Representing the Communications Services Industry

FEDERATION OF COMMUNICATION SERVICES

Spectrum Framework Review
A consultation on Ofcom's views as to how radio spectrum should be managed
Issued 23 November 2004

A response by the Federation of Communication Services

Introduction

The Federation of Communication Services is the trade association for the communication services industry that delivers radio, mobile and fixed telephony products and services to UK customers. Our members include spectrum users and providers of products and services to the business radio market, who form the Business Radio Group within the Federation. More information on the FCS and a list of our members may be found on the website www.fcs.org.uk

FCS welcomes the opportunity of responding to the Spectrum Framework Review. The review is a thoughtful and well crafted document setting out how Ofcom proposes to manage spectrum in the coming years, developing the ideas and policy already set out in the spectrum trading and liberalisation documents. Many of our general comments are similar to those submitted in our response to the Spectrum Liberalisation consultation of September 2004, which forms the Appendix to this document.

Key issues

As we have explained in the Appendix there are a number of key issues that we believe need to be addressed in order to develop the spectrum market and to move spectrum management to market control rather than command and control by Ofcom.

In summary these are:

- Spectrum trading and liberalisation are commencing in the UK but economic benefits are predicted to accrue only when other EU states follow suit; the UK may not gain anticipated benefits for a while. Research among FCS members has show a clear interest in trading by a minority but process hurdles have prevented trades taking place.
- The role and resourcing of Ofcom, which will have a crucial role in interference and competition regulation. The term light touch regulation implies that Ofcom will pull back from regulation, but we foresee that there will be a lengthy interim when Ofcom will need a constant level of effective

engineering resource. Ofcom has inherited the management of a complex and well established market, which it cannot withdraw from regulating rapidly without potential harm to users.

- The lack of a definition of the spectrum markets, which are necessary for Ofcom to ensure fair competition and the prevention of market manipulation and other anti-competitive behaviour.
- The need for licensees to have clear quality of spectrum SLAs from Ofcom in return for the licence fee
- A need for vigilant interference management by Ofcom during the introduction of liberalisation and a regime for managing the noise floor.
- Keep talking to industry and the spectrum community through industry groups so that the changes and problems can be addressed as they arise.

In response to the key points identified in section 1.8 of the consultation we would like to make the following comments:

1 What would limit the extent to which the market can be relied upon to deliver our objectives?

The market cannot act in isolation from the regulator as we have explained above. The Ofcom spectrum vision is laudable, but any freedom from technology constraints would have to be optimal and not at the price of destroying existing markets.

2 How much spectrum should be set aside for licence exempt use?

No more than Ofcom has proposed.

3 Should Ofcom allow licence holders to permit cognitive access if they wish but not mandate this?

We think that this subject requires much more debate so that the technical feasibility of cognitive access can be assessed for individual spectrum bands.

4 Should Ofcom pursue a more flexible approach to harmonisation?

We would caution Ofcom from pursuing a UK only route. FCS has supported the concept of harmonisation because of the economies of scale and service that result. GSM has been a success story. Tetra has also been a real success elsewhere in the world. The lack of private Tetra use in the UK has been due to spectrum not being made available by the Radio Agency despite clear market demand. Harmonised spectrum associated with the Tetra technology standard might have avoided this shortfall.

Responses to the consultation questions

Q1 Are there any major medium to long- term spectrum management issues that this review should be considering?

We predict that it is unlikely that any new national networks that require many new aerial sites will be possible in the UK due to the significant public antagonism to new infrastructure in urban, suburban and rural locations. Competition in service delivery over national wireless systems would then need to focus on services competition rather than infrastructure competition.

Q2 Do you believe that it is useful to publish a compendium of issues? How frequently should it be published? What information should be included?

Yes. A compendium of issues would be valuable, preferably maintained as living document that is updated when new issues are added. The RA spectrum strategy documents were of interest and importance to spectrum players and we welcome the proposal to continue this.

Q3 Are there any other issues of significance to merit mention in this document?

The policy issue of "entitlement in power" and use of licensed spectrum by a third party who does not pay for it is of real interest. The debate includes competition issues and the definition of "materially affecting existing services". The subject of GSM gateways- used by end users to reduce mobile to fixed call cost- has been under discussion for the past two years. Where GSM gateways do not materially affect the existing services would they now be permitted in the same way as cognitive radio were this given the go ahead?
There seem to be different approaches emerging that can either encourage competition and diversity or inhibit it.

