



Quantum Information Partners LLP

## **Bank of England Briefing**

**Quantum Cryptography – Out of the Laboratory into the  
Market**

**SPEAKER PROFILES**

## (THOMAS) ALASTAIR CLARK

Read Mathematics at Cambridge and Economics at the LSE. Has worked in the **Bank of England** since the early 70s including spells as Personal Assistant to the Deputy Governor, Alternate UK Executive Director at the IMF in Washington and Alternate Director of the European Investment Bank. Head of the Bank's European Division, 1993-94. Appointed Deputy Director, co-ordinating policy on regulation and market and institutional structure, in the middle of 1994. Appointed Executive Director, March 1997. Appointed Adviser to the Governor, October 2003.

## CHARLES HUGHES, BSC, CENG, FBCS, CITP, FIMIS, MCMi, MCIPS

Charles is a partner of **QIP LLP** and a director of eManagement Limited, promoting the implications of IT and e-commerce and managing relationships between the public and private sectors. His career includes twelve years in director roles with ICL and over two years with the Department of Trade and Industry as Project Director for the Information Society Initiative.

During thirty years in the IT industry in sales, marketing, purchasing and technical roles he has also served on the boards of IT companies in the US, Germany, Australia and the UK.

He is a Vice President [and](#) Deputy President (elect) of the British Computer Society, Court Assistant of the Worshipful Company of Information Technologists and an Executive Council member of the Parliamentary IT Committee (PITCOM).

## CHARLES ROSS, FBCS(HON) CITP FIMIS FIAP CITP

A Partner in **QIP LLP**, Charles trained as a banker but has spent his career since 1958 in computing. He was elected a Fellow of the British Computer Society in 1968 for his work on diagnostic programming systems and an Honorary Fellow in 1976. He is a Fellow of the Institution of Analysts and Programmers and a Fellow of the Institute for the Management of Information Systems.

He has spent half his career in the invention and development of computing technology and half in the financing and implementation of commercial applications. He has been associated with four 'world firsts' in computing and has started, bought and sold a number of companies in the UK and the USA. In 1998 he was the Secretary of the Quantum Computers in Europe Pathfinder Project for the European Commission and has been involved with quantum information processing since then.

## **PROFESSOR ANDREW BRIGGS**

Andrew is Director of the Quantum Information Processing Interdisciplinary Research Collaboration (**QIPIRC**).

He is Professor of Nanomaterials at the University of Oxford. He is a Professorial Fellow of St Anne's College, an Emeritus Fellow of Wolfson College, an Honorary Fellow of the Royal Microscopical Society and a Fellow of the Institute of Physics. He developed the use of elevated temperature scanning tunnelling microscopy and associated techniques to study *in situ* the atomic structure of oxide surfaces, and the growth of semiconductors, including self-assembled heteroepitaxial nanostructures such as quantum dots and the nitride family of semiconductor materials.

He has over 400 publications, the majority in international refereed journals. His work is characterized by a close relationship between experimental observation and theoretical modelling. He is currently pursuing the application of nanomaterials to quantum computing, especially nitride quantum dots and carbon nanotubes and fullerenes ([www.nanotech.org](http://www.nanotech.org)). He has a degree in theology from Cambridge, and is a qualified pilot. In 1999 he was a winner of the *Metrology for World Class Manufacturing Award*.

## **PROFESSOR BRIAN S COLLINS**

Professor Collins is Head of Department and Professor of Information Systems at **RMCS Cranfield University**. He was appointed in August 2003.

His current personal research interests centre on the design and engineering of structured, secure and dependable knowledge and information management processes and systems using next generation information and communications technology (ICT).

He is currently a Vice President, External Relations of the British Computer Society and has been Vice President of the Institution of Electrical Engineers.

He was one of the technical advisers to the DTI on a Foresight Cybertrust and Crime Prevention project, and as an Associate Fellow of RIIA Chatham House he is advising on Future Global Security issues. He was specialist adviser to the Home Office Select Committee's work on Identity cards. He is an independent member of DSAC and a member of the CIO Connect network. He advises Government Departments and Industry on a wide range of ICT related topics.

At the end of 2001, he completed a period as International Director of Information Technology at Clifford Chance, the largest commercial law firm in the world.

As Head of Information Systems at the Wellcome Trust he was responsible and accountable for the information systems in the Trust, the largest charity in asset terms in the UK and the principle private funder of medical research.

At GCHQ he held a board level appointment of Chief Scientist and Director of Science and Technology and was accountable for the strategic direction, development and procurement of all information and communication systems.

Prior to this appointment he was Deputy Director at RSRE responsible for all electronics technology research in MOD; this was the culmination of a period of 15 years spent at RSRE as a practicing research scientist, research manager and science policy creator. His first degree is in Physics and his Doctorate is in Astrophysics.

