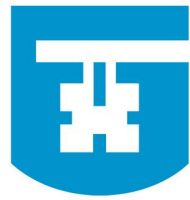# BCS

IT 2057

British Broadcasting Corporation

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St Andrews Management Institute

BCS

IT 2057

The films that you will see today are based on over 45 short interviews each with an expert in a particular area of IT. Each film is designed to explore one particular theme and the effect that IT will have in that area over the next 50 years. There are 8 films in all covering technology, health, education, transport, people, the information society and IT in 1957 and 2057.

Each film is around 10 minutes in length. The films are designed so that you can dip in and out of them depending on your interest. Each film is being shown on an endless loop in its own dedicated booth.

The films are designed to provoke views and discussion. We know that you will not agree with all the views in the films. Please feed back to us your comments from the special feed back booths before you leave the event or afterwards on FeedbackIT2057@bcs.org.uk

The films would of course not have been possible without the contributors and I thank each and every one of them for their time, effort and enthusiasm.

The films were directed and produced by Southampton Solent University and the music was especially commissioned. I am most grateful for their skill, patience and hard work in meeting the task that was set for them.

I must also thank our sponsors, BP, BBC, DHL, Lloyds Register and SAMI without which these films would have not been possible. I also acknowledge the valuable support from BT, HP and the BCS

The following pages contain some information on the people that were involved in the film either as contributors or as part of the production team.

Thank you to you all. We hope that you enjoy the films.

Gill Ringland FBCS

CONTRIBUTORS TO IT IN 2057

JOHN ARIS (FBCS), RETIRED

LEO Computers/English Electric Computers/ICL 1958-75; Imperial Group 1975-85 (Manager, Group Management Services); NCC 1985-90 (Director); IMPACT Programme 1990-2000 (Director)

CHRISTINE H ASHTON (MBCS), STRATEGIC ADVISOR, GROUP AND SEGMENTS, DIGITAL AND COMMUNICATIONS TECHNOLOGY FOR BP

Christine both advises at a BP corporate level and supports a major business area, Refining and Marketing which has some 35000 pc users.

She has been responsible for leading the development of transformational IT strategies for several of BP's major business areas and running significant pieces of global infrastructure including large ERPs transacting many billions of dollars.

Christine is always looking to innovate and drive a technology agenda that keeps the business ahead of competitors. Currently she is sponsoring work to exploit the area of social networking using Second Life in BP.

She has supported the BCS for many years and holds 4 professional charters in engineering, science, technology and chemistry.

PROFESSOR RODNEY BROOKS, PANASONIC PROFESSOR OF ROBOTICS, MIT

Rodney Brooks is Panasonic Professor of Robotics at MIT. He is also Chief Technical Officer of iRobot Corp (nasdaq: IRBT). From 1997 - 2003 and from 2003 - 2007, respectively, he was Director of the MIT Artificial Intelligence Lab and Director of the Computer Science and Artificial Intelligence Laboratory. He received degrees in pure mathematics from the Flinders University of South Australia and the Ph.D. in Computer Science from Stanford University in 1981. He held research positions at Carnegie Mellon University and MIT, and a faculty position at Stanford before joining the faculty of MIT in 1984. His research is concerned with both the engineering of intelligent robots to operate in unstructured environments, and with understanding human intelligence through building humanoid robots. He has published papers and books in model-based computer vision, path planning, uncertainty analysis, robot assembly, active vision, autonomous robots, micro-

robots, micro-actuators, planetary exploration, representation, artificial life, humanoid robots, and compiler design. Dr. Brooks is a Member of the National Academy of Engineering (NAE), a Founding Fellow of the Association for the Advancement of Artificial Intelligence (AAAI), a Fellow of the American Academy of Arts & Sciences (AAAS), a Fellow of the American Association for the Advancement of Science (the other AAAS), a Fellow of the Association for Computing Machinery (ACM), a Corresponding Member of the Australian Academy of Science (AAS) and a Foreign Fellow of the Australian Academy of Technological Sciences and Engineering (ATSE). He won the Computers and Thought Award at the 1991 IJCAI (International Joint Conference on Artificial Intelligence). He has been the Cray lecturer at the University of Minnesota, the Mellon lecturer at Dartmouth College, and the Forsythe lecturer at Stanford University. He was co-founding editor of the International Journal of Computer Vision and is a member of the editorial boards of various journals including Adaptive Behavior, Artificial Life, Applied Artificial Intelligence, Autonomous Robots and New Generation Computing. He starred as himself in the 1997 Errol Morris movie "Fast, Cheap and Out of Control"; named for one of his scientific papers, a Sony Classics picture, now available on DVD.

JEAN CLAUDE BURGELMAN, INFORMATION SOCIETY HEAD OF UNIT, INSTITUTE FOR PROSPECTIVE TECHNOLOGICAL STUDIES, EUROPEAN COMMISSION

Degrees in social sciences (PhD 1986) and in science and technology policy (MA 1991) from the Free University of Brussels (FUB), where he teaches a course on the ``Global aspects of the information society``. Till 2000 he was full professor of communication technology policy at the FUB where he also chaired the department of communication studies and created the research centre Studies on Media, Information and Telecommunications (a Belgian research centre of excellence now part of IBBT). He was also guest professor at the University of Antwerp and the University of South Africa. He is a board member of some important scientific journals in IST policy (Communication and Strategies, Telematics and Informatics, Media, Culture and Society, etc.) and member of the scientific board of CPR, the Communication Policy Research Conference and of the ITS 2006 conference (the International Telecommunications Society).He joined the DG JRC first as Visiting Scientist of IPTS where he became Head of the IS unit in 2005. As research into the technological aspects of Information Society Technologies is well developed in Europe, the IS unit of IPTS addresses the policy aspects of the European Information Society in general and the socio-economic impacts of IST`s in Europe in particular. Research is focused on those areas where ICT are key or very important to the (renewed) Lisbon Objectives (competitiveness, R&D, health, public services, social cohesion, etc). In doing so the unit complements technology-push approaches with socio-economic impact analysis. Most research is carried out on demand of the DG `s (DG INFSO, DG JLS and DG EAC) or the EP and contributes to core policy making of the EC.

