2nd Radio Montreux
9–11 June 1994

2nd Radio Montreux consisted of a technical exhibition with about a hundred exhibitors and a symposium of audio–visual presentations which covered engineering, management and programming topics in radio broadcasting. Amongst the exhibitors were the European Broadcasting Union and the RDS Forum.

The event opened on the Thursday morning with welcome addresses from Mr. Frèdy Alt (Mayor, City of Montreux), Mr. Daniel Kramer (Chairman, 2nd Radio Montreux) and Dr. Albert Scharf (President, EBU). The platform host, Mr. Michel Ferla (Executive Director, 2nd Radio Montreux) then introduced Lord Chalfont (Chairman, UK Radio Authority) who presented the highlight session "The Future of Radio".

Lord Chalfont noted with interest the technical innovations which were to be discussed at the Symposium. *I look forward, as a listener to radio, to enjoying the fruits of your labour. I hope, however, that in the field of programme compilation, production and presentation, the integrated automated system will not destroy the personal touches and the local character that often contribute to the enjoyment and value of radio programming.*

The Symposium programme was divided into three concurrent streams, dealing with management, programming and engineering. The present report gives an overview of the engineering sessions which, reflecting the current trends in sound radio, were dominated by digital sound production and digital audio broadcasting.

Another of the principal topics – both in the engineering sysmposium and on a number of the exhibition stands – was the automation of radio stations which was of such concern to Lord Chalfont.

The integration of computer technologies and digital audio systems now enables radio stations to automate many parts of their operation, including news acquisition and editing (audio, data and text), music scheduling and night programming.

Many of the systems being planned or in use are based on standard PC networks, with the software running in a Windows environment. One such example is PACE, a computer–aided newsroom editing system which has been installed at the premises of CBS Radio in Washington DC. Using icons on a Windows desktop, it contains all the tools and controls necessary to route, connect, record, edit and store audio for later retrieval. The interface behaves much like a "video game" and was developed in order to eliminate the fear which certain people have of computers.

Another important part of an automated radio system is the audio storage device. Current audio storage media, such as the CD jukebox and DAT player, are progressively giving way to electronic media, such as hard disks; the audio data is handled by being copied, read and written, just like any other computer data. With the introduction of digital audio compression standards, such as ISO/MPEG–2 Layer II (MUSICAM), a complete audio sequence can be stored on a few megabytes of disk space in just a few seconds.

Süddeutscher Rundfunk (SDR) has been operating a computer–aided broadcast system in Stuttgart for more than ten years. In the light of its experience, SDR expressed concern about the lack of an international standard for audio file formats and has
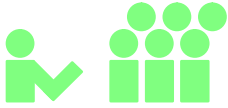
launched a proposal, in conjunction with various other German and French broadcasters, and the Institut für Rundfunktechnik (IRT) in Munich. The introduction of an international standard would facilitate audio file exchanges, both in–house and externally.

Other worries were expressed by Schweizerische Radio– und Fernsehgesellschaft (SRG) during their presentation on the Radio Broadcast CIM–system. The SRG is concerned that there are no finished radio automation systems yet on the market: there have been too many releases, too many promised features, and product stability has been poor. Commercial systems have different strengths and shortcomings, often making it necessary to combine products from different suppliers in order to achieve high–quality performance.

The SRG noted that the introduction of radio automation systems will cause the post of "technician" to disappear in the long term; technical assistance may only be required for complex live transmissions. Similarly, the number of staff in music–scheduling and sound–production areas will decrease. SRG noted that staff working in automated areas will be required to have interdisciplinary skills (musical, technical, documentary, etc.) and increased flexibility; they will need to be more product/client orientated.

In essence, these latter concerns reflect a need for training and, appropriately, the symposium session on training sought to respond to questions such as *Should the broadcaster of the future be more of a computer engineer?*

Rapidly–changing technical developments, recurrent organizational changes, quality and value for money are just a few of the factors influencing the training of broadcast staff, including those who work in radio. As the traditional barriers between skill areas are swept away, there is a changing division of labour which has to be addressed by modern–day training programmes.

"Assembly–line" courses and training aimed at specific professions are thus being phased out, to be replaced by cross–skilled training programmes and tailor–made courses – some of them highly–specialised. Rather than provide long (multi–week) courses which need to be planned months in advance, training programmes are moving in the direction of shorter seminars and workshops, aimed at relating skills to the ever–changing environment and the programme output, rather than specifically to the equipment.

Despite its obvious cost implications, training has to be seen as an investment, and work should be organized to allow time for it. Staff should be trained how to *learn* (or keep on learning) new tasks, rather than being trained how to *do* them.

The confusion regarding international audio standards, mentioned earlier, was demonstrated again in the presentation on the MS Disc – a new format for audio recording and production.

The MS Disc has a diameter of 133 mm and is encased in a protective cartridge, marginally different in size to existing data magneto–optic discs (to avoid any confusion). The MS Disc has a recording capacity of 1.3 Gbytes, recorded on one side of the disc only, and offers 80 minutes continuous recording of, for example, two–channel 20–bit audio sampled at 44.1 kHz. Although particularly suited to recording, editing and mastering work in the production of CDs, the MS Disc is being promoted for use in other areas, including broadcasting.

