

**An investigation into skills availability in the ICT sector**

Noel Byrne

Master of Arts in Human Resource Management

School of Business

National College of Ireland

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### **Abstract**

The ICT sector accounts for approximately one third of Ireland's exports and is one of the few growth industries in this current recession. Ireland is the European country of choice for US overseas foreign direct investment, mainly due to its open economy, its benign tax regime and, increasingly, the industry clustering effect. It has established itself as a major international IT hub for the EMEA region and is now exceptionally well-placed to capitalise on the emergence of the Cloud Computing phenomenon. There are almost 100,000 people employed in the sector in Ireland but yet it seems that, in an economy with close to 15% unemployment, there are reportedly significant shortages of sufficiently skilled employees to feed the anticipated industry growth.

This dissertation investigates the current situation to understand what is actually happening in the ICT sector in Ireland from a Human Resourcing perspective.

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## Introduction

A recent happiness index survey (Irish Independent, 4/1/12) had Ireland in last place for Western Europe, and only four countries in Eastern Europe – Romania, Serbia, Lithuania and Georgia – scored less than Ireland. According to the Live Register in June (CSO, 2012) the seasonally adjusted unemployment rate stood at 14.9% or just over 450,000 people out of work and signing on for benefits. This included a rapidly decreasing fall-off in non-national workers, but it does exclude a reputed 50,000 nationals and non-nationals who are emigrating out of Ireland in search of work (ESRI, 2011). Over 44% of the total unemployed are now classified as long-term unemployed bringing the annualised percentage to 6.6% (out of 14.9%).

Classic economic theory, and indeed common sense, suggests that during a recession when jobs are scarce, there will be an excess of labour supply over demand, making it an employers' market when it comes to recruiting. However, recent anecdotal evidence is that there are recruitment difficulties and skills shortages being experienced in 'knowledge industry' sectors such as ICT (Irish Independent 5/4/12, Cork Independent 25/8/11).

This sector, as with many export-oriented (and largely multi-national corporation dominated) industries is still thriving and growing in spite of the recession. According to Regina Moran, CEO of Fujitsu Ireland and chairperson of ICT Ireland, (IBEC's technology sector representative group), speaking in January 2012 at the launch of the ICT Action Plan:

The technology sector in Ireland is thriving. Since the beginning of the year over 300 jobs have been announced, with over 4,000 jobs announced in the sector in 2011. With the top 10 global technology companies having a significant presence here and a substantial indigenous software sector, Ireland continues to be a powerhouse for technology (IBEC, Agenda 2012).

By May 2012 the job announcements in the ICT sector had already surpassed the 4,000 announced for the full year for 2011 (IBEC, Newsroom 28/5/12, Silicon Republic 28/5/12).

While the domestic economy is struggling, exports are achieving strong growth with the trade surplus reaching a record high last year (CSO, 2012, O'Brien & Madden, 2012) and the demand for skilled workers in these sectors remains unabated (Weldon, 2011, Walsh & Donnelly, 2012). A recent IBEC Q1'12 Business Sentiment Report (IBEC, 2012) shows that the outlook for Domestic sales recovered from minus (17%) in Q4'11 to minus (2%) - still negative but much less so – while the outlook for Export sales is a resounding +43% (up from +29% in Q4'11).

The current 'Action Plan for Jobs' issued by the Department for Jobs, Enterprise and Innovation (DJEI, February 2012) recognises this 'two speed economy – exports flourishing while domestic demand contracts' - as an area for concern. It states that these traits are a function of a recovering international environment where there is commercial opportunity, and weak domestic demand that is inhibiting growth prospects. As a consequence, restoring Cost Competitiveness is seen as a key driver for domestic recovery. The report identifies five action streams for jobs growth:

- Research and Innovation to drive job creation
- Improving Cost Competitiveness
- Aligning Skills with Enterprise Needs
- Infrastructure Investment to underpin Employment growth
- Reduced costs through sensible regulation

Under the heading *Aligning Skills with Enterprise Needs* (p 30), the report recognises that

Skills shortages continue to persist despite the recession. Employers are having difficulty in finding suitably qualified and experienced people in the areas of ICT, Engineering, Science, Finance, Health and Sales. Skills shortages in the Science, Technology, Engineering and Mathematics (STEM) disciplines are particularly acute.

It also notes that

While the level of issuance of work permits has dropped substantially since the peak of 2007, most of the areas where they continue to be issued mirror the above areas of skills shortage.

As a consequence of which 'the Government is making education and training central to this action plan'. In relation to the ICT sector, action item 1.35 is 'to respond to immediate shortages in the ICT sector' this year by increasing the number of places on ICT programmes and initiating a one year level 8 conversion programme in core computing in conjunction with the Higher Education Authority (HEA). These action items overlap directly with the ICT Action Plan launched earlier in the year, mentioned above but fail to recognise the more medium-term, rather than short-term, aspects of increasing the numbers of college places.

### **ICT sector profile**

The ICT sector (Information, Communication and Technology) encompasses a broad range of high-tech businesses. The major classifications of the industries in this sector based on Forfas (2011) headings – my own shorthand is in the brackets - are

- Computer and Electronic Equipment Manufacturing ("Hardware")
- Computer Consultancy ("Professional Services")
- Computer Facilities Management ("Hosting")

- Computer Programming (“Software”)
- Other IT and Computer Services (“Support Services”)

There has been a steady shift in sub-sector employment trends from “Hardware” towards “Software” (Forfas, January 2012) although this distinction can become blurred as many of the larger ICT multi-nationals cross the manufacture-services divide (so-called “manu-services”) (Enterprise Europe Network, 2012, Forfas, January 2012)

The sector is predominantly export oriented and accounts for approximately one third of the country’s total exports by value (Enterprise Europe Network, 2012, ICT Ireland, Careers Portal) This is very significant for a country where 84% of our goods are exported

The ICT sector is also a major employer There are over 74,000 people employed in the sector (CSO, 2010), although the Department of Jobs, Enterprise and Innovation (DJEI, February 2012) place this number significantly higher at 97,000 in their 2012 Action Plan – 27,000 in hardware segments and 70,000 in software and services However, forty-five major multi-national firms account for 50% of total employment, while the largest 225 firms represent 70% ((Forfas, January 2012)

These figures do not take into account the potential that Cloud Computing presents for the Irish economy According to a study commissioned by Microsoft Ireland (Goodbody, 2011) Cloud Computing has the potential to create more than 8,000 jobs within the ICT sector by 2014 as well as being a key enabler for opportunity and significant employment outside of the ICT sector In an article citing the possibility of 20,000 jobs arising from Cloud computing (Irish Independent, 24/1/12) Paul Rellis, managing director of Microsoft Ireland estimates that ‘the Cloud’ could be worth €9.5bn to the economy by 2014 This sentiment is echoed by the Expert Group on Future Skills Needs (EGFSN) – ‘Internet communications (including cloud computing’ is set to be one of the fastest growing sub-markets within ICT – with potential growth rate as high as 20 percent per annum over the next decade’ (EGFSN, 2012, 6)

There is a high dependency in the sector upon the forty-five major firms According to varying sources, Ireland is home to 7 (IDA Ireland), 8 (ConnectIreland.com), 9 (ICT Ireland, Careers Portal) or 10 (IBEC, Agenda, 2012) of the Top 10 global ICT companies Different sector classifications drive different opinions but, regardless of the individual claims, it is accurate to state that Ireland is the EMEA home to the majority of the largest global ICT and

ICT-dependent companies. These include household names such as Microsoft, Google, HP (Hewlett-Packard), Intel, Oracle, Apple, Dell, Fujitsu, SAP, eBay, PayPal, LinkedIn, IBM, DCC, Cisco, EA Games, Adobe, Yahoo, Amazon – all major US multi-nationals with the exception of Fujitsu (whose CEO currently chairs ICT Ireland).

According to the American Chamber of Commerce Ireland, the US accounted for 74% of Ireland’s inward investment in 2011. At sector level, this makes Ireland the No. 1 location worldwide for US foreign direct investment in the Information sector and No. 3 in the Chemicals/Pharmaceutical sector. This represents 8% of all US investment in the EU and 5% of US worldwide investment, which equates to more than the total invested in the BRIC economies (Brazil, Russia, India, China) and over a decade is three times the US investment in China. In simple terms, ‘three out of every four foreign direct investment projects coming to Ireland in 2011 originated from the US’ (Amcham, US Investments).

US firms also constituted all of Ireland’s top 15 ICT exporters in 2011 (Business and Leadership, 2011, 13). In total, US firms exported in excess of \$100 billion of products and services from Ireland into world markets in 2011. In so doing, they contributed €3bn to the Irish Exchequer in taxes, a further €16bn in expenditure into the Irish economy and provide over 100,000 direct jobs in Ireland (Amcham, US Investments).

These are very impressive facts that make Ireland a very serious contender for to be considered the ICT capital of Europe. So, why Ireland? According to IDA Ireland (Ireland & US Investment; PWC), Ireland has an equally impressive, objectively measured, CV:

<b>2010 IMD World Competitiveness Yearbook:</b> 1st for corporate taxes 4 <sup>th</sup> for availability of skilled labour 4 <sup>th</sup> for being open to new ideas 6 <sup>th</sup> for labour productivity 7 <sup>th</sup> for availability of financial skills 7 <sup>th</sup> for flexibility and adaptability of people	1 <sup>st</sup> in Euro-zone of best countries for business (Forbes, 2010)
	1 <sup>st</sup> in world for most highly-employable graduates (European Commission Study of international recruiters, 2010)
	1 <sup>st</sup> in world for jobs created by inward investment per capita (2010 IBM Global Location Trends Report)
	1 <sup>st</sup> in Europe for most competitive R&D investment location (Mazars Review of Global R&D Incentives 2010)
	2 <sup>nd</sup> most globalised economy in the world (E&Y/Economist Intelligence Unit Globalisation Index, Jan 2011)
	3 <sup>rd</sup> highest proportion of maths, science and computer graduates (Eurostat Yearbook 2010)
	1 <sup>st</sup> in world for jobs created by inward investment per capita (2010 IBM Global Location Trends Report)

The American Chamber cite the 12.5% corporation tax rate, the quality of the English-speaking workforce, cooperative labour relations, political stability, transparent judicial and taxation regime and the ‘clustering’ effect of existing US companies as the main attractions

for Ireland as an export platform to the EU and international markets (Amcham, US Investment in Ireland) Former US President, Bill Clinton at the Invest in Ireland Forum in New York, February 2012 said

You'd have to be nuts not to take advantage of the unique investment opportunity presented by one of the most business-friendly countries in the world, with the youngest, best-educated workforce in Europe (ConnectIreland.com)

Cloud Computing is the new ICT phenomenon that is bringing with it a paradigm shift in how business is and can be done in the future. One commentator describes it as 'the computing equivalent of linking into the electricity grid or gas network' (Irish Independent, 24/1/12). Cloud services - the storing of applications, software and data over the Internet with 24x7 on-demand access from any location, without the costly need to build and manage their own networks and systems - are typically being delivered from purpose-built data centres, for which Ireland is quickly emerging as a location of choice. In addition to more than 23 data centres located around Dublin city, major investments are being made around the T-50 fibre ring in west Dublin. Microsoft is investing \$1bn for to supply its EMEA dot net cloud computing services from Clondalkin. Nearby, Google is building a €75m data centre and, right beside them, Digital Realty Trust has acquired a site to build a 193,000 sq ft data centre. Last year, TelecityGroup acquired Irish data centre player Data Electronics for £87.6m making it the market leading carrier-neutral provider in Ireland with 3 data centres around Dublin. Software companies such as Amazon and SAP have also revealed plans to create employment at new cloud support centres in Ireland. Other industry players such as HP, Cisco and EMC are similarly re-positioning themselves to supply cloud service from Ireland. The Government are also investing €1.2m into a Cloud Computing Research Centre for a consortium of third-level institutions (Source Silicon Republic, 19/7/12). Very recently, Brendan Howlin, Minister for Public Expenditure and Reform announced that 'Cloud computing has huge potential to radically change how public services are delivered'. The Government's Cloud Computing Strategy is a key aspect of using ICT for delivering Public Service reform (MerrionStreet.ie, 20/7/12). This was one of IBEC's key recommendations to the, then, incoming coalition Government (see page 11 below).

Digital 21, the ICT industry's campaign group for action to secure Ireland's digital infrastructure and services for future growth, envisaged Ireland as the 'Silicon Valley of Europe' (Silicon Republic, 27/5/10). This vision is quickly becoming a reality but key elements - increased broadband penetration (Silicon Republic, 19/4/12 & 18/7/12) and the

supply of High-Skilled ICT workers (Silicon Republic, 25/7/12) – are currently major impediments to achieving the vision. The latter is the subject of this paper. While broadband is largely a technical issue, dependent upon public expenditure, the skills supply is subject to international competition for people. This is an issue of concern, especially given all of the current negativity in Ireland (e.g. the (un)happiness index and high unemployment), hence the establishment of events such as the ‘Future Jobs Forum 2012: Winning the Battle for Global Talent’ (featuring high-level representatives from Irish Politics, the American Chamber, Google Ireland, Fujitsu Ireland/IBEC, PayPal EMEA and the Open Ireland Forum) scheduled for later this year ([www.futurejobsforum.eventbrite.com](http://www.futurejobsforum.eventbrite.com))

## Literature Review

### (i) Employee perspectives:

Employee Retention and employee turnover are related issues. There is a distinction between Voluntary and Involuntary staff turnover – the latter being primarily redundancy-based in the current economic climate (CIPD, 2011a). For voluntary turnover, while recognising the complexity of human nature and the rationale for career choices, a 2010 CIPD survey (CIPD, 2011b) suggests that Managers and Professionals/Specialists, followed by Technical staff, are the most difficult to hold onto. The ‘most common methods used to address retention by nearly two-fifths of organisations, are to improve line managers’ people skills, improve learning and development opportunities and improve the induction process’. However, in recessionary times Training is often one of the first budgets to be cut – possibly as recognition that people do not generally need to be incentivised to stay during a recession. A somewhat contrary piece of research by Acton & Golden, (2002) specifically into Irish IT professionals (‘as they embody the new “knowledge worker” operating in the information economy’) has found that, ‘while employees see training as important for career development, the provision of training does not have any impact on staff retention rates’. Towers Watson 2010 Global Workforce Study key findings were that ‘the desire for security trumps everything’ and that, while mobility is at a decade-long low point globally and many employees are sacrificing career growth for job security, ‘confidence in leaders and managers is disturbingly low’. (Towers Watson, 2010). The inference then is that Line Managers, rather than any other organisational factors have a primary role to play in staff retention.

