European Software Association
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Challenges for the European Software Industry

The Competition for Graduate Skills from an ICT perspective

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• Introduction
  – The European Software Association
    • An association of packaged software developers with R&D facilities in Europe
    • Active involvement of CEOs or equivalent
    • Based in Brussels – members across Europe
    • Founded October 2005 with active encouragement from the European Commission
    • To provide a single point of contact at European level for the software development industry
    • Fragmented, diverse industry that impacts on several commissions, each of which needs to work with authoritative industry representatives
The Competition for Skills

- Economic strategy
  - The European Commission has identified ICT and particularly Software as a strategic economic growth segment
    - The Industry itself
    - Support for innovation within other industries
  - i2010 sets out a framework for requirements and results
  - Europe can only supply finite levels of skilled resources
  - All indications suggest a serious shortfall
    - Quantitative and qualitative evidence
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IT Spending in EMEA

Billions
(Constant 2003 Dollars)

Austria
Denmark
France
Germany
Ireland
Italy
Netherlands
Portugal
Spain
UK
Czech
Republic
Estonia
Hungary
Lithuania
Russia
Poland
Israel
South Africa
Turkey

Source: IDC IT Economic Impact Study, 19 EMEA Countries
IT as a % of GDP

<table>
<thead>
<tr>
<th>Year</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
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<th>2006</th>
<th>2007</th>
<th>2008</th>
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<tbody>
<tr>
<td></td>
<td>3.37%</td>
<td>3.40%</td>
<td>3.21%</td>
<td>3.08%</td>
<td>3.15%</td>
<td>3.27%</td>
<td>3.39%</td>
<td>3.53%</td>
<td>3.69%</td>
</tr>
</tbody>
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Source: IDC IT Economic Impact Study, 19 EMEA Countries
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IT-Related Employment

2.1 million new jobs from the end of 2003

- Czech Republic
- Estonia
- Hungary
- Lithuania
- Poland
- Russia
- South Africa
- Turkey
- Austria
- Denmark
- France
- Germany
- Ireland
- Italy
- Netherlands
- Portugal
- Spain
- UK

Source: IDC IT Economic Impact Study, 19 Countries
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EMEA IT Spending ($B), 2000-2008*

<table>
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<tr>
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<th>CAGR</th>
<th>CAGR</th>
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<tbody>
<tr>
<td>Software</td>
<td>3.0%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Total IT Spending</td>
<td>0.0%</td>
<td>6.7%</td>
</tr>
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</table>

Source: IDC IT Economic Impact Study, 2004, 19 Countries
Software investment experienced a 3.0% CAGR between 2000 and 2004

Over the next four years, the market is forecast to grow at a 7.3% CAGR

Turkey, Russia and Poland will have the most aggressive growth with all countries exceeding a four year CAGR of 13%

Source: IDC IT Economic Impact Study, 2004, 19 EMEA Countries
Approximately 9 million people are employed in IT related functions in the 19 study countries.

Over the next four years, even modest IT growth will drive an additional 2 million jobs.

While software represents only 20% of total IT spending, it drives over 50% of employment.

Source: IDC IT Economic Impact Study, 2004, 19 Countries
Software’s Influence will Continue to Increase

IT Spending, 2004

- Hardware & Services: 79.4%
- Software: 19.6%
- Total: $275 Billion

Employment, 2004

- Software Vendors
- Channel Firms
- Services Firms
- IT Professionals
- Total: 8.9 Million

Source: IDC IT Economic Impact Study, 2004, 19 Countries
Software % of ICT Employment

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Software-Related* Employment

* Includes software vendor employees, channel and services employees focusing on software, and a percent of end user IT professionals concentrating on software

Source: IDC IT Economic Impact Study, 2004, 19 EMEA Countries
IT Growth Creates Employment Opportunities

- General IT employee opportunity will increase from 8.9M jobs today to almost 11M jobs in 2008
- Over half of these jobs will be software or software related employment

*Total Software Employees include Software Vendors, Software-related Services and Channels and Software-related IT Professionals

Source: IDC IT Economic Impact Study, 2004, 19 EMEA Countries
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IT-Related Tax Revenues

