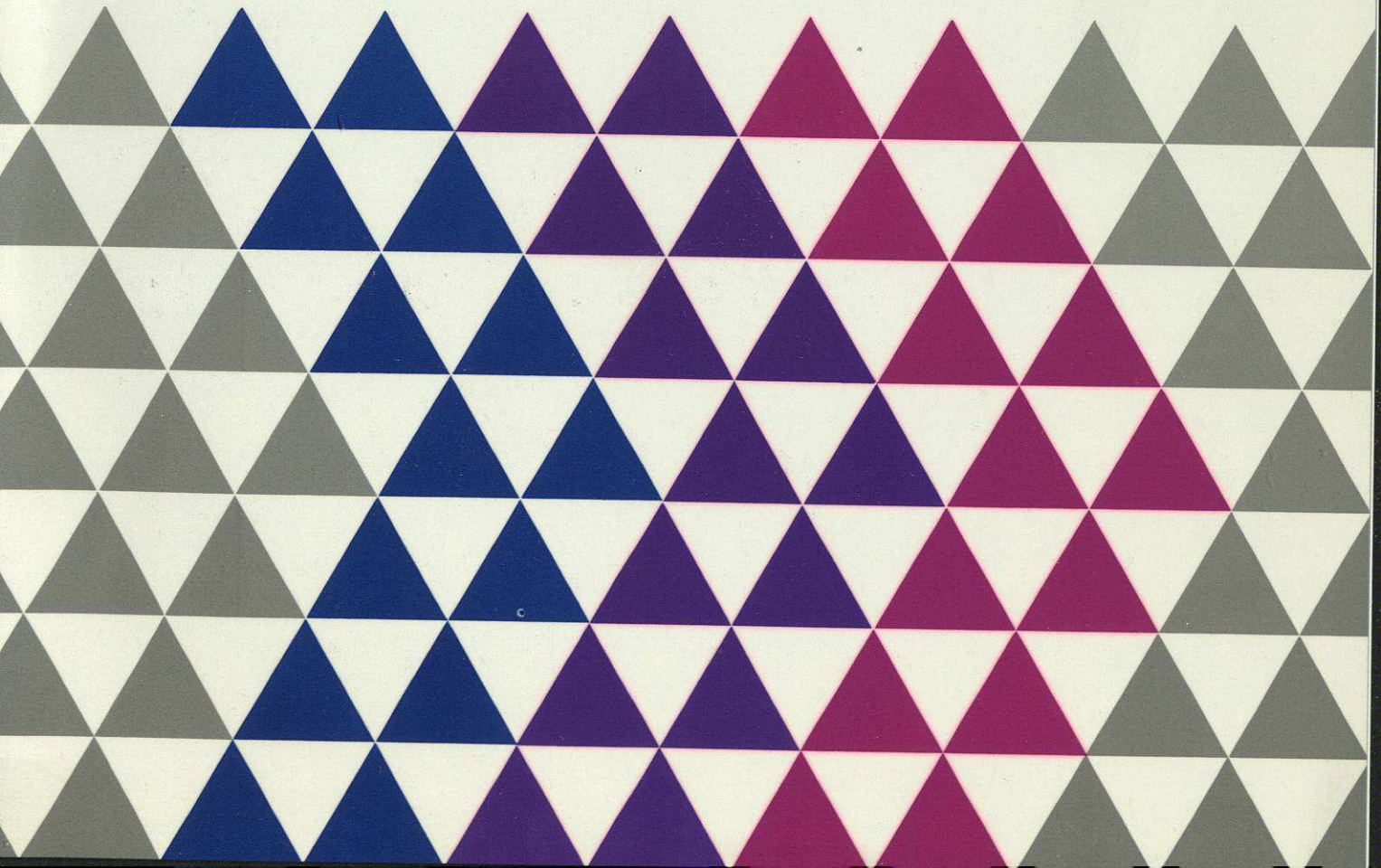
UK National Conference Programme

BUTLER COX FOUNDATION

Managing High-Technology Projects
The Dormy Hotel, Bournemouth
7-9 June 1987



Managing High-Technology Projects

The Dormy Hotel, Bournemouth

7-9 June, 1987

Contents

1 **Introduction**

2-3 **Agenda**

4-13 **Speakers**

14-16 **Registration**

17-18 **Registration form**

BUTLER COX FOUNDATION

TEN YEARS ON

Managing High-Technology Projects

The 1987 national conference for UK members of the Butler Cox Foundation will be held at the Dormy Hotel, near Bournemouth, between 7 and 9 June. This brochure describes the purpose and format of the conference and includes a synopsis of each session with a biography of the speaker.

