

University of St Andrews  
School of Mathematical and Computational Sciences

**Computer Science Division**

**Annual Open Lecture Course  
1997**

# **Distributed Systems Technologies**

*Monday 21st and Tuesday 22nd April 1997  
Lecture Theatre D, Mathematics Institute,  
University of St Andrews.*

**Speakers:**

Dr Andy Hopper  
Computer Laboratory  
University of Cambridge

Dr Andrew Herbert  
Technical Director  
APM Ltd.

## *The Speakers*

Andy Hopper received the B.Sc. degree from University of Wales in 1974 and the PhD degree from the University of Cambridge in 1978. He was elected a Fellow of the Royal Academy of Engineering in 1996.

He is the Reader in Computer Technology at the University of Cambridge and a Fellow of Corpus Christi College. He is Vice President of Research of Ing. C. Olivetti & C. SpA, Italy, Director of the Olivetti & Oracle Research Laboratory (ORL) in Cambridge, Chief Technical Officer of Advanced Telecommunications Modules Limited, Chairman of Telemedia Systems Ltd, and a Director of Acorn Computer Group plc.

His research interests include networking, multimedia, and mobile systems.

Andrew Herbert is Technical Director of APM and chief architect of ANSA. ANSA is an industry-sponsored program of research and advanced development into the use of distributed systems technology to support applications integration in enterprise-wide systems. The current focus of the ANSA work includes support for interactive multi-media services, object technology for World Wide Web applications, distributed systems management and security for electronic commerce.

Andrew is a member of the UK Information Technology and Electronics Foresight panel. He has served on numerous conference programme committees and is a project reviewer and strategy advisor for the European Commission and UK EPSRC. He interacts regularly with senior technical staff in the organizations which have sponsored the ANSA programme, including HP, ICL, BT, Bellcore amongst others. He maintains strong links with the academic research community and holds a Visiting Professorship In the Computer Science Department at the University of Essex, Colchester, England.

Prior to ANSA, Andrew was a lecturer in the Computer Laboratory at the University of Cambridge during the pioneering days of local area networks and before that a research student active in the fields of operating systems and security. He spent a sabbatical at the MIT Laboratory for Computer Science in 1983 at the inception of project Athena and the X-Window system. He wrote his first operating system in 1976 and sent his first RPC in 1978. His first degree, awarded in 1975, was in Computational Science from the University of Leeds.

Andrew is a member of Wolfson College Cambridge, BCS, ACM, IEEE, and a liveryman of the City of London Worshipful Company of Information Technologists. His interests beyond ANSA include pyrotechnics and steam railways.

## *The Course*

Technology has moved to a point where both the network systems and the information appliances at the end points can handle many different media types. For example, high quality video and audio are beginning to be used routinely. Such use will be extended to situations where information streams are not only watched by humans but also simultaneously by computers. This will require both systems and algorithmic research support. Such network based audio and video processing agents will augment applications by making or suggesting choices for better use of system resources, or for the convenience of the end user. The emphasis will move away from undersupply of information so as to remain within bandwidth and processing constraints, to cache-based oversupply so as always to have available data for every demand an information consumer might make.

Personalisation of interfaces to computer and communications systems will need to develop as the frequency of use of computer equipment explodes. In a connected world, personalisation information can at all times be obtained through the network. Personalisation can encompass the control part of an interface only, or it can include the data as well. It can be extended to live applications which in effect become 'follow-me' and are never shut down. This advance has begun with text and data and will be extended to multimedia information streams. Perpetuating applications and rerouting the sessions may be manageable in situations where the terminal devices are similar, but it is much more difficult if the end points vary in complexity, and research is needed in this area. Furthermore, where many different terminal types are available and the personalisation takes advantage of agents, the scalability of applications is a major research issue.

One of the fruits of the age of technology, is the proliferation of diverse business structures, operational processes and information systems. The increasing need for enterprises to inter-operate, often globally, places immense challenges upon organisations and their information systems in managing this diversity. It is only recently that enterprises have been discovering that standardisation of procedures and systems is only a temporary and incomplete solution to change, the growth of diversity and the need to inter-operate. Increasingly, enterprises are turning to forms of federation, in order to maintain control, when forced into distributing management, processes, businesses and systems. The ANSA Architecture is founded upon a set of simple principles for building software which can both interoperate across and be managed within federated business structures. This briefing note outlines those principles and their use.

# *Programme*

## **Monday, 21st April**

10.00-11.15      Andy Hopper: Multimedia and Network Computing

11.15-11.30      *Registration & Coffee*

11.30-12.45      Andy Hopper: Smart Personalisation

12.45-14.30      *Lunch*

14.30-15.45      Andrew Herbert: Distributed Object Systems 1

15.45-16.00      *Tea/coffee*

16.00-17.15      Andrew Herbert: Distributed Object Systems 2

## **Tuesday, 22nd April**

10.00-11.15      Andrew Herbert: Topics in Secure Electronic Commerce 1

11.15-11.30      *Tea/coffee*

11.30-12.45      Andrew Herbert: Topics in Secure Electronic Commerce 2