$160 billion in new tax revenues 2003-2008

Czech Republic
Estonia
Hungary
Lithuania
Russia
Poland
Israel
South Africa
Turkey

Austria
Denmark
France
Germany
Ireland
Italy
Netherlands
Portugal
Spain
UK

Source: IDC IT Economic Impact Study, 2004, 19 Countries

October 11
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- Economic strategy – a prediction
  - IT spending in the region should hit 6% per year through 2009
  - In the next four years, 2006 through 2009, the IT sector will generate over 1.5 million new jobs;
    - 60% will be software-related
  - In 2009 IT-related taxes will be $72 billion higher than in 2005
  - Over the next four years, 2006 through 2009, the IT sector will drive a total of $179 billion in incremental tax revenues

Source: IDC EU+3 Economic Impact Study, 2006
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- IT & Software companies and end user Companies all require resources!
  - The business community demands innovative ICT to support efficiency and growth
  - Education policy in several EU countries (notably the UK) is shifting graduates away from sciences to humanities and arts
  - The EU sees software as a growth economic segment on both demand and supply sides
  - Software development demands:
    - Technical skills
    - Business domain skills
  - So does almost every other economic segment
    - Efficiency through greater automation
    - Effectiveness through greater sophistication

Source: www.electronic.ie/demand.php
The software industry is therefore facing a two dimensional skills shortfall:

- **dimension 1°**
  - staffing within the software development industry

- **dimension 2°**
  - skills within the general population and user community to ensure successful uptake and use of ICT technologies
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**dimension 1:**
ICT Skills Requirements

**dimension 2:**
Professional Skills Requirements

The overlap between professional and ICT skills profiles is increasing.
• Is Off-shoring the answer?

  – European Software Association Members say that primary driver for off-shoring is lack of skilled resources
    • Cost is NOT the prime driver
    • Increased management and design costs offset against savings

  – India produces over 100,000 graduates in software related disciplines each year
  – Norway for example produces about 200 in sof
• Is Offshoring the answer?
  – India and Asia now starting to have their own skills shortages (Predicted 600,000+ to 2009)
  – Quality may be falling
  – Wages are rising
  – Infrastructure is under pressure

• There is a place for offshoring – but is not a complete solution
  – Combining on-Europe and off-shore
  – Development centres in emerging European countries can be better than off-shoring
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The Off-shoring/Outsourcing Cycle

- Lack of Skills
- Fewer Course Places
- Lower Demand for Training/Courses
- Fewer Job Opportunities
- Outsource and Offshore
• dimension 1 - What could be done:

  - Education
    • a multidisciplinary academic approach needed
      – mixed curricula
      – specialized in a particular field, for example Software or nano technologies or gaming
      – at the same time generalists (finance, engineering, legal, etc.)
    • engage in projects with industry during education
    • include in curricula skills needed for tomorrow
    • teach students how to manage a life-long learning experience
    • Recognise the role of the SME as well as the multinational

  - Skills mobility
    • Create the conditions needed for a true European labor market
    • Harmonization of labor laws and tax regimes
    • Proper alignment of social legislation with international trading policies
• dimension 1 - What could be done:
  – Market Led
    • Training
      – Greater commitment from a far wider range of businesses to the internship concept
        » graduates or students receive a standard internship program across in different functions and countries
        » This could help SMEs in particular to attract and engage quality graduates
      – Develop high-quality on-line courses to reduce cost of training
      – Offer these courses to schools and colleges across Europe for inclusion in their curricula
    • Information
      – Better quality, more independent market information needed
        » Impossible to plan on the patchwork of mixed quality research and advice currently available
      – The industry should take some responsibility promote software development studies
        » software is everywhere - in media, gaming, communication
        » actively help universities to encourage students to gain hands-on industry experience
        » actively engage students and pupils at schools and colleges
  • Career structures
    – create transparency
      » More uniform job titles for the same capabilities across EU
      » Will make cross-European hiring processes easier, especially for SMEs
Higher Demand for Training / Courses
More Course Places
More of Skills
Reduced drivers for Outsource and Offshore
More Job Opportunities

The Skills Development Cycle
The Competition for Skills

• dimension 2 – What could be done:
  