CAROLYN D BYERLY, CHIEF INFORMATION OFFICER, STANFORD HOSPITAL AND CLINICS

Carolyn D. Byerly is Vice President and Chief Information Officer for Stanford Hospital & Clinics. She has been Stanford's CIO since June 2002. She is responsible for all of Stanford's information technology and telecommunications operations and strategy. As a member of Stanford's senior management, she is responsible for developing, implementing and operating I.T. strategies to meet business requirements. Under Ms. Byerly's leadership, Stanford recently announced a strategic partnership with Perot Systems for providing outsourcing services for Information Technology Delivery. Most recently, Stanford completed their 5 year IT Strategic Plan with Board approval.
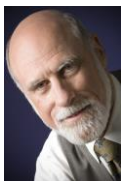
Prior to her role at Stanford Hospital & Clinics, Ms. Byerly served as Senior Vice President and Chief Information Officer of Lovelace Health System and she was previously the Chief Information Officer at Mayo Clinic Scottsdale. Ms. Byerly directed the development of a strategic information systems plan for Mayo Clinic Scottsdale, and the newly constructed Mayo Clinic Hospital which opened October, 1998. Mayo's primary goal was to implement enterprise integrated solutions across the continuum of care, open the hospital filmless and paperless (electronic patient record), and to replace legacy applications in the specialty clinic. Ms. Byerly has also serviced as VP of Information Services for Good Samaritan Health System, San Jose, California. She was responsible for directing the development of a strategic information systems plan, consolidating and restructuring information systems departments into a centralized corporate organization responsible for enterprise-wide information systems strategic planning, system selection, and line management of operations and telecommunications. She is a member of numerous professional organisations, including the College of Healthcare Information Management Executives and the Healthcare Information and Management Systems Society.

PAT CADIGAN, SCIENCE FICTION AUTHOR

Pat Cadigan was born in Schenectady, New York, and grew up in Fitchburg, Massachusetts. Attending the University of Massachusetts on a scholarship, she eventually transferred to the University of Kansas where she received her degree. She was an editor and writer for Hallmark Cards in Kansas City for 10 years before embarking on her career as a full time fiction writer in 1987. Since then she has received Hugo and Nebula Award nominations for stories which have appeared in such magazines as Omni, The Magazine of Fantasy and Science Fiction, and Asimov's SF. Her collection, Patterns, was honoured with the Locus Award in 1990.

Pat Cadigan moved to England in 1996, and now lives in North London, with her husband Chris Fowler, and their cat, Calgary

DR VINTON G CERF, VP AND CHIEF EVANGELIST, GOOGLE CORPORATION

Vinton G. Cerf is vice president and chief Internet evangelist for Google. Widely known as one of the "Fathers of the Internet," Cerf is the co-designer of the TCP/IP protocols and the architecture of the Internet. With his colleague, Robert Kahn, Cerf received the U.S.

National Medal of Technology in 1997 for co-founding and developing the Internet. They received the ACM Alan M. Turing award in 2004 for their work on the Internet protocols. In November 2005 they received the Presidential Medal of Freedom. The medal is the highest civilian award given by the United States to its citizens. Vint Cerf serves as chairman of the board of the Internet Corporation for Assigned Names and Numbers (ICANN) and is a Fellow of the IEEE, ACM, and American Association for the Advancement of Science, the American Academy of Arts and Sciences, the International Engineering Consortium, the Computer History Museum and the National Academy of Engineering. Cerf holds a Bachelor of Science degree in Mathematics from Stanford University and Master of Science and Ph.D. degrees in Computer Science from UCLA. He also holds honorary Doctorate degrees over a dozen universities

PROFESSOR BRIAN COLLINS (FBCS), CHIEF SCIENTIFIC ADVISER, DEPT FOR TRANSPORT

Professor Brian Collins became the Department for Transport's Chief Scientific Adviser in October 2006. He is also Professor of Information Systems at the Defence College of Management and Technology (DCMT), Cranfield University. His role at DfT is to ensure that the department's technological activities are well directed and that appropriate investment policy is based on good science and engineering. He is also a member of Sir David King's Chief Scientific Advisers Council, covering pan Government Science Technology and Engineering. He also advises Home Office and other agencies on Intelligence and Counter Terrorism matters. He was Vice President of the BCS responsible for External Affairs and is Chairman of the BCS Information Security Strategic Forum. He has served as Vice President of the then IEE and was Chairman of the Informatics Division

PROFESSOR JOSE CORDEIRO, CHAIR THE VENEZUELA PROJECT

Jose Cordeiro is an independent consultant, writer, researcher, professor and "traveller", currently doing research at the Institute of Developing Economics (IDE-JETRO) in Japan. He teaches as a Guest Professor at the Institute for Higher Studies in Administration (IESA) and at the Central University of Venezuela (UCV), where he created the first formal courses of Futures Studies ("prospectiva"). He is founder of the World Future Society (Venezuela Chapter), cofounder of the Venezuelan Transhumanist Association, chair of the Venezuelan Node of the Millennium Project of the World Federation of United Nations Associations (WFUNA), director of the Extropy Institute, advisor to the Center for Responsible Nanotechnology, member of the Academic Committee of the Center for the Dissemination of Economic Knowledge (CEDICE), former director of the Club of Rome (Venezuela Chapter, where he has being active promoting classical liberal ideas) and of the Venezuelan Association of Exporters (AVEX), and consultant to various companies and organizations, both Venezuelan and international. He has been included in the Marquis Edition of Who's Who in the World.

DAVID CORNER, ADVISER TO THE PRINCIPAL, UNIVERSITY OF ST ANDREWS

Having graduated with a 1st class degree in History at the University of Oxford, David Corner went on to hold academic positions at Oxford and St Andrews. He is the author of several publications on medieval historiography, hagiography and law and is a Fellow of the Royal Historical Society. At St Andrews, David combined his academic career with several managerial roles as Director of Personnel, Assistant Principal, Secretary of the University and Deputy Principal. In this last role, he was responsible for the operational and strategic management of both the academic and support activities of the institution. Having served on several national commissions, trusts and company boards, he is, now, in his retirement, involved in three major international projects and retained as Adviser to the Principal of the University of St Andrews. David Corner has recently been made both an Honorary Doctor of Law and an Honorary Doctor of Literature.

