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Information Technology Electronics Communication

KNOWLEDGE and SKILLS for a DIGITAL FUTURE

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INSTITUTION OF ENGINEERING AND TECHNOLOGY
SAVOY PLACE, LONDON



Digital technologies transform the way in which we view ourselves, our relationships with each other and with other communities; the nature of work and commerce; how we learn and communicate; how we design and build things; how we conduct research. They open up enormous potential for innovation, and may have a greater impact on worldwide social and economic structures than any other technological advancement.

The far-reaching opportunities created by digital technologies cross link intellectual, cultural, social, scientific and technological dimensions. To achieve them we will need a workforce composed of adequate numbers of knowledge discoverers, application designers, and innovation drivers. We will need a workforce with a strong disciplinary knowledge base; an ability to collaborate, and understand the nature and context of innovation; and characterised by inclusiveness and diversity of perspective.

The UK Software Economy

Skills, Education, Challenges & Opportunities

Michael Bowkis

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THURSDAY, 6th September 2007, Institution of Engineering and Technology

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Our Objective
To ensure that ICT is effectively used to drive innovation and productivity in particular to impact digital business.

The Information Age Partnership (IAP) is a forum to provide leadership in the UK, and take maximum global advantage of the technological, economic and political developments which characterise the Information Age.

The Partnership supports high-level dialogue and debate between the Chief Executives of the UK's leading IT, Electronics, Communications and Content (ITEC) companies, Ministers and senior Government officials.

The Executive oversees the delivery of the Partnership's agreed actions and is responsible for creating and managing workstreams to deliver these tasks.

2010 workstream
The 2010 working group launches its major report.

ICT and Productivity workstream
The final report is successfully launched.

IAP's Game creation workstream

www.microsoft.com/uk/developingthefuture

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The School of Informatics is at the forefront of international excellence and leadership in education and research for the information and computing professions.

Our portfolio of activity includes innovative undergraduate and postgraduate education, internationally-recognised research, and accredited professional development.

At The City University, London, Informatics encompasses computing and information sciences, software engineering and a number of specialisms.

These include information management and retrieval, information-related business issues, library studies, geographic information, health informatics, human-computer interaction design, new media, computational creativity, artificial intelligence, service-based systems, requirements engineering and software dependability.

Latest news

Impact of Emerging and Disruptive Technology in Healthcare Delivery
City University London ranks fifth amongst the UK's top universities in a climb of seven places from last year. City is now positioned ahead of singles City out for its substantial rise in the overall table, climbing 17 places.

City tops requirements research The City University is leading the field in Colorado at Colorado Springs.

City releases 'Developing the Future' report in conjunction with Microsoft.

www.soi.city.ac.uk

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From business strategy and development, to ICT consultancy, our knowledge and expertise has enabled many of our clients to implement effective strategies to maximise business opportunities.

By integrating areas of expertise we develop and implement definitive and comprehensive solutions for our clients.

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Dialogic delivers...
Microsoft

Facilitating businesses through the design and delivery of the new Developing the Future report.

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The Landscape

- What do you believe the most significant challenge to face UK PLC is for ITEC?
 - What do you think this hinges on?
- How important is the ITEC sector to UK wealth and prosperity?
- Is there a skills problem; where do you think the problems start?
 - Why does it matter?
 - What about levels of skills?
 - What skills do we need in order to innovate?
 - Do you believe they can be taught?
- Do you believe that the gender bias (80/20 appx. male - female) is being adequately addressed?

Dialogic Research

- Software & Computing Services is the largest single contributor to our National Accounts within the Creative Economy (CE) at 2.7% of GDP
- As a whole the CE provides 7.3% of GDP
- Forecast to rise to 10% over next 3 years
- CE is part of the Knowledge Economy - the fastest growing component of the UK economy and is predicted to have a 40% all graduate workforce by 2020
- Therefore - software development/technology sector underpins UK economic growth and prosperity

Example Issues: Secondary Education

- Computing Education in secondary schools (11+) is broken
- Girls are switched off and out! So we create a problem that exacerbates our economic dilemma.
- The secondary IT curriculum emphasis is on software-use skills that, whilst essential, could be delivered using a cross curricular approach.
- We deny any opportunity for innovation and creativity at a very early age
- For many years: therefore, historically, we have shaped our current problems

Do we lose what opportunity we create?

- In 2006 six months after graduation,
 - 58% of computing/IT graduates were in full-time employment
 - 7% were in part-time employment
 - 6% combined employment & study
 - 11% assumed to be unemployed
 - Of those in full-time employment, 45% were working in the IT sector and
 - 11% were working in commercial, industrial, engineering or public sector organisations.

Dialogic Research Shows

- Need to ensure we create a vibrant ITEC economy
- Hinges on getting a sustainable knowledge and skills base at the right level
- We should foster an innovation and entrepreneurial culture
- We need greater support for innovation and this is not about funding but about mentoring, education, guidance, collaboration, networking...

So...

- We have a knowledge and skills issues coupled with a severe industrial sector image problem
- There are opposing forces that are shaping the current thinking (e.g. Govt. HE, Sector Skills Councils, Industry, Industry bodies)
- Oh! and what about the individual?

The Backdrop is Globalisation

- In reality - this is widened competition
- Primarily an exercise in cost reduction for large organisations
- SME/small innovative enterprise is not engaged here to any real extent
- I conjecture that globalisation drives innovation
- A popular UK view is that India (China...) pose a threat, however I have been researching the drive for innovation in India - it is not as simple as pundits would have you believe

Innovation

It's a Race

- In the EU
- In Wider Europe
- Between UK and Asia
- Between Asian economies
- Between N America and the EU/Asia etc.

Everyone is making a land grab for the new Knowledge or
Creative Economy

There is opportunity

- The Knowledge Economy is vital to the economic wealth of the UK
- There is a real need for a forum for change
 - Engage Individuals, Academia, Government & Industry in the debate. Take action.
 - Formulate strategies and policies for change
 - Be adaptive; be agile
 - Supporting innovation, champion an entrepreneurial culture
- The issues can be addressed

Even back in 1776, Adam Smith's 'The Wealth of Nations' suggested that:

'The greater part of what is taught in schools and universities ... does not seem to be the proper preparation for that of business'.

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