



**Report from the
Federation of Communication Services and
Radiocommunications Agency**

**“PMR into the Future”
Seminar and Workshop
Held on 5 December 2000**

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1 Executive summary

PMR into the Future is a joint initiative from the Federation of Communications Services and the Radiocommunications Agency in response to the changing and challenging environment for the PMR community. The project comprised a series of surveys and information gathering exercises in 2000 culminating in a seminar and workshop on 5 December 2000. This report brings together the outputs from the seminar covering customer requirements, spectrum, and the move to digital systems and promotion of the sector.

Each of the seminar delegates, drawn from the user community, dealers, manufacturers and Radio Agency staff, put their own thoughts and proposals for the future of PMR into the workshop and are thanked for their contributions.

The major themes and discussion are set out in the 15 chapters of this report. A series of projects arise for the PMR community to take forward in a new Radio Agency PMR strategy group to be launched in February 2001:

- Clearer definition of user requirements and growth potential in all end user economic sectors
- Redefine and rebrand the service to make it more relevant for customers and strongly promote its benefits
- Urgently set up a new digital project to research, analyse, set aside spectrum and introduce digital systems
- Contribute a PMR strategy to the Agency Spectrum Strategy document
- Research and introduce private and public system roaming and co-operation
- Iron out any outstanding licensing problems
- Undertake a more comprehensive economic analysis of the value of PMR to UK plc
- Develop a business equivalent of PMR 446
- Consider the competence of suppliers and training requirement of all stakeholders
- Monitor health and environmental issues
- Set up effective communication methods within the PMR community.

A second event, *PMR in the Future*, is set for 21 November 2001 to review progress and developments and report back to PMR stakeholders.

2 Introduction

The year 2000 proved to be a watershed for the PMR community. The cost of access to spectrum for public mobile services had escalated following the £22.5 billion auction of spectrum for third generation systems. Mobile communications became dominated by the 40 million mobile phone users and their multinational suppliers. In this context the 2.5 million UK mobile radio users and their suppliers, the majority of whom are small or medium sized enterprises, seemed to be overshadowed. In addition users and industry were concerned about the lack of digital spectrum, product and services to move PMR forward into the digital age. There were continuing historic problems associated with licence conditions.

The Federation of Communications Services, FCS, the industry trade association, and the Radiocommunications Agency, RA, had each separately concluded that action was necessary to ensure that the vital services provided by PMR continued to add to the economic value of UK plc. The first step was to meet, exchange ideas and work in partnership to involve all interested parties in taking PMR into the future. Three months of research in late 2000 among users and the industry combined with the feedback from the Agency's regional customer panels, provided a comprehensive analysis of the sector.

The product of the analysis was presented to a PMR sector seminar on 5 December 2000, *PMR into the Future*, chaired by **Barry Maxwell**, RA Director. Speakers from industry, **Sir Angus Tait**, Tait Electronics Ltd, and **Andrew Beever**, Motorola, set out the value of the analogue services and prospects for the digital future. Representatives from the user community **John Evans**, Speedwing, **David Tripp**, CSS Spectrum Management on behalf of the utilities and **Steve Clarke**, Advanced Communication Information Service explained their PMR requirements. **Jacqui Brookes**, FCS, and **Paul Jarvis**, RA summarised the perspectives of the trade body and RA respectively.

More than one hundred users, industry members and government officials in workshop sessions then reviewed the data and developed their proposals for the strategy to take the sector forward. This report covers the outputs from the workshops. Implementation of a strategy for PMR will continue in 2001 by means of a RA PMR Strategy Group. A second event is planned for 21 November 2001.

3 Rebranding of PMR/self provided systems

Stakeholders in the PMR community considered customer perception of the PMR sector and its positioning within the wider communications community at the workshop. They concluded that:

- PMR had a small voice in the wider mobile industry
- PMR kit was not stylish enough to attract users in new target markets, nor in some existing markets
- Customers were faced with confused messages and acronyms
- The industry needed more co-ordination and to raise its profile
- There was a need for creativity in order to attract more users
- Strong promotion of the benefits of PMR services was needed
- PMR needed to re-farm, re-launch, and re-equip.