A 2007 Business Members Survey (Chartered Accountants Ireland, 2008) identified six main reasons why people leave their jobs:

- Opportunity for advancement elsewhere
- More interesting and varied work
- Work life balance
- Better compensation/remuneration
- Dissatisfaction with employer/manager
- Desire to travel

In an open economy such as Ireland, globalisation is aligned with many of these factors.

### (11) Employer perspectives

The consultancy firm McKinsey brought the phrase 'The War for Talent' into common parlance (Chambers *et al*, 1998, McKinsey, 2001) Their central argument was that, in a knowledge-based economy, to be the best a company needed to hire the best This meant creating a winning Employee Value Proposition (EVP) based around 'Why would a talented person want to work here?' Winning EVPs are designed to appeal to the needs of specific talent segments to attract and retain them The 'War for Talent' is about building and managing superior talent pools for intellectual capital and competitive advantage

Differentiation of employers is the basis behind the 'Employer of Choice' (EOC) concept 'EOC strategies represent attempts by a firm to construct a unique employer brand identity based on a value proposition that sets it apart in some meaningful way' (Herman and Gioia, 2001) This is about the marketing of an organisation or brand, not just to customers, but to current and prospective employees – especially in a tight labour market O'Donoghue and Wickham (2008) recommend approaching EOC in a similar manner to product marketing, using the 'Marketing Ps' and 'value propositions' to cast attention on the part that indirect opportunity costs, (for which they use the example of 'having an unhappy partner at home'), 'can play in the employee's construction of the benefit-cost equation' It has also been suggested that Corporate Social Responsibility can assist greatly in strengthening employee retention and, ultimately, to help win the war for talent (Bhattacharya, *et al*, 2008)

However, having the best individuals does not always imply being the best team Jeffrey Pfeffer (2001), referring back to Edwards Deming's quality movement, 'what is important is not so much individual motivation or ability but the attributes of the system in which the person works' Even in professional sports, the most talented, best paid, teams do not inevitably win championships Pfeffer argues that in the 'War for Talent' the over-emphasis on individual performance erodes and eventually destroys teamwork through marginalizing the less able, de-emphasising systemic, cultural and business process issues, and in the development of elitist, arrogant attitudes Rather than the 'War for Talent' concept being simply wrong, it is also seriously damaging to an organisation's health Accordingly, this is 'why great companies get the best out of their people instead of always searching for different people' Peter Senge's (1990) Learning Organisation, through shared visions and systems thinking is, in many ways, the antithesis of the individualistic 'War on Talent' EVP concept

### (iii) Motivation Theory

Getting the best out of people revolves primarily around employees' intrinsic motivation (Although business ethics can also be a key factor) Much has been written about employee motivation (e.g. Maslow, 1943, Herzberg, 1957, Vroom, 1964, Locke, 1984) but, underlying most SHRM discussions is the concept of the 'Psychological Contract' (Argyris, 1960, Levinson, 1962, Schein, 1978) which, ideally, in order to retain talented employees, must be strong and reciprocal. Problems arise in the definition of what constitutes a psychological contract (Guest, 2004). Although based upon reciprocal mutuality (Rousseau, 1998, Atkinson et al., 2003), there are mixed messages on whether it constitutes implicit *obligations* or *expectations* on one or both parties. Much is made of onerous obligations imposed by employers and unrealistic expectations by employees, but the power imbalance between the two has focussed substantial amounts of the literature on legalistically-driven 'violations' of the psychological contract (Cullinane and Dundon, 2006). Underlying the psychological contract is the short-term transactional or long-term emotional relationship between employee and employer (Rousseau, 1995) and their mutual understanding of their respective positions vis-a-vis each other. As the psychological contract is fundamentally an implicit social exchange interaction rather than a tangible agreement, it is a moveable feast and expectations change as the parties move through their respective personal and business lifecycles (Low, et al. 2011). Accordingly it needs to be revisited and re-evaluated, especially when external competitive and labour market factors bring EVP into play.

The concept of Employee Engagement (Kahn, 1990) introduces the idea of employees' self-motivation through identifying physically, cognitively and emotionally with the employer's mission and values, which leads to positive discretionary effort by employees. Although there is a lack of clarity over definition, Engagement is associated with High Commitment, High Performance teams and organisations who will challenge assumptions in order to improve outputs. The 'WIFI' staff engagement model (Cook, 2008) supports Well-being, Information, Fairness and Involvement but, in practice, Robertson and Cooper (2009) believe that much of the focus is on 'Narrow Engagement' i.e. 'the factors that are of most direct interest to employers and organisations'. This is a pro-employer view that focuses too heavily on the benefits to organisations. Robertson and Cooper espouse a broader 'Full Engagement' model which includes the 'W' - employee well-being - as a better, ultimately, more sustainable and mutually beneficial approach.

The factors affecting employee retention and voluntary resignation are a combination of external and internal influences. The respective 'power' of employers and employees in the labour market, the general economic climate, and international dimensions can all influence decision-making. Equally, the literature suggests that organisations can influence decisions by better management practices, stronger emotional ties with their employees (through attractive branding, reinforced teamwork, strong psychological contracts and staff engagement). Ultimately, a strong EVP is required in order to retain the seemingly more mobile Managers, Professionals/Specialists and Technical staff.

#### (iv) Market drivers

The Labour Market is a secondary market that works both dependently and independently of its primary Product/Services Market. Demand and Supply of a primary Product or Service is the primary reason for employing labour in the first place but the drivers of labour skills supply are not the products but the underlying education system, and the drivers for labour skills demand are not the products but the technology and knowledge behind the products. Some skills, such as manual handling, are easily transferable, others which rely more on individual talent – art, music, intellect – are less easily transferred. This is the basis of 'intellectual property', a valuable commodity that Peter Senge (1990) envisaged as a shared/sharing experience in his 'learning organisation' model, a key intangible in any business supply chain which, in the Resource-based view of organisations (Mullins, 2007), can become a primary sustainable source of competitive advantage. In an innovation-led industry, it becomes *the* competitive advantage.

For the concept of a 'knowledge economy', the commodity being traded in the Labour Market is 'knowledge'. Specialised knowledge is a scarce resource that can command premium prices, Old knowledge or common knowledge, less so. Basic economic supply and demand curves can kick in and, where there is a knowledge vacuum, it can be filled by New Entrants to the market (e.g. college graduates, migrant workers, up-skilling or re-skilling) or Substitute products (e.g. automation), to use Michael Porter's Competitive Forces model (Porter, 1979) terminology. Equally, in a fast-moving industry, knowledge can quickly become out-dated and superseded, so it must be dynamically refreshed or business competitiveness will be very quickly eroded.

(v) Current Irish Market forces:

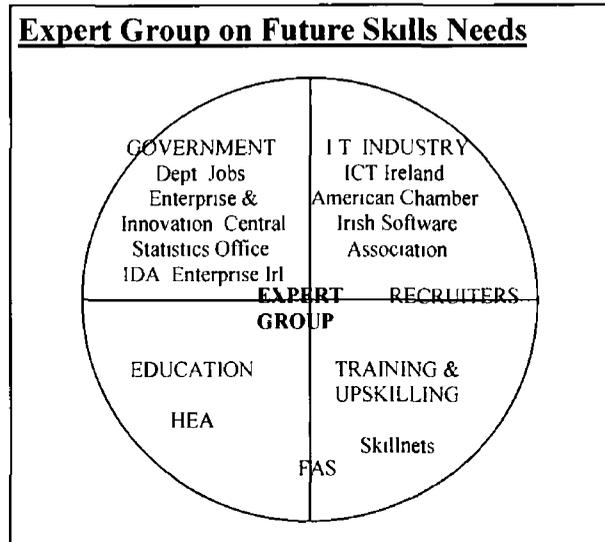
This is a situation that is in danger of happening in Ireland. In 2010, Craig Barret, then CEO of Intel, warned academics and politicians – a message which has been repeated more loudly in 2012 (Silicon Republic, 6/3/12) – about elevating the importance of maths and science subjects in the Irish education system. This view was supported by an assessment carried out in 2009 by the PISA (Programme for International Assessment) – a programme sponsored by the Organisation for Economic Co-operation and Development (OECD) - which found that the knowledge and skills of Irish 15-year olds in reading, mathematics and science were below the OECD average. In the case of Mathematics, Ireland was very significantly below and ranked 26<sup>th</sup> out of 34 OECD countries, 32<sup>nd</sup> overall against 65 countries. However, in Science Ireland's mean score was significantly above the OECD average and ranked 14<sup>th</sup> out of 34 OECD countries, 20<sup>th</sup> overall against 65 countries (FÁS, July 2011, 35 & July, 2012, 34).

The recommendations of the 2008 Expert Group on Future Skills Needs – 'Future Requirement for High-level ICT skills in the ICT sector' (EGFSN, 2008) - have finally been turned into an ICT Action Plan this year (EGFSN, 2012) – a collaborative venture between ICT Ireland (IBEC's technology sector representative group), the Irish Software Association, the American Chamber of Commerce in Ireland (who represent the major US multi-national ICT foreign direct investment companies), the Higher Education Executive (who represent the Irish Education system) and the EGFSN.

IBEC had previously issued policy recommendations in a strong statement to the, then, incoming Government that the ICT sector, employing more than 74,000 people, could assist greatly in the next Government's top priorities of stimulating economic growth and fostering an environment for job creation (ICT Ireland, 15/2/11). The policy recommendations were fourfold:

- 1) Maintain the existing low corporation tax rate (which was under threat from the EU)
- 2) Improve Ireland's competitiveness (especially with regard to labour and energy costs)
- 3) Substantially improve Ireland's Education system to the highest international standards
- 4) Use ICT as an enabler in the delivery of Government services (to dramatically reduce exchequer spending)

The Expert Group is an assembly of experts from industry, education, government, and development agencies. It was put together in 2008 on the back of the unprecedented success of the ‘Celtic Tiger’ to address the emerging, high-level skills gap in the ICT industry and to identify the steps needed to provide the quantity, quality, and diversity of high-level skills to meet the future requirements of the ICT sector (EGFSN). Since then it has continued this focus, producing annual reports on progress (ref Forfas) and monitoring Ireland’s ICT Skills Supply and Demand/Vacancies (ref FAS).



The latest EGFSN 2012 research findings (Forfas, January 2012, 3) find that

‘Current skills recruitment difficulties mainly relate to high-level ICT Honours Bachelor Degree (Level 8) and above. These difficulties result from a steep decline in the domestic supply of ICT graduates over recent years. Companies are sourcing approx 55% of their high-level ICT skills supply needs (for expansion and replacement needs) through inward migration, although with increasing difficulty, as these skills are also in high demand globally.

an increasing share of employment within the sector is being accounted for by people with high-level skills. This is a result of a shift in subsector employment from hardware towards software, a general shift in the skills mix, and a pattern of simultaneous creation and loss of jobs, resulting in lower-skilled jobs being replaced with higher-skilled ones.

‘On the other hand, companies indicate that they are continuing to fill a substantial number of managerial, professional, administrative and sales and marketing positions without too much difficulty.’

They recommend tackling this position within four identifiable activity streams

- a) Boosting the High-Skills Pipeline – a medium-term action plan to focus on increasing the number of acceptances for high-level undergraduate programmes to help meet demand
- b) Addressing the immediate Skills Recruitment Difficulties – largely through encouraging inward migration to fill the 8+ years experience vacant positions, and to a lesser extent encouraging enterprises to upskill their existing staff

- c) Sustaining Ireland’s attractiveness for high-skilled ICT staff – both national and non-national
- d) Ensuring the Upskilling of the Current Workforce – to include in-company training and publicly supported development programmes, such as those offered by Skillnets

The ICT Action Plan launched earlier in January this year (EGFSN, 2012, 8) established

‘an overarching target of doubling the annual output from honours degree ICT undergraduate programmes to 2,000 graduates by 2018. Projected output in 2011 is approximately 1,000 graduates’

In this is the recognition that, to fully realise the expansion and development opportunities that exist for the evolving ICT sector while also meeting the high-level ICT skills needs of other enterprise sectors,

‘a continued reliance on inward migration of this scale [55%] is not sustainable’

The plan addresses both short-term (Part 1) and Medium-term (Part 2) targets in support of the objectives of the 2012 Research Report findings

Short-term actions

Actions/Tasks	Description	Action/Tasks	Description
1 Springboard	Level 6-9 NFQ ICT programmes 2011	4 Review Graduate skills conversion programme	1,700 Masters programmes directed at ICT/Biopharma sector
2 JobBridge	Internships for unemployed graduates	5 Skillnets	Provide Core Training Network programme, new Job Seeker Support programme with work placements + 3 ICT training courses under Future Skills Needs programme
3 Level 8 conversion programme	1 year HDip in core computing/programming skills		

Medium-term actions

1 Introduce Bonus points for Leaving Cert Maths	5 Awareness raising in HEIs	10 Establish high-level ICT Foresight Group
2 Promote career opportunities to parents, 2 <sup>nd</sup> & 3 <sup>rd</sup> level students including ICT and Foreign Languages (incl Smart Futures Campaign)	6 Implement Project Maths	11 Undergraduate work placements
	7 Improve CPD opportunities for 2 <sup>nd</sup> level teachers	12 Improve retention rates for ICT & Electronic Eng honours degree programmes
3 Transition Year internship programme	8 Implement National Numeracy & Literacy strategy	13 Explore feasibility of providing alternative ICT related progression path for drop-out students
4 Scratch programme	9 Streamline HEI programme offerings	

In parallel with this, and in conjunction with the Expert Group, the Higher Education Authority (HEA) have been acting upon (and indeed were a party to) the initial 2008 recommendations, as updated by the annual new entrants and graduate results. They have issued their report on the outcomes of the 2012 ICT Level 8 Skills Conversion Programme (HEA, 2012(1)) with an almost consistent Higher Diploma in Science in Computing across most institutions.