Interference management and maintaining clean spectrum will be crucial elements of UK spectrum management in the next 10 years and should be high on Ofcom's agenda. This could include a record of interference complaints and how they were handled and a measure of the change over time of the noise floor by band- to identify whether licensed spectrum is becoming degraded and its value reduced.

Q4 are there important lessons to be learnt from other countries that are not addressed here?

Yes, spectrum liberalisation has not generated much trading. We believe that Ofcom may be over optimistic in its timescales. We made the same point in our previous submission on liberalisation set out in page 3 of the Annex.

Q5 Do you agree Ofcom's intent to maximise the use of trading and liberalisation?

In general our members agree in principle to maximising the use of trading and liberalisation providing Ofcom retains the appropriate levels of control over the resolution of disputes, interference and competition.

Q6 Are there other areas apart from those identified above, where trading and liberalisation should be restricted? Are there areas identified above where you believe that the trading and liberalisation could be fully implemented?

No comment

Q 7 Do you agree with Ofcom's approach to providing spectrum for licence-exempt use?

We agree with Ofcom's opinion that all access should not be licence exempt. Current licensed spectrum use fulfils many vital requirements for mission critical and business use- contributing significantly to UK economic benefit. We agree that licence exempt use can help to introduce new technology rapidly, but the UK regulator ought not to run the risk of non-policed chaos. The balance of 7% spectrum for non-licensed use appears to be a suitable amount. However, licensees will be very cautious if adjacent blocks to their spectrum are redefined as licence exempt and they would expect to be fully consulted.

Wi Fi is a notable success for unlicensed use, since it provides “free “access to spectrum. However user experience can be constrained by restrictions on use of the unlicensed spectrum in certain in-building environments.

Q 8 Is Ofcom’s proposed methodology to estimate the amount of spectrum needed likely to deliver the right results?

We would caution Ofcom to consider the variations of usage and geography when assessing the amount of unlicensed spectrum needed. If the range of licence exempt use is increased in rural areas, Ofcom might unwittingly be leaving users with a reduced quality of service, particularly if higher powered equipment sold for rural use were to be used in more densely populated urban areas.

Q 9 What is the appropriate timing and frequency bands for making available any additional spectrum for licence-exempt use that might be needed?

Ofcom’s proposal to monitor telemetry use below 1GHz and use of the 5GHz band is a prudent approach.

Q 10 Do you agree with Ofcom’s longer term proposals for market based spectrum management methods?

Q 11 Is the approach set out here, and in Annex H, for developing technology-neutral spectrum usage rights appropriate? Are there alternatives?

We agree with Ofcom that the definition of a system of spectrum usage rights is highly complex and that Ofcom has to approach this whole area with caution. The example on page 31 of the consultation document of a 3G operator acquiring broadcast spectrum and then negotiating with adjacent users does not take into consideration the impact on users in other bands due to intermodulation effects.

Before Ofcom continues along this path we believe that detailed debate on spectrum property rights is required resulting in a legal definition of spectrum quality for current licensees.

It is clear that management and regulation of the noise floor is essential and Ofcom is the sole body to undertake this role. A deteriorating quality of service due to a rising noise floor is already being experienced by our members. This directly affects the value of their spectrum. Not only should the noise floor be identified when a licence is issued but regular monitoring and reporting of noise floor changes will be an important ingredient of the regulator’s report to its spectrum customers.

Q12 Should Ofcom do more to resolve interference?

If, as anticipated, opening up the spectrum market results in more spectrum in play and more changes in use, then the level of interference will undoubtedly increase and more interference issues will arise. Ofcom as the legal authority will be faced with more disputes and complaints to resolve than it does now and so will have to ensure that it has an adequate level of technical resource to maintain the current level of service.

Our members have had the assurance of Ofcom that despite a considerable reduction in the staffing levels of the Field Engineers and Ofcom’s objective of reducing its costs year on year that the grade of service will be maintained. This remains to be proved.

Our members ask how Ofcom plans to manage the primary allocations to ensure that new users do not exceed their property rights.

Q 13 To what extent should Ofcom intervene in promoting innovation?

We would caution against intervention by Ofcom to promote innovation. If spectrum is available, interference disputes adequately resolved and the noise floor effectively managed then the market is more likely to respond with innovative uses for spectrum.