CORNELIA DAHEIM, PROJECT DIRECTOR, INTERNATIONAL RESEARCH, Z_PUNKT GMBH, THE FORESIGHT COMPANY

Cornelia Daheim is Director Foresight Consulting for Z_punkt GmbH The Foresight Company. Ms. Daheim studied general and comparative literature, English and psychology at the University of Essen and at King's College, London. Before joining Z_punkt, Ms. Daheim held a number of posts at the University of Essen for four years during her studies, e.g., managing the linguistic agency and the "LAUD" journal, and as a research assistant at the Institute of German Studies / Medieval Studies. She has been with Z_punkt since 2000, working on future studies projects for institutions such as the Federal Ministry of Education and Research and various national and multinational companies, including Philips, Bayer, TUI, BASF, or RWE. Cornelia Daheim founded and chaired the German Node of ACUNU's Millennium Project and the Planning Committee for the German Node which brings together the relevant actors from the German futures field. Her general work focus is on:
Futures studies and its methods, particularly scenario methods
Regional development, futures studies approaches and usability for regional development
Socio-cultural change and its relevance for strategic decision and innovation (Demographic change, societal change, lifestyles, identity)
International dimension of futures studies

DR PHIROZ P (DARU) DARUNKHANAVALA, VICE PRESIDENT AND CHIEF TECHNOLOGY OFFICER, DIGITAL AND COMMUNICATIONS TECHNOLOGY FOR BP

Dr. P. P. (Daru) Darukhanavala is VP & Chief Technology Officer, Digital and Communications Technology for BP. He leads a team responsible for the fast and efficient

matching of external technology innovation to BP's business requirements using a VC-type approach to rapid adoption. His team acts as change agent for the BP group in applying digital technologies and services to force major business process transformation as well as cost efficiencies across all of the business segments. Typical 'game changing' initiatives are expected to exceed $50m annual impact every year. The team accelerates adoption of new technology by hosting a series of executive education and awareness programmes aimed at increasing senior executive level awareness of the business possibilities created by emerging digital technology trends.

As VP, IT Integration, Daru led the IT integration programmes for the BP-Amoco merger and the Arco acquisition, which collectively targeted a bottom line synergy of over $500 million in annual bottom line IT cost reduction.

Previously, Daru was Director, Global IT Services for the BP Group, responsible for establishing standard IT infrastructure services world-wide. Other assignments included IT Functional Chief for BP Exploration globally based in London and CIO for BP Exploration in the Continental US and Alaska.

Before the merger with BP, Daru was Director, Corporate Supercomputing Center and Head of the Corporate Management Science Group for The Standard Oil Co. He has also worked as a consultant on several projects in the industrial and health care arenas and as an adjunct professor of management at several US universities.

Daru received his PhD and MS degrees in Operations Research from Case Western Reserve University, Cleveland Ohio, and B. Tech in Mechanical Engineering from the Indian Institute of Technology, Bombay.

KEN DUCATEL, MEMBER OF CABINET OF MRS. VIVIANE REDING, COMMISSIONER RESPONSIBLE FOR INFORMATION SOCIETY AND MEDIA, EUROPEAN COMMISSION

British, aged 50, he holds a PhD in economic geography from Bristol University and an MSc in transport policy from Cranfield University in the UK.

He has worked on information society policy for twenty years. He was a member of the faculty of University of Manchester for 14 years. His first experience in the European Commission was in DG Employment in 1995, when he worked in the secretariat to the High Level Group on the Information Society led by Professor Luc Soete. From 1997 to 2003, he worked at the European Commission's Institute for Prospective Technological Studies in Seville, where he led the institute's flagship "Futures Project."

At the end of 2003 he moved to DG Information Society to become head of sector for eEurope. In November 2004 he was invited to join Commissioner Reding's Cabinet

JAKE F DUNAGAN, RESEARCHER, HAWAII RESEARCH CENTRE FOR FUTURES STUDIES

Jake Dunagan is a Ph.D. candidate in the University of Hawaii's Alternative Futures Program. His dissertation concerns new forms of power, governance and subjectivity

emerging from advances in neuroscience and neurotechnology. His work at the Hawaii Research Center for Futures Studies combines futures thinking and new media to help groups understand change and increase their foresight capacity.

PROFESSOR WILLIAM H DUTTON, DIRECTOR, OXFORD INTERNET INSTITUTE, UNIVERSITY OF OXFORD

William H. Dutton is Director of the Oxford Internet Institute, Professor of Internet Studies, University of Oxford, and Fellow of Balliol College, Oxford. He was previously a Professor in the Annenberg School for Communication at the University of Southern California, which he joined in 1980, where he was elected President of the Faculty. In the UK, he was a Fulbright Scholar 1986-87, and was National Director of the UK's Programme on Information and Communication Technologies (PICT) from 1993 to 1996.

Among his recent publications on the social aspects of information and communication technologies are Society on the Line (Oxford University Press, 1999), Digital Academe, edited with Brian D. Loader (Routledge, 2003), and Transforming Enterprise, edited by Dutton, Brian Kahin, Ramon O'Callaghan and Andrew W. Wyckoff (MIT Press, 2005).

THIERRY GAUDIN, PRESIDENT DE PROSPECTIVE 2100

Ingénieur Général des Mines, born 15th May 1940 at Neuilly sur Seine, France

Diplomas : Graduated from "Polytechnique" and Mining engineering school of Paris.
Chonology:1966-1969 : in charge of regional development and research policies for the governor of the northern region..

1971-1981 : in charge of building a national innovation policy in the Ministry for industry: patents, measurements, testing, standards, quality control design, technical information and regional networks to support innovation in SME's. Management of innovation incentives, redesign of ANVAR, INOVA shows.

Member of the steering committee of the "Six countries program on innovation policies" since its foundation in 1974 and president of this program between 1981 and 1983.

1982-1992 : Creation and management of CPE (Centre for Prospective and technological assessment, Ministry for Research and Technology), in charge of three missions :

- international technological awareness
- Prospective (foresight)
- Assessment of research and industrial strategies

1993 : "Conseil général des Mines" (the highest assembly in civil service for technological assessment), member of the auditing committee of CNRS (the french NSF), creation of the 2100.org, aimed at designing world programs for next century.