The conference theme

Many Foundation members will have considered harnessing an emerging technology ahead of their competitors to gain relative advantage. Some may even have attempted to do this. But all members will recognise that managing a high-technology project is very different from managing a conventional system development project. It is risky and it raises questions such as:

- Which technologies should one look at?
- How does one recognise the relevant, potentially successful applications when the technology is still so immature?
- What managerial style will increase the chance of success?
- What mix of staff and skills is needed?
- When should one persevere with an application and when should one kill it off?
- What can we learn from other technologies?

The conference will seek answers to these questions. The programme will divide broadly into two parts. The first half will examine developments in the most important aspects of information technology — computer architectures, artificial intelligence, voice and image processing — and will indicate possible applications of these developments. The second half will identify management guidelines for high-technology projects and will contain case histories from companies that have exploited the technology in this way.

To ensure that the conference remains relevant and useful, it will be pegged down to reality by opening and closing sessions that address the subject from the Foundation members' point of view. Also, each of the technology sessions will end with a commentary on the presentation by an independent expert speaking on behalf of the members. There will also be ample opportunity for members to ask their own questions and discuss the speakers' views.

This conference is designed to focus on issues of concern to all forward-looking systems directors. In selecting and briefing the speakers we have stressed that the audience is interested in managerial implications and not in high technology for its own sake.

The speakers are drawn from researchers, academics, and practitioners from the UK and North America. Some are already world famous, others are less well-known but have an interesting and instructive message. As always, the programme will include plenty of opportunitiues for members to meet informally with the speakers and other delegates during meal breaks and in the evenings.

Conference programme

The conference will start with a keynote address on Sunday evening, 7 June, given by Roger Woolfe of Butler Cox, who has made a special study of high-technology project management. The technology part of the programme will be on the Monday and the management sessions on the Tuesday. The conference will end around 3.30 pm on Tuesday afternoon.

One of the attractions of the Dormy Hotel as a conference venue is the superb leisure facilities. Members are encouraged to take advantage of these, to relax and get into the right mood to make the most of the conference. There will be an informal reception and open-air barbecue after the keynote address on Sunday evening (weather permitting), when members can renew old friendships and establish new ones. There will also be a formal conference dinner on the Monday evening.

In addition, there is a fine golf course, a health centre fully equipped with swimming pool, squash and tennis courts, and a gym. Riding, walking and shooting are all available locally. We shall organise a golf competition on the Sunday morning. Members are invited to take part and especially to bring their partners for a relaxing weekend.

The Conference Agenda

Sunday 7 June 1987

Morning	Golf tournament	
17.00-18.15	Registration	
18.30-19.30	**Session 1: Keynote Address**	Roger Woolfe Butler Cox
Evening	Informal reception and barbecue	

Monday 8 June 1987

09.00-09.10	**Session Introduction**	
09.10-10.10	**Session 2: Advanced Computer Architectures**	Prof. Philip Treleaven University College, London
10.10-10.40	Coffee	
10.40-12.00	**Session 3: Expert Systems**	Prof. Edward A Feigenbaum Stanford University
12.00-12.30	**Commentary and Discussion**	Horace Mitchell Business Information Techniques
12.30-14.00	Lunch	
14.00-15.00	**Session 4: Image Processing**	Dr T John Stonham Brunel University
15.00-15.30	Tea	
15.30-16.45	**Session 5: Speech Processing**	Ken Davies IBM Research Center
16.45-17.15	**Commentary and Discussion**	Dr Simon Forge Butler Cox
18.00-19.00	**Expert Systems Teach-in**	Prof. Edward A Feigenbaum Stanford University
19.30-20.00	Cocktails	
20.00	Conference dinner	

