*BBC Research & Development exists
to give competitive advantage to the
BBC through technology*

foreword

BBC R&D exists to give competitive advantage to the BBC through technology. This year, we have played a leading part in some of the BBC's most significant achievements: a team effort between R&D people and colleagues from all parts of the BBC and our partners in industry.

Among our achievements were world firsts in digital broadcasting, including the first enhanced TV service on DTT, the first public audio description service and the design for the first single chip DVB-T demodulator. Our work on programme-making led to the first prototype digital radio camera, the first demonstration of media objects moving between standard PCs across standard IT networks; and the first depth-mapping system for the Virtual Studio.

The nature of these achievements reflects the changing priorities in our work.

For a number of years we have been strongly focused on the development of digital platforms for broadcasting and online services. The BBC was the first broadcaster in the world to establish a complete set of digital services, offering television and radio on terrestrial, satellite, and cable networks, with a complementary Online presence for people with access to the world wide web. These services would not have been possible without

the systems and technology developed and delivered by BBC R&D.

This year, we have been able to transfer more of this technology to the operational areas of the BBC. Our team of IT specialists who designed and built the infrastructure for the BBC's Online services have now transferred to Online Operations. Responsibility for the Digital Radio infrastructure is being taken over by Radio and Resources; and we have less involvement in the day to day running of digital television services. Of course there is still much to do to complete the digital broadcasting picture and we continue to devote a lot of energy to this field. In particular we are breaking important new ground in the delivery of effective multimedia, data and text services, especially the schedule information needed by digital Electronic Programme Guides, and in ancillary services like signing and audio description which are of tremendous value for our disabled audience.

But as the BBC becomes increasingly familiar with the

technologies of digital broadcasting, R&D is able to devote more resources to supporting the needs of programme makers. This is highly complementary to the BBC's 'Imagineering' initiative which explores new kinds of programme content; and it reflects the increasing importance which the BBC is placing on the business of producing programmes.

Virtual Production therefore remains one of our major themes. Its benefits are partly in simple cost savings. But it also allows us to create programmes that would never have been possible with traditional techniques. The concepts are now expanding to virtual actors, as well as sets: the potential is enormous.

A major new area of work is to bring IT technology to support the production process. Much of today's broadcast equipment is specialised and expensive; but IT has now reached the point where many of the production functions can be carried out on a normal desk top computer, bringing faster, cheaper and more effective processes

into the production office. Our work integrates the networks, hardware, software, metadata and middleware needed to allow media files to be transferred and manipulated easily and cheaply through the production process.

This year our work on speech recognition has come to fruition. It is already in regular use to index the News archive and to increase the amount of subtitling that we can do; and further applications are in development. Elsewhere, technology developed as part of our work on digital television has led to a new digital wireless camera. This provides a versatile and flexible tool for studio use as well as news and sport.

Developments in digital technology are leading to exciting possibilities in the home. As more programmes and interactive services become available, and as more content is available through the web or stored on hard disc, we will see the consumer experience evolve away from reliance on the conventional broadcast schedule. Our work on Navigation will help our customers find their way around this new world of content.

Alongside these areas of attention, we have continued our leading-edge work on spectrum planning. We continue

to improve the coverage of new digital services; but there is now a real (if long term) prospect of a switch-off of analogue services. Our spectrum planning experts have made a key contribution to UK thinking on how to achieve this: in the coming years this contribution will become even more critical.

We are particularly proud that our work has received recognition from our colleagues in the industry. The National Academy of Television Arts and Sciences in the USA awarded us our third Engineering Emmy, recognising 'Sound in Syncs', our pioneering work in digital distribution technology. R&D's special expertise in High Definition TV helped the BBC win awards for *A Midsummer Night's Dream* and *Cecilia & Bryn at Glyndebourne*. And R&D's contribution was prominent in the teams which won Production Solutions Awards at IBC '99: BBC Digital Services were recognised for the launch of the BBC's new digital television services; and the SMART project received an award for their work on multi-camera, cable-free programme acquisition.

One of our biggest challenges is how to share with our colleagues in the other divisions of the BBC the knowledge and insights we gain from our work. We held a series of Open

Days at Kingswood Warren in May 1999, at which all our major projects were on show, and which generated many useful contacts and ideas for the future. We have continued our programme of staff attachments between R&D and the other divisions of the BBC. And our publications effort has been re-doubled, with a particular emphasis on creating material accessible through the BBC Intranet – like this annual report!

As always, the achievements of the year are the result of the outstanding commitment, energy and creativity of the staff at BBC R&D. Our team is stronger than it has ever been; and our effectiveness will be enhanced further by our continuing participation in the multi-function teams of the BBC.

Peter Bury
Head of Research & Development

contents

awards

Once again, the quality of our work has been recognised by our peers. This year we have received many awards, covering many of the areas of our work.

PRODUCTION SOLUTIONS AWARDS 1999, PRESENTED AT IBC

In September 1999, the BBC and its collaborative partners received several awards and commendations. BBC R&D was a significant contributor to several of these.

BBC Digital Services received the award for the Launch of the Year for the launch of the BBC's new Digital Services. BBC R&D was the design authority, providing technical input in the provision of the technical architecture.

BBC R&D and the BBC's SMART project won the award for acquisition technology for their work on multi-camera, cable-free programme acquisition. SMART have been pioneering the use of new technology to create low cost, high quality programmes. BBC R&D's part in the award winning work was to provide guidance on cable-free cameras.

The award for Transmission Technology was given to the MOTIVATE collaborative project for its work on mobile digital terrestrial television, and in particular for the demonstration of TV on a Tram at IBC '99. The award reflects the work of all the partners in the MOTIVATE project, including BBC R&D, and especially Nozema, Deutsche Telekom and NDS.

In addition, we were highly commended for the Plasma Display Panel interface (now licensed to Delphi), and highly commended under 'Achievement in Acquisition' together with Playback HD for the making of *Cecilia & Bryn at Glyndebourne*. The same collaboration won the Best Television Presentation of a stage dance at 'Dance Screen 99' June 1999.

...AND SOME AWARDS WON BY OUR INDUSTRIAL PARTNERS

We are keen to see our ideas successfully taken up by industry. This year, three such products have received major awards.

At NAB '99, Snell & Wilcox won the IBE editors award for Steadyshot, now called Shake Out, and Radamec won the Television Broadcasters' Pick of the Show award for **free-d**.

At IBC '99 the Peter Wayne award was presented to Snell & Wilcox for Archangel, a system which improves the quality of archive material. Both the Snell & Wilcox products are derivatives of work developed with our help in the Aurora project.

NATIONAL ACADEMY OF TELEVISION ARTS AND SCIENCES EMMY FOR SOUND IN SYNCS

Nearly 30 years after its completion, the BBC's sound distribution technology, Sound in Syncs, has won an Emmy – BBC R&D's third. Sound in Syncs (SiS) – the digital transmission system used to convey television sound between studios and transmitters – was in BBC service for more than 15 years from 1970 and was adopted by many other broadcasters. It enabled the sound and picture signals to be combined and was the first example of broadcast equipment, in quantity production, to make extensive use of digital techniques.