The HEA are also responsible for a new initiative called Springboard. This is designed to assist people who have lost their jobs to return to sustainable employment by offering over 200 courses nationwide at Levels 6-9 on the National Framework of Qualifications (NFQ). These courses are intended to meet current and future market needs, primarily in ICT, the green economy, bio-pharma-pharmachem sectors and in developing innovative business and entrepreneurship skills.

However, a number of disturbing trends were being tracked in the Education sector, not only the falling Application/Acceptance rates in Computing and Science courses but, more alarmingly, the high drop-out rate from these disciplines – a trend that has been linked to low proficiency levels in Mathematics (Forfas, January 2012, 11). These latest EGFSN research findings suggest that these negative trends are slowly beginning to improve. Acceptances in Computing were up from 1,380 in 2009 to 1,427 in 2010. Honours Graduate numbers showed a reduction due to low intake levels between 2002-7 but this is expected to ‘begin to increase in 2012 given the 29% cumulative increase in acceptances over the past three years (+10%, +15%, +2% respectively)’.

The EGFSN recommended that the multiplicity of ICT/Engineering programmes with different titles and content, used mainly for branding/marketing purposes, which causes confusion amongst parents and students, should be modified. Their suggestion is for all programmes to concentrate on the development of core ICT skills with flexibility for bespoke specialism modules in 3<sup>rd</sup> and 4<sup>th</sup> year and through postgraduate qualifications.

They also observed that current funding mechanisms encourage competition between institutions, whereas collaboration would optimise the use of expertise and funding, improve student outcomes and help build internationally comparable centres of expertise. (Only two Irish Universities – UCD and Trinity College – are in the top 200 QS World University

Rankings for computer science and five –Trinity, UCC, DIT, NUIG, UCD – in the top 200 for electrical and electronic engineering)

Skillnets is a state funded enterprise-led body focussed on training and upskilling to sustain competitiveness. In its 2011 annual report, their investment in skills development had increased from €17.3m spent in 2010 to €22.6m in 2011, reaching 42,113 people in 2011 (2010 = 39,000) across all sectors (Skillnets, 4/7/11 & 25/6/12)

## Research Aims and Objectives

There are a number of 'push and pull' factors interacting in the Irish marketplace at present. On one hand, Ireland has positioned itself as a major IT hub in Europe for US overseas investment. This investment is coming through very rapidly as evidenced by the almost weekly new job announcements in the sector (for which, see various news clips references from Irish Times, Irish Independent, RTE News, ICT Ireland news, Silicon Republic, MerrionStreet.ie in the bibliography section).

The 'Ireland Inc' storyboard reads very well from a US perspective but behind the headlines lie some less pleasant truths. Ireland is heavily dependent upon migrant labour to fill its key ICT vacancies. Inward migration is reducing and large-scale emigration is a feature of many Irish lives. Recent CSO data reveal that there is 39% unemployment among 15-24 year olds (RTE News 26/7/12), yet the take-up for college places in Computing disciplines remains low, with high drop-out rates (EGFSN, 2012). Low-level skills in Mathematics require urgent attention to help redress this but will take many years to come to fruition. Cross-skilling is a stop-gap solution. Many employers are already experiencing skills shortages and have difficulties filling vacancies. Only the larger players can offer internships to train up graduates to the requisite levels so there is a talent war driving up staff costs for scarce, mainly overseas, resources during a recession where bank funding is also limited. The ICT future in Cloud Computing is going to be huge in Ireland and, it would seem, that we are unprepared for the demands this will place on resources. Government plans incorporating Expert and multi-disciplinary groups have been set to address these problems at a macro-economic level but their initiatives have already taken some time to get to the current situation. There are no short-term solutions on offer save what re-training and up-skilling employers themselves have already been doing (and is now simply being recognised). How much longer to realise the medium-term objectives of the ICT Action Plan? And will it be in time to address the 8,000 or 20,000 more job possibilities and commercial opportunities arising from Cloud Computing? There is a real danger in all of this that Ireland's competitiveness will be eroded by skills deficiencies.

Anecdotal evidence is that in the current Irish climate it is becoming increasingly difficult for employers to differentiate themselves globally and to offer strong EVPs and, hence, attract and retain the right talent. The aim of this research is to get a fuller understanding of what is

actually happening on the ground for the ICT industry. Also, there is a need to estimate the industry needs over the next 5 years to establish if the current initiatives will be adequate.

There are a number of aspects to this research:

- 1) Public Policy initiatives – is this delivering real benefits on the ground from its high-level initiatives? What does the future hold?
- 2) Demographics – can Ireland continue to expect high-levels of high-skills immigration to support growth during the period it takes for the Public sector initiatives to kick in?
- 3) How can the indigenous ICT industry support its own short-term high-skills requirements?

## Research Methodology

This is an exploratory study to discover what is happening in the ICT skills sector and to gain insights into the reality of the situation on the ground. Accordingly, the research approach employed is primarily inductive using qualitative methods. An Inductive approach attempts to move from specifics to more general interpretations. It is based around specific observations to establish if there are any patterns from which to generate tentative hypotheses. Induction is less rigid than deduction and allows for subjective views in order to get a feel for what is happening. The data produced is Qualitative rather than numerically based (quantitative). Qualitative research is fundamentally about interpreting phenomena that are subjectively reported so as to make sense of them. The characteristics of qualitative methods are to use non-standardised data collected 'to study participants meanings and the relationship between them' (Saunders, et al, 2012, 163)

The primary data collection mechanism used is semi-structured and in-depth expert interviews from a variety of disciplines in order to gain as wide an interpretation as possible. Using this mechanism presented significant barriers due to the inherent secrecy of the ICT industry itself. It was anticipated from the outset that access to information in this highly competitive sector would be particularly difficult to obtain. This is especially true of the major US multi-nationals and the evolving Cloud Computing sector where sensitivities are heightened due to the secure nature of the organisations themselves (including non-disclosure agreements with all employees and suppliers). Accordingly, the research strategy was to work around the industry rather than directly within it. This presented its own challenges in terms of obtaining first-hand information but it was anticipated that this alternative data gathering mechanism would give sufficient industry insights on which to form a critical view.

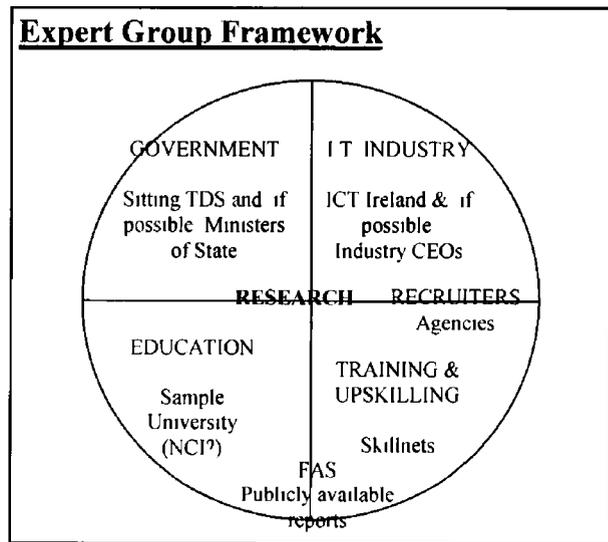
By definition (Saunders, et al, 2012, 374-5), semi-structured and in-depth interview types are non-standardised and allow greater opportunity to explore emerging themes. The approach taken was informal and in a location of the interviewee's choosing (generally their private work-spaces) to allow for relaxed, open discussion.

Ethics were a primary consideration for the interviews. Given the industry sensitivity to confidentiality and security issues, no questions were raised about individual companies in the ICT sector. Where incidental information was included a private view was taken on the sensitivity or otherwise of this information that anything reasonably already in the public

domain could be included. Notes are contained in the interview details (Appendices 1 to 4) where any information has been omitted.

There was some room for quantitative data in this study but, from a practical perspective much of the quantitative data initially envisaged at the outset of the project was readily available through the workings of key public agencies such as the Expert Group for Future Skills Needs and associated public organisations – CSO, HEA, FAS and Forfas. Given the high-level of public scrutiny and the reliability of sources for the data, a practical decision was taken that the publicly available statistics can generally be relied upon. Exceptions to this rule are the FAS Vacancy findings. These have inherent limitations due to the limited data sources used, (FAS, the Irish Times and Irishjobs.ie), and explicitly excludes vacancies advertised by agencies. That said, it was accepted that the trends generated by their consistently gathered data are representative of more general ICT labour market trends (which can be relied upon).

The framework for this study used the sectors already identified in the Expert Group for Future Skills Needs reports (illustrated) to investigate the current situation. Their data had already given valuable insights, not only into industry thought processes, but also into the demographic and statistical data. The purpose of this approach was to get a ‘real world’ view, outside of the formally established political framework, on whether or not this was a working and/or workable plan.



The Expert interviewees chosen were representative figures across the main sectors. Broadly speaking they represented

- (i) Public Sector Bodies – Government and Education representatives
- (ii) ICT Industry - Industry Representative Groups and HR Recruitment Agencies

It was anticipated that, with careful selection, these could be expected to give informed views of what was happening in each sector.

**Government** For the Public Sector much of the required information was already available through the published reports. The purpose of the Government sector interviews was to establish the bases for the plans and if the plans are working (or workable) so it made sense to invite Opposition side as well as Government side individuals for interview. The availability of deputies due to the Dail Summer recess was an issue but the key targets were interviewed.

- Joanna Tuffy, a Labour TD, is Chair of the Dail sub-committee on Education and Skills. This placed her well to comment on the EGFSN findings. A lawyer by training and a member of the Labour Party meant she was also well placed to give views on the current (un)employment situation. Her Labour Party colleagues also include the Minister for Education (Ruairi Quinn) and the Minister for Social Protection (Joan Burton).
- Stephen Donnelly, an Independent TD, is one of the truly independent voices in Dail Eireann. Not a career politician, he entered politics in order to challenge the status quo, primarily in response to the IMF/ECB deal. As a graduate of UCD, MIT and Harvard universities he was well placed to comment on the Irish education system. As a former change management consultant with McKinsey & Co he also has real business world experience. He holds a Masters degree in Public Administration from Harvard and is a member of the Dail sub-committee on Public Expenditure & Reform.

Approaches were made to other TDs on Dail sub-committees for Enterprise, Finance and Education, and also to members of Fianna Fail and Sinn Fein (as the main opposition parties) but they either did not respond or were unavailable.

**Education** In this sector, the colleges already focusing on 'Cloud Computing' in particular were chosen. This choice reflected the weight of expectation and public statements issued in relation to this key industry growth area. The National College of Ireland (NCI) was an obvious choice in this category. Apart from being the accrediting body, it has also just established a new Cloud Competency Centre to 'advance knowledge and educate students in Cloud Computing Business and Technologies to serve Ireland and the world in the 21<sup>st</sup> century' (NCI website). The other college chosen was Dublin City University (DCU), generally recognised as being one of the more innovative universities in the country. It has very close industry links and on campus it is host to a number of ICT research centres – CLARITY (the centre for Sensor Web Technologies), CNGL (the Centre for Next Generation Localisation), LERO (the Centre for software engineering) and Sci-Sym (the centre for

Scientific Computing and Complex Systems Modelling) It has recently opened the CloudCORE Research Group Centre

- Dr Horacio Gonzalez-Velez, Head of Cloud Computing at NCI is a recognised international expert in Cloud Computing He is an award winning lecturer and researcher in 'parallel computing' He also brought a strong industry background with him into research
- Professor Mike Scott, ex-Head of the School of Computing at DCU has just retired from the college (and not yet replaced) He was with DCU for thirty years, building Computing at the college from its establishment as a National Institute for Higher Education to its current leading university status

An approach was also made to NCI's Head of the School of Computing but he failed to respond

**Training** This was a much more difficult area to identify as there is no real 'centre' to its activities During the interviews it was emerging that the ICT sector were relying predominantly on either Third Level Colleges or In-house re-training and that the public agencies established under the ICT Action Plan were not addressing their specific skills needs Consequently, this element was dispensed with

**HR Recruitment Agencies** This sector was deliberately included for interview to offset any bias in the FAS reports The National Recruitment Federation is an umbrella body for recruitment agencies but its brief is around the standards and ethics of the profession rather than to identify skills gaps being recruited, so it was not considered suitable Leading agencies dealing directly in the ICT sector were approached to get their individual perspective on recruiting and HR issues within the industry In order to ensure representative views, the market leading recruitment agency, CPL, was chosen Also, one of the leading HR advisory agencies was chosen for insights into employee perspectives Both agencies offer recruitment and advisory services

- Peter Cosgrove is the director in CPL responsible for ICT, Science and Engineering He has 12 years senior management in the recruitment industry and is a recognised commentator on the sector
- Caroline Browne is the managing director of the HRP Group, a best in class HR consultancy' She has been a HR professional for over 16 years and a regular conference speaker and media contributor on a range of HR issues and topics

**ICT Industry Representative bodies** In the absence of being able to approach industry players directly, trade associations represented probably the best method of obtaining valuable industry information. They are representative bodies established for to express the wishes of their members while maintaining anonymity for member-sensitive and/or industry-sensitive data. The main representative bodies are IBEC (ICT Ireland), the American Chamber of Commerce (AmCham), the Irish Software Association (ISA), the Irish Internet Association (IIA), Ireland Innovation Taskforce (Digital 21), Irish Computer Society (ICS). Representatives from IBEC, AmCham and the IIA were chosen, only two of whom were available for interview over the holiday period.