The Conference Agenda

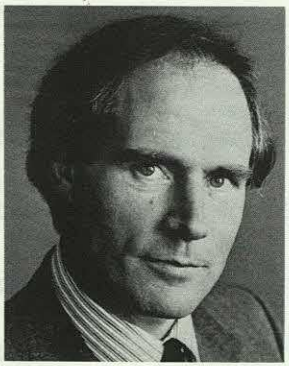
Tuesday 9 June 1987

09.00-10.15	**Session 6: Principles of High-Tech Project Management**	Dr Robert M Alloway Alloway Incorporated
10.15-10.45	Coffee	
10.45-11.30	**Session 7: Case History 1**	Dr Roger D Butler Austin Rover Group
11.30-12.15	**Session 8: Case History 2**	Dr Barry Stapley Satellite Information Systems
12.15-13.00	**Session 9: Case History 3**	Anthony R Butler Colonial Mutual Group
13.00-14.15	Lunch	
14.15-15.15	**Session 10: So What? — Implications for Users**	Prof. Gordon M Edge Scientific Generics
15.15-15.30	**Conference Conclusion**	
15.30-16.00	Tea and depart	

Session 1: Sunday 7 June: 18.30-19.30
Keynote Address

Roger Woolfe, Butler Cox

Peter Drucker's statement of many years ago — that in business, trying to take risks is often the biggest risk of all — rings even truer in today's more competitive environment. The rewards of success can be huge, and so can the costs of failure. Information systems can be high risk. Such systems need to be managed like other high-technology opportunities. What do we mean by high-technology opportunities, which technologies are worth watching and what are the key issues in managing high technology? This session sets a framework for the speakers that follow.



Roger Woolfe is director of group consultancy at Butler Cox. Since joining the company at its inception he has been involved with a variety of consultancy assignments, many of which have involved reviewing technological opportunities on behalf of clients and recommending appropriate applications. He has carried out research assignments into a wide variety of emerging technologies. He has also been responsible for Foundation research, the Public Reports programme, multiclient studies, and UK consultancy.

Session 2: Monday 8 June: 09.00-10.10
Advanced Computer Architectures

Philip Treleaven, University College London

There is currently an explosion of research into novel computer architectures, especially parallel computers. A number of interesting computer products are appearing, covering a broad spectrum: parallel UNIX systems (for example, SEQUENT Balance); artificial intelligence applications (for example, Connection Machine); high-performance numerical supercomputers (for example, INTEL iPSC); exploitation of very large scale integration (for example, INMOS Transputer); and new technologies (for example, optical computers). This session will give an overview of these novel computers and will discuss their likely commercial impact.

Philip Treleaven is Professor of Computer Science at University College London. He is a European authority on so-called Fifth Generation computers and on national research programmes such as Japan's FGCS project, ESPRIT, and ALVEY. He is Chairman of the ESPRIT (Project 415) Working Group on Computer Architectures. From 1970 to 1973 he was employed by International Computers Ltd. From 1973 to 1976 he was a graduate student in the Department of Computer Science of Manchester University, where he started the department's data flow research. Subsequently he held research posts at the Universities of Newcastle upon Tyne and Reading.

His research interests include parallel computer architecture, new forms of programming languages, fault-tolerant computing, and very large scale integration.

He holds a BTech from Brunel University, and MSc and PhD degrees from Manchester University.

Session 3: Monday 8 June: 10.40-12.00
Expert Systems

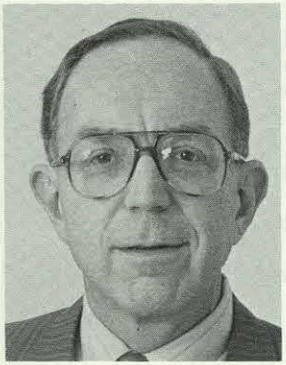
We have entered a second computer age — the age of computers that reason with knowledge. In the first computer age, computers were used as aids for calculating numbers and for filing and retrieving data. In the second computer era, computers are becoming aids to human intellectual and professional work.