Q 14 Do you agree with Ofcom's proposed approach to harmonisation?

There are a few cases where UK use of the radio spectrum is not harmonised with our EU neighbours. In general adoption of ETSI standards brings economies of scale and affordability of equipment for UK users. We do not believe that the UK is big enough to go it alone in future and so we do not agree with Ofcom's proposed approach.

Q 15 Can you foresee any problems with the proposed approach to harmonisation other than those listed above?

We believe that innovation can be achieved within the harmonised standards and that Ofcom should review its stance, particularly as Ofcom's withdrawal from the ETSI process will leave it less aware of the new technical developments in the standards making bodies.

Q 16 Do you agree with Ofcom's proposal to continue with division by frequency as the primary method of dividing the spectrum?

Yes

Q 17 Is Ofcom's approach of not intervening to mandate entitlements in time appropriate?

Yes

Q 18 Do you agree with the RIA?

We believe that the effectiveness of the spectrum market in improving access to spectrum and thereby increasing overall economic benefit will be very dependent on Ofcom's involvement. Some aspirations need specific action by Ofcom such as "Ofcom will consider all potentially competing users of spectrum and ensure a level playing field as far as possible". This will require action to define the spectrum markets, assess market power and then put in place rules to ensure effective competition. No work appears to have started in this area. It should and soon.

The costs and benefits of the RIA rely heavily on EU studies. Benefits will only accrue when a high percentage of EU member states introduce trading and liberalisation. The UK is experimenting with these concepts and no doubt years will pass before the rest of Europe implements the same ideas, and learns from our mistakes, and then gains the benefits at much less cost. The RIA may well be over optimistic.

Spectrum Liberalisation

Federation of Communication Services

Response to
Ofcom's consultation on proposals to reduce or remove certain Restrictions on spectrum use
Issued on 17 September 2004

Contents

	Page
Introduction	3
Business radio	3
The role of Ofcom	3
Interference	4
Spectrum is not homogenous	5
Innovation	5
Business opportunities	5
Unlicensed spectrum	5
Responses to questions posed in the consultation	
Questions 1-4	6
Questions 5-6	7

Introduction

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We welcome the opportunity of responding to the consultation on spectrum liberalisation, which follows on from the statement on spectrum trading and associated consultations. We realise that Ofcom has set itself aggressive targets and that a considerable amount of thought and work has been put into the suite of publications published in recent months. In seeking to respond we have found the task time consuming. A trade association has to consult with its own members, many of whom have found the issues in the raft of Ofcom documents on radio spectrum both complex and difficult to comprehend. The high level theory of economic spectrum management does not always relate to practice and generally our members would have wished for more detail on how each proposal might be implemented so that they could assess the implications for their own businesses. In our experience the devil is in the detail of spectrum management and thereby success or failure will hinge.

The timing of this consultation on liberalisation, so close to the proposed implementation dates for liberalisation set out by Ofcom, raises a concern that the proposals are a fait accompli rather than a true consultation.

Business radio

Business radio is one of the guinea pig categories for spectrum trading and liberalisation. We are at the start of a very long road, where we cannot say whether the lauded benefits will accrue either for the business radio sector, the UK or indeed the EU. Dot Econ et al in their study for the EU, published in July 2004, said that the innovation benefits from trading and liberalisation can only be maximised if sufficient EU states adopt trading and liberalisation.

We are at the very start of trading in EU. We urge that this experiment with business radio does not jeopardise the sector's viability in terms of value and social benefits to the UK. There are around 50,000 business radio licences. The Regulatory Impact Assessment in the Ofcom Spectrum Trading consultation estimated that 8% of licences will trade each year. This would suggest that 4000 business radio licences are expected to trade per annum. We think that this may be an overestimate as recent data from Australia, a more mature spectrum market, indicates less than 4% of licences are traded annually.

The role of Ofcom

As spectrum trading is an experimental concept for the UK, we recommend caution and that Ofcom maintains a close engineering and policy watch during the transition to the spectrum market and reviews annually this continuing requirement. The transition might be as long as 5 years. If things go wrong Ofcom will need to be able to reinstate some or part of its command and control framework.

Ofcom is keen to put new ideas in place and deliver changes and benefits quickly, but spectrum changes take time. One can consider spectrum years to be 5 times as long as normal business years. For example it has taken Vodafone nearly 5 years from the date of access to spectrum through the market mechanism of an auction through to service delivery and the launch of its 3G service this month.