  – Software systems are more diverse and ICT more pervasive than ever
    • More need for a wider range of skilled users
    • Software technology should be more flexible to the needs of the users
      – Software development should evolve to become a ‘services science’
  
  – Better information and training on IT capabilities for senior managers
    • Industry needs to establish independent information resources
    • Analysts need to be more European focused and ‘professional’
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• Action today
  – The Software industry and the academics must engage with European Commission on eSkills
    • produce a balanced skills pool
    • We are stronger together
  – Exchange best practice between governmental levels
    • local, national, European, maybe even global
  – Our industry needs to engage with you as educators:
    • Tell you what we need
    • Tell you where it is needed
    • You need to explain to us how to engage
  – The European Software Association
    • Is ready to engage with you
    • Will communicate with software companies throughout Europe
    • Through our members and our Network Partners (local associations)
Examples of skills required: CODA

• 13 Countries
• 16 Offices
• 550 Employees (170 in R&D Direct)
• 2500 customers
• Quoted Company (London AIM: CODA)
Examples of skills required: CODA

- Architects
- Analysts
- Developers
- Testers (Manual and Automated)
- Documentation
- Benchmarking and Technical Specialists
- Quality
- Sales/Pre-sales
- Consultants
  - Application
  - Technical
- Trainers
- Support Analysts
• Example - ICT Ireland

  – Research shows trainee programs are more popular with large companies

  – The “Trainee Concept" aimed at making it possible for all companies to offer trainee programs

  – Joint meetings between a range of companies of different profiles
    • general speakers
    • blue book on recruitment
    • information on traineeship procedure
    • cost per company is 5,000 euros
• Example – Dassault Systemes

  – Skills: communication between HR & business development essential
    • engage in discussion to create curricula for graduates
    • shopping list of skills
      – Complexity of ICT means that there are core skill requirements and business specifics
      – Association members have different business products and therefore need different skills
    • to cooperate with universities who are developing talent
      – innovation - R&D is key

  – Review experiences of HR-contacts

  – Maintain and develop relations between business & academics

  – Understand the needs of trainees vis-à-vis relations with students/academics

  – We must develop the skills we need to be maintained in Europe
    • if we do not there is no other solution than to outsource and offshore
• Example – Unicorn
  – The Unicorn Hatchery
  • Courses for new graduates and undergraduates
  • 25% theory
  • 75% practical content
  • Delivers outcomes focused on skills needed for specific roles
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• Example – CAD/CAM/CAE vendors
  – Active competition amongst vendors to have their software used by engineering students
  – Pool of young designers already familiar with that product
  – Reduces industry’s in-house training costs
  – Influences future buying decisions as graduates take-on future responsibilities
  – Constantly reminding both engineering and IT students that 3D-CAD software is *uber-cool*
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- Example – Accounting Software vendors
  - Rarely communicating with academia
  - Focusing on running a business
  - Need to explain that accounting software is just as cool as the next Lara Croft game!
    - Sponsorship of Extreme-Accounting.com
    - Budapest University – modern accounting systems
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• The Challenge is therefore

  – Embrace the opportunity and reduce the threats huge threat!

  – We need to ask and answer some fundamental questions about our economy, society and culture
    • Do we want to maintain a competitive software industry in Europe?
    • Or shall we let it gradually off-shore

  – Shipping it to India is not a sustainable option
    • India predicts a 600,000 FTE shortfall in ICT skills in the same time-frame
    • Market forces will hit here soon

  – It’s everybody’s problem
    • If we are to meet the predicted 300,000 FTE shortfall in skilled ICT resources by 2010 we must all act now
• Conclusions
  – We need to speak to a far wider base within the academic world
    • More universities
    • More faculties within each university
    • Education policy makers
  – We need to be proactive
    • Imaginative ways to get involved in curricula
      – IT side (electronic engineering, telecoms, software development)
      – Application side (engineering and design, accountancy, business studies)
      – Mix the two
  – We must apply a wider commitment to training roles
    • Internships and ‘Apprenticeships’
    • Internationally accepted ‘professional’ training
  – We need a better understanding of how we can do this
    • Academia needs to help us find the right people to talk to
    • The EU and Governments need to find the right level of intervention
Thank you for your attention

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