**Qualifications:**

MA DPhil (Oxon), C.Eng, CITP, Fellow and Vice President, British Computer Society, Fellow of the Institution of Electrical Engineers, Associate Fellow, Royal Institute of International Affairs, Liveryman of the Worshipful Company of Information Technologists, Visiting Professor, Southampton University, Fellow of the Institute of Physics, Fellow of the Royal Society of Arts

**STUART BROCKLEHURST**

Stuart Brocklehurst holds directorships with Carbon Leadership, Darwin Consulting and Business Data Quality Ltd. He was previously Senior Vice President of **Visa International** for four years, where he remains an adviser.

At Visa Mr Brocklehurst held responsibility for new technology, including smartcards, e-commerce and mobile commerce, and latterly led initiatives to establish new areas of business, including the first electronic payment network in Iraq and a major investment in Nigeria.

Prior to Visa he worked for Barclays PLC in a variety of roles including corporate strategy, business planning and technology management.

Mr Brocklehurst is a frequent speaker and commentator on IT and business change, and sits on the editorial board of African Investor magazine.

**DR ANDREW J SHIELDS PHD**

Andrew Shields trained as a Physicist at Imperial College, London, gaining a First Class Honours Degree and a Doctorate in Physics. He was awarded a Royal Society Fellowship to work at the Max Planck Institute in Stuttgart, before joining the staff at **Toshiba Research Europe** in Cambridge, where he now leads the R&D programme on Quantum Information Technology.

Under Andrew's direction the Quantum Information Group in Cambridge have developed the world leading technology for quantum cryptography. Notable firsts have been to extend the reach of a single link beyond 100km and to

realise a fully automated system. They have also pioneered a quantum device technology based upon self-organising semiconductor nanotechnology that will enhance and enable future IT. Over the past ten years, Andrew has co-authored over 100 scientific publications, patented more than 40 inventions and is a regular speaker at international conferences on nanotechnology and quantum information.

Andrew co-ordinates a DTI-funded programme to develop quantum cryptography and participates in the management of a European based consortium. He advises the EPSRC on their portfolio of Materials related research.

### **DR BRIAN LOWANS PHD**

Dr Brian Lowans is Team Leader for quantum cryptography within **QinetiQ** and is responsible for its technical and business development. He has developed technical and business skills through 17 years experience in industry, government and university environments. This has given him a sound technical background in physics, photonics and information technology applied to real problems. He has led the development of optical pattern recognition systems, used patent portfolio analysis to improve the positioning of holographic imaging technologies. As well as quantum cryptography, his team is currently developing technologies such as fibre-optics and waveguide devices with applications to communications. He is a Member of the Institute of Physics, has a PhD in Optical Information Processing, an MSc in Optoelectronics, a BSc in Physics and an MBA.

### **GRÉGOIRE RIBORDY**

Founder and Chief Executive Officer of **id Quantique**, a Geneva-based start-up company specialising in the field of quantum photonics, Grégoire is the recipient of the 2001 Wall Street Journal Europe Innovation Award, as well as 2002 and 2004 Technologist Standort Schweiz award.

He began his career at Nikon Corp., in Tokyo in the R&D department of the optical division of Nikon where he worked on the numerical simulation and development studies of two new types of optical microscopes.

## **KEVIN B. LATRAVERSE, VP OF WORLDWIDE SALES**

Mr. Latraverse joined **MagiQ** in February 2004, and has overall responsibility for building and managing MagiQ's worldwide sales force.

Mr. Latraverse has spent 25 years in high technology and has broad experience in the security field. In his most recent role, Mr. Latraverse served as President of KELEMA Solutions, a sales and marketing firm which specializes in developing distribution strategies and building revenue channels.

Prior to KELEMA, Mr. Latraverse was Executive Vice President of Worldwide Sales and Operations for ION Networks, a provider of secure network management and monitoring platforms. At ION, Mr. Latraverse was instrumental in reorganizing the company, raising capital, and developing key relationships with analysts and investment bankers.

Before ION, Mr. Latraverse worked as Vice President and General Manager of VPN start-up Isolation Systems, Inc., and held various sales and sales management positions with CrossComm Corporation, an internetworking vendor, NCR, and Data General Corporation.

## **MARK ALDINGTON**

In addition to being a Partner in **QIP LLP**, Mark is a business strategy and corporate financial advisor. He has spent the last five years focusing in new technology start-ups. In 1999 he co-funded a London-based seed capital fund, Ideas Hub PLC. The Fund raised £6M and invested in six UK start-ups, including a private equity exchange, Angel Bourse PLC. He was also responsible for developing a consulting business, specialising in corporate venturing and spinning-off new enterprises from existing businesses. A key customer was Nomura International's private equity fund who invested £30M in a business spun out of their Pub portfolio.

Mark has spent the last ten years providing strategy advice to large multinational businesses on the impact of interactive technologies on business efficacy. He advised British Airways, Visa International, Coca-Cola and BSKYB. He also set up and managed an interactive strategy agency for Publicis Communications and advised their roster of European clients.