mechanism proposed by the Council politically acceptable. Parliament has always been in favour of opening up 900MHz, the challenge has been finding a process which maintains the balance of power between the two institutions.

Assessing progress

Is this a breakthrough – the solution to a problem which has held back industry development for the best part of two years? “The Commission will talk about a ‘breakthrough’ only when the final text, as adopted, will be published in the Official Journal of the EU - because only then, this proposal will be the law and positively affect the industry,” said Selmayr.

However, he was confident that the other EU institutions would see the importance of finding an agreement: “[t]his proposal is further evidence of the Commission's conviction about the vital need for a dynamic and co-ordinated approach to spectrum management in the EU, such as that proposed by the Commission in its review proposals, at a time when growth in the European economy is threatened by the financial crisis and its broader economic repercussions.”

“The 900 MHz bands used for GSM, as well as other valuable frequency… such as the digital dividend, have a strategic importance in the development of wireless broadband access and other innovative applications that will boost European industry and make EU business more competitive,” he added.

The impact of the delay on the UK regulator has been significant. Ofcom is trying to progress towards an auction of spectrum in the 2GHz band. However, mobile operators T-Mobile and O2 are working on delaying action, using the courts, arguing that the
auction should not take place until a decision on 900MHz has been made, coincidentally preventing anyone from buying up the frequencies and deploying WiMAX or similar. Ofcom's opinion has always been that the spectrum should be sold off as quickly as possible, and on a technology-neutral basis, so companies can start deploying wireless services to compete with the incumbents. Those incumbents, however, might bid for some spectrum themselves, but argue they can't decide until they know what Ofcom's policy will be on spectrum re-farming of the 900MHz spectrum, which is currently limited by licence to GSM 2G technologies. That licence could be updated (ie: "re-farmed") to allow the use for 3 or 4G technologies.

(It is also relevant that O2 and Vodafone use 900MHz for their GSM services, while T-Mobile and Orange use 1800MHz. The smallest U.K. operator, 3, has no GSM spectrum at all. Because lower frequencies transmit further, the EC's proposals have the potential to give O2 and Vodafone the chance to have greater 3G coverage, at a lower cost, than their rivals. 3 stands to be the most disadvantaged network as it has no GSM spectrum to re-farm).

The legal case has been ongoing for a while now: most recently there has been an appeal from T-Mobile/O2 against the Competition Appeals Tribunal (CAT) decision that they do not have the jurisdiction to prevent the auction taking place: that appeal was rejected, however, meaning that the case can actually proceed, which is likely to be in February 2009. All of which puts the auction back to March 2009, at best, which is good news for incumbents who are intending to deploy GSM LTE (Long Term Evolution) 4G technology - that standard is still being worked on and won't be completed until the end of 2008 at the earliest.

The effects of delay

The spectrum concerned comes in three bands, and mobile operators T-Mobile and O2 are still working on delaying action, arguing that the auction should not take place until a decision on 900MHz has been made, coincidentally preventing anyone from buying up the frequencies and deploying WiMAX or similar. Ofcom's opinion has always been that the spectrum should be sold off as quickly as possible, and on a technology-neutral basis, so companies can start deploying wireless services to compete with the incumbents. Those incumbents, however, might bid for some spectrum themselves, but argue they can't decide until they know what Ofcom's policy will be on spectrum re-farming of the 900MHz spectrum, which is currently limited by licence to GSM 2G technologies. That licence could be updated (ie: "re-farmed") to allow the use for 3 or 4G technologies.

The case has been ongoing for a while now: most recently there has been an appeal from T-Mobile/O2 against the Competition Appeals Tribunal (CAT) decision that they do not have the jurisdiction to prevent the auction taking place: that appeal is scheduled for November 20th, after which the case can actually proceed, which is likely to be in February next year.

900MHz re-farming is linked to a rapid evolution to modern, nationwide, broadband-enabled mobile networks

The GSM directive currently stipulates that 900MHz frequencies must be reserved for GSM networks in Europe. It is expected that this legislation will be lifted, which will enable these valuable frequencies to be re-farmed for emerging UMTS 900MHz deployments.
The anticipated benefits of using 900MHz for UMTS deployments include lowering the cost of deploying UMTS and mobile broadband services in less populated, rural areas, and improving in-building signals. These benefits could be realised by incumbents, new operators or recent entrants across Europe.

However, there are two aspects of market evolution that will determine the benefits generated from early refarming: whether 3G voice and mobile broadband becomes a nationwide proposition, and whether there is a rapid migration of subscribers, handsets and voice traffic to UMTS networks (and subsequent rationalisation of the old GSM networks).

If refarming is delayed, any gains would be significantly diminished. For mobile operators, this could impact in three ways.

They would be required to make extra investments to deploy their networks at 2100MHz, without being able to rely on long-term access to the more cost-effective, refarmed 900MHz spectrum.

They would have to limit the extent of mobile broadband deployment, focusing on cities and dense suburban areas and neglecting areas of lower population density. Mobile operators would also have to delay their migration to 3G and operate overlapping GSM and UMTS networks in parallel for longer.

Figure 1 shows the relative values of refarmed spectrum, estimated using a generic cost model of a mobile operator.

In the situation of rapid migration to 3G combined with the early roll-out of nationwide mobile broadband, delays to 900MHz refarming will be costly. The value of having unrestricted access to this spectrum reduces rapidly by 97% for delays during the three years in which rapid network evolution occurs.

If the evolution of the mobile network is slower – with either limited migration or limited mobile broadband service availability – early refarming would still be important, but delays would result in a smaller reduction in spectrum value, around 40%–60% over three years.

If migration to 3G is slow and mobile broadband services are limited to urban areas, delays in refarming the 900MHz spectrum will not be significant. However, in this situation, the overall development of the mobile market could be significantly impeded.

Figure 1: Relative values of refarmed spectrum 2009–2013 [Source: Analysys Mason, 2008]

In order to create the maximum benefit for mobile operators, and to generate the greatest value, GSM restrictions on 900MHz frequencies should be lifted as soon as practical, ready for spectrum refarming from 2009 or 2010.
Consequently, the directors of spectrum policy in regulators and mobile operators should explore the opportunities for early 900MHz refarming within their jurisdiction and consider their options in the context of expected mobile market evolution. As experienced advisors to regulators, policy makers and operators, Analysys Mason is ideally placed to support organisations engaged in the debate on spectrum refarming.