Moving into 2001 the PMR strategy group needs to consider having a new name that all stakeholders would identify with and use. The focus from industry would be to promote the dealer

as the user's consultant providing solutions to customer requirements, with emphasis on new technology and good service to the customer.

The scope of the service required consideration- not only the existing analogue services but new analogue and digital services as well as Wireless LANs. Business Management Radio was suggested. A rebranding exercise led by suppliers but involving all other stakeholders was an urgent project.

4 Spectrum access and licensing

A strong message supporting the transition to digital technologies was given by the industry but they were concerned about the prospects for access to spectrum for these new services in the short term. Voice communication is an ongoing requirement for all user groups, but many businesses that have integrated data into their systems have seen the demand for voice fall significantly. Higher data rates can be achieved by moving to a broader band technology. The concerns of both industry and user groups concerning spectrum access and licensing are listed below:

Spectrum access

- Provide a clearly defined route of access to spectrum and an equitable licensing scheme.
- Lack of spectrum for new services, particularly Tetra
- Easier and faster access to spectrum is required
- Better strategic planning of PMR spectrum, clearly reported in the Agency Spectrum Strategy document
- Narrow band frequencies can be allocated to create more speech channels
- RA is requested to respond faster to realistic industry requirements
- PMR band alignment to CEPT plan (All bands to be aligned).

Licensing

- Both the licensing system and the industry are fragmented due to the evolution process; all parties need to consolidate and reduce the complexity of systems and licensing
- A more open, well communicated set of licensing policies and procedures from RA is needed- currently there is a mixture of licensing techniques
- There is confusion in trunked analogue system licences
- Integrated systems need integrated licensing
- Overlay PMR with public systems
- Roaming between systems must be considered in order to provide cost effective and dynamic extension of services and coverage.

5 Spectrum value

In order to strengthen the case for radio spectrum dedicated for private business systems, a more precise definition of the economic benefits and contribution from PMR to the UK economy must be found. Although this is linked to the value of spectrum it is also a key to securing spectrum for future PMR use. The industry and other stakeholders need to help define the real economic value of PMR to UK businesses and Government.

Small companies do not have sophisticated accounting systems to provide the necessary data requested by the RA study carried out in summer 2000. The questions to be answered are: What aspects of business does PMR enable? What other technologies compete and what advantages and/or disadvantages do these have?

The RA will be looking again at how the economic benefits of PMR can be assessed and what it contributes either directly or indirectly to the UK economy.

6 User demand and economic impact

Approximately 2.5 million mobile radios are in use in the UK in every sector of the economy. The growth in the numbers of users has steadied, with particular growth in on-site systems and hire fleets. End users value wide-area systems but numbers are declining.

Data on user requirements arises from feedback from end user participants at the seminar and from an end user survey carried out by FCS in November 2000.

The FCS survey revealed that 80% of respondents said that the licence was good value. Over 90 % said that their radio system was vital or beneficial to their business and suited their business requirements. 70% observed that PMR improves their business efficiency. Only 25% were seeking additional facilities and 30% thought they would upgrade or change their system in 2-5 years.

Key issues for customers were coverage, reliability, cost, and integration of data services with their current business systems and resolving interference issues. Dual band equipment, speedier licence application turn round times were also perceived as important. Wide-area coverage in a cost effective way had to be resolved- options proposed were shared private networks or roaming between public and private systems. Specific problems have to be resolved. For example in a hospital environment helicopter ambulances, A&E, porters and medical staff must all be able to communicate on the same system.

Many large end users were despairing about the lack of spectrum for private Tetra systems despite repeated requests. As convergence of communications technologies develops, all customers will need to revisit the services they want to ensure they receive continued value for money. Industry needs to have a sharper definition of customer requirements in the rapidly changing market place.

The impact of PMR on the economy had been assessed by the RA in a study during summer 2000 (see chapter 5) and in a paper by FCS. The range of values attributed from the impact of PMR on GDP from the two sources was of the order of £1-2 billion.

Major projects for the strategy group moving into 2001 suggested were:

- Another economic impact study
- Another in-depth customer satisfaction study.

7 Customer panels

The RA local customer panels were set up in each region in early 2000 as a forum for Agency staff, industry and users (details may be found on the RA website www.radio.gov.uk).