The transition of this technology from laboratories to business use has been following the usual S-shaped curve, and is now on the steeply sloped portion. The results from the 'early adopting' firms are now in, and show remarkable benefits — particularly enhancement of the productivity of professional workers, and cost savings in internal operations. Particularly impressive is the range of problems over which the technology has shown itself to be useful. The presentation will illustrate these themes with case histories drawn from American and Japanese corporations.

The principles and methods for building machines that reason spring from the science of artificial intelligence, and its applications discipline called knowledge engineering. Knowledge engineers build programs called expert systems or knowledge systems. Knowledge engineering is the technology base of the second computer age.

Expert (or knowledge) systems can have great economic, business, military, and social value, well beyond the value of the traditional calculating and data processing programs. But because the technology is new it poses challenging problems for identifying, nurturing, and fielding applications. The presentation will identify key problems and offer suggested strategies for dealing with them.

Edward A Feigenbaum, Stanford University



Edward Feigenbaum is Professor of Computer Science at the Computer Science Department, Stanford University. He is Scientific Director of the Heuristic Programming Project at Stanford, a leading laboratory for work in knowledge engineering and expert systems. Dr Feigenbaum is also Co-Principal Investigator of the national computer facility for applications of artificial intelligence to medicine and biology, known as the SUMEX-AIM.

He has been Chairman of the Computer Science Department and Director of the Computer Center at Stanford University. He is the Past President of the American Association for Artificial Intelligence. He has served on the National Science Foundation Computer Science Advisory Board; is now serving on a Defense Department advisory committee for information science and technology; and is a member of the National Research Council's Computer Science and Technology Board.

He is the co-editor of the recent encyclopedia, ''The Handbook of Artificial Intelligence'', and of the early book, ''Computers and Thought''. He is the co-author of ''Applications of Artificial Intelligence in Organic Chemistry: The DENDRAL Program'', and was the founding editor of the McGraw-Hill Computer Science Series. He is the co-author of the book ''The Fifth Generation: Artificial Intelligence and Japan's Computer Challenge to the World''.

He is a member of the Board of Regents of the National Library of Medicine. He is a co-founder of two start-up firms in applied artificial intelligence, IntelliCorp and Teknowledge; and serves on the board of directors of IntelliCorp.

Session 4: Monday 8 June: 14.00-15.00
Image Processing

John Stonham, Brunel University

The potential for image-processing applications has long been recognised in the defence industry. More recently considerable interest has been aroused in image processing within the commercial sector. The potential for vision systems encompasses a wide range of applications. Obvious examples are in the fields of medical imaging and manufacturing inspection. This session will include a discussion on those developments in image processing that are most likely to have potential for industrial and commercial application.

Dr Stonham will refer in particular to work on the design and application of pattern recognition techniques. Projects he will discuss will include the design of parallel adaptive pattern-recognition hardware. Potential applications for speech recognition, character recognition, face recognition, and industrial vision will also be reviewed.

John Stonham is a reader in electrical engineering at Brunel University where he is head of the pattern-recognition and image-processing research group. The group's research interests cover all aspects of the design and application of adaptive pattern recognition techniques.

Dr Stonham gained his PhD from the University of Kent in 1977. He has written four books and published over forty research papers on pattern recognition and image processing. He has recently returned from a short spell as Visiting Professor at Nausing University, China.

Session 5: Monday 8 June: 15.30-16.45
Speech Processing

Intensive research is being carried out on speech recognition in an attempt to develop useful products for an office environment.

In this session Ken Davis will identify the state of the art for speech technology. He will describe the current recognition performance attainable under certain restrictive conditions, which include: acceptance of speaker, level of noise ambience, prescribed area of discourse, and range of vocabulary.

The session will identify the expected advances in speech recognition and will discuss their implications for end users. Current applications of isolated word-recognition products will be discussed, including mail sorting, quality inspection, and inventory handling, as will the prospects for the use of continuous speech recognition. While sophisticated dictation equipment is an obvious example of the latter, speech compaction for economical storage and transmission offers equally significant benefits.