- Regina Moran is chair of ICT Ireland and managing director of Fujitsu Ireland, a leading Japanese multinational. She was a primary lobbyist and contributor to the Expert Group research and ICT Action Plan. Regina is also a council member of the Dublin Chamber of Commerce, a member of the Dublin City University Governing Authority and a non-executive director of Eirgrid. She is a regular commentator on industry developments.
- Maurice Mortell is Secretary of the Irish Internet Association and managing director of TeleticityGroup Ireland, the leading provider of carrier-neutral data centres in Ireland. He is also a member of the Telecommunications Federation Committee (TIF) within IBEC and a former chairman of the Outsourced Group within IBEC. Maurice is a regular speaker on topical thought leadership issues including Ireland's Innovation Taskforce (Digital 21) and the Green Economy.

## Research Findings

These findings are based on the expert interviews carried out as part of this research project. In order to ensure conciseness in the main body of the report, the detailed interviews have, of necessity, been relegated to Appendices 1 to 4 but these do form (and should be read as) an integral element of this research paper.

- 1) **On the ICT skills gaps** There was a general acceptance by interviewees that right skills can sometimes be difficult to find. Some interviewees took the view that this is to be expected in a high-growth industry, especially when it comes to bringing in overseas expertise. Others were radically critical of the fundamental skills delivery potential within Ireland, via the Education system, and of its ability to deliver on future indigenous skills needs from within Ireland.

The radical view took the position that the requisite skills are just not there in the Irish marketplace and that the mechanisms to deliver them are badly flawed. They were critical of the lack of prescience within the Education sector and, in particular, of its inability to flex and adapt to predictable current and future industry needs. It is primarily demand-based in its delivery of courses for students (not industry-led) and, in trying to encourage less popular courses, was perceived to have 'dumbed down' its course offerings and appeased weaker students in order to maintain favourable college league table positions (This issue of the Education system will be discussed later). The fallout of this is that they believe that employers are by-passing the Irish education outputs altogether and are going directly overseas to find the necessary skills.

The median view is that there is a lack of skills in some areas but that this is not to be overstated. Indeed it is to be expected in a relatively immature Irish industry where insufficient time has elapsed in which to create the 8-plus-years expert level experience required. Several interviewees commented that employers were looking for a perfect fit for their particular position on offer. In some cases this meant excluding many categories of, probably very suitable, applicants and left the position available only to 'A-Players'. The consequent perceived shortage has resulted in targeted recruiting - either poaching equivalent staff from competitors in Ireland or going overseas to find their perfect candidate. The more pragmatic took the view that a perfect fit is almost impossible to find and recruited those who 'ticked one or two of the main boxes' and then sought to train them up internally for the missing skills elements. They seemed ambivalent about whether positions were filled by Irish or

overseas candidates, even though there is some additional risk with overseas candidates. The more positive view on immigration was that it brought diversity and additional skillsets into the indigenous sector.

There was a general recognition of the remedial action required, with a particular emphasis on the potential of the Springboard programme – a short-term college programme designed to attract and re-train (primarily Construction Sector professionals with comparable skills) into the ICT sector. There was more scepticism about taking lower-level construction workers, many of whom comprise the 15% unemployment figures, as the upgrade required would be far too radical (many of whom would not have a Leaving Certificate) - although Government are actively encouraging this route in order to alleviate some of the unemployment issues.

Overall, although there are unfilled vacancies, these are mainly in very specialised roles and, despite extensive lobbying to Government, the Industry appears to be self-correcting and dealing with the issues using multi-faceted approaches as the needs arise.

- 2) On Staff Retention** Those from within the Industry did not highlight any particular problems with staff retention. They did note that there was some poaching of staff happening, especially for the more specialised roles, but that overall they were satisfied that staff loyalty was intact and manageable. Job-hopping is happening but not to the same extent as before during the boom. It was commented that it is not the same labour market as we had - ICT staff are less of a scarce resource than they were during the Dot Com era. Staff loyalty is perceived to still be there now but tied very much into career progression and a company's ability to offer exposure to new technologies and enhanced training – something that is not always possible.

The HR agencies relate this lack of movement, not to the employer, but to much more risk-aversion by employees. Although not directly affected by the recession from a career perspective, they are very aware of what is happening in Ireland at a more general level. Staff are still extremely mobile in the ICT sector but they are being a lot more careful before moving job – conscious of the fact that for anywhere they join, they will be the last in and on probation (but often, if they do take a decision to move, they could have three or four jobs on the table and a counter-offer from their existing employer). Risk-averse staff are not job-hopping as they did during the Dot Com boom at the height of the Celtic Tiger. The view

from the agencies was that companies are much more likely to retain staff in the current era and that staff themselves need a 'real' reason before moving

This is resulting in some push and pull factors in the ICT employment market. Key push factors were internally generated ones – the working environment, imbalanced work practices, over-working by staff in order to protect their employment or, (primarily within the multi-nationals), over-working by staff because it is expected by their employer. Employer branding such as 'Employer of Choice' is not perceived as an advantage in retaining staff unless employees 'feel the love' and see good HR practices in operation around them. The key pull factor mentioned was targeted recruiting – headhunting, poaching of staff – although one agency believed that this is not generally happening because it can cause reciprocal issues with their own staff. For overseas staff, the 100% motivator is salary.

Retention measures mentioned were more proactive remuneration management, more attention to the work environment, adoption of best practice HR models, concentrating more on staff engagement, and by ensuring career advancement and job enrichment through exposure to technologies, projects and skills. Most people stay because they have better access to latest technology and because they like their manager.

- 3) **On Salary Inflation** There was a mixed response to skills shortages being possibly responsible for driving salary inflation. It was accepted that there is salary inflation when competing for scarce resources, for instance if poaching staff from competitors or when going overseas for particular expertise. However, the general feeling was that there is not too much salary inflation going on and that, in many circumstances, when going overseas there is a short-term win in terms of low (not high) salaries being offered.

The main competition on salaries would appear to be in the multi-national sector. In the more indigenous sector, there is some push-back from employers on pay scales. They are looking at economic factors and in areas such as software engineering a direct link can be drawn between sales revenue and salary costs, allowing market-based ceilings to be set for salary levels being offered. This link is less obvious in other aspects of the profession such as IT Managers but the ICT labour market is becoming increasingly specialised, which in itself does drive salaries. However, in the current climate, there appears to be more of a sense of realism about salary levels generally and a recognition that, traditionally, ICT was not the best payer so there is some necessary re-alignment for specialised skillsets.

While the multi-nationals can generally offer better salary packages and benefits, there is another aspect driving the market around 'quality of life'. Some multinationals recruit employees into well-paid 'silos' where they get limited technology exposure but are expected to work very long hours. The attraction for employees for positions in smaller indigenous companies is that they can enjoy greater autonomy, flexibility and creativity, but they do still expect comparable rewards. The kick-back from the multinationals is that they do have (and are always considering) the option of off-shoring some activities – to maybe India or Poland – if salary inflation does become a significant problem.

One interviewee advocated the use of the Springboard programme as a means of enriching the talent pool while also driving down, or at least being realistic about, salary price-points.

- 4) **On Recruitment** This was a more general question, related to the questions above but also, in an expanding Irish ICT market, an essential element to fuel further expansion and growth into the future. While existing staff retention and the availability of skills is part of the Recruitment issue, the bigger picture requires routes to the labour market to fill key positions. There was a general consensus within the interviewees that overseas recruitment is essential in order to maintain current productivity and for expansion. A variety of approaches are being taken to address this issue. Some employers, especially multi-nationals with a presence in other countries, can use their overseas branch network to recruit into Ireland. Others use the Internet and social media. Many recruit directly through Irish employment agencies, who have also developed overseas connections and/or branch presences. Recruitment is also taking place through targeted trade fairs, for example, the 'Gateway to Europe Expo' sources overseas staff for European operations, but not just specifically for Ireland. Employer brand marketing, such as 'Employer of Choice' is not perceived to be of value in giving any major advantage when recruiting. That said, recruitment is helped greatly by the large presence of ICT multinationals which draws candidates into the country.

The multinational positions are being reported as 'an easier sell' but can also result in people being 'silo'd' in restrictive positions – a push factor that helps move risk-taking ICT talent into Irish indigenous organisations. These multinationals are also very proactive in linking into the major Irish colleges and universities. They form these special relationships 1) to have first call on the best graduates, but also 2) to get their own research carried out at a low cost (or for free). The Education sector see this as an essential element of their higher-skills

programmes to get students into real life situations as part of their learning Internships and co-operative ventures are the most popular way to do this Unfortunately, or fortunately, depending upon perspectives, many of the students in the higher-skills programmes are drawn from non-nationals seeking to up-skill and bring these skills back to their own native country The hope is that they will remain in Ireland and settle for a while, at least long enough to give benefits back to the Irish economy

Broadly speaking, the recruitment of non-nationals into Ireland was seen as a positive thing It helps, not only to increase the numbers in the Irish labour talent pool, but also to pass on valuable experience to less experienced Irish nationals in what is essentially still a maturing industry for the country This is particularly important for college graduates who need to acquire the necessary industry experience to be of real value to the sector In addition, Cultural Diversity in the workforce is seen as a big positive by overseas investors

In terms of overseas candidates, financial reward (not benefits) is perceived as the key driver for them They are generally not here to stay but, as mentioned above, they are especially valuable in passing much needed expertise onto their Irish cohorts One interviewee said that employers have a preference for Irish candidates as there is less risk involved With overseas candidates, there is a risk that they may not adapt or settle in Ireland Also, there are potential language and cultural issues

Some of the perceived barriers to overseas candidates are the excessive immigration rules in Ireland that are placed on non-EU candidates This can be a lengthy process and, in a fast-moving industry where speed of employment is important, there is a drive on at multinational levels at the moment to relax the visa rules to make employing such candidates much easier This is, to some extent, in opposition to the Government policy which (understandably with 15% unemployment levels) would prefer to 'protect our own'

Technology skills are in short supply globally and Ireland is in direct competition with, in particular, the likes of Canada, Australia and China for these skills These countries are actively and openly running campaigns to get these skills into their country to address their market shortfall Ireland has taken an opposite approach The IDA or Enterprise Ireland are not prepared to admit to skills shortages for fear of damaging Ireland's attractiveness and reputation for foreign direct investment But, as one commentator put it 'we are competing on a world stage the gloves should be off'

There is a need for more cohorts in the ICT sector. This does not apply only to overseas cohorts. The sector is predominantly male so, by definition, it immediately eliminates half of the potential candidates from the industry. Because of the high-skills requirements, it is also perceived that those from more disadvantaged backgrounds (who generally go into trades rather than college) are also predominantly excluded from the industry. The entry level to the industry is often at Level 7/8 college degrees even though, as one interviewee highlighted, in the long run all social classes even out in terms of business success. (This issue will be discussed under the Education section below). The recommendation is that we need to be much more open about promoting the industry, promoting the overseas skills requirement, and in promoting especially female and disadvantaged cohorts into the sector.

#### **5) On Ireland's attractiveness as a destination for nationals and non-nationals:**

There were polarised views on this from the various interviewees. From the Education stance, it was felt that Ireland is losing its edge. One interviewee stressed that there needs to be a lot more creativity and innovation in Education for to meet the FDI requirements. (Having criticised this, the same interviewee said that his university was excellent at courting US companies). If language was not such a big thing with US investing companies, it is very possible that they would have moved to Eastern Europe long before now. The view was expressed that university presidents are afraid to advertise the fact that the standards have gone way down and just how bad it is. If this is allied with the earlier issue that the IDA/Enterprise Ireland are also afraid to highlight the skills gap in Ireland, we potentially have a very difficult covert situation.

On the opposite side, the ICT industry believes that they are very well placed at present to capitalise on further FDI, especially from the US. Ireland is now seen as an IT hub for Europe from many perspectives (low tax, high skills, open business environment, etc). There are some criticisms but there is now also a critical mass for the ICT industry in Ireland. This is also the primary attraction for non-nationals into both the Industry and related Education over here. According to the Expert Group 55% of high-level skilled jobs are required to be filled from abroad. According to one interviewee, 80% of attendants on his Cloud Computing course are non-nationals. These are extremely high ratios which, certainly the Expert Group, believe to be unsustainable. The real challenge is how to keep the collective brainpower in the country.

One of the criticisms during the interviews was that the media are talking the country down. It should be much more upbeat. One commentator said that 'the optics are not great but generally when they come over they are pleasantly surprised. They can see that it's booming'. Another said that the focus had moved onto the ICT sector 'only because the rest of the economy is falling apart' and that many of the same issues, also present during the boom times, didn't even get a mention then. For instance, during the boom there were over 40,000 emigrating from Ireland but now comparable numbers are deemed to be dramatically newsworthy during the recession. Emigration is part of the Irish psyche and, if the talent later comes back into the country, (which invariably much of it does) it is seen as a good thing to have brought learned skillsets back from abroad into Ireland. There are no statistics on the numbers of non-nationals included in these emigration numbers who are moving back out of Ireland (as the Irish did when they emigrated) but the evidence is that many remain in Ireland and set down roots, pay their taxes and contribute to the economy and Irish society. But the competition for mobile international resources from other countries is a very real issue/threat and should be addressed as such.

- 6) **On Education** This was one of the more emotive areas and provoked very different responses during the interviews, some of which were very polarised. Those on the inside track of education were extremely critical of where the educational system in Ireland has arrived at. Those on the receiving end, in Industry, were more accepting of the current position. The Expert Group placed huge emphasis on this area and has set in place plans to double the student numbers in Computing and related disciplines over the next few years.

One of the overriding criticisms was the 'funnel' of high-skills students coming through the college system. In 2007, at the height of the Celtic Tiger economy, student intakes for Computing were at their lowest level, both in terms of numbers and entry qualifications (Leaving Certificate points). This reflected the unattractiveness of the ICT industry in the wake of the Dot Com bubble collapse. Since then more students and their parents have been directed towards safer havens – business, financial services, law, where better rewards could be expected on leaving college – all three of which are now experiencing their own issues in the wake of the Property bubble/Banking system collapse and subsequent recession. Some of the challenges are now how to attract students into the technology sector, especially as some colleges now have a much-reduced focus in that direction. This includes attracting females into technology disciplines.

It takes four to five years for students to come through the college system and a further three or four to gain the high-skills experience required by the ICT industry. We are now seeing the (predictable) results of this shortage of candidates coming through. The worrying aspect is that the funnel wasn't there ten years ago and it is still not there!

