

## **Lambert Review of Business University Collaboration**

In response to your letter of 3 February 2003, please find below a response from Royal Holloway to your consultation document.

RHUL enjoys strong connections with various industry sectors and is committed to deepening these relationships. Accordingly, we welcome the Lambert Review and this opportunity to provide some information on our experience of collaboration with industry.

As noted in the invitation to supply a response to the review, much attention is focussed on gaining information on the demand supply of the equation. Therefore, our submission will focus on the first two sets of questions, concerning best practice and barriers to collaboration.

### **1. Best Practice in Collaboration**

RHUL works with a wide-range of industry sectors. Our Information Security Research Group, however, provides a notable example of collaboration with industry that is firmly embedded in the Group's activities. The strength and durability of the collaboration flows from the multi-strand and multi-mode character of the relationship. Care has been taken to build up over time different patterns and styles of connection with industry stakeholders that cover research, teaching and consultancy – with considerable synergy between these areas and related networks. We would offer this characterisation as a key thread to emerging best practice

#### **The Information Security Group**

The Information Security Group (ISG) is one of the largest academic security groups in the world. The Group regularly hosts international visitors and has close links with leading companies in the area of Information Security. The ISG conducts research in areas such as the design and evaluation of cryptographic algorithms and protocols (where it contributes actively to the international standardisation process), smart cards, electronic commerce, security management, mobile telecommunications security, and the integration of security techniques into specific applications.

#### Research

Currently, research students are working on topics such as cryptography, key recovery, public key infrastructures, electronic payment protocols, risk analysis, and smart card security. Contacts with leading companies allow students to have a privileged view of the latest developments in information security. There are also a number of collaborative projects sponsored by industry, among them :

- Hewlett-Packard sponsors the Annual Colloquium and research students;
- Vodafone sponsors a part-time Chair in Telecommunications as well as research students;
- BT sponsors research students and collaborative research projects;
- Price Waterhouse Coopers sponsors research projects.

#### Research Networks

In addition to discrete projects, the ISG is involved in both formal and informal industry facing networks – these are critical in ensuring that there is strong industry pull with respect to emerging research themes.

An example of a formal network is the *Mobile Virtual Centre of Excellence* <http://www.mobilevce.com/> . Mobile VCE is the operating name of the Virtual Centre of Excellence in Mobile and Personal Communications Ltd, a collaborative partnership of nearly

30 of the world's most prominent Mobile Communications companies and eight UK Universities each having long standing specialist expertise in relevant areas – RHUL provides the Security expertise.

The Group also connects with industry through more informal themed networks or clubs for more wide-ranging discussion and debate. A current example is the *PKI Club* (Public Key Infrastructure – associated with, among other things, implementing secure e-commerce). The aim is to highlight common problems, to exchange views, to provide specialised seminars given by invited experts and to share ideas about future developments. The PKI club is sponsored by the following organisations:

- Association for Payment Clearing Services (APACS);
- CESG;
- Barron McCann;
- beTRUSTed, Price Waterhouse Coopers;
- BT exact Technologies;
- Hewlett-Packard Laboratories Bristol;
- Indicii Salus;
- Mondex.

#### Teaching and Training

The Group is well known for its vibrant research programmes and high-value consultancy projects but the ISG also has an international reputation for delivery of taught post-graduate courses and industrial training programmes.

The ISG offers two MSc courses: *MSc in Information Security* and *MSc in Secure Electronic Commerce*. Both are interdisciplinary courses taught by the ISG and security experts from industry. Over 40 companies contribute to the MSc courses. To date students from almost 40 countries have successfully completed the Masters programmes.

Ex-students can now be found in many organisations working as security professionals, some of whom are in very senior positions. These organisations range from large financial institutions such as Abbey National, KPMG, Mondex, NatWest, Rothschild, and Standard Chartered Bank, technology and research oriented organisations such as BT, Camelot, Hewlett-Packard, and Vodafone, and security specialists such as Baltimore, Indicii Salus, Insight Consulting, Logica, and RSA Inc.

Links with industry are reinforced through this rich alumni network – a number of who are themselves used as course tutors – great value is attached to this self sustaining industry validation of the courses and training offered.

#### Formation of Industry Collaborations

The character of the ISG's links with industry have been shaped over more than 10 years by the lead academics involved, most notably Professor Fred Piper, current Head of the Group. Professor Piper has recently been awarded the Gold Medal of the Institute of Mathematics and its Applications. He has acted as a consultant to over 30 companies. From 1992 to 1995 he was a member of ITSSQC, the advisory committee to DTI on IT Standards, Security and Quality. He is currently a member of the Foresight Crime Prevention Panel: IT, Electronics and Communications Task Force, a member of the DTI Management of Information for Fraud Control, Security and Privacy Link Programme, and a member of the Scientific Council of the Smith Institute.