Ken Davies, IBM Research Center

Ken Davies joined IBM in 1969. His early work was in the field of compiler technology for both large and small machines. More recently he has been concerned with signal processing and speech recognition. He is now the manager of speech systems design at the T J Watson Research Center, Yorktown Heights where he is developing realtime dictation systems based on speech recognition. His current interests are in the area of real-world usage of dictation-recognition systems.

He received a BSc degree in mathematics from Liverpool University.

Session 6: Tuesday 9 June: 09.00-10.15
Principles of High-Tech Project Management

Robert M Alloway, Alloway Incorporated

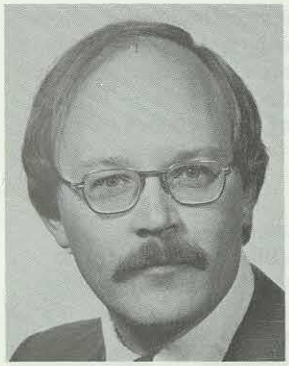
Some companies shy away from innovative applications of information systems. Others make an attempt and, having failed, are doubly cautious. Yet other companies are leaders in innovative applications of information systems and reap considerable business benefits. The difference is not luck.

Some user managers would never conceive of information systems as a useful business tool let alone consider using them as the enabling lever for an innovative business opportunity. Some user managers accept information systems for operational efficiency and managerial support. And some user managers search for new technological opportunities to exploit. The difference is not their IT-literacy.

Some information systems executives are still technology oriented — more interested in IBM's business than their own. Some information systems executives are user oriented — interested in the effectiveness of systems for business support. Some information systems executives are business leaders — providing business insight and technology direction. The difference is not their business-literacy.

High-tech development projects differ from typical information systems projects in fundamental ways that necessitate different project design and management. Most high-tech projects are partial successes but few companies learn how to avoid failure on the next high-tech project.

High-tech opportunities require pro-active searching, unlike most information systems exploitations that are extensions or transfers of known applications. There are two basic search patterns, one of which leads to long-term failure, even if pilot projects are successful. The second search pattern has more pilot project failures but better long-term success. There is a middle ground with both advantages. In his presentation Dr Alloway will describe these search patterns and set out some basic rules for success in high-technology projects.



Bob Alloway received a doctorate in management of technology from Harvard Business School. He is currently president of Alloway Incorporated, and a recognised world-class expert in information systems management issues, a popular speaker at major domestic and international conferences, and a management consultant to many best-practice corporations.

Dr Alloway has extensive experience in information systems research, teaching, and consulting. His primary research contributions include: the User Needs Survey for practical information systems strategic and tactical planning; Temporary Management Systems for successful project design; and decision-support systems for effective support of judgmental decisions.

His teaching topics include information systems strategic planning and management, DSS, and project design. He has lectured at MIT's Masters and Senior Executive Programs; at the Center for Information Systems Research conferences; at MIT's Industrial Liaison Program's seminars; at Executive Summer Session Courses; at customised in-house courses for major corporations; and at major information systems conferences.

Dr Alloway was a Professor at the Sloan School of Management and the Center for Information Systems Research at MIT from 1975 to 1983. Before that he was a senior information systems manager.

He holds a BS from Brown University and an MBA from Boston College.

Session 7: Tuesday 9 June: 10.45-11.30
Case History 1: An Integrated Technical Strategy Applied to a Complex Manufacturing Industry

Roger D Butler, Austin Rover Group

Most manufacturing companies have 'islands of excellence' through which major new technology initiatives have been successfully brought through to implementation in limited zones of their business. These initiatives have been successful because of the efforts of particular individuals with sufficient vision and energy to drive their projects through.

In complex manufacturing industries it is essential to provide a strategic framework within which to nurture 'islands of excellence'. This business framework enables progress to be made on all fronts, each initiative reinforcing and supporting common overall objectives.

In Austin Rover, much senior management effort has gone into developing such a framework with the aim of exploiting new technologies such as CIM, FMS, online diagnostics, online quality-control systems, and 'nett to form' methods by a single coordinated initiative under the umbrella of its Integrated Technical Strategy.

