

Intellect submission to the BERR select committee

Creating the higher-value added economy

January 2008

Background

Intellect is the UK trade association for the IT, telecoms and electronics industries.

Its members account for over 80% of these markets and include blue-chip multinationals as well as early stage technology companies. These industries together generate around 10% of UK GDP and 15% of UK trade. Intellect is a vital source of knowledge and expertise on all aspects of the hi-tech industry.

Alongside the technology industry's considerable footprint in the UK, it also enables many other industries in today's economy:

- financial services
- creative industries
- retail
- transport and logistics
- manufacturing
- defence and aerospace
- pharmaceuticals

The UK has had a good record in creating a business environment that allows the technology industry to thrive and drive the growth of other sectors. However, in an era of globalisation, and new competitive threats, sustained economic growth cannot be guaranteed. UK based businesses must work with policymakers to ensure that the UK remains an attractive location for technology companies.

Intellect welcomes this timely inquiry into the creation of a higher-value added economy by the Business, Enterprise and Regulatory Reform select committee. Intellect values the opportunity to provide input to the committee and looks forward to a programme of continual engagement with relevant government departments, agencies and other stakeholders on this and related issues.

Summary

The UK Government has a role to play in creating a business environment that attracts investment.

Intellect's members have been aware of the importance of taking action to ensure that the UK remains a competitive location for some time. Whilst we have seen strong growth across knowledge based industries such as technology, financial services and creative industries for a number of years, continued growth is not guaranteed and there are a number of issues that require action to ensure that the UK business environment remains an attractive investment location. Whilst many of the priorities require action from business itself, there are a couple of areas where we believe policymakers can help:

- **Driving up quality of research**

There is a critical role for universities not only to drive research but also to work with business to commercialise research ideas as they are developed. The UK is falling behind its competitors in this area; other countries have a stronger culture of commercialising R&D. Whilst there is already work underway to drive improvement in this area, through Knowledge Transfer Networks and other initiatives, Government has a key role to play as the financier of the university sector.

- **Investment in skills**

Government's ongoing efforts to tackle the skills gap in the UK need to be refined to ensure a more holistic approach to STEM subjects. We are concerned that technology skills are being systematically overlooked in the wider debate on driving up STEM skills, with worrying implications.

- **Smart procurement**

Recognising the size of the public sector in the UK, government must seek to continue in its efforts to improve efficiency in procurement and leverage the impact of the high levels of investment in goods and services to best effect.

- **Open business relationships**

It is critical that there are open, wide-ranging relationships between business and government. Over recent months decisions have been taken without any consultation with business, which have had considerable market effects. Open channels of communication and consultation between Government and industry have to be an established part of the UK business environment.

Inquiry questions

1 What is meant by a higher value added economy? Which businesses qualify as such?

Intellect defines a 'higher value-added economy' as a knowledge economy:

Where the generation and use of knowledge has come to play the predominant role in the creation of national wealth, achieved by effective use and application of all types of knowledge and technology, in all manner of economic activity.
(*Navigating the New Economy, Intellect, 2006*)

Knowledge has become the new factor of production. The exploitation of technology, innovation, skills and creativity are central to the development of new high value goods and services across public and private sectors. The UK's continued economic stability is reliant on successfully realigning our economy to enable us to compete in this changing global market. This will only be achieved by placing the successful orientation, diffusion and exploitation of knowledge at the heart of our economic vision.

Currently we believe the UK is developing a knowledge base, but not a knowledge based economy. To have a knowledge based economy highly innovative, and therefore high risk, activities have to be invested in with the accompanying risk of failure. That risk of failure handicaps companies within the UK where efforts are lacking as there is no mechanism to encourage such innovation by supporting the levels of risk associated with a highly innovative industrial/commercial base. While tax incentives support success, such incentives do nothing to support the risk of failure. If failure is not allowed for, innovation levels reaching the forefront of technologies and turning that knowledge into usable product and services, will not happen.

2 How does UK business compare internationally in areas such as research and development, creativity and design?

Statistically UK business does not compare well with its international competitors. Private sector R&D is currently 1.8% of UK GDP¹. This level of investment puts the UK significantly behind Germany, Japan and the US. The UK currently lies 18th in the table of R&D spend on services as a percentage of GDP².

The economy wide statistics do mask some areas of strength in R&D, such as aerospace, F1 and pharmaceuticals. However we have concerns relating to two factors: firstly international perceptions of the UK's R&D abilities and secondly a lack of focus on the 'D' of R&D.