The RA plans to build on the customer panels as a valuable communications mechanism at the local level which will identify changing customer requirements, give an early indication of any need for policy changes and, most of all, to act as a forum for local debate. The panels are certainly there as a local vehicle for dealers, users and the RA to jointly develop thinking and then feed into central policy making.

8 Digital project

The cellular companies have exploited the digital revolution, which has so far passed by PMR. Workshop delegates indicated that it is important to establish what digital technology can do for privately run systems. Getting this defined and matched to suitable technology will be the key to future success. Delegates identified the following elements for a new project that has the objective of bringing access to private digital systems:

- Define customer requirements
- DIIS (Digital Interchange and Information Signalling) should be developed as fast as possible and spectrum made available
- Technologies such as Tetra 2, Tetrapol and IR2008 need to be evaluated
- An analogue to digital migration analysis and planning programme needs to start
- Common interfaces need to be developed (see chapter 10)
- A study of whether narrow-band or wide-band technology is the most efficient for purpose
- Definitions are needed for coverage area, protection ratios and establishing the balance between voice and data
- Roaming (perhaps to public operators for range extension and international use)
- Monopolies are a concern when PSTN or Internet access is required- action by Oftel is needed
- Full duplex requirement and interconnect with PSTN
- Setting out a clear route and time scale for access to digital systems.

9 Private wide-area communications

The next advance in communications technology will be the arrival of constant connectivity, with the expectation that each individual is always connected to the information web (superhighway) no matter where they are. Only the medium of connection and the bandwidth available will change. This cannot be accomplished by a single technology or network but by a multiplicity of complementary transmission media, including both public and private networks.

The concept of private radio networks is enjoying a revival thanks to the imminent arrival on the market of various wireless local area network products and even personal area network devices. There is a substantial niche for private mobile wide-area services serving a number of areas including transport providers, safety type services that need high reliability standards and anyone with a regular need for wide-area communications that are either too expensive to provide via cellular or too critical to trust to cellular.

The new wide-area services will not be voice focussed but will be based around provision of critical data. Voice will still be needed but may become secondary in a corporate wide-area network. This service will be complementary to the fixed corporate wide-area network (WAN) which is the backbone of most modern large businesses. Essentially radio (PMR) will be needed to provide the wireless and therefore, mobile, component of that network.

On the downside, wide-area PMR requires high sites for coverage against the trends of higher site costs and increasing difficulty in gaining planning permission.

10 Common interfaces between PMR and other services

- IPv6 is an example of a common standard to provide universal compatible comms in the future. It is seen as the key to develop the next advance in communications technology
- This is a standard far above the physical (PHY) and medium access control (MAC) layers of the network model and resides solely in software. However the concept of a universal interoperable standard for comms is an important goal in the development of the industry.
- The next advance in communications technology will be the arrival of constant connectivity, where the expectation will be that the individual is always connected to the information web (superhighway) no matter where they are. Only the medium of connection and the bandwidth available will change to fit the circumstances.
- At the PHY and MAC layers connectivity will be accomplished using a multitude of technologies and standards
- These technologies will need to be complementary rather than competing in order to support IPv6 or its equivalent
- Given the general developments in the comms industry and the economies of scale from cheap digital components PMR systems are unlikely to remain largely as stand alone analogue voice only services. It is rather more likely that they will develop into private data networks providing dedicated low bit rate (below 1 Mbit/s) services to industries that require high system availability to carry critical information
- There is a need to develop interfaces between private radio systems and the other technologies to achieve the goal of constant connectivity, which are common open standards and not proprietary.
- This includes interfaces between PMR and broadband technologies (at bit rates above 1 Mbit/s), other low bit rate technologies, fixed media and public access mobile technologies like GSM, TETRA and 3 G.

11 Industry proposals for a business equivalent of PMR 446

Many PMR industry players, manufacturers, distributors and dealers have benefited from the introduction of the PMR446 service. Based around simple back-to-back handset radios with limited range, PMR446 has no licence requirement and can therefore be used for business or leisure pursuits.