The levels of proficiency in Mathematics, in particular, for new entrants into third level has been heavily criticised, primarily because Maths is a reliable predictor of successful outcomes in technology subjects. Dropout rates from technology courses are much higher than normal college averages as a consequence. Poor quality in Maths, despite the introduction of Project Maths some years ago, is seen as a system failure rather than a third level issue. Even though it manifests itself at third level and the colleges have tried to fudge/mask the issue, the problem appears to be at second level, or possibly even at primary level. Recently the introduction of extra points for Maths has led to more second level students taking higher level Leaving Cert Maths, (although this is now being criticised for distorting the CAO points system for college places). A number of primary school initiatives have also taken place (the most mentioned was the Coder Dojo project to encourage young children into programming at a young age). One commentator, however, noted a historical disconnect between the various Government departments in the educational syllabus and the roll-out of technology initiatives which led, ultimately, to ineffectual outcomes. Also noted were the teachers skills where 40% of those teaching Maths at second level have no primary Maths qualifications and, more tellingly at all levels of the education system, resistance and intransigence when it comes to any change. Much of this is blamed on the teachers unions and the Croke Park agreement.

Allied with low Maths proficiency is a deficiency in foreign language skills coming through the system. If Ireland is to be an international IT hub, language skills are critical and many of the vacancies being filled by non-nationals reflect this.

There is much public debate about how this could and should be changed. Ruairi Quinn, the Minister for Education and Skills, is the person charged with this responsibility. The industry sources interviewed showed great confidence that, finally, there was a Minister at the helm who understood the issues with the resolve to make the necessary changes to bring about the required outcomes. This confidence was not reflected by other interviewees, including members of Ruairi Quinn's own political party. They were espousing more radical change to

the education system up to and including total reform. The words 'not fit for purpose' and 'mediocrity' being used in this context. Most outspoken was Independent TD, Stephen Donnelly, (also on record in Dail debates), favouring fee-paying universities and the creation of world class, Ivy League standard educational institutions in Ireland – which provoked a response from the Labour Government of being 'too elitist' and 'too expensive'. Labour favour affordable, universal college education citing the Scandinavian model (as opposed to the US Ivy League model). Their ambition is to increase the prestige of technology qualifications to match those of other professions such as Law. The issue of College Fees in particular is an emotive one, even with the recognition that fee-paying institutes do produce better results (although not sufficient to keep Irish universities in the top 100!). The flip-side of this argument is that if fees were to be re-introduced it would be middle-income PAYE earners (not grant-aided low income applicants or high-earners who can afford college) who would suffer.

The one point that all interviewees agreed on is that there needs to be a change to the current educational system. The budget cuts were generally perceived as a positive measure in order to force innovative change and co-operative initiatives upon intransigent institutions. This could also help force the issue of wastage on administrative, 'elitist', and non-educational expenditure and on the provision of unnecessary courses and move the focus of universities to where it should be – market-focussed education.

The Springboard transfer programme and the re-aligning of qualifications was universally welcomed, (not so the JobBridge & Outreach programmes). Skillnets was not mentioned by any interviewees.

The other point they all agreed upon is that there needs to be more done to attract kids and their parents towards technology courses. Improve Maths. Introduce computing at schools (even introduce on-line exams). Do much more PR around technology futures. Emphasise more the portability of technology skills and qualifications. Reach out to female and marginalized cohorts. Invest counter-cyclically in education to anticipate future needs.

## Discussion and Comment

The overriding intention of this paper is to place the current ICT skills market situation into a strategic HRM context. There are quite a range of significant HR issues that have been raised in relation to the employee lifecycle and resource management. The purpose of this section is to relate the research findings to the literature review to highlight key HR issues from an employee, employer and market context.

### (1) Employee perspectives

The findings support the view that employees are interested in training and career progression. They are motivated by exposure to IT projects, access to latest technology and learning new skills. For non-nationals, the primary driver is perceived as financial reward through salary, although, presumably, the other drivers still exist. Those entering the Irish ICT labour market from abroad, especially from Eastern Europe, may experience low starting salaries but quickly discover they are being undervalued in a market context and typically move employer within two years. Regardless, average industry staff turnaround could be as low as three to four years.

Many employees are attracted into the major multinationals where salaries are often more competitive. But they can become disenchanted if placed into a basic role 'silo' in 'corporate-land' with only limited access to latest technology. The attraction of the smaller indigenous companies is for a better work-life balance. They offer 'cool' roles and flexibility that may be unavailable at larger multinational level, although there is an expectation that they will also match multinational salary levels.

Employees see a very buoyant ICT labour market out there at present but there is a reluctance to move jobs without a 'real' reason to do so. The more risk-averse are uncomfortable to move preferring job security over career growth. This is in line with the Towers Watson 2010 Global Workforce Study findings. The risk-takers are still being a lot more cautious than during the boom, checking out the small print in contracts and all their options before making the decision to move. 'Real' reasons to move are down to individual perceptions. Poor working environment, long hours, higher salary, career dead-ends and lack of access to 'cool' roles involving latest technology have all been mentioned during the expert interviews as reasons for wanting to move. Targeted recruitment in local markets and overseas PR campaigns by some countries, notably Canada and Australia, in the global competition for

scarce skills appear to be the key pull factors. An already-migrant, non-national cohort have a high propensity for global movement but the desire to travel is also part of the Irish psyche. Government austerity measures are a push factor in this instance.

Some negative factors from an employee perspective are that the main skills gaps in the ICT sector appear to be towards the high-end positions and towards those requiring language skills. These positions exclude many of the students graduating from college. For these high-level skills, many employers, especially in the multi-national sector, are looking for a near-perfect fit into their advertised position and exclude many potential candidates. But, at the lower end of the jobs spectrum for college graduates, the major ICT employers are prepared to offer internships and research options to graduates with an expectation of full employment with a period of training and up-skilling required.

Overall there is a strong market for employees with the right skill levels to move job either in Ireland or abroad. The incentive therefore is for employees to up-skill to ensure mobility and career progression.

#### (ii) Employer perspectives

In a tight labour market staff retention is key to ensuring adequate resourcing to deliver on strategic goals. The findings by Acton & Golden (2002) are that training is desired by employees for career development but that it does not have any impact on staff retention rates. This is a potential area of some concern for employers in the current environment. In a situation where many employers are seeking an exact match for a job, there should be little need for training. Yet employees are expecting employers to give them sufficient training for to step up to their next position rather than for mastering their current one. This situation may be ideal for employers who can offer career paths but, in the current climate, the findings indicate that people are not being locked into career paths any more and the acquisition of transferable skills is the key to mobility. The challenge for employers is how to retain these highly mobile skillsets. The suggestion from the research is that employers should look internally to ensure that employees are not given any 'real' reason to leave. In particular, most people stay because they like the opportunities and they like their manager.

The implications of this for employers, (if they haven't already done so), is that they should be implementing HR 'best practice' into their workplaces. This is already the case with the larger multinational organisations but less so in the indigenous SMEs ('Best practice' in this

case is not in the strict HRM definitional terms, it could also be 'best fit' or 'contingent' HR practices) They should also be ensuring that managers are equipped with appropriate people skills In simple terms this means getting things right for employees from a HR perspective – the right direction, right environment, right job design, right work challenges, right motivators and rewards, right organisational fit, etc It means tackling HR from a strategic perspective to ensure that the business plans and strategies are complemented by appropriate HR plans and strategies HR needs to be right up there with the business Excellent employee communication and regular feedback are a prerequisite for this This could be through formal appraisal processes as suggested during the research Pro-activity in HR would appear to be the key to good HRM, and to be seen by employees to be doing this (and not just 'lip-service' HR) Performance based pay was mentioned during the interviews but other initiatives such as job enrichment or job rotation to ensure exposure to technologies could also be employed

A strategic approach would also be required for the proactive management of skills gaps arising either through growth or staff turnover Route to market is arising as a key issue for employers There are a number of considerations – cost, skills level, training period, but the overriding issue may well be skills availability Also whether local or overseas staff sourcing is required Strategic decisions need to be taken early on either

- (i) Buying in skills from the labour market, or
- (ii) Growing skills internally

Buying in has the advantage that recruits can hit the ground running with minimal training time However, if buying in, there is a high dependency on availability at the time the gaps arise In the current market this will not always be guaranteed and may necessitate sub-optimal hiring just to fill a vacancy Growing skills internally can help to ensure more certainty but involves a significant time element Growing skills means ensuring effective internal succession planning, effective retention measures and an efficient employee intake funnel for organisations This would mean recruiting at intern or graduate (or lower) levels, structuring appropriate training and exposure to technologies, identifying high-potential individuals, and grooming them for succession, which could take several years It may also require strategic alliances with learning institutions to ensure a steady supply of new recruits at ground level

The suggestion at the moment is that there is a combination of both happening Despite the media hype there does not appear to be any panic at Industry level Neither the recruitment

agencies nor the representative groups have indicated any major issues in filling roles from the available labour market once a reasonably flexible approach is taken and an appropriate time allowance is built in. This is not to say that there is a wider problem to be addressed.

### (iii) Motivation theory

Taking both perspectives above, the findings support the view that there is somewhat of a *status quo* in the market at present. Employees are reluctant to leave for trivial reasons and employers are trying reasonably to accommodate employee requirements. Much depends upon the skillsets the employee possesses, (they may be in a relatively powerful or weak position vis-a-vis the external labour market) but, from the interviews, there would seem to be some degree of reciprocal loyalty underpinning the psychological contract. Key determinants of the strength of the psychological contract appear to be dependent upon the employer's ability to match employee expectations on access to technology. Continuous training and up-skilling would appear to be more of an obligation on employers than an expectation in that its absence may cause employees to leave. Lifestyle choices also appear to be an employee issue – choose Security but restricted access to technology and long working hours, or choose Risk with certain working hours, more flexibility and technology access (which accords well with the Towers Watson (2010) findings).

Employers can generate strong employee engagement and EVP by using HR 'best practices'. Those that do so (even in a recession) are viewed more favourably as employees 'feel the love' and can experience strong connections with the company's goals. The contrary position is that those who chase 'Employer of Choice' accolades may often do this cynically for marketing purposes rather than genuine underlying HR reasons.

### (iv) Market drivers and the current Irish market

The labour market is not controllable by individual employers. It can only be tackled at a national level. While individual actors may make their own decisions, ultimately it will be macro supply and demand factors (mainly internationally) that determine industry requirements, size and the availability of suitably skilled employees.

Before arriving at any conclusions about individual actors, the current market situation needs to be put into a wider context. This is especially the case as the ICT sector is going radically against the trends in the other sectors of the Irish economy.

**Vacancies** The ICT sector, depending on whose estimates are used, employs 74,000 or 97,000 people. Job vacancies of 2,000 to 3,000 represent somewhere in the region of 2% to 4% of total employed. If we were to reverse our thinking and these same statistics were to have been issued in terms of unemployment, 2% to 4% would be deemed to represent full employment when allowing for structural issues (such as displacement and movers). As with the emigration numbers, the media have blown some of these statistics out of proportion. However, the unfilled vacancies are real – especially on the software engineering side – but there are much bigger reasons for their presence.

**Cloud Computing** With the advent of Cloud Computing we are looking at a paradigm shift, not just in the ICT sector, but right across all aspects of life. In a very recent speech at the launch of the National Broadband Plan for Ireland, Pat Rabbitte, Minister for Communications, Energy and Natural Resources said that ‘Internet connectivity is now as important for both employment and society as electricity has been for the last 60 years (DCENR, 2012, RTE News, 30/8/12)’. While Cloud technology is comprised of many already-existing technologies, the technology convergence is a brand new phenomenon, not only to Ireland but to the entire ICT industry. The enablers for Cloud have been in the process of being laid internationally for many years - fibre-optics, the Internet, data centres, shared software, shared platforms, network security, smart mobile devices, etc. The infrastructure is now already mature and has been happening relatively quietly in the background. But, as a concept, Cloud Computing has only really just emerged. Ireland, as a major ICT hub for Europe, has found itself at the epicentre of this phenomenon.

What has been remarkable (as with many new technological innovations) is the speed of adoption. The Microsoft/Goodbody report setting out the Cloud Computing possibilities for Ireland was issued only in January 2011. In its wake there has been a seemingly frantic re-positioning by many organisations not already in the cloud space, and even by those that were (e.g. data centre building and consolidation). The elements for ‘Infrastructure as a Service’ (IaaS) were already fundamentally in place, but the other aspect of Cloud computing – ‘Software as a Service’ (SaaS) with the proliferation of mobile devices and accelerated consumer demand – is where the explosion is happening. Hence, the major shift in emphasis within the ICT sector from hardware to software.