¹ OECD 2004 confirm

² OECD 2006

Research published in the FT in December 2007 showed that German high-technology companies are much more likely to invest in China, India or eastern Europe than Britain³. The findings make worrying reading for both UK businesses and policymakers. According to the research, declining research standards and skills levels combine to reduce the attractiveness of the UK as a location for investment.

Government policy has focused on R&D over recent times, reinforced by the R&D tax credit. However, we are concerned that too much attention is put on research, and little on development – the UK is bad at commercialising its ideas. Our competitors are better at developing innovation into commercial success.

3 What can be learnt from the experiences of other countries in this area and how fast other countries are moving up the value chain?

It is important to temper international comparisons with recognition that each country is in a different stage of development and has had a unique development. With this in mind it would be valuable for Government to undertake deeper analysis of competitor nations, and their effect on UK business.

For example, the profile of Indian technology companies is evolving rapidly from the provision of back-office IT outsourcing to business process outsourcing and knowledge process outsourcing. It would therefore be valuable for companies in the UK technology market to have access to data on the Indian market to establish the exact nature of the opportunities for business collaboration.

It is important that the UK embraces emerging markets and actively engages to ensure that UK business is well positioned to take advantage of opportunities that may arise.

4 The extent to which UK business has absorbed new business practises such as lean manufacturing.

Technology enables business change. The adoption of technology has allowed UK business to reap the benefits of higher productivity and allowed them the flexibility to enter global markets.

The exploitation of broadband is an interesting example of a driver of new business practise. Broadband is now available to 99.6%⁴ of the UK, over the last 5 years broadband has started to have a real impact on the way businesses interact and transact with their customers – both consumers and B2B. For many companies, particularly SMEs, broadband is changing the way they operate.

These are global trends and there is every expectation that these trends will continue to develop. Therefore the capability of the underlying comms infrastructure available to small growing companies is a real competitive differentiator. It is therefore essential that we look to the long term evolution of these networks to make sure they can keep pace with the requirements of a fast changing commercial world.

Intellect is a member of the Broadband Stakeholder Group⁵ and strongly endorses its recent work⁶ to highlight the challenges of the rollout of next generation broadband in the UK. This

³ Germans shun investing in UK, Financial Times, 5 December 2007
<http://www.ft.com/cms/s/0/e212ad24-a2bd-11dc-81c4-0000779fd2ac.html>

⁴ Pipe Dreams? The prospects for next generation broadband deployment in the UK, Broadband Stakeholder Group report, April 2007

⁵ www.broadbanduk.org

⁶ Pipe Dreams? The prospects for next generation broadband deployment in the UK, Broadband Stakeholder Group report, April 2007

has stimulated a dialogue between industry, government and regulators on the steps we need to take over the coming two years to ensure our long term competitiveness.

5 Why some sectors of the UK economy appear to be more effective at embracing value-added activities than others.

There are sections of the UK technology industry that are particularly effective at creating higher value-add from their activities, including for example, the space industry. Recent research shows that the value added per head in the UK space industry is around four times the UK average⁷. Several key factors have been identified as drivers of this high level of value added activity:

- In part, the space industry's high productivity reflects the very high levels of capital investment undertaken by firms in the sector.
- The industry's labour force is also highly skilled
- The presence of an upstream industry in the UK is likely to have brought benefit to the downstream/applications sector that would not have happened if they had bought satellite capacity from non UK suppliers
- UK space industry is about six times more R&D intensive than the UK economy as a whole

We should seek, wherever possible, to ensure that the UK business environment facilitates these factors, capital investment, development of high skills levels, support of UK businesses and R&D, as much as possible.

6 The impact on business of government efforts to promote research and development, including the research and development tax credit.

The R&D tax credit is a key enabler of the UK's knowledge economy. Intellect has long been involved with helping technology companies to maximise the tax credit system and believes the scheme is an important enabler of UK business innovation. However, even with the increases announced in the last Budget statement, Intellect believes the scheme for large companies is insufficient to have a real impact and will not help the UK catch up with competitor nations in terms of R&D spend.

Intellect has been arguing for several years that the large company scheme needs a substantial rise. The current rate for large companies is 130 percent, many costs involved in an R&D project are not eligible for the credit and corporation tax is still applicable, creating a real value of the tax credit of about four percent. This is an increase of just half a percentage point.