PMR446 was introduced following the success of SRBR (Short Range Business Radio). SRBR, as the name implies, was a service for business use only and required a licence fee, but did not have EU frequency harmonisation PMR446, which uses the same technical specification parameters and

operates at 446 MHz, goes from strength to strength as a consumer product available off-the-shelf and over-the-counter. As such the product can be purchased and used by anybody, not just businesses.

From a business user point of view this is not very satisfactory. Imagine a school caretaker talking to his maintenance team using PMR446. He has no guarantee that kids in the playground will not be listening to or even jamming his messages. Worse scenarios can be envisaged, in security situations for example.

With the withdrawal of SRBR, PMR suppliers no longer have the ability to offer a low-cost and effective communications tool for business customers requiring a service that is free from having all-and-sundry using, and possibly blocking, the same channels.

Clearly there is a demand from both users and the industry supply chain for an inexpensive and lightly regulated service to satisfy short-range radio communications for business use. Manufacturers and regulators are challenged to provide a solution.

12 PMR dealer base and competence

Delegates to the workshop recognised that the PMR dealer community has great value in its role as the consultancy and interface with business customers. Most customers are more concerned with the service they get rather than the detail of the technology. Dealers play a vital role in reviewing customer requirements and offering solutions. Dealers themselves are seeking improved communications mechanisms.

Historically a range of measures of dealer quality and competence have been proposed or put into practice such as BS 5750 and ISO 9000, but none have been comprehensively adopted for a variety of practical reasons. Codes of Practice such as for Short Term Hire were incorporated into the relevant licence.

New pressure for an illustration of competence by the dealer community has come from:

- The RA with the introduction of new e-licensing procedures and feedback from the local customer panels
- Customers seeking reassurance about their suppliers and comparison with other communications suppliers.
- The challenge to industry in the Communications White Paper (published on 12 December) to come forward with effective codes of practice for service delivery.

Development of any new programme would require consensus across the whole PMR community.

13 Education and training in the PMR community

Opportunities for training in the sector are available from many specialist-training organisations. Many of them provide, as standard packages, training from basic principles right up to higher levels. However, because training houses normally have to create special programmes for the PMR sector these are more expensive than the standard programmes.

Most of the FCS Groups are keen to endorse further training in their particular areas. For the PMR sector, with the closer links between the Mobile Radio Training Trust and the FCS Trade Association, there is the potential for cost effective programmes to be developed. If a number of participants can be persuaded to work together the costs can be shared and the trainee cost will be more acceptable.

The FCS dealer survey identified a need for greater commercial awareness by Agency staff and many respondents offered visits and information days. Manufacturers also have awareness programmes.

14 Health and environmental impact

PMR, as well as other radio transmitting systems, is coming under increasing public scrutiny concerning health effects on humans from the radio equipment and base stations. Currently the focus of public concern is on mobile phones, following the Stewart Report in May 2000, and publication of information leaflets by the Department of Health in December 2000. Where questions cannot be answered, research on an international basis is needed to respond. The PMR strategy group will need to keep abreast of developments in this area and if necessary initiate research. Communicating current knowledge to the whole PMR community will be an ongoing responsibility.

15 Communication within the PMR community

In order to maintain a dialogue between all elements of the PMR community and provide news alerts, a series of mechanisms were requested by workshop delegates and respondees to the invitation to attend.

FCS and RA will post relevant information, including this report, on their websites:

www.fcs.org.uk

www.radio.gov.uk

and in addition use the mechanism of their publications, RA PBR News and FCS Bulletin.

The industry is considering more public awareness of PMR via exhibitions and conferences, and a second seminar event, *PMR in the Future*, is planned for 21 November 2001.

The RA is continuing its series of local customer panels.

16 Contributors

This report has been compiled from the reports of the ten working groups attending the *PMR into the Future* seminar and workshop on 5 December 2000 and edited by **Jacqui Brookes**, FCS, with additional contributions from **Paul Jarvis** and **Annette Henley** from the RA and **Anton Matthews**, FCS. A list of attendees is given in the Appendix.