With many of the potential cloud computing companies already in Ireland, their rapid re-positioning required resourcing. This resourcing issue had been flagged by the Expert

Group for Future Skills Needs back in 2008, but its immediacy only became apparent with the advent of the Cloud phenomenon. Much of this was lost in the noise of an unprecedented Irish recession (complete with bank guarantees, construction sector collapse and IMF bail-outs) and blurred by dual economy messages (indigenous doom vs export boom)

**Challenges** The primary challenge faced by the Irish ICT sector (and the Irish Government) is to maintain its collective knowledge base. In very simplistic terms, this requires the application of good HRM practices as referenced above, but from a macro-economic perspective, in order to sustain the funnel of high-level skills into the economy. Essentially we are looking at the same issues the ICT employers are facing but at a national level – buy in talent or grow it internally (indigenously)

There are a number of aspects to maintaining this funnel

- 1) Competing to attract international skills, the so-called Global War on Talent
- 2) Re-channelling indigenous expertise
- 3) Adapting our Education system to match commercial needs
- 4) Enticing more cohorts into the industry
- 5) Up-skilling existing cohorts already in the industry

Some of these have been identified by the Expert Group but, based on this research, I would like to add some further comments

- 1) Competing to attract international skills. There seems to be a collective burying of heads in the sand on this aspect. While the Expert Group are urging Ireland to sustain its attractiveness for high skilled ICT staff (for both nationals and non-nationals) as a cornerstone of its reports, there is no plan in place. The IDA and Enterprise Ireland are trying to down-play the issue for fear of upsetting potential foreign direct investors. The reality is that many of those, primarily US, investors are already here in Ireland and are getting more upset and more vocal about the skills gap. I would perceive this as a more critical issue to be satisfied as ultimately this could lead to ‘off-shoring’ by these multinationals. Ireland is in a very strong position against its international competitors for talent. It already has the clustering effect of major international ICT players. It is already an international hub, if not *the* international hub, for the EMEA region. As such, it is not to be unexpected that, as a small country with a small workforce, it requires external expertise to service the entire EMEA region. Instead of down-playing the

issue, it can be delivered as a very strong positive and the public relations machine should go into overdrive in order to attract non-nationals into the Irish talent pool  
The gloves should indeed be off'

- ii) Re-channelling indigenous expertise There needs to be some realism about this issue The divide between high-skills and lower skills potential must be recognised For instance, it is not possible to take low-skilled construction workers off the dole straight into the high-skills ICT sector unless they already possess an appropriate skills base Some of the quick-fix initiatives, such as the Springboard programme that was introduced to divert skilled employees from an almost defunct Construction sector into a very vibrant ICT/Technology sector, would appear to have succeeded very well Other attempts to re-train Second Chance candidates have been less successful, mainly I would suggest, because the gap is far too wide for to easily convert candidates who do not have even a Leaving Certificate into the high-skills, knowledge economy sectors Filling ICT sector vacancies is not the solution to solving the national 15% unemployment crisis They are not the same issue and there should be a sense of realism about this
- iii) Adapting our Education system to match commercial needs As a small country competing on an international stage, Ireland's key competitive advantage has been its agility and flexibility Due to the long lead times to deliver skills to the labour market, this agility is especially needed in the Education system Long-range foresight with close links into Industry is essential in order to anticipate future market needs Our Education system has failed to anticipate It has been led by market demand for courses based on student perceptions rather than industry-led demand based on solid, long-range future planning requirements To continue to churn out Nurses for export and Lawyers for the dole queues is totally unacceptable unless they fit into some overall future plan, especially when there are other gaping holes to be filled While the Cloud phenomenon burst upon us very rapidly, the Education system has been extremely slow to react to criticisms that could have alleviated some of the current skills crisis – especially in relation to Maths and language skills Maths has long been flagged as an issue from many sides, including the OECD, the American Chamber, individual US multinationals,

IBEC Similarly language skills have also been flagged from a long way out but nobody would appear to have yet grasped that particular nettle, and yet many of the unfilled vacancies arise through non-English speaking positions. The seeming reluctance of university presidents and teachers unions to allow radical reform is understandable from a protectionist stance (especially in the current recession), but for our best and brightest not to admit to the problems in the first place and not face up to them, if that is indeed the true situation, is totally unforgivable. Adapting such a vital driver of Ireland's international success should not be 'like turning a supertanker', it should be more like fine-tuning a well-oiled machine.

That said, while arguments prevail at the highest levels about the fitness for purpose of our third level institutions and their inability to meet this unprecedented demand for skilled ICT staff, it is (and always was) unrealistic to expect that our indigenous colleges could produce sufficient numbers to populate an 8,000 job gap predicted by the Microsoft/Goodbody report, let alone the postulated 20,000 peripheral jobs. The speed of change and the consequent high demand for specialists could never have been filled from the college sector alone, or indeed by the indigenous Irish skills pool. It is entirely unrealistic to expect that what is a major pan-European IT hub operation could be resourced from a small pool such as Ireland.

- iv) Enticing more cohorts into the industry. Some suggestions made during the research were to increase female participation in ICT, to offer inclusive programmes for disadvantaged students, to lower the entry level into ICT from a 2 2 college degree to a Technician level qualification, and to accept that perfectly fitting 'A-Players' are always going to be almost impossible to find.
- v) Up-skill existing cohorts. This is happening anyway at both an individual and an industry level. Up-skilling is a key retention tool in today's labour market. It can offer internal progression to staff and enhance engagement levels to serve both employer and employee alike.

## Conclusions and Recommendations

This research was an exploratory study to attempt an understanding of what is happening in the ICT sector in relation to its high-level skills requirements. While the rest of the economy is struggling, this sector is extremely buoyant and continuing to report significant skills gaps. The issuing earlier this year of the updated report on the ICT high-level recruitment needs by the Expert Group for Future Skills Needs and the publication of the ICT Action Plan by the Department of Education and Skills have brought some of these issues into sharp focus. The Action Plan is multi-faceted requiring co-operative and concerted action from Government, the Education sector and Industry bodies.

There were a number of aspects to this research:

- 1) Public Policy initiatives – is this delivering real benefits on the ground from its high-level initiatives? What does the future hold?
- 2) Demographics – can Ireland continue to expect high-levels of high-skills immigration to support growth during the period it takes for the Public sector initiatives to kick in?
- 3) How can the indigenous ICT industry support its own short-term high-skills requirements?

The investigation was carried out through desktop research to explore current developments in the ICT sector and to gain insights behind the published statistics. The critical body of the investigation was carried out using semi-structured and in-depth one-to-one interviews with carefully selected experts from in and around the industry (see Appendices). The research broadly speaking validates the Expert Group findings and the ICT Action Plan. There were some gaps identified, especially around the overseas promotion of Ireland as a destination for high-skills employment opportunities and the lowering of entry criteria for suitable candidates into the industry.

What the public reports did not discuss was the bigger picture around the rapid explosion of the Cloud Computing phenomenon - a paradigm shift not only in the ICT industry, but for society in general - with Ireland as its European IT hub. While the infrastructure has been building for quite some time, the software development aspects have become a pinch-point, especially with the proliferation of mobile Internet devices. This is where the primary skills gaps have emerged – a situation that the media, industry representative bodies and some public representatives have made much of. Some endemic failures in the Irish Education system have not helped and resulted in shortages of suitably skilled college graduates into the

sector but, primarily, the skills gaps are not at this entry level but at the five- to eight- years plus experienced level. This is an influential level within the industry that is linked to the additional hiring and training of less skilled staff, including graduates. Many of these higher-level skills are simply not available in the country, most probably to do with the lack of maturity of the industry in Ireland compared to other countries. Consequently, a significant number of these positions are being filled by migrant workers from overseas – 55% according to the public reports.

Some of the concerns giving rise to this research were if it would be possible to sustain this level of dependency on migrant workers, especially with Ireland's possible loss of attractiveness in the wake of the recession. Also, with longer lead times to build a domestic funnel of cohorts through the Irish Educational system, would Irish industry be able to sustain competitiveness with the reported skills shortages?

The findings reveal some concern, but not panic (as the media would have us believe there should be), at the current situation. A number of interviewees were sceptical of the levels of reported vacancies, identifying employers seeking a perfect fit for the positions advertised as a possible cause. Also it transpired that not all of the ICT vacancies were for technical positions. Quite a number of them required language skills that were unavailable in Ireland.

In terms of the technical skills shortages, this would appear to be over-stated. Positions are being filled, not necessarily by Irish people, but with not too much angst either. They may take slightly longer to fill but generally, if a perfect fit is not insisted upon, candidates are available. There was an opinion that, as long as Ireland remains as an IT hub for Europe, (a factor heavily dependent upon the Irish low-tax regime and the clustering effect), it would continue to attract non-nationals into the industry. These migrant workers are an essential element in up-skilling Irish employees and, although some may remain only for a number of years, it is the skills transfer and diversity of ideas that is the critical contribution from their stay. The general findings were that there is a confidence and belief that the current situation will continue. While Ireland is attracting less inward migration generally, the Irish ICT sector is still a primary draw for both high-skills employees and technology students.

The recession in Ireland is working somewhat favourably for Irish employers in the ICT sector. It is making their highly mobile skilled employees much more cautious about moving job, so employee retention is high. This is in accord with research carried out suggesting that

in a recession staff prioritise security over career advancement. Those employees that are less risk-averse have no difficulties in finding alternative employment, often with several job offers on the table. Their primary reason for moving is for access to latest technology and because they don't like their manager. Work-life balance is also a factor – a reaction to long working hours. In the current market, employees need a 'real' reason to move so the onus is on employers not to present them with a reason. The lesson for employers is, where possible, to facilitate access to technology through projects and up-skilling, to engage them. Also to ensure that their line managers have strong people skills, that they communicate regularly with employees and that they employ HR best practices across their organisation.

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## **APPENDICES**

### **1 Government Sector interviews**

- (i) Stephen Donnelly, Independent TD
- (ii) Joanna Tuffy TD, Chair of Dail sub-committee on Education

### **2 Education Sector interviews**

- (iii) Dr Horacio Gonzalez-Velez, Head of Cloud Computing at NCI
- (iv) Professor Mike Scott, ex Head of Computing at DCU

### **3 HR Recruitment Agency interviews**

- (v) Peter Cosgrove, Director of ICT, Science & Engineering at CPL Group
- (vi) Caroline Browne, Managing Director of HRP Group

### **4 ICT Industry Representative Group interviews**

- (vii) Regina Moran, Chair of ICT Ireland and Managing Director of Fujitsu Ireland
- (viii) Maurice Mortell, Secretary of the Irish Internet Association and Managing Director of TeleticityGroup Ireland

## APPENDIX 1 GOVERNMENT SECTOR INTERVIEWS

### Interview # 1 **Stephen Donnelly**, Independent TD for Wicklow and East Carlow

Reason for selection Stephen is one of the few truly independent voices in the Dail. He is not a career politician and joined politics to try to effect radical change in Ireland. He is an outspoken critic of the IMF/ECB deal. As a graduate of University College Dublin (UCD), the Massachusetts Institute of Technology (MIT) and Harvard College, he is well-placed to comment on the Irish university system and its international reputation (as he has done in Dail debates). He also worked with the international management consultancy firm McKinsey & Company – the original publishers of the War for Talent. He is a member of the Dail sub-committee on Public Expenditure and Reform.

#### Detailed Interview

During the initial introductions Stephen explained to me that he may not be the best person to interview in relation to the current position on ICT skills or, in particular the publishings of the Expert Group. He suggested that the Departments of Enterprise or Education may be more appropriate. I explained my reasons (above) for his selection and he was happy to discuss his views at a general level rather than going into the specifics of the published reports.

**What levels of investment are being earmarked by the Government to improve the ICT skills base?** ‘There has been a 50% cut in the Education budget without taking into account the inflation effect (making it even greater). This is at a time when we should be investing more. We are destroying our education system. The education system is collapsing.’

One US engineering company rated it as ‘so bad that the undergraduates are unemployable’. And when they are looking for post-grads, ‘they don’t even advertise in Ireland’. ‘They say that they can recruit the equivalent of a leaving cert level student abroad and train them up within a few months to the same level as Irish graduates.’

‘Yet, we are in denial. An ex-President of one of our universities said to me that the universities are afraid to tell how bad it is because of the PR effect.’

When Stephen challenged Ciaran Cannon [Minister of State at the Department of Education and Skills] during a recent Dail debate on the fact that we have no universities in the top 100 in the world, he was shocked that the Minister said on public record that we don’t aspire to Ivy League standards for our universities, branding them as ‘elitist’ and too expensive.

(When I double-checked with him, he said that both TCD and UCD are now in the 100-200 range.)

‘We need to go to better universities. In Ireland we teach to Average. The Government actively rejects excellence.’

‘You are aware of the recent PICO [OECD] study which shows that Ireland has the biggest fall in educational standards in the world in a decade, and nobody is being held to account. Our education system is collapsing. It is not fit for purpose.’

‘Yet we hold onto the notion that we can’t charge for university education I have told students “you are in a mediocre institution” When I spoke to some Leaving Certificate students recently, I asked them Which would they prefer – to pay eight grand a year, fully covered with a zero percent loan repayable when they get a job, for an internationally valued qualification, or pay nothing and get a mediocre qualification?’

‘Our education system is collapsing around us right now and there is not much being done about it ‘If we don’t turn it around, this country will be screwed for the next three decades’ ‘It is in the process of being destroyed and needs money and reform’ ‘And the disappointing aspect is that we know what to do’

He went on to explain that Finland, South Korea and New Zealand have very successful models that we could follow 50% of MIT’s students are foreign because of its reputation Finland is particular invested in education when its economy was in crisis following the split from the Soviet Union ‘We are looking at a 60% drop to third level [funding] over the next four years

He believes that ‘Croke Park anchors the current working practices against where they are today We are anchoring failure against failure People are not interested in turning the country around We are trying to incrementally move from a failed system’ He cites that some years ago ‘the Department [of Enterprise] wouldn’t even answer the phone’ when McKinsey tried contacting them

[ENDS]

Interview # 2 **Joanna Tuffy**, Labour TD for Dublin Mid-West

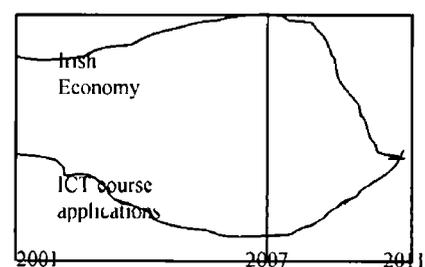
Reason for selection Joanna is Chair of the Dail sub-committee on Education and Skills

## Detailed Interview

During our opening discussion, Joanna referred to the just-released jump in CAO (Central Applications Office) points due to the introduction of extra points for Maths in the Leaving Certificate. Her very strong view was that college shouldn't be just a once-off chance after the Leaving Certificate. Why can't the colleges increase the numbers on a course to meet the demand? After all, it doesn't make any difference to the lecturer if there are thirty or fifty in a class. They should try to match the supply with the demand for courses and use that to target the dropout rate. There are less popular courses that cannot be filled (possibly technology) and yet there are particular kinds of courses such as Law where they are queuing up but there are no jobs out there. It's about status so we need to look at how to promote courses such as technology, science, computing to give them an equal status in people's minds. Talk them up, advertise them, promote them to increase awareness. The colleges need to be more flexible, especially for full-time courses that aren't filled. At the moment if courses are not being filled, the resource are already budgeted to be in place so they stay in place for the year even though people don't need them. The Government should give sufficient space for flexibility, and maybe offer the places to people on the Live Register with incentives to do the course. The model of education should be adjusted to deliver according to student needs. For example, full-time or part-time to meet with their family circumstances. They shouldn't discriminate against part-time when it comes to the fees.