R&D is fundamental to the success of UK's knowledge economy and the UK has lagged behind its international competitors. Gordon Brown has reiterated his ambitious target of 2.5 per cent of UK GDP spent on R&D by 2014. This represents an increase of one third in seven years. When we consider that R&D spend has either fallen or been flat over the past few years, this target becomes even more challenging.

Although the tax credit is just one factor for companies deciding upon R&D projects, it can still act as a real incentive. To attract multi nationals to undertake R&D in the UK, the R&D tax credit needs to rise to at least 150% for large companies, which equates to 6-8% in real terms.

Intellect believes that the R&D tax credits for small and medium sized companies is working well and welcomes the increase from 150 to 175 percent announced in the 2007 Budget.

⁷ OEF research conducted within the Case for Space

7 The progress that has been made on university/business co-operation and knowledge transfer since the publication of the Lambert Review in December 2003.

Intellect is involved in a number of Knowledge Transfer Networks (KTNs) and believes they are a useful mechanism for ensuring that innovation flows across the value chain more effectively. However, KTNs are just one part of the solution and it is important to ensure that more work is done to develop the links between universities and business.

8 Whether business and government can interpret innovation too narrowly.

The creation of a department for Universities, Innovation and Skills in the recent Government restructure has raised concerns within industry that the government equates innovation solely with higher education. Whilst innovation undoubtedly does take place in the academic sphere, business innovation has to be recognised as a central tenet of the UK's progress towards a knowledge economy.

The Sainsbury Review of Science and Innovation is a welcome contribution to the debate on how Government can play its role in driving the UK's development as a knowledge economy. Such an approach has been adopted by many of our international competitors such as India, South Korea, US, Brazil and Japan, and has demonstrated impressive returns.

Lord Sainsbury's recommendations provide a framework for Government action. The challenge Government faces now is ensuring that departmental silos do not inhibit this important agenda and that there is an aggressive programme to implement the recommendations laid out in the review. The recommendations should be implemented right across Whitehall; the agenda should not be constrained to the DIUS work programme alone.

9 What the government can do to further promote higher value-added business activities and innovative thinking among UK businesses.

Intellect believes there are a number of priorities for Government:

- **Creating an attractive business environment**

The UK Government has a role to play in creating a business environment that attracts investment. There are some concerns that we are losing some competitive advantage in this regard. Research published in the FT in December 2007 showed that German high-technology companies are much more likely to invest in China, India or eastern Europe than Britain⁸.

The findings make worrying reading for both UK businesses and policymakers. According to the research, declining research standards and skills levels combine to reduce the attractiveness of the UK as a location for investment.

- **Defining innovation**

As we adapt our businesses to the globalised economy we must also update our definitions of innovation. Thinking on innovation tends to be linear: focused on how to drive innovation that takes place in universities into business. Whilst this is an important area of focus, it is also important to recognise that new types of innovation are taking place.

There has to be a greater recognition of the variety of places innovation can take place – not only in academia, but also in business. For technology companies, definitions of innovation are shifting as consumers and users are increasingly taking control. Innovation is no longer a linear process that takes place in universities and is then

⁸ Germans shun investing in UK, Financial Times, 5 December 2007
<http://www.ft.com/cms/s/0/e212ad24-a2bd-11dc-81c4-0000779fd2ac.html>

pushed into the commercial sphere – it is everywhere and technology is allowing the individuals to push their ideas back to their suppliers. Recognising this the public and private sectors need to move from the mindset that innovation is a move from A to B. In reality competitive environments drive innovation to a much greater extent than collaborative environments.

In terms of Government approaches to innovation and R&D, there is a need for a holistic approach. There is a concern amongst industry that policymakers consider innovation as something that takes place in the academic sphere, a perception reinforced by the creation of the Department for Innovation, Universities and Skills.

- **Innovative procurement**

The Government has opportunities to drive innovation through the procurement of products and services. There have been a number of commendable initiatives undertaken by the Office of Government Commerce to ensure that the procurement is better able to take account of the most innovative products and services available at any given time. There have also been important developments at a local level: local authorities setting standards for services rather than procuring large projects to allow different suppliers services to interoperate across areas. These moves, which place an emphasis on the desired outcome rather than prescribing a projects scope, give the most space for the application of innovative solutions.