"2100, history of the next century" from twenty years of experience in technology and innovation analysis, T. Gaudin directed, from 1988 to 1993 a worldwide prospective syntheses combining approaches from social sciences, ecology and technology. A reduced version has been edited in English « 2100, Our specie's Odyssey », quoted as "Our scenario" at the website http://2100.org

LESLEY GAVIN, FUTUROLOGIST, RESEARCH AND VENTURING, BT GROUP CHIEF TECHNOLOGY OFFICE

Lesley Gavin joined Chief Technology Office in BT Group PLC in 2004. Her role in strategic research involves identifying social, economic and technology trends, identifying new market opportunities for new technologies
Lesley started her career as a practicing architect working for Denys Lasdun, Richard Rogers and Hurley Robertson architects on housing and office developments. She then went on to work as a lecturer in the Bartlett School of Architecture at University College London, where she directed the graduate programme in Virtual Environments. Her research was predominantly in distributed and collaborative working environments and in pervasive IT. In 2000 she founded her own company focussed on delivering data visualisation solutions for derivatives and equity traders. This company grew to become an international entity and was sold in 2003.

JEROME C GLENN, DIRECTOR, MILLENNIUM PROJECT, WORLD FEDERATION OF UN ASSOCIATIONS

Jerome Glenn co-founded and directs the Millennium Project, the leading global participatory think tank supported by international organizations, governments, corporations, and NGOs which produces the internationally recognized State of the Future reports in cooperation with 32 Nodes around the world. Glenn has 35 years experience in futures research for government, international organizations, and private industry in science & technology policy, economics, education, defence, space, forecasting methodology, international telecommunications, and decision support systems with the Millennium Project, Committee for the Future, Hudson Institute, his own firm, the Future Options Room, and as an independent consultant.

MICHAEL GOLD, SENIOR RESEARCH ENGINEER, SRI CONSULTING BUSINESS INTELLIGENCE

Mr. Gold has over 25 years experience in engineering and consulting in the Silicon Valley, California area, specializing in helping businesses and governments make

high-stakes technology decisions. Since 2001 he has worked for SRIC-BI (a spinoff of the former Stanford Research Institute) where he enjoys the sponsorship of product-development laboratories worldwide. Mr. Gold specializes in helping organizations set R&D agendas and identifying promising areas of research in entertainment and automotive electronics, portable devices, and wireless technologies. Prior to his current engagement, Mr. Gold worked for a number of small and large organizations involved in telephony, high-fidelity audio, coin-operated games, local-area networking, spread-spectrum radio, radio-frequency interference control, system integration, and software development. Clients and sponsors who have valued his ability to bring the future into focus have included AT&T, BBC, BT, Nokia, Philips, Samsung, Sony, Thomson, Universal Studios, and the Walt Disney Company. He has published numerous reports and presentations on topics related to opportunity discovery, scenario planning, platform development, and the crafting of technology business models. Mr. Gold earned a Bachelor of Science in Electronic Engineering and Computer Science from the College of Engineering, University of California, Class of 1981. He's also an amateur musician with lifelong interest and involvement with literature and the humanities.

DR WILLIAM E HALAL, PROFESSOR, GEORGE WASHINGTON UNIVERSITY; PRESIDENT TECHCAST LLC

William Halal is Professor of Science, Technology, and Innovation at George Washington University, Washington, D.C. An authority on emerging technology, strategic planning, knowledge, and institutional change, he has worked with General Motors, AT&T, SAIC, MCI, Blue Cross/Blue Shield, International Data Corporation, the DoD, the Asian Development Bank, foreign companies, and various government agencies. Bill recently substituted for Peter Drucker in giving a talk to 2000 managers at the Los Angeles Coliseum.

Halal's work has appeared in journals such as Nature/BioTechnology, California Management Review, Strategy & Business, Knowledge Management Review, Academy of Management Executive, Journal of Corporate Citizenship, Human Relations, Systems & Cybernetics, and Technological Forecasting. He has also published in popular media like The New York Times, Christian Science Monitor, Toronto Globe & Mail, Advertising Age, Executive Excellence, and The Futurist. He has produced five books: The New Capitalism (Wiley, 1986), Internal Markets (Wiley, 1993), The New Management (Berrett-Koehler, 1996), The Infinite Resource (Jossey-Bass, 1998), and 21st Century Economics (St. Martin's Press, 1999).

 Prof. Halal is the founder of TechCast, a web-based system that pools the knowledge of experts to forecast breakthroughs in all technical fields - "A Virtual Think-Tank Tracking the Technology Revolution." He also co-founded the Institute for Knowledge & Innovation as a collaborative effort between the GW School of Business and the School of Engineering.

Bill studied engineering, economics, and the social sciences at Purdue and Berkeley. Previously, he was a major in the U.S. Air Force, an aerospace engineer on the Apollo Program, and a Silicon Valley business manager. He serves on advisory boards of AMD Corporation, the World Future Society, and other organizations. His work has received prominent recognition. One paper, "Beyond the Profit-Motive," won the 1977 Mitchell Prize and an award of $10,000, and he received a medal from the Freedom Foundation for

Excellence in the Study of Enterprise. Macmillan's Encyclopedia of the Future ranked him among "The World's 100 Most Influential Futurists," including H.G. Wells, Arthur C. Clarke, Alvin Toffler, and Daniel Bell.

JEFFREY R HARROW, PRINCIPAL, THE HARROW GROUP

Jeff Harrow, Principal at The Harrow Group, has been the chief technologist for the Corporate Strategy Groups of both Compaq and Digital Equipment Corporation. He began his IT career at a large aerospace company where he designed and implemented the first colour-graphic Executive Information System, and then led the transition from a batch-oriented mainframe administrative computing environment to a 1,000+ terminal interactive distributed computing environment. He joined Digital to implement the first Network Planning and Installation business in the Southern Region, and later moved into the Services organization to work on network and network management products and services.

Jeff invented and implemented the first iconic network management prototype for DECnet networks, and he now works with many businesses and industry groups to help them better understand the strategic implications of our contemporary and future computing environments.

Jeff has a two-decade-plus track record of providing businesses and organizations with technology consulting and presentations that highlight the innovations and the trends in computing, and in the growing number of synergistic technologies whose growth is changing virtually every element of our society. Most importantly, he then helps them to explore how these changes will affect their businesses, and how they can choose to profit from these unstoppable technological and resultant social evolutions.

As the author and editor of the Web-based multimedia technology journal and Webcast originally known as the "Rapidly Changing Face of Computing", Jeff has shared his fascination with technology, and his sense of wonder at the innovations and trends of contemporary computing and the technologies that drive them, with people across the globe. (The Webcast audio version was the first and is the longest-running weekly Web-based "radio" technology program.)

His new journal, The Harrow Technology Report, available on the Web at www.TheHarrowGroup.com, continues and significantly expands on this tradition.