**(Referring to the ICT Action Plan produced earlier this year to address skills shortages) You say that courses should be geared towards student demand. Surely it should be the other way around and target workplace requirements?** The Springboard programme is trying to address that. There are 6,000 places available for people to convert their skills. Also, there need to be more females. The likes of 'Women in Engineering' and the EU Equality agency are pushing for more women. At the moment they are being stereotyped. We need to promote this more in schools and online media and the likes, to offer role models. There are also high dropout rates. This is to do with Maths at second level. It's not very practical. They should modernise the curriculum to make it more practical. Introduce computer games like the Coder Dojo that was brought in by Minister Ciaran Cannon. They should also look at more conversion courses from not-related degrees like they used to do in the '80s and '90s. They were funded by the European Social Fund but there's not so much of that now. We should use this more and work with the EU on the Europe 2020 Vision for labour market needs. I'm not quite up to speed on the reports [referring to the ICT Action Plan and the Expert Group recommendations] so I would need to read more on it.

**There seems to be a leading and lagging effect in the provision of courses (illustrating this with a rough trend diagram – below) How can this be adjusted to have the courses completed to meet job market demands?** A lot of this is to do with biases in society. There was a collective delusion around the property boom. It's not unique to Ireland but here it was masked by the property boom. We were looking for a soft landing to achieve an equilibrium position. The Expert Skills Group was set up because they recognised the problem.



**That was back in 2008 at the start of the recession How come it took until 2012 to produce an action plan?** There was no political urgency From 2007 to 2012 the Government were more preoccupied with crisis management It was not properly strategic

**So they slashed the education budget Why not do something like Finland did when in recession and invest in education?** This was an unprecedented situation Finland was not as tied in as Ireland They had no bank guarantees and sovereign debt constraints I agree that there should be investment but we need help from Europe

**Why would Europe help us when there are ICT skills shortages right across Europe? They are already giving out about our low tax rates giving us a disproportionate advantage when it comes to American foreign direct investment** They have the 2020 Vision This looks very good on paper but it's not very substantial There is the ESF [European Social Fund] which gave us free courses in the Institutes of Technology We did it before, we can do it again

**Is there a willingness in the colleges to change?** The Institutes of Technology have a proven record The universities are less flexible They talk the talk but they can sometimes be patronising and condescending They are more elitist and not very vocational They could do more Like I was saying, why not just increase the number of places? Look at doing more part-time courses, community-based courses, Saturdays The Institutes of Technology do much more They have their Outreach programme The exception is NUI in Maynooth – they have more community-based programmes We need to put the universities under more pressure [to change] The Institutes of Technology have apprentice students on part-time courses but they can go on to do a degree and even a postgrad on a full or part-time basis But the universities are downplaying the trades In Galicia they introduced special needs education and eighty per cent of students could go onto third level We have a shortage of trade skills Tomas McGiolla, you remember him? [a retired Labour minister] He was very passionate about the VEC [Institutes of Technology] and believed that apprenticeships should get a broader third level education We need much more fluidity with courses (I mentioned Open Degrees where subject module choices are less restricted) Yes, they are a good idea We should leave the fluidity rather than streaming

**How practical is it to expect retraining of tradesmen into IT?** The Springboard programme is there There are lots on the dole so it should be possible to achieve But it needs flexibility It could be done through distance learning or Outreach or the community colleges A three-year degree is a lot to take on, especially when you have a family We have 'Pathways to Work' The [dole] sign-on should link to labour market activation

**Is the financial incentive there?** There are not too many options so we have to make different ones Many are caught in the poverty trap with no incentive to work The Labour Party policy is that wealth should be re-distributed through the social welfare system There are so many things, getting rent supplements, medical cards, etc We have to make sure that this doesn't re-distribute wealth the wrong way We need to maintain income but they should not be too comfortable on the dole Social protection and education are linked Joan Burton [(Labour) Minister for Social Protection] is doing great work in this area

**Are college fees a barrier to education?** We [the Labour Party] want to make sure that college fees are not introduced If fees are introduced it is not the lower paid (who can get

grants) or the higher paid (who can afford it) that would lose out. It's the lower, mid-range earners that are on PAYE that will be dropped out of the system.

**But there are already fees?** No. There is a registration fee but this is not the same as college fees. We [the Labour Party] are trying to ensure that fees are not re-introduced. It's better to have a registration fee that can be eliminated or reduced at some stage in the future. If you look at the US, which does have fees, it is an elitist system. Compare this with Sweden or Finland which is a broad, universal college system. It doesn't have to be elitist. It can still produce brilliant people. There was a Nobel Prize winner. He was a Japanese that was educated in the UK educational system in a Polytech. That was about two years ago. He got the prize for discovering those things you bury under the ground – fibre optics. In Sweden people live longer, they have a better environment. In the US it is much more divided and people die younger.

**Will the reduction in the education budget be a factor?** There could be savings made. There were a few hundred unfilled places in DCU, around four hundred, but they were being funded anyway. They should keep or increase the spend on education but there is a lot of money wasted. There are places at the top with inflated salaries. I don't agree with all the luxuries in colleges. All the pomp and ceremony. It is unnecessary and it is discriminatory. Garden parties, Commons dinners and the likes. A lot could be saved. For example, the Provost in Trinity gets his accommodation and living costs paid. The spend is not always towards education. They could manage better. Cutting funds forces that. There is a new grant system – Student Universal Support Ireland. They could put more students in classes. I don't particularly care about student teacher ratios. They could use online. Try doing more with less staff using technology. There could be online lecturers. We can cut costs by using technology and at the same time give more flexibility.

**How come we didn't anticipate the current skills shortage?** How can you predict what will be needed in the future? Government Ministers have certain biases. The ESRI have blind spots. We've had Labour think-ins. But it evens out. For instance the Financial Services Centre in Dublin. We were delusional about the boom, that it would be unlike any other boom. And we still have the same policies in place because the Programme for Government has the same ideology going forward. I didn't agree with the Programme for Government. I didn't believe that Labour should have gone into Government with Fine Gael. We could not get our programme in the way we wanted it.

**They are saying that the ICT Action Plan is 93% implemented?** That's probably at a superficial level. Much of it is spin. I'm dubious about internships where people don't get paid. We're better with Springboard. This gives individual benefits and the general trend is that we are making in-roads. There are over three hundred courses but there's no sense to some of them. Trinity are still talking about a pilot scheme to get into Law. The Government should force the colleges and use funding to incentivise and disincentivise.

**Are they? Is Ruairi [Quinn, Minister for Education] doing enough?** He's being restricted by the [Fine Gael] Minister for Finance. He won't increase the Universal Social Charge or income tax. Joan [Burton] had to cut back on Social Welfare. Ruairi had to cut Education. They were the two biggest spending departments, so they had to cut [with prompting in relation to Brendan Howlin/ Brian Hayes]. The Civil Service are down. There are eight thousand people gone. But the Programme for Government is flawed. We could fight more with the colleges.

**Is he getting any co-operation from them?** They're giving out now that Maths is distorting the points system. This would need to be investigated. But that's nothing new. It's an ill-informed debate. He's having a row at the moment with Paddy Prendergast (Head of Trinity College)

**Should this not be the job of the HEA [Higher Education Authority]?** The HEA only suggest. They can't enforce. It's down to the individual colleges.

(At this point Joanna explained that she had worked in the Institute of Technology in Kevin Street, and that her father, now a Councillor, had been a senior figure in the college/VEC)

The VECs are more oriented to the labour market. But how are they to know what the market will require? They have the Expert Group and the ESRI, etc., but Ireland is a service economy and I'm not sure how sustainable that is in the longer term.

**How can we attract non-nationals?** (ignoring my question and continuing on the previous one) We don't use our existing infrastructure enough. The buildings. The schools. The personnel. And there's a lot of intransigence. Conservatism. There's a lack of challenging of ideas. And there's fear.

**Fear?** Yes. They should be motivated to change, not to stay. The problem is that we [the Government] have centralised power. We have untrained advisors who don't want to frighten the horses, who don't want to upset the media. It's a presidential style - Leaders, advisors, spin doctors who are playing up to the media. We need to reform the political system. Not change the electoral system or abolish the Seanad. We need to change the system at the top. The ordinary TDs should have more power. Local issues are just as important and absolute power corrupts absolutely. This is a smokescreen. We have a cynical media but they are not sceptical enough. They are being populist and emotive. There was a press statement yesterday about the [Trinity College] pilot scheme interviews for Law. Why Law when it's in the bin? Why not combine, say, Computers and Law? Things are very media driven. They are spindoctor driven. There's not an in-depth debate.

For colleges it's about prestige. Their motivation is the rankings (which are very arbitrary). Their focus is on private funding and research. And the primary job, the education of students, undergraduates is being talked down. They should focus on this and not R&D.

**With its new single campus will DIT go the same way?** I think it would be wrong to change it from a college to a university. Look at MIT - it's still an Institute of Technology without any loss of prestige. Look what happened when DCU became a university. The real challenge is how to raise the status of technical education without the need for elitism. We're not a class society. We're better than Britain in that way. We have a less class-based education system and we need to maintain that. Ruairi is not as favourable towards the VEC sector as others so I don't know if he will but I hope so. He would want universities to keep their autonomy, but I'd lean more towards the VEC. It's a similar situation in Waterford. People were asking if WIT [Waterford Institute of Technology] should have university status. I wouldn't be in favour but prestige is a real problem and those who should know better buy into that.

We could have a binary system – Technology vs Arts & Management degrees Not a two-tiered system in terms of prestige Besides, employers don't discriminate For instance at the ITT they are quite innovative I know a guy who re-trained there He was working in Pest Control and is now a Production Manager at Intel So it can be done At the moment it's individual colleges driving themselves and not the Government driving policy We don't see them affecting policy at Trinity or UCD, maybe UCC or UCG, where half the college places are but we do in the other half with the likes of Limerick

**How can we influence people to take technology courses?** We have to look to the schools Also at Second Chance students and the long-term unemployed But Labour is only in Government for a year and a half and that time has been mostly about budget, so there is scope for more strategic thinking

I only found out about the postgraduate loan scheme in the news It was just announced but I hadn't heard about it I am critical of this but less critical than I would have been about an undergraduate loan scheme I don't like the idea of kids coming out of college with a massive debt hanging over their heads before they even get started

Springboard was a quick fix solution There were about six thousand places up and running immediately There was almost 100% take-up But we need to look at the quality of those courses and what sectors they are in 'Pathways to Work' is another good scheme JobBridge, the internship scheme, is ok for work experience but it won't address the skills shortage FAS is now part of Joan's area It's now in the Department of Social Protection and has been renamed to Solas It should be that everyone has a right to employment and training

**Can they produce the same calibre of students?** In Arts, Social Sciences and Commerce, yes And at Leaving Cert Science and Maths, it is manageable We have a proven track record in technology through the 1990s We attracted companies such as Intel, Microsoft and HP, but we lost our way then It will be more difficult with construction workers from different backgrounds There is a gap to get them up to Leaving Cert level There are basically two pools of people – graduates who can't get jobs unless they are very specialised, and the unemployed, mainly mature students who offer great potential The IT sector is seen as a young sector We need to get rid of that bias It should also be open to petrol station attendants and the likes Many foreigners are staying in Ireland They are looking for citizenship and are not returning home They are getting rooted in Ireland, a bit like Irish people who went away to the US We like to help people here There are many undocumented with no status – we could offer them work permits, we could look at our immigration system and, a bit like in the UK, we could look at some sort of an amnesty It's not done here at the moment but we could tie it into education and the labour market requirements We should aim at the immigrants who are already here rather than herding more in

**According to the Expert report, 55% of senior positions require experts This won't address that issue** No, but we have to make Irish people part of the picture too

[ENDS]

## APPENDIX 2 EDUCATION SECTOR INTERVIEWS

Interview # 3 **Dr Horacio González-Velez**, Head of Cloud Computing at the National College of Ireland

### Reason for selection

The National College of Ireland (NCI) is in the process of developing a state-of-the-art Cloud Competency Centre. This has been developed in consultation with leading ICT industry players, such as Microsoft, IBM, Fujitsu and Google and also indigenous ICT organisations. The aim of the centre is 'to help bridge the recognised skills shortage in the web technologies and cloud computing areas'. It is due to begin operations in September 2012 in conjunction with a newly launched one year full-time MSc in Cloud Computing.

Dr Gonzalez-Velez has recently been appointed as the Head of Cloud Computing at the college. He is an award-winning lecturer and researcher in 'parallel computing' and a recognised expert on cloud computing for the British Computer Society (BCS). He had a strong ICT industry background before moving into research and describes himself (on LinkedIn) as a 'computational scientist with a marketing twist'.

### Detailed Interview

**What do you understand by Cloud Computing?** 'Cloud computing is the conjunction of different technologies readily available'. There followed a detailed explanation of the evolution of the technology, highlighting that it is not new, some of its roots going back to 80's, 70's and even 60's technology. The key elements are the convergence of the ability to supply computing from different providers (software on demand), the ability to supply resources when needed ('elasticity') and the facility for common access.

**The IT industry has continuously gone through phases. Is this just another fad?** It is best defined in terms of what it can and can't do. It allows for the exchange of computational resources through networks (both private, public and, increasingly popular, hybrid). The key difference is the 'elasticity for resources in demand to be up-scaled automatically without additional human resources'. This does not make it necessarily cheaper (e.g. solar panels).

**If it's using existing technologies, why is there a need for specific cloud computing courses?** If I can re-tell an old joke that I told at a conference to the British Computer Society about object-oriented IT environments: 'Object-oriented environments are like teenage sex. Half of the people talk about it but have never done it. Most of the rest have tried it but done it badly, often with consequences for the rest of their lives'. It is a similar position for cloud computing. In Ireland there is the possibility of a skilled workforce, somehow (and I say somehow) the technology is there and there is a requirement for skills to adapt to this new technology. There will be new roles arising in companies, not just IT outsourcing (which most IT managers perceive as a threat), as companies move from private clouds to public clouds. This requires both education and applied research.