A key aspect to this work is improving SME access to Government contracts. This is a challenging agenda as SMEs, whilst often producing the most innovative products and services, do not have the resource or capacity to compete in long term bidding processes. As such the imperative has to be on Government to provide better information on procurement opportunities to SMEs, they need to be given channels to market.

- **Skills**

There has been widespread recognition of the importance of improving STEM skills in the UK education system and workforce. However, an unhelpful by-product of this has been the proliferation of initiatives that have sprung up to tackle the skills gap. Many of the schemes are overlapping creating a disjointed picture and a bureaucratic burden for companies trying to respond.

- **Don't forget the T in STEM**

Over the last two years there has been a concerted effort to tackle the falling levels of skills in Science, Technology, Engineering and Maths, the so-called STEM subjects. The technology industry draws on skills from across the STEM disciplines. However, there is concern that within the programmes to drive STEM, there is less of an emphasis on technology skills than the other three disciplines and this has worrying consequences.

Specifically we are concerned that the Higher Education Funding Council for England has excluded computer science from the Strategically Important Vulnerable Subjects classification, on the basis that there are higher numbers of students studying computer science. This overlooks the fact that demand for computer science skills still substantially outstrips supply.

This is exacerbated by a further anomaly in the education system that means funding per student is lower for computer science than other STEM subjects. For individuals who wish to retrain by taking a second degree, funding is available for students taking all STEM subjects except computer science.

- **STEM teaching**

The Sainsbury Review reflects on the teaching of STEM subjects, concluding that Science and Maths are subjects that should be taught from secondary level onwards whereas Engineering and Technology are suited for higher education only. We are concerned about the ramifications of this distinction and its impact in practise. We

recommend the following measures be examined in order to introduce a more holistic approach to STEM teaching:

- Greater focus on the problem solving aspects of STEM subjects to bring the subjects to life and link them to vocational applications.
 - Examination of key Stage 2 and 3 curricula for computer science to capitalise young people's natural technological abilities: a refreshed approach to computer science teaching that focuses on skills rather than applications.
 - Build on the good progress made in recruiting STEM teachers with more aggressive targets to increase numbers going forward.
 - Build more links between STEM related employers and educational sector to allow young people to better understand the path to take to get jobs in our sector. Engagement would also help break down stereotypes of STEM jobs such as IT geeks or scientists
 - Exploit technology solutions to allow careers advisors to keep abreast of the skills demands from employers. Make it easier for people to understand the latest careers opportunities and how to get there by using ICT to link skills with careers.
- **Retraining**
Much of the debate on skills naturally focuses on the education of young people and their progression into the workforce. However it is very important to also consider the existing workforce and the needs for retraining and up-skilling that exist amongst the people already working today.

70% of the 2020 workforce is already in work today.⁹ This fact reflects the importance in removing barriers to people retraining in STEM subjects. There should be incentives in place to encourage workers to retrain as the demand for skills evolves.

There are frequently debates about the role of offshoring in the UK business community and its impact on the UK workforce. We believe this debate should be considered within the wider focus of the global marketplace with global sourcing. Rather than focusing on how offshoring may deplete the UK jobs market, we should instead consider how UK workers are upskilled, retrained so that the workforce remains relevant.

Within debates about retraining it is also valuable to look to mechanisms that can introduce flexibility. A good example of such a scheme is the IET classifications which classify particular skills rather than focusing on whole degrees. This allows a more nimble reaction to skills shortages as they develop. In these terms, offshoring is simply an aspect of a wider process of reclassifying the jobs we need in the UK.

10 The impact of nationality of ownership on the location of research and development work.

The nationality of ownership of R&D should not be the focus of the debate. We should focus on taking steps to ensure that the UK is an attractive location for R&D and that companies operating here have access to the skills base they need.

Some UK companies undertake R&D offshore, but the benefits of this innovation filter back to the UK. Conversely foreign owned companies undertake R&D within the UK that also delivers benefits for the wider UK economy.

A number of global companies within Intellect's membership choose to have one of their research bases in the UK.

⁹ Skills for a Global Economy – Chris Humphries, City and Guilds
file:///C:/Documents%20and%20Settings/amyw/Local%20Settings/Temporary%20Internet%20Files/Content.IE5/09QFWT67/Skills%2520in%2520a%2520Global%2520Economy%2520-%2520Eurhodip%5B1%5D.ppt#344,21,UK workforce of 2020

11 The effectiveness of machinery of government arrangements in encouraging innovation and creativity.

The Sainsbury Review says that ‘the best way for the UK to make the most of globalisation is to support the restructuring of British companies into high-value goods, services and industries.’ We endorse this view and suggest that the Government also needs to be structured around this objective.