Jeff is also a Board Member of the Technology Advisory Board of
 "The Institute for the Study of Accelerating Change."

Jeff is the co-author of a book, "The Disappearance of Telecommunications," published by IEEE Press. Jeff's writings on technology are carried in numerous electronic and traditional media around the globe, and his insights have been featured in newspaper, magazine, and online articles.

Jeff has also been interviewed on technology futures for TV programs such as the History Channel's "Modern Marvels," and has been a judge for Disney's Discover Magazine "Innovation Awards."

Jeff has numerous patents issued and on file in the areas of network management and user interface technology, and he is a commercial pilot. He brings these and other technological interests together to help people "look beyond the comfortable and the obvious" so that they don't become road-kill by the side of the Information Highway.

ANDREW HERBERT (FBCS), MANAGING DIRECTOR OF MICROSOFT RESEARCH, CAMBRIDGE

Andrew Herbert is Managing Director of Microsoft Research, Cambridge and a Microsoft Distinguished Engineer. Andrew joined Microsoft Research in 2001 as an Assistant Director and in March 2003 he succeeded the founding director, Roger Needham. Andrew's research interests include computer networking, operating systems and distributed computing. Prior to joining Microsoft Research in 2001 he was Director of Advanced Technology at Citrix Systems Inc. Andrew is a Fellow of the Royal Academy of Engineering, and the British Computer Society.

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DR MATT JONES, READER, FUTURE INTERACTION TECHNOLOGY LABORATORY, SWANSEA UNIVERSITY

Matt Jones is a Reader in Computer Science and is helping to set up the Future Interaction Technology Lab at Swansea University. He has worked on mobile interaction issues for the past ten years and has published a large number of articles in this area. He is the co-author of "Mobile Interaction Design", John Wiley & Sons (2006). He has had many collaborations and interactions with handset and service developers including Orange, Reuters, BT Cellnet, Nokia and Adaptive Info. He is an editor of the Journal of Personal and Ubiquitous Computing and on the steering committee for the Mobile Human Computer Interaction conference series. Married with three mobile, small children; when he's not working he enjoys moving quickly on a bike whilst listening to music and the occasional podcast. More at www.undofuture.com

DR JONATHAN LIEBENAU, SENIOR LECTURER IN INFORMATION SYSTEM, LONDON SCHOOL OF ECONOMICS

Jonathan Liebenau is a Senior Lecturer in Information Systems at the London School of Economics (LSE) and a visiting Scholar at Columbia Business School, Columbia University. In addition he is involved in research projects at the Columbia Institute of Tele-Information (CITI). Dr. Liebenau was previously the Director of Industry Studies at the

Technical Change Centre, a government-linked think tank in London, and he headed research projects within the LSE, Business History Unit and Department of Economic History on high technology industries. He has conducted research in the area of telecommunications policy, with emphasis on transfer of technology, information infrastructure policy, and regulatory reform and liberalization of the European markets. He has also written on fundamental concepts of information management, as applied to problems such as decision support, temporality and transaction costs. His current research is on concepts of information infrastructure at levels ranging from the organization to national and international cooperative policies.

DR MARK LUPISELLA, NASA, GODDARD SPACE FLIGHT CENTER

Dr. Mark Lupisella is an engineer and scientist working for NASA at the Goddard Space Flight Center, Information Systems Division. He has a B.S. in physics, a M.A. in philosophy, and a Ph.D. in biology (Program in Behaviour, Ecology, Evolution, and Systematics) all from the University of Maryland, College Park. His dissertation was on modelling microbial contamination of Mars from a human mission. He worked on the Hubble Space Telescope, from launch through Servicing Missions I-III, and has since worked on the NASA Constellation Program, operations systems engineering, knowledge management, Mars planning, wearable computing, and areas of astrobiology such as planetary protection, artificial life, using cooperative robotics to search for extraterrestrial life, and broader societal issues of astrobiology such as ethics and worldviews. He is interested in multi-generational altruism, works on space governance issues, and co-founded the Horizons Project which aims to improve humanity's ability to address long-term global survival and development challenges.

He has written a number of papers and articles on the above topics, and has a book chapter forthcoming on a 50 year view of space governance for a volume based on the National Science Foundation and NASA sponsored conference, *Space Science, Environmental Ethics, and Policy*; as well as a forthcoming chapter on philosophical aspects of astrobiology for *Exploring the Origin, Extent, and Future of Life: Philosophical, Ethical, and Theological Perspectives* – a Cambridge University Press book based on a series of workshops held by the American Association for the Advancement of Science. He is presently working on a book with NASA's Chief Historian, tentatively titled, *Cosmos and Culture: Cultural Evolution in a Cosmic Context.*

JOHN MILNER (FBCS), MIS DIRECTOR, UNIVERSITY OF CAMBRIDGE, SAMI ASSOCIATE

John Milner has been in the IT and Telecommunications industry for over 35 years.

He started work with ICL in the 60's and developed his career in customer support, product development and large projects, progressing from early third generation mainframes through to the PC era.

In the mid 80's he moved to Racal where he rapidly became a Director within the telecommunications products and services company and was involved in a number of high profile projects and start ups. After the dotcom boom he took redundancy and moved on. He has just completed 5 years as MIS Director for the University of Cambridge where he had responsibility for all administrative systems and the University's first MIS Strategic Plan. He is a FBCS and CITP and a Liveryman of the IT Company in the City of London

DR KASUO MURANO, PRESIDENT, FUJITSU LABORATORIES LTD

Kazuo Murano is currently President of Fujitsu Laboratories Limited, which is the R&D organization for Fujitsu Limited, an ICT company based in Japan. He assumed this role in June 2004.

He has been a Board Member of Fujitsu Limited since June 1996. In 2002, he was named Corporate Senior Vice President and Group President, Global Businesses, responsible for Fujitsu's overall global operations. From 1996 to 2000, he held senior positions in Fujitsu's Network/Telecommunications Group, including Group President, International Telecommunications Business Group. Prior to 1995, he worked in Fujitsu Laboratories and was appointed to the position of General Manager, Multimedia Systems Research Division. He has a Bachelor's Degree in Electrical Engineering from Tokyo University and a Ph.D. in Electrical Engineering from Princeton University (June 1972). Fellow, IEEE.