The FCS believes that Ofcom will have a continuing and crucial role in the future spectrum market in order to ensure that there is:

- no market manipulation or distortion by effective competition regulation,
- compliance with international standards,
- prevention of harmful interference to current users and predictability of interference for all users, with Ofcom as the arbiter. Ofcom requires continuing competent engineering resource to support this role.

The move to the spectrum market should not result in a lessening of the interference resolution service that licensees received from the Radio Investigation Service under the Radio Agency.

At the top level we still await the definition of the spectrum markets. Ofcom has said that it has adequate powers to deal with abuses of dominance but has not defined the spectrum markets or how it might assess dominance. We see that this is a gap in the whole market concept, which does not allay the fears of spectrum users concerned about hoarding or pressurised takeovers. New entrants or existing players can adopt an aggressive and anticompetitive approach to squeeze out existing users by manipulating the system. In this way they may be able to use trading and liberalisation to thwart the policy of encouraging diversity. A clear example of some of the potential consequences of a totally market driven philosophy is the conflict between Private Mobile Radio users and Nextel in the 800 MHz band in the USA.

Interference

One of the greatest concerns of licensees is whether liberalisation will lead to greater levels of interference. Licensees need quality of service Service Level Agreements (SLAs) with Ofcom in return for their licence fee. For example intermodulation effects of new spectrum allocations require analysis and that all potentially affected users are informed.

Where users can alter their use of spectrum, interference may occur to other users, co-channel, adjacent channel and more widely. An example of the latter is a report of interference from Airwave operating at 380-400 MHz into analogue TV in the 470-860 MHz band.

There is general concern at the rising level of the noise floor and the potential for this to deteriorate further should widespread use of UWB be introduced. Ofcom has said that it does not manage the noise floor, but some of our members say that Ofcom should take more responsibility for protecting the whole radio spectrum from noise interference.

Not all services currently use their full spectrum ‘entitlement’. For example analogue FM PMR does not fully occupy a channel mask. If an adjacent channel user then starts to make full use of the bandwidth to which they are entitled, such as by splitting a 12.5 kHz channel into 2x6.25 kHz channels, or moving to a different type of modulation which fully occupies the channel mask, they may cause interference to the adjacent channel users who had not previously experienced interference. However, both users may be fully complying with their licence conditions.

Where services are on shared channels, a co-channel user may change the nature of their system (either going to data, different modulation) which will change the profile of the service for sharers

Spectrum is not homogenous

We were concerned to hear at the Ofcom seminar on1 November from speakers from the economic sector that homogeneity is an aim of the spectrum market.

The spectrum bands have vastly different characteristics. Some are heavily used and others lightly used. We would expect administrative pricing to reflect this variation in perceived value, through pricing lightly used bands at a lower rate. Equipment has been designed and technology agreed at international level to ensure that spectrum efficiency is maximised and equipment sales benefit from economies of scale.

Innovation

We can expect to see innovation within the family of harmonised international standards as well as new international standards as they arise. For example the new Digital Mobile Radio standard shows great promise to deliver new and spectrally efficient services for business radio. FCS is to issue the first Business Radio Award for innovation in the use or delivery of business radio this year to highlight the inventiveness of the sector.

Innovation in use of radio spectrum may not always arise from new technology or equipment. Reuse of equipment through refurbishment can also be innovative. For example there is a burgeoning sector devoted to the reuse and recycling of mobile phones in the UK, taking advantage of the residual value within a mobile phone after the first owner has finished with it. A by-product of this may well be minimal contribution to the waste electronics mountain in the UK.

Business opportunities

Liberalisation and trading may bring new sources of spectrum into the market. For example, a broadcaster may offer UHF band IV and band V spectrum for PMR use in areas where it is not used for broadcasting. New sources of spectrum may be cheaper than Ofcom spectrum, such as sharing with MoD.

New opportunities may arise to do things not currently permitted. One of our members is interested in the potential for single channel (64 kBit/sec) fixed links in VHF and UHF bands to provide feeds to PMR base stations. In remote areas, these could replace expensive and unreliable leased lines to improve the competitiveness and viability of wide-area PMR.