This strategy is applied from product styling, through vehicle and component design, through manufacturing engineering and tool design, to production and quality control. It is part of a broader network aimed at linking sales outlets and service functions to a common database created once within design engineering and then used by all functions. This has required major changes in management attitudes, re-evaluation of methods of communication and training, re-assessment of the relationship between industry and universities and re-examination of the relationships with suppliers, the planned removal of separate 'watertight' departments within the organisation, and a whole new approach to the traditional roles of people in the business.

Roger Butler is Manager, Forward Planning and Control within ARG Manufacturing Operations. He is one of the architects of the Company's Integrated Technical Strategy by which it is meeting the challenge of a rapidly changing marketplace. The strategy utilises new technologies to further improve performance, quality, and flexibility. His responsibilities cover planning the introduction of new models and components into production, and also medium to long-term feasibility and strategy planning for new products, new technologies, and new approaches to working methods. He has been deeply involved in restructuring the car manufacturing operations from many and widely scattered inefficient locations to the current streamlined structure.

Dr Butler has worked in the motor industry for over 25 years, including periods in the stamping division, quality, vehicle assembly, foundry, and power train operations. Earlier experience was in the metal-supply and motor electrical industries. He actively supports technology training inside and outside the company including initiatives such as British Schools Technology and his local TVEI Steering Committee. He is involved with NEDO Working Groups on Engine and Foundry Development Programmes, and is experienced in commercial and technical programmes overseas.

Session 8: Tuesday 9 June: 11.30-12.15
Case History 2: Satellite Racing

Barry Stapley, Satellite Information Services

At the beginning of 1986 live televised racing was not allowed in UK betting shops. Within one year a new racing service was available, offering a complete, integrated service of pictures, text, and voice. With 8,000 betting shops connected to the service it represents one of the largest networks in Europe. Initially the service will cover only horse and dog racing, but other sporting services will be added later.

The service has five components: information gathering, on-course picture gathering, central collection, processing and editing, distribution, and in-shop receiving. Most of the technical challenge arose in the distribution and receiving of the racing pictures and betting information. BT was chosen as the turnkey distributor, using Intelsat V and B-Mac coding. Most of the difficulties were associated not with the high-tech aspects of the project but with the practical issues of installing satellite dishes and TV receivers in the various shop premises.

In this presentation Barry Stapley will examine the various aspects of setting up the project — financial planning, contractual negotiations, regulatory issues, project planning, and management. He will draw out the lessons of the project, the mistakes and failures, but mainly its tremendous success.

Barry Stapley is Technical Director of Satellite Information Services Ltd., a company set up by a consortium of bookmakers, the Racecourse Association, and independent shareholders, to deliver live televised racing to betting shops by satellite.

He has 20 years research and consulting experience in the fields of teleconferencing, networks, switching systems, and satellite-based systems. He holds a BSc and PhD in electrical engineering.

Session 9: Tuesday 9 June: 12.15-13.00
Case History 3: Collaboration in Expert Systems for Insurance

Anthony R Butler, Colonial Mutual Group

Under the flag of the UK Government's Alvey programme, eighteen insurance companies, one insurance broker, and twelve other organisations formed a collaboration (ARIES) in early 1985 to develop two prototype expert systems for insurance work. The first was a system for assessing fire risks on clothing-trade premises. The second was a system for assisting with buy/no buy decisions in the equity-investment area.

The fire-risk system was completed in mid-1986, the equity investment system in early 1987. As of mid-1987 both systems have been ported to PC-shell environments and delivered to collaboration members. It seems likely that two further collaborations will emerge from the original project.

This presentation will highlight the many high-tech project management lessons that have been learned by ARIES Club members, and by the contractor who supplied the seven man-years of effort for the project. In particular, the value of collaboration in high-tech systems development work and of traditional disciplines will be stressed. The value of effective links with academia and other centres of excellence, and the need for comprehensive documentation, will also be discussed.

Anthony Butler is Assistant Manager, Computer Services with the Colonial Mutual Group in London. He has a particular responsibility for technology issues in the Group and is Chairman of ARIES, the Alvey insurance industry expert systems community club. He is also Joint Chairman of the British Computer Society's Computer and Telecommunications Performance Engineering Specialist Group.