IAN NEILD, DISRUPTIVE FUTURIST, BT GROUP TECHNOLOGY OFFICE

Ian Neild is a disruptive evangelist who presents on technology trends and social/business impacts. He writes the technology timeline along with Ian Pearson of BT, which lists possible technology changes and their impacts. It is used extensively by many companies around the world to think about future impacts in business. As an experienced presenter Ian has appeared around the world to a wide variety of audiences. Currently he is working on an area dubbed as the "Internet of Things" looking at disruptive technologies within BTs foresight team.

AMY OBERG, FUTURIST, OBERG AND ASSOCIATES

Amy Oberg is a futurist and competitive analyst who specialises in helping organizations better understand the emerging competitive environment and respond with effective, proactive strategies. With over 25 years of cumulative experience in competitive, management, and market analyses, her insights

regarding emerging trends, threats and opportunities, competitor activities, market conditions, and technology disruptions, have been sought out by both large and small public and private organizations in a wide variety of industries including aerospace, energy, telecommunications, transportation, consumer goods, bio/pharma, real estate and finance. Most recently, Ms. Oberg has applied her skills to assist organizations such as NASA, Enron, Dynegy, Conoco, MCI, Solectron, the State of Minnesota, and the City of Kaohsiung (Taiwan). She is now on staff at Kimberly Clark Corporation.

As a futurist, Ms. Oberg has been the invited keynote speaker at professional conferences*, a guest lecturer at universities, and a quoted source for national and international media. She has provided insights to organizations such as the National Association of Purchasing Managers, American Society for Quality, Institute of Electrical and Electronics Engineers and others on topics ranging from emerging global trends and issues, to new technologies, and the future of life; and she has lectured to business students and faculty at the University of Houston, River College, Southern New Hampshire University and others on the future of business and business ethics. In addition, she has lead special projects for NASA related to the design of an interplanetary communications system, the future design of operations aboard the International Space Station, and the future of Mission Control; and provided input to DARPA regarding future designs for submarines. Ms Oberg has also served in a research and writing capacity for the United Nations Millennial Project publication, State of the Future 2003.

As a formally trained competitive intelligence professional and manager, Ms. Oberg has initiated, designed, and managed competitive intelligence (CI) functions for large organizations. Her CI training has included coursework through the Academy of Competitive Intelligence in areas such as war gaming, benchmarking, cross competitor analysis, competitive blindspots, and forensic intelligence. In addition, she has attended educational offerings from the Society of Competitive Intelligence Professionals on topics including competitor strategy analysis, early warning system design and development, financial forensics, decision maker profiling, and research methodologies.

Ms. Oberg holds a Masters degree in Studies of the Future; a Bachelors degree in Communications; and has completed the Program for Managers at Rice University's Graduate School of Management.

She is a member of the World Future Society and the Association of Professional Futurists, and is serving as an expert for TechCast, a technology forecasting effort from George Washington University. She has served as co-chair of the Boston chapter of Women in Networking and as a Board member for the Boston chapter of the World Future Society. Ms Oberg has also served on national and local steering committees and boards for the World Future Society and the Society of Competitive Intelligence Professional, and as an active member of Women in Technology. She is currently working on a book on the future of Boston. She was the originator and author of a Boston based radio program about the future.

IAN PEARSON (FBCS), FUTUROLOGIST, BT GROUP TECHNOLOGY OFFICE

Ian Pearson graduated in 1981 in Applied Mathematics and Theoretical Physics from Queens University, Belfast. He spent four years in Shorts Missile Systems, in many different disciplines from mechanical engineering to battlefield strategy simulation. He joined BT Laboratories in 1985 as a performance analyst, and has since worked in network design and evolution, cybernetics, and mobile systems. He now concentrates on mapping the progress of new developments throughout information technology, considering both technological and social implications. As a futurologist and a principal consultant, he lectures extensively on his futures views. In between conferences, current projects include machine consciousness, social trends and advanced computing technology.

He has received many awards for his papers, written several books and has made over 400 TV and radio appearances. He is a fellow of the British Computer Society, the World Academy of Art and Science, the Royal Society of Arts, the Institute of Nanotechnology and the World Innovation Foundation.

BILL RALSTON, PRESIDENT, PGO CONSULTING LLC

Bill Ralston is president of PGO Consulting LLC (www.projectsgo.com), a scenario-planning consultancy located in Silicon Valley, California. For over 20 years, Bill has been working with management teams in business and government organizations to make sense of the complex, dynamic environments they're operating in from the welter of information available. Co-author of the recently published book, *The Scenario Planning Handbook*, Ralston is currently dividing his time on energy/climate change mitigation/sustainability issues, healthcare investment opportunities, and emerging telecommunications markets. Co-founder of the technology- and business-research spin-off from SRI International, SRIC-BI.

GILL RINGLAND (FBCS), CHAIR BCS MANAGEMENT FORUM, SAMI FELLOW

Gill Ringland is an author and consultant on scenario planning, future studies and strategy. Since 2002 she has been CEO of SAMI Consulting which specialises in using views of the future to improve decision making. Her books are amazon.com best sellers and she was co-opted to the EC's High Level Group on Converging Technologies (nano-bio-info-cogno). She came to scenarios through using them when head of strategy at ICL. Her career in the IT industry included research and product development in databases, email and office systems, and multi-media storage.

Gill has been a Member of the BCS since joining the industry in 1970 and was appointed as a Fellow in 1995. She has spoken at many Branch meetings on a number of topics, many "standing room only". She served on the Nominations Committee from 1999 to 2002, on the Management Forum from 2002 to now, from 2004-2008 as Chair, Chair of the Management Qualifications Working Group from 2004 to 2007, and as a member of Council from 2006."

DR FRANK RUFF, SENIOR MANAGER OF SOCIAL ENVIRONMENT AND TREND RESEARCH, DAIMLERCHRYSLER AG, RESEARCH AND DEVELOPMENT

Dr. Frank Ruff is Senior Manager of Social Environment and Trend Research and member of the management team of the Society and Technology Research Group of DaimlerChrysler in Berlin and Palo Alto (California). He has 17 years of practical experience in corporate foresight, applied industrial research and consulting. He was deeply involved with projects on societal change, changing lifestyles and customer needs and the implementation of research projects for product, marketing and sales strategies. Clients included automotive business units, the aircraft industry and services businesses. Previously he was working as researcher and teaching assistant at the Technical University of Berlin, faculty of planning and social sciences. He has substantial experience in developing and coordinating future-oriented research projects and making them effective by combining research with consulting.