Unlicensed spectrum

It is clear that use of unlicensed spectrum has brought benefits of new users to radio and improved business efficiency for example WiFi in the 2.8 GHz band and PMR 446 for short range on-site use. However such mass market use will need to be balanced with the growing demand for licensed spectrum and the quality of service expectations of users of licensed spectrum. Once spectrum is given over to unlicensed use, recovery for other uses can be problematic.

Use of new unlicensed spectrum might impact on existing spectrum businesses and we would welcome clarification of Ofcom's role in enforcing emission limits for licence exempt equipment, perhaps as a statement on the Ofcom website.

Questions posed in the consultation:

1 What are your views on Ofcom's general approach to introducing greater flexibility and in particular timing and phasing?

We can give cautious support for Ofcom's approach but the timing of introduction in each band needs to be measured. We do have concern about the lack of weight given to the benefits of harmonisation, particularly economies of scale that help to drive down equipment costs and interoperability.

2
A) What are your views on Ofcom's proposals to base initial spectrum emission rights and quality benchmarks on existing licence conditions and assignment criteria?

We agree with Ofcom's proposals to base spectrum emission rights on existing licence conditions as continuity is vital to avoid disruption to existing services, however noise levels do have to be addressed.

B) Is there an alternative approach you would suggest and why?

We have no other suggestions.

3 Would you find it useful for Ofcom to publish monitoring data and what format and content would you find most helpful?

We welcome greater transparency in Ofcom's spectrum management activities and publication of monitoring data would be welcome to assist spectrum users and their suppliers to understand spectrum usage. Our members have indicated that publication on the Ofcom website would be most helpful. The RA previously published monitoring information in printed format. Many of our members found the data helpful and we would support replication of this level of detail on the web, in particular a bar chart of channels versus % occupancy.

4 What are your views on Ofcom's specific proposals for the liberalisation in the licence classes?

- PAMR
- National paging
- Data networks
- Common Base Stations
- PBR
- FWA
- Point-to-point fixed links
- Scanning telemetry

PAMR and CBS licensees have welcomed the removal of the restrictions on their licences and the proposed reduction of business licence categories to 5. The removal of the anticipated distinction between PMO and PBR licences is welcomed by these spectrum management professionals as there would be a greater pool of channels available. Comparable licence fees would be the next step, provided that the fees for PMR did not rise unduly.

However not all the requirements of PBR licensees can be satisfied by third party provision. Many users rely on interference free operation for health, safety and operational reasons using on-site systems. They expect that this level of spectrum quality to continue.

Companies delivering paging services have expressed their support for the proposals for them in the responses from their representative bodies, the Wireless Messaging Association and the Onsite Communications Association.

Do you agree that these proposals are unlikely to be problematic from a spectrum management perspective? Do you see any other reasons why Ofcom should not proceed with these proposals?

Spectrum management concerns are not the only considerations for spectrum users. Professor Cave recognised in his Spectrum Review report that there were societal benefits from the use of radio spectrum and he challenged Ofcom to address these. Use of PMR provides health, safety and other benefits, which ought to be factored into management considerations.

5

A) **What are your views on the proposals for dealing with requests for licence variations and for dealing with interference**?

We believe that much more detailed analysis of the practical issues associated with interference management has to be conducted and shared with licensees before the liberalisation regime is put into place.

B) **Do you consider that they are reasonable, proportionate and will be effective in preventing harmful interference?**

We cannot say if this is so until the work that we suggest above in response to A) is undertaken.

6 Do you agree that, in the case of segmentation, the parties themselves should be responsible for resolving interference issues between them (i.e. that do not affect third parties)?

Where through the liberalisation regime Ofcom has introduced opportunities which result in increasing interference such as the case cited above, then it should be Ofcom's responsibility to resolve. Ofcom ought to think through where its policies might give rise to conflict and set out rules for resolution. Each licensee requires a SLA from Ofcom as interference is a revenue reduction opportunity.

Not all services currently use their full spectrum entitlement. Analogue FM PMR for example does not fully occupy a channel mask. If an adjacent channel user then starts to make full use of the bandwidth to which they are entitled, e.g. by splitting a 12.5 KHz channel into two 6.25 KHz channels or moving to a different type of modulation, which fully occupies the channel mask, they may cause interference to the adjacent channel users, who had not previously experienced interference. Both users, however, may be fully complying with their licence conditions, but undue interference may be the result.

In addition if a service such as UWB were to be used to fill the space between existing services other disruptions may occur as the noise floor rises.