His wide-ranging dp experience has included systems development as well as operations and technical services. He started his career by working for three years with IBM in Liverpool as a systems engineer. He then spent three years leading a medical records computerisation project at Queen's University, Belfast, before becoming a project manager on the London Stock Exchange's Talisman computerisation project.

Anthony Butler obtained a BA and a Diploma in Computing at the University of Cambridge. He is a Fellow of the Royal Statistical Society and a Member of the Operational Research Society, as well as being a Fellow of the British Computer Society. He has written many papers and articles for conferences, journals, and the technical press. His current special interests are the management control of information services, expert systems, computer performance evaluation, and computer training and qualifications.

Session 10: Tuesday 9 June: 14.15-15.15
So What? — Implications for Users

Gordon M Edge, Scientific Generics

Science and superlatives converge in high technology but what actually distinguishes a high-technology project from others?

High technology for one company may be routine for another, but the ability to identify and to manage risk derives from a combination of the quality and nature of the company's business environment and the organisation structure within it.

This presentation discusses these issues by attempting to introduce some order into a proposed technology hierarchy and suggesting ways in which technology, organisation, people, and market may cohabit effectively and efficiently.

The presentation reviews internal and external factors contributing to success and failure in technology-based projects and attempts to construct a 'royal road'.

Gordon Edge was the founder of PA Technology in 1970 and was its Chief Executive Officer until 1986, when he left to form his own group of companies Generics Holding Corporation. The group includes Scientific Generics, a research-based company specialising in optics, life sciences, and electronics, together with business disciplines such as economics and corporate strategy.

He is Visiting Professor in the Department of Engineering at Brunel University, a member of the ACARD cabinet committee, a member of the BTG Council and of the ADAS Board. Previously he was Research Visitor in the Department of Zoology at Cambridge University. He has published numerous papers and he holds a degree in electronics.

Registration for the conference

Each member organisation may send up to three delegates to the conference. Each delegate should complete the registration form on pages 17 and 18 (please photocopy it if necessary), and return it to Butler Cox as soon as possible. Accommodation at the hotel is limited, so please book your place early to avoid disappointment. Depending on the demand for conference places we will endeavour to comply with all registrations from all members.

Accommodation during the conference

Residential conference delegates will stay at the Dormy Hotel. The special conference package includes accommodation for two nights (Sunday 7 June and Monday 8 June), all meals from dinner on Sunday through to tea on Tuesday, and use of the leisure facilities. The cost of the package is £190 for a delegate occupying a single room for the entire conference. This amount, together with any additional incidental charges incurred by the delegates, should be paid direct to the hotel at the end of the conference.

Companions

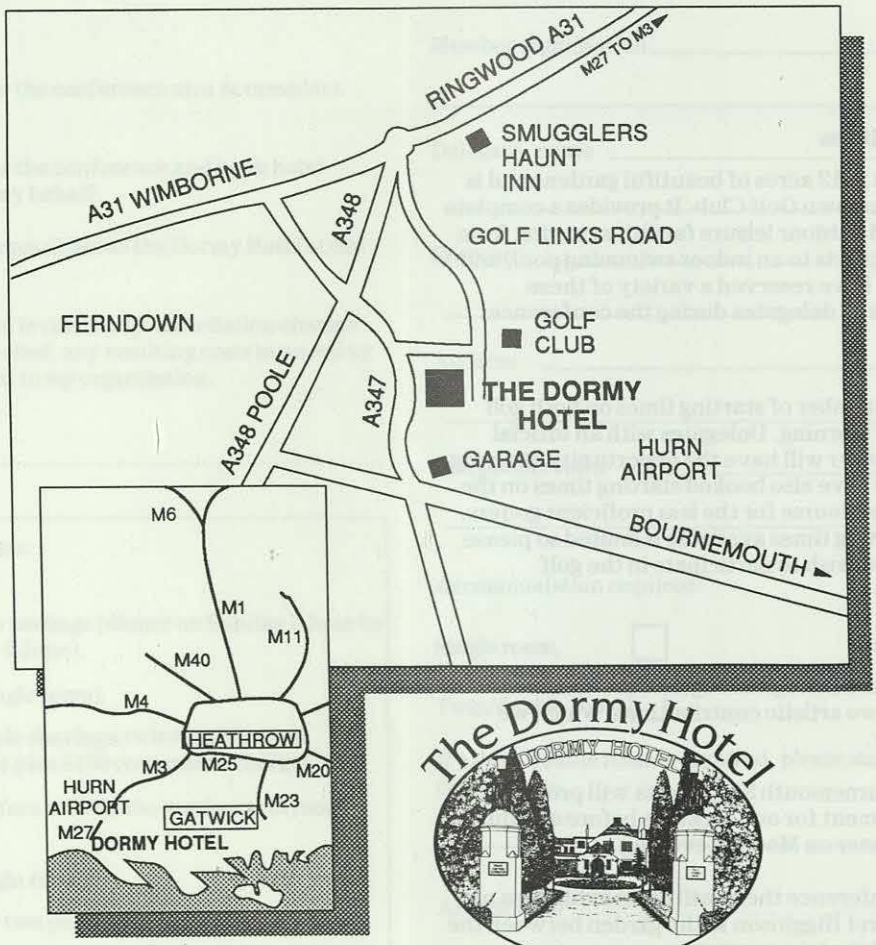
For couples sharing a twin/double room, the cost of the special conference package is £250 (£150 for the delegate and £100 for the companion). Companions are invited to join the delegates for the reception and barbecue on 7 June (weather permitting), and for the conference dinner on 8 June, as well as for all other meals and refreshments. If a sufficent number of companions indicate that they would like us to arrange a companions' programme, we will be happy to do this.