It should be emphasised that the current high quality and productivity of industrial collaborations is a result of a long-term, although sometimes relatively unstructured, process, championed at senior level. There appears to be a very high degree of confidence among industry stakeholders that the ISG understands their needs and that understanding flows from offering multiple channels for input from industrial partners.

#### Input from the RDA – South East England Development Agency

The Regional Development Agency, SEEDA, has not been influential in forming the collaborations described above. But it is creating the basis of future collaborations. First, through its Enterprise Hub structure it has supported the development of an Information Security focussed Enterprise Centre at Royal Holloway to incubate new businesses. Second, it is poised to have a major input into strengthening and broadening business-university interactions through its *cluster fund*. SEEDA has agreed to fund the creation of the Secure South East cluster with the following objectives related to the ISG:

##### Industry Networks

- to enhance SME access to existing network clubs and resulting technical outputs;
- to develop new topic-specific clubs focussed on improving SME performance in the supply chain.

##### Supporting Start-ups and Security Based Ventures

- with regional partners, develop an investor network aligned with the security sector;
- enhance awareness of the opportunities and barriers associated with security technology among business support agencies and networks;
- create a well informed investor community better able to identify and back promising opportunities.

##### MSc Graduate Cadre

- to help firms meet the challenges of recruiting staff with appropriate skills by retention of high quality, post-graduate security specialists within the region's SMEs and start-ups in particular;
- to address the perceived lack of support for continuing professional development of key staff.

##### Smart Card Technology and Security

- to increase the uptake of high-value applications of secure smart-card technology among new businesses and existing businesses within key supply chains;
- to communicate the existing state of knowledge and the results of further R&D in the form of training, technical reports and reviews, consultancy and other forms of outreach to SMEs and start-ups in the region.

## **2. Knowledge and Technology Transfer**

Recent surveys of HE-business interaction indicate a widespread increase in general HE-business interactions. There is, of course, a significant difference between activity levels and the value of the interactions.

### Networks and Collaboration

It is obvious but significant that the main barriers to development of collaborations vary with regard to the character and capacity of the organisations (both educational and industrial) involved. PARK (Partnership for Accessible Research and Knowledge – [www.unipark.org](http://www.unipark.org) ) is a collaboration between Royal Holloway and Brunel University which provides an example of an attempt to deal with three important issues:

- visibility of HE-based expertise to industry and particularly SMEs;
- cost-efficient delivery of service requiring the deployment of capabilities from more than one HEI;
- cost-efficient support for contact and service administration.

PARK will provide:

- An investment networking forum;
- Business development and cluster groups for the following areas in which Royal Holloway and Brunel have been able to build capacity with the support of the Higher Education Innovation Fund:
  - Healthcare and Quality of Life;
  - ICT and New Media;
  - Industrial Design;
  - Environment and Sustainability.
- General business Networking Events;
- PARK is associated with the London Technology Network, which provides access to the combined knowledge base of the entire London university network.

Crucially, shared business development posts operate between RHUL and Brunel in order to develop joint responses to opportunities and to maintain a shared expertise portal that allows industry rapid and direct access to information about what the HEIs can deliver both singly and collectively. From the HE perspective, this collaboration is designed to reduce the very high overheads that can be associated with maintaining sufficient administrative capacity to deal with enquiries from industry, especially SMEs , that can require intense management before they are fully defined and realised as consultancy or research contracts. Royal Holloway and Brunel University are currently working with the universities of Surrey and Reading to extend the PARK principles to a consortium of all four universities under the title “*ThamesWey*”.

### Intellectual Property

Recent surveys, as with investigations of general industry liaison, point to extensive rationalisation and professionalisation of IP management within HEIs. It is likely that industry will welcome efforts by HEIs to ensure that potentially valuable IP is identified , defined and properly protected. Less welcome, may be the increasing determination among HEIs to secure fully commercial returns from IP exploitation. There seems to be a view in some industry sectors that this leads to unrealistic expectations of returns (by the HEIs) and thus over-extended negotiations or failed deals. Government policy encourages HEIs towards diversification of income streams and exploitation of IP in technology is an obvious, and potentially lucrative, element of this mix. Therefore, there is little prospect of a voluntary retreat from an increasingly commercial approach. Arguably, industry should accept that a market is being created and companies are not bound to accept any particular offer. It might be suggested therefore, that the key role of Government is to ensure that HEIs can resource technology transfer adequately and thus ensure that, while industry may have to endure hard negotiation, it will be negotiation informed and conducted by appropriately experienced and qualified staff.

Professor Stephen Hill  
28 March 2003