The review gives a framework for action but we are concerned that it lacks a vision for a global knowledge economy, it gives insufficient weight given to services as opposed to manufacturing and does not take account of technology as a sector which will drive the UK’s growth. These points are outlined below.

- **Lack of a vision for a global knowledge economy**

The Sainsbury Review says that, “The UK needs a vision of our role in the global knowledge economy.”, but no vision is provided nor a recommendation as to how this vision might be produced and used as a basis for action.

As in any business strategy, we would expect to see market segmentation as a starting point. Targeting the global knowledge economy in general is not sufficiently specific, not least because most developed economies have the same target. The UK Government should identify the clusters, or market segments within the global knowledge economy in which it - and industry - believes that the UK can succeed. Examples of such clusters or market segments are oil, investment banking or IT services. The next step would be to develop strategies in support of each of those clusters. Some elements of those strategies would relate to science and innovation; others would relate to tax policy, infrastructure, training and skills, geography, etc. In attempting to review science and innovation policies without that context the cart is being put before the horse.

The report appears to recognise this point, suggesting that (because the UK is strong in sectors where little if any R&D is reported), “Rather than seeking to raise the amount of research performed by all industries we should focus our efforts on the four major goals developed by the Technology Strategy Board”, i.e. help our leading sectors and businesses to maintain their position, stimulate those sectors with the capacity to be the best, combine all these elements so that the UK becomes a centre of investment, but then reverts to a far more traditional view of science and research-based innovation as a driver of growth. The review was commissioned by the Chancellor of the Exchequer but the scope of review is closely aligned to the remit of the Department for Innovation, Universities and Skills.

- **Insufficient weight given to services as opposed to manufacturing**

Overall, the Sainsbury report gives much more weight to manufacturing than to services, reflecting a historic bias. The ITEM Club’s recent report, “Financial and business services – the driving force behind the UK’s economic success”, demonstrates effectively that, “The Financial and Business Services (FBS) market is the key to the UK’s future prosperity”. Chapter 1 of the Sainsbury report does examine the importance of the services sector, but what the review does not do, however, is to reflect the centrality of the FBS sector in the weighting of its recommendations and focus. Though there are frequent acknowledgements of the service sector, for the most part it follows a traditional line relating science to innovation to economic success (in manufacturing – albeit now high-value manufacturing).

For example, the review describes the fragmentation of the manufacturing chain – which occurred decades ago - but fails to describe the fragmentation of services that is occurring now. Off-shoring of services, whether call handling, claims processing, or IT development, is now common-place. Exports of information-intensive services have been

growing by 20% a year in OECD companies¹⁰. This is a fundamental issue – and an opportunity – in an economy based around high-value services. Reverting to the previous point, this is the very sort of question that one would expect to feature in a vision of the UK’s role in the global knowledge economy.

A related point is the under-valuing of Framework Conditions. The review notes that Framework Conditions, such as tax and infrastructure are critical to the success of services industries, and are far more important to services than to manufacturing. Indeed, it is notable that the growth of the UK economy, which has been driven by FBS, has not depended on government policies regarding science and innovation. Again the train of thought is not followed through and the answer is still a hammer.

- **Relative absence of technology as a sector**

Technology is largely absent as an industry in its own right and as an enabler of other industries. This absence is all the more striking when one considers that the overall thrust of the report is towards building a knowledge-based economy. So why is the basis for capturing, applying, and exporting knowledge not central to the report? The sectors where the UK is strong, such as business services, media and creative services and financial services are all intensive users of technology.

The question of the role of Information Technology in the national economy – a knowledge-based economy - was equally missing in the Government’s strategy for applying technology to its own business, “Transformational Government, Enabled by Technology” (Cabinet Office 2005). This ought to be a central question, and the government’s own technology strategy and procurement policies should be considered in this light. Innovation Platforms, such as for Network Security, are a good start in this direction but we believe that government has a major role to play in shaping this industry as a customer and as a setter of Framework Conditions, such as standards and infrastructure.

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¹⁰ Organisation for Economic Co-operation and Development (OECD), “Structure and Trends in International Trade in Services” quoted in, “What a Flat World means for Government”, EDS Government Journal, Volume One Issue One