DR WENDY L SCHULTZ, INFINITE FUTURES, SAMI ASSOCIATE

Since 1980, I have focussed my futures work on facilitating futures fluency: helping groups of people explore -- and celebrate! -- the myriad possibilities the future might unfold. This focus on process, rather than output per se, has resulted in over a decade of participatory futures work: designing sea-level-rise/environmental management workshops for leaders in the Republic of the Marshall Islands; helping U.S. court administrators envision the future of justice; exploring alternative futures for human endeavours in space with participants at the International Space University; and building alternative scenarios for dental health policy in Great Britain. While such projects required every aspect of futures research -- identifying emerging issues of change, imagining the alternative futures arising from various trends, envisioning preferred futures as goals, planning strategies to create those visions, and monitoring progress towards the vision -- my focus, and the focus of Infinite Futures, is on workshop design, facilitation, and documentation.

Futures researchers track technical innovations, value shifts, geopolitical tides, environmental perturbations, economic developments, demographic patterns, and other trends of change. From these data they create scenarios of possible alternative futures, which are then used as contingencies within strategic planning. Working as facilitators, futures researchers can help communities and organizations envision their preferred futures and compare those visions with current trends and scenarios of possible futures. The process leads to practical planning and policy-making. As a consequence, futures researchers read widely in both the social and natural sciences, and I read even more widely in science fiction as well.

PROFESSOR NIGEL SHADBOLT (FBCS), PRESIDENT BCS AND PROFESSOR OF ARTIFICIAL INTELLIGENCE, UNIVERSITY OF SOUTHAMPTON

Nigel Shadbolt is a Professor of Artificial Intelligence in the School of Electronics and Computer Science (ECS) at the University of Southampton. His research concentrates on two ends of the spectrum of AI - namely, Knowledge Technologies and Biorobotics.

In its 50th Anniversary year, Nigel is President of the British Computer Society. He is a Fellow of both the Royal Academy of Engineering and the British Computer Society.

Between 2000-7, he was the Director of the £7.5m EPSRC Interdisciplinary Research Collaboration in Advanced Knowledge Technologies (AKT). He is the Chief Technology Officer of Garlik, a company formed to exploit semantic web technology to enhance consumers' and citizens' privacy. He is also a founding director of the Web Science Research Initiative (WSRI).

From 2001 to 2004 he was Editor in Chief of IEEE Intelligent Systems and in 2005 he was appointed Emeritus Editor in Chief. He is also a Fellow of the European AI Association (ECCAI). He is a member of various national committees including the UK EPSRC Strategic Advisory Team (SAT) for ICT and the Human Sciences and Technology Sub-Committee of the UK Defence Scientific Advisory Committee (DSAC).

DAME STEPHANIE (STEVE) SHIRLEY (FBCS), FOUNDER AND LIFE PRESIDENT, XANSA PLC

Dame Stephanie (Steve) Shirley's dameship in 2000 was for services to the UK computing industry. An IT entrepreneur, now ardent philanthropist, she started her software house with £6 on her dining room table in 1962 with positive discrimination for women. She has been associated with a number of firsts, including serving as the BCS's first woman President (1989-90) and the first European Board member of Tandem Computers Inc. (1992-97). She gave £5m to the IT livery company (Master 1992-3) and £10m+ to the Oxford Internet Institute (International Strategy Board 2001-).

CHRIS SKINNER (FBCS), CHIEF EXECUTIVE OF BALTRO LTD, CHAIRMAN OF THE FINANCIAL SERVICES CLUB, SAMI ASSOCIATE

Chris Skinner provides consultancy and speaking engagements as the Chief Executive of the think tank Balatro. He is also the Chairman of the Financial Services Club, and a co-founder of the website Shaping Tomorrow. He is well-known for his regular

column in the Banker magazine, the FinanSer.com and Finextra.com. Chris is the author of two books published by John Wiley, titled "The Future of Banking" and "The Future of Investing", and is currently working on a third: "the Future of Payments".

DR OLIVER H G SPARROW, DIRECTOR, CHALLENGE NETWORK AND SAMI FELLOW
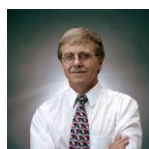
Oliver Sparrow directs the Challenge Network, which is a loose affiliation of experienced individuals who enjoy addressing future oriented, complex issues. Most clients are large international companies or state agencies. He chairs a number of start up companies and is a non-executive director of other more established organisations. He spent the bulk of his career in Shell, chiefly as a strategist and general manager. He was a director at Chatham House, the Royal Institute for International Affairs for five years after leaving Shell. He is an Oxford-trained biochemist whose post-doctorate work involved plugging plants into the primitive computers of the time: code applied with a soldering iron. Raised in Africa and the Caribbean, he has lived and worked in over twenty countries. The URL of the Challenge Forum web site is http://www.chforum.org

ROHIT TALWAR, CEO, FAST FUTURE

Rohit is an award winning futurist speaker, entrepreneur, specialist advisor and strategic change agent. He was nominated as one the top ten global future thinkers by the UK's Independent newspaper.

He is the founder of the consultancy Fast Future and the think tank - Global Futures and Foresight. He spends his time traveling the world researching the ideas that will shape the future and meeting the people and organizations behind them. Rohit has a particular interest in the evolution of China, India, the emerging economies and the future of travel, tourism, meetings and events. He has completed major global studies on the Future of China's Economy – The Path to 2020 and the Future of Travel and Tourism in the Middle East.

DR EILIF TRONDSEN, DIRECTOR SRI CONSULTING BUSINESS INTELLIGENCE

Eilif Trondsen is Director at SRI Consulting Business Intelligence (SRIC-BI) in Menlo Park, California. The focus area of his research and consulting at SRIC-BI—a spin-out of SRI International (formerly Stanford Research Institute)—is the use of technology for innovation, learning and business performance improvement. He has 28 years' experience at SRIC-BI and at SRI International, leading or contributing to a variety of projects for U.S. and foreign clients in the private and public sectors. For ten years, Eilif held the position of Research Director of the Business Intelligence Program (now the Scan

program) at SRI and for 10 years led the Learning on Demand (LoD) program (www.sric-bi.com/LOD).

He has recently been doing research on virtual worlds and their potential role in learning and other business applications and recently launched the Virtual-Worlds Consortium for Innovation and Learning (see http://www.sric-bi.com/vwc). In his tenure at SRI and SRIC-BI, Eilif has given numerous presentations on various eCommerce and eLearning topics at conferences and to SRI clients around the world. Eilif has also the author and co-author of numerous publications on eCommerce and eLearning topics.