Appendix

FCS/RA PMR INTO THE FUTURE SEMINAR Tuesday 5 December 2000

ATTENDEES

SPEAKERS:

Barry Maxwell	Radiocommunications Agency
Sir Angus Tait	Tait Electronics Ltd (by video)
Brett Smythe	Tait Europe Ltd
Jacqui Brookes	FCS
Andy Beever	Motorola
John Evans	Speedwing
David Tripp	CSS Spectrum Management Services Ltd
Paul Jarvis	Radiocommunications Agency
Steve Clarke	Advanced Communication Information Service (ACIS)

Government

Annette Henley	Radiocommunications Agency
Bob Malyon	Radiocommunications Agency
Bruce Davies	Radiocommunications Agency
Chris Winton	Radiocommunications Agency
Dave Howell	Radiocommunications Agency
Dave Sweeney	Radiocommunications Agency
David Thomas	Radiocommunications Agency
Des Jackson	Radiocommunications Agency
Girish Patel	Radiocommunications Agency
Graham Scothern	Radiocommunications Agency
Hazel Canter	Radiocommunications Agency
Ian Eyre	Radiocommunications Agency
John Ayres	Radiocommunications Agency
Mark Redman	Radiocommunications Agency
Malcolm Foulds	Radiocommunications Agency
Michael Hodson	Radiocommunications Agency
Mike Bothma	Radiocommunications Agency
Mike Lipscomb	Radiocommunications Agency
Nick Hodgson	Radiocommunications Agency
Martin Broadway	Radiocommunications Agency
Rick Benson	Radiocommunications Agency
Ron Stanley	Radiocommunications Agency
Roy Howells	Radiocommunications Agency
Steve Edgar	Radiocommunications Agency
Tracey Locke	Radiocommunications Agency
Vaughan Asque	Radiocommunications Agency

Industry

Richard Searle	2CL Communications
Gerald David OBE	Aerial Facilities
Ted Beddoes	Aerial Facilities
David Britland	APD Communications
Rodger Hickman	APD Communications
Phil Hartles	Auriga Communications
Mark Barnby	Auriga Communications
John Dundas	Auriga Communications

ATTENDEES- continued**Industry**

Steve Luscombe	DCRS		
Simon Bingham	DCRS		
Graham Tufnail	Direct Telecom Services Limited		
David Sorrell	Entec UK Ltd		
Brian Seedle	Fylde Microsystems Ltd		
Colin Jameson	Highpoint Community Repeaters		
George Storey	HT Communications		
Barry Vane	Icom (UK) Limited		
Paul Gill	JFMG Limited		
Ron Little	JFMG Limited		
John Knott	Kenwood Electronics		
David Divecha	Kenwood Electronics		
Jim Short	Key Radio Systems Limited		
Tony Lowes	Key Radio Systems Limited		
Richard Jaworski	Key Radio Systems Limited		
Mike Rawlings	London Communications Plc		
Richard McLachlan	Lowe Electronics Ltd		
Andrew McLachlan	Lowe Electronics Ltd		
Tim Cull	Motorola Ltd		
Chris Philips	Motorola		
Diane Keevil	Motorola		
Derek Baker	Multitone Electronics Plc		
John Thompson	Panorama Antennas		
Roy Pierce	Procom Communication Services		
Malcolm Salmon	Samair Systems		
Peter Given	Simoco Europe		
Bernie McGovern	Simoco Europe		
Paul Smye-Rumsby	Smye-Rumsby Ltd		
John Billowes	Tait (New Zealand)		
Ray Gloster	Zetron	Anton Matthews	FCS
Tim Sunderland	Zycomm	Merlene Mills	FCS

User

Mark Rogers	Eurotunnel
M Cassell	GB Agencies Ltd
Bob Scott	Gloucester Royal NHS Trust
P Gardner	Hutchison Ports UK Ltd
KR Saagi	Hutchison Ports UK Ltd
Peter Swann	ICL
Simon Parsons	Joint Radio Co Ltd
Paul Cracknell	Laing Ltd
Kevin Finn	Lutterworth Coaches Ltd
Joe Harbourne	Notts Fire and Rescue Service
R Eaion Corlett	TNT
R I Jackson	UECC (Terminals) Ltd
Don Boyer	UECC (Terminals) Ltd
C L Priestley	W Morrisons Supermarkets PLC