Additional nights accommodation

We have also negotiated a special reduced bed and breakfast rate for delegates who wish to arrive early and stay on Saturday night prior to the start of the conference or Tuesday night after the conference. The rate for these nights is £50 per person per night, or £80 per room per night for two people sharing a twin/double room.

Travel

The Dormy Hotel is situated in Ferndown, Dorset which is 6 miles from Bournemouth and its mainline station, with London only 90 minutes rail journey away. By road the hotel is easily accessed via the M3 and M27 (a map of the area is provided opposite).



Ferndown, Dorset BH22 8ES
Telephone: 0202-872121
Telex: 418301

Will you require transport from Bournemouth station to the Dormy Hotel? YES/NO

Arrival date ..... Time .....

Do you wish to to take part in the golf tournament on Sunday 7 June? YES/NO

Please indicate your handicap (if you have one) .....

Please return this form to

Denise Dawes
Butler Cox Foundation
Butler Cox House
12 Bloomsbury Square
London WC1A 2LL
Tel. (01) 831 0101

Butler Cox & Partners Limited
Butler Cox House, 12 Bloomsbury Square,
London WC1A 2LL, England
☎ (01) 831 0101, Telex 8813717 BUTCOX G
Fax (01) 831 6250

Benelux
Butler Cox BV
Burg Hogguerstraat 791
1064 EB Amsterdam
☎ (020) 139955, Telex 12289 BUCOX NL
Fax (020) 131157

France
Butler Cox SARL
Tour Akzo, 164 Rue Ambroise Croizat,
93204 St Denis-Cedex 1, France
☎ (161) 48.20.61.64, Fax (161) 48.20.72.58

Germany (FR)
Butler Cox Deutschland Ltd.
Richard-Wagner-Str. 13
8000 München 2
☎ (089) 5 23 40 01, Fax (089) 5 23 35 15

United States of America
Butler Cox Inc.
150 East 58th Street, New York, NY 10155, USA
☎ (212) 486 1760 Fax (212) 319 6368

Australia
Mr J Cooper
Consultants (Computer and Financial) plc Australia
Level 5, 303 Pitt Street, Sydney 2000, Australia
☎ (02) 2870400, Fax (02) 2870450

Italy
SISDO
20123 Milano – Via Caradosso 7 – Italy
☎ (02) 498 4651, Telex 350309 SISBDA I

The Nordic Region
Statskonsult AB
Stortorget 9, S-21122 Malmo, Sweden
☎ (040) 1030 40, Telex 12754 SINTABS

Spain
Mr Sidney M Perera
Rosalía de Castro, 84-2°D, 28035 Madrid
☎ (91) 723 0995