As the Digital Audio Broadcasting system matures, and as broadcasters move closer to the start of "real" services, the impact of DAB on production facilities is begining to exercise the broadcasters' imagination. According to the BBC, the main attractions of DAB to the "ordinary" radio listener are likely to be its ruggedness, reliability and ease of use and, perhaps most of all, the facility which allows the listener to select the compression level most appropriate to the listening environment. The hi–fi enthusiast, on the other hand, will be more interested in the very high sound quality offered by digital delivery. Following this argument to its logical conclusion, the BBC presentation suggested that any defects in the broadcasting chain – especially those caused by analogue equipment – will be a cause for concern to the hi–fi listener, rather than the "ordinary" listener. In consequence, the BBC believes that it is not necessary to replace all the analogue equipment in their studios, production centres and outside broadcast vehicles, simply to accommodate DAB transmission. It is believed that other factors will be the driving force behind the conversion of radio studios to all–digital operation, such as the cost of ownership over the lifetime of the equipment and whether the digital equipment will accelerate and/or simplify the production processes. While the digital revolution will undoubtedly have a major impact on production equipment, the adoption of digital equipment will be the result of pressures other than the pursuit of the best audio quality.

While much attention is focussed on DAB, the Radio Data System (RDS) continues to benefit from improvements (especially in the structuring
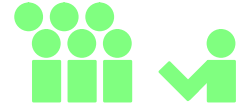
of services built around the RDS data channel) and new applications. A comparatively new use for RDS is the role it can play in the differential Global Positioning System (DGPS). With the basic GPS network of 24 location and navigation satellites, a positional accuracy of typically 100 m can be obtained in a dense urban environment. Using the RDS signal as an additional path carrying local offset data to a combined GPS/RDS receiver, much more accurate positional information may be determined – down to typically 10 metres in an urban environment. While such applications may be of little interest to the vast majority of radio listeners, they may have substantial economic implications for industry and the public utility services (for example, they allow road junctions or underground cables to be located more precisely) and thus constitute a useful source of potential revenue for broadcasters.

The proposed Astra Digital Radio (ADR) system will enable up to 12 stereo/dual–mono audio channels to be transmitted by each of the television transponders on Astra satellites 1D and 1E. This implies that a substantial number of channels could be available in Europe in the next few years, each having the capacity to carry RDS information, control data, in–house data and conditional access information.

ADR channels will be made available to public and private radio operators, to pay–radio operators, and for use as feeder links to terrestrial FM and future DAB transmitters.

A full afternoon session was devoted to digital radio services and, in particular, DAB. Most of the presentations were devoted to describing how digital radio will be implemented in various parts of the world.

One of the presentations described the replies to a questionnaire which had been sent to leading broadcasters, manufacturers and regulators in Europe. Radio Montreux symposium delegates learnt that the release of the European Standard (ETS) for DAB was seen as the most significant DAB achievement over the last 12 months; that large–scale field tests and acceptance of the DAB system outside Europe were envisaged as being the most important objectives to be attained during the next 12 months; finally, that rapid IC chip–set development leading to low–cost receivers was a key problem remaining to be resolved. Visitors to the Eureka 147–DAB stand in the Radio Montreux exhibition will have found some cause for comfort regarding JESSI chip–set development, and on the Philips stand they will have seen the first commer-

cially–available 3rd–generation DAB receiver[1]. Other DAB–related hardware on show included a complete credit–card sized MPEG audio codec.

Other factors regarded as having an essential impact on the launch of DAB were frequency–band harmonization and an official commitment to introduce the system and services in European countries. One theme to emerge from the questionnaire was the familiar "chicken and egg" situation: broadcasters are looking to manufacturers, while manufacturers are looking to broadcasters, to take the lead in DAB.

Exhibition visitors who remembered the first demonstrations of DAB technology, barely five years ago, will have been impressed by the rapid advances now being made, notably in the development of custom ICs and the DAB service multiplex environment. The scientific euphoria that surrounded the first COFDM and MUSICAM (formerly Mascam) hardware prototypes is rapidly giving way to the hard work and harsh commercial realities of equipment design for mass–prodution and preparations for the public launch of real services.

The final afternoon session of Radio Montreux, organized by the EBU, was devoted largely to reviews of the current studies within the EBU concerning the options and possibilities for service implementation, notably with respect to frequency availability and service planning for terrestrial DAB. The session highlighted the continuing need for international coordination as a means of promoting the smooth introduction of DAB in the various countries of Europe, as and when each country feels that the time is right.

Under the deluge of technical information, impressive digital audio hardware and software, and the unswerving enthusiasm of the engineers seeking to get more performance into ever–smaller black boxes, the last paper of the Symposium, delivered by Mr. Peter Baldwin (Chairman, UK Radio Authority), made a heart–felt plea on behalf of the listening public who will not necessarily be best–pleased when asked to pay a premium for a radio receiver which can (potentially) do more than ever was asked for – but which cannot be enticed into delivering even the local news bulletin without multiple button–pushing and frequent reference to the user–guide. DAB receiver designers – please take note!

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1.   The Philips receiver was described in EBU Technical Review, No. 259 (Spring 1994).