LLOYD WALKER, PRINCIPAL, PRECURVE LLC

Lloyd Walker is the principal of Precurve, LLC an innovation services firm. He is an entrepreneur with over fifteen years experience in early stage technology startups and twenty years of strategic planning and product development experience. Throughout his career he has provided creative foresight, innovation management, and business leadership for emerging markets and technologies. He serves as a senior executive, advisor and shareholder for technology businesses in Texas and California.

Mr Walker was formerly the President of Human Code, an interactive developer that was sold to Sapient in 2000 for $135M. He grew the firm to be a leading national developer of electronic games, e-learning, and online solutions. Prior to Human Code he performed strategy and product design for NASA, Honda, and many other Fortune 500 companies. He has taught Industrial Design in California and Texas and has an MS degree in Studies of the Future from the University of Houston, and a BS in Industrial Design from the Art Center College of Design in Pasadena, California.

KEVIN WARWICK, PROFESSOR OF CYBERNETICS, UNIVERSITY OF READING

Kevin Warwick is Professor of Cybernetics at the University of Reading, England, where he carries out research in artificial intelligence, control, robotics and cyborgs. He is also Director of the University KTP Centre, which links the University with Small to Medium Enterprises and raises over £2.5 million each year in research income.

Kevin was born in Coventry, UK and left school to join British Telecom, at the age of 16. At 22 he took his first degree at Aston University, followed by a PhD and research post at Imperial College, London. He subsequently held positions at Oxford, Newcastle and Warwick Universities before being offered the Chair at Reading, at the age of 33.

As well as publishing over 500 research papers, Kevin's experiments into implant technology led to him being featured as the cover story on the US magazine, 'Wired'.

Kevin has been awarded higher doctorates both by Imperial College and the Czech Academy of Sciences, Prague. He was presented with The Future of Health Technology Award in MIT, was made an Honorary Member of the Academy of Sciences, St. Petersburg and in 2004 received The IEE Achievement Medal. In 2000 Kevin presented the Royal Institution Christmas Lectures, entitled "The Rise of the Robots".

PROF MARTIN WESTWELL, DIRECTOR, FLINDERS CENTRE FOR SCIENCE EDUCATION IN THE 21ST CENTURY, FLINDERS UNIVERSITY

Martin received his first degree and PhD from Cambridge University where his research focused on the way that drugs bind to their targets in the body. He has worked in academic research, the biotechnology industry, in business development and with a number of organizations on science-and-society projects.

Martin's particular interest is in the way that young people form their minds and the influences of technology on this process in the future.

SIR MAURICE V WILKES (FBCS), FOUNDER PRESIDENT, BCS

Maurice V. Wilkes was born in England in 1913. He went up to Cambridge University in 1931 and studied mathematical physics and other subjects. In 1934 he became a graduate student in the Cavendish Laboratory doing experimental research on the propagation of radio waves in the ionosphere. This led to an interest in tidal motion in the atmosphere and his first book was on this subject. It also led to an interest in computing methods and, when he returned to Cambridge in 1945 after war service, he became head of the Computer Laboratory, then called the Mathematical Laboratory.

In the summer of 1946, Wilkes attended the famous Moore School lectures on electronic computers in Philadelphia. On his return, he set about building the EDSAC which began to work in May 1949. In 1951, he published with two colleagues the first book to appear on computer programming. At this time, he put forward his proposals for microprogramming, a system which later became adopted widely in the industry. In 1965, he published the first paper on cache memories, followed later by a book on time-sharing.

In 1974, it appeared to Wilkes that the time had come when local area networks based on traditional telecommunication technology might profitable be replaced by networks of much wider bandwidth based on computer technology. The design study for what became known as the Cambridge Ring was published in 1975. The Cambridge Model Distributed System, a pioneering client-server system, described by Wilkes and Needham in 1980, was based on this ring.

Since 1980 Wilkes has worked in industry, first with DEC in Massachusetts and later with the Olivetti Research Laboratory in Cambridge, England. This laboratory was acquired by AT\&T in 1999. In 2002, Wilkes moved back to the Computer Laboratory, University of Cambridge, where he is an Emeritus Professor.

Wilkes is a Distinguished Fellow of the British Computer Society, a Fellow of the Royal Society, and a Fellow of the Royal Academy of Engineering. He is a Foreign Associate of both the US National Academy of Sciences and the US National Academy of Engineering. In

1981, he received the Faraday Medal from the Institution of Electrical Engineers in London and in 1992 he received the Kyoto Prize for Advanced Technology.

In 1967, Wilkes delivered the ACM Turing Lecture and in 1980 he received the Eckert-Mauchly award from the IEEE Computer Society and the ACM. His books include Memoirs of a Computer Pioneer (MIT Press, 1985) and Computing Perspectives (Morgan-Kaufmann, 1995).

CHRIS YAPP, FUTURIST, SAMI ASSOCIATE

Chris Yapp has been in the IT Industry since 1980. Most recently he was Head of Public Sector Innovation at Microsoft. Before that he has held a number of roles at Honeywell, ICL and Hewlett Packard.

He has been involved in Public Sector IT for the majority of that period and has been involved in many policy and advisory groups on strategic and management aspects of IT.

Chris is a Patron of NACE, and a Trustee of world e-citizens. Chris is also an Associate of the think tank, DEMOS, and a former Director of the Internet Society of England. He is a past Trustee of the School for Social Entrepreneurs and the British Committee of the UK-Canada colloquia He is a frequent public speaker and writer on the e-agenda. His most recent publication is 'Personalization of education in the 21st century'.

PRODUCTION UNIT FOR IT IN 2057

JENNY ALLEN, BUSINESS DEVELOPMENT OFFICER, FACULTY OF MEDIA, ARTS AND SOCIETY, SOUTHAMPTON SOLENT UNIVERSITY

JODY CUSACK, FILM CAMERA AND LEAD EDITOR, SOUTHAMPTON SOLENT UNIVERSITY

LIZA-MARIE HENSHAW, FILM DIRECTOR , SOUTHAMPTON SOLENT UNIVERSITY

MARK SIDEBOTTOM, FILM EDITOR, SOUTHAMPTON SOLENT UNIVERSITY

MARTIN VICKERY (FBCS), CONSULTANT MANAGER, BCS IT MANAGEMENT FORUM