The MSc in Cloud Computing will be a one-year 'hands on with theory' course. It will work with industry in placing graduates. The dissertation will be in an industry background – both Microsoft and Dell have already offered internships. The intention will be to develop real proofs of concept in-house at a company for a project that is of real interest to that company. The course offers the possibility for industry-based dissertation, entrepreneurs (at the college's incubation centre with Cloud companies there) and research.

When I was in Scotland, the placements were like a probationary period, many of the students stayed at the company. They didn't go back to the university – they continued their dissertation from the company.

**How many will the course cater for?** It's over-subscribed at the moment. There will be 50 students enrolling and 25 of them will graduate in year 1.

**Why the huge drop-out rate?** No, it's because some of them will be placed, they will complete the remainder of the course during year 2.

**If it's a one-year course what prior qualifications will applicants need to be accepted?** A 2.2 Degree in Computer Science or IT, or a cognitive discipline with an IT background – Physics, Maths, Engineering – with industry experience.

**A full-time only course will exclude many in industry looking to up-skill?** Next year there will be a part-time programme. HETAC wanted us to go with just a full-time programme initially to see how it works out.

Anticipating my next question, Dr Gonzalez-Velez continued to say that the expected demographics would be 80/20, 80% non-nationals (predominantly Indians, mentioning two major companies in particular) and 20% nationals.

**Why come to Ireland for this education?** Ireland is possibly the best country for cloud computing. The industry is here. On 23<sup>rd</sup> March the Prime Minister [Taoiseach] announced in New York that Ireland is the Cloud Capital of the world. Six of the ten commercial carriers are here. It has the connectivity. It's like a hub – you can travel to anywhere in Europe from Dublin Airport. It is English speaking. It is London without the poshness or the price. On the educational side, the course is in English and also with industry links (students are interested in real world scenarios).

He pointed out that there are only three other research centres in Ireland – Cork (with direct EMC links), Clarity (a joint DCU/UCD research project with 100+ students) and CloudCore (DCU). The NCI centre will offer both Applied Research and Industry links.

(At this juncture, Dr Gonzalez-Velez disclosed some confidential information about some prominent participants for the launch and guest lecturers that cannot be disclosed yet but will, most certainly, enhance the prestige of the centre.)

As such, it will offer 'best of breed university' and practical actual industry 'architectural sessions' to develop solutions for customers, not artificial in-house labs. Students will require skills for problem solving so they need real deadlines, budget constraints. It's not just about the technical aspects but the commercial decisions.

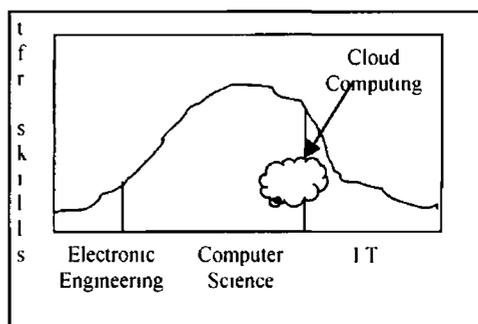
**One of the recommendations of the Expert Group (referring to the Future Skills report) was that Irish universities should collaborate more rather than compete, to offer Ireland as a centre of excellence. Will you collaborate with other universities on this?** Universities have to compete to attract new students. They compete on brand and price. You have to have diversity in the educational sector. The Government are already forming clusters of excellence for 'best of breed'. I would be open to the idea but it is not so clear-cut. There are skills and cultural differences between universities. NCI is not fully private, it's a not-for-

profit organisation that reinvests any profits back into education. It is not a public university either. This means that it is more flexible and can make decisions faster. The Cloud Centre decision was made in December 2011 and I signed my contract in April 2012. The programme and research will launch in September. Six months from idea to delivery. This is industry standard timings, not academic.

**What are the expectations of the industry contributors from the Cloud Competency Centre?** People with the right skills – Software as a Service (SaaS) and Infrastructure as a Service (IaaS). For example, Dell have ten open positions that they cannot fill. They can't even get people to come to the interviews. They didn't turn up.

**Will you need new teachers?** The School of Computing have 14 full-time academics ('computer scientists' I call them). They also have 50 associated lecturers from industry (IBM, Microsoft, Dell, Fujitsu, Deloitte, Anderson and some SMEs) who can bring in their knowledge from outside.

[In a version of the diagram to the right, mapping courses to transferable skills – (Reference ACM ICEE 2005, CS Programme and Curricula Development) – he explained the relationship between the new course and the expertise currently available on existing courses]



**Microsoft (referring to the Goodbody report) have predicted huge job growth in Cloud computing. How will NCI react to this?** NCI is not in the mass market, it is a niche player. There are approximately 150 Computer Science students. For Cloud Computing there will be a maximum of around 100 full-time and 100 part-time students, (except if there was a strategic alliance).

**So you will effectively double the outputs?** Yes. Cloud will become mainstream. It will be embedded into Computer Science programmes. On the roadmap for next year we will also include Data Analytics, possibly as a Masters, and we are also looking at other specialisms.

[ENDS]

#### Interview # 4 **Professor Mike Scott**, ex Head of Computing at Dublin City University

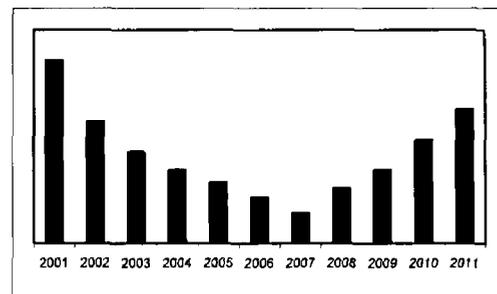
##### Reason for selection

Dublin City University (DCU) established its School of Computing in 1980 and has been perceived as one of the more innovative universities in Ireland, especially for IT. It has close industry links and currently hosts on campus, amongst others, CLARITY, (the centre for Sensor Web Technologies), CNGL (the centre for Next Generation Localisation), LERO (the centre for software engineering) and Sci-Sym (the centre for Scientific Computing and Complex Systems Modelling). Recently, it also opened the CloudCORE Research Group Centre, a centre dedicated to research on the Cloud phenomenon in four main research groups – Business Models and Best Practice, Security and Governance, Cloud Services and Autonomic Computing, Cloud Applications

Professor Mike Scott is the ex Head of the School of Computing. He has been with DCU for thirty years since it was first established as a National Institute of Higher Education and has been part of its rise to university status. He retired in March earlier this year (not yet replaced) and now works part-time as head of research for Certivox, an incubation company in DCU's INVENT centre.

##### Detailed Interview

Following our initial introductions, Professor Scott showed me a bar chart of CAO (Central Applications Office) college applications/preferences relating to DCU – the diagram below is my visual of the broad shape, not a replica, of what he showed me. It charted the interest in ICT undergraduate courses since the Dot Com bubble around the millennium. 2001 showed a high interest against high leaving cert points. 2007 was a low-point in interest, against low entry points. Professor Scott explained that parents actively discouraged their children from going into IT following the collapse of the industry in the wake



of the Dot Com bubble burst. It was seen as a precarious industry and undergraduate efforts were best put into Business subjects where there were better future prospects. The curve has gone back up in recent years and he expects 2012 to be back to the 2001 levels.

**Why the re-emergence of interest in IT? Does it reflect the cyclical trend of the industry itself?** There is a genuine shortage of IT people. Parents are now pushing their kids in. There was a huge lag in the system and the system hasn't responded. There's a general background noise around IT which is slowly starting to be heard by parents, kids. The madness of the last four or five years where people all thought "we're going to be rich and then we'll holiday in the sun" has gone. The relationship between hard work and reward had broken down. IT was seen as nerdy, for the socially poorly equipped. IT wasn't sexy in the mid-Noughties.

We dumbed down the courses to keep the numbers up. We lowered the points, reduced the requirement for maths and software programming. The ITs [Institutes of Technology] were particularly guilty of this. Maths has completely broken down at second-level and we're not inclined to fix it at third-level. It's not just an Irish problem but right across Europe. Software Engineers in Ireland are not particularly well-educated, they're not prepared to work hard either. We [Certivox] went to Bulgaria, they can't get quality [jobs] and there's a lower wage bill. But it will come back around again. It'll come right. It's like turning a supertanker.

It's four years from CAO to graduation and then another three years before they can reach a senior level. The universities are slow to react. Their financing is dependent on numbers, and the numbers went right down. Now there is a recruiting ban and people are not being replaced. The School of Computing was the biggest department in DCU, now it's one of the smallest. Nursing and Public Service have replaced it. For Nursing they leave the university and are put straight on a plane.

Education is not an area you want to cut back. Universities should be ahead of the curve, not just following. Short-term we can fill the gap with immigrants. This will make it easier to fill the gap. It's pretty bad, but we're turning the corner.

**Should universities not be anticipating future trends maybe 5 years ahead?** Universities should be counter-cyclical, but it's not. It's down to the numbers. The lag in the system will catch up eventually but by then it may be too late. The multinationals will leave Ireland and relocate to the likes of Bulgaria whenever they can get over their hang-up with this language thing.

The Department is world class. It is shrinking, but excellent. The university was not as supportive as it might have been. Most university Presidents and Vice-Presidents are from non-computing backgrounds. They don't really understand computing. It's not very good from a short-term PR perspective. With Law and Government you can put a commentator from DCU up in front of a camera to comment on the state of things, you can't do this with a computer person. Presidents work off a warm and fuzzy feeling of the here and now.

There are seven independent universities in Ireland<sup>1</sup> but they all work together. I think of them like a chain gang, where they all shuffle in one direction and then they shuffle off in the other. There are consortiums set up between universities – TCD and UCD, DCU and NUIM – but then nothing much happens and they tend to be forgotten about.

It needs a different environment, with fees and everything. It costs a lot of money – sports facilities, support services – there are more administrative staff here than academic staff. What we have is a high cost model of higher education. It's just not sustainable. In the UK they pay £9,000 per annum in fees. They have an elitist structure. But Education can be very simple. It does not have to be precociously expensive [he related back to his teaching days in Malawi]. In the West we have made higher education an unsustainably expensive process. They are obsessed with rankings. Most of our researchers are not from Ireland but from Eastern Europe. They produce quality software engineers but this can't be sustained. It will crack. It will be like the US where online education has taken off. I just read an announcement that UCD were opening a new fifty-metre swimming pool. This is the US influence. It drives up the fees. It's supposed to be about education. It needs real reform. People just want to tinker around the edges. What it needs is for one of the seven university presidents to break ranks.

**What do the research centres contribute to industry?** Multinationals are all jostling to form special relationships with universities. They want first call on the best graduates. And they want their own research free. DCU is good at that. It is part of their founding principles to get close to the market, to get down and dirty with industry.

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<sup>1</sup> TCD, UCD, UCC, NUIG, NUIM, UL and DCU

CNGL is closely tied in with industry. The language thing in Europe is massive for them. We give a good balance. CLARITY is enormously successful. It has helped joint applications for FB7 funding. Cloud CORE was introduced just as I was leaving.

**Is this just a fad and going with the trends?** The President said that we had to do something about it [Cloud]. The doors were open so we fast-tracked it. We used our connections with industry. We got the funding in and the space. Sometimes we can react quickly. Origin to set-up in three months.

**Why now? Why not a few years ago when Cloud was first emerging?** It's all to do with funding. If it's trendy, new, the coming thing, then it's easier to get the funding. If you throw in the word 'cloud' into something it can get through much more easily.

It's also part of our Outreach programme. We can get workforces up to speed with Cloud technology. We are opening this as educationalists, not just for research. It can give companies a quick start into Cloud Computing.

**In terms of numbers, how many computing students are there at DCU?** Around two hundred.

**How many went on to graduate or to do a post-graduate?** There has been trouble with retention. Half of the students drop out after first year. And the papers make the most of it – DCU computing has the highest dropout rate in the country (Irish Times) - We don't see any point in keeping them there if they're not going to make it all the way. There are bad things happening at second level. It causes tension in the system.

**How many postgraduates do you have?** Is this research or taught programmes? We do both. On our taught programmes we have about forty doing the Security qualification but there are other qualifications too. We assume they have maths, that they can programme, but that is not the case. We have to dumb down the courses and accommodate them. We take the emphasis off the programming side. At undergraduate level we do a remedial Maths course but at Postgraduate level you can't start teaching them primary school maths (explaining a simple maths test – factorise  $xy^2$ , circle prime numbers, etc - he does with all new students). In our research centres, we don't even recruit our own. We go to Eastern Europe. They do world-class research but it's of no benefit to this country.

**How can this be corrected?** It's a problem at second level. You've heard of "Project Maths". This was a political fig-leaf. It was three people sitting around and a very ropey website. There was no real plan to it. It needs fundamental root and branch reform. But we don't do that.

**Who can?** There is a drumbeat of negativity around Maths. There are too many people who say "I can't do Maths" or "I hate Maths". It's almost something they seem proud of. You wouldn't see them standing up like that and boasting if they were illiterate. "I can't read or spell". If you left it to our own devices, we would have no maths [in Ireland]. Thank God for outside interference.

It's all the special interest groups out there – unions, teachers – they're not budging. I mean the unions are just doing what they are supposed to do but there are teachers teaching maths.

with no maths qualifications I have no real insights into second level – I don't have any kids - but there's something broken there

**I see DCU has dropped down the world rankings from the 300s into the 400s?** There's a way of rigging that. For example, the number of academic staff educated outside of Ireland is seen as a positive. All the Northern Irish staff were asked to put themselves down as UK and not Irish. I refused. With any system you game it. It's all about the quality of the academics. Expertise. IP [intellectual property]. Brilliance. That certainly hasn't changed [at DCU]. For the wealthier universities it's about money. You can buy yourself up the rankings. Staff to student ratios, etc. It's all about money. Look at the top ranked universities. Universities like DCU do not make any money except the Government headage payments.

**But DCU has risen up the 'new university' rankings table?** They're always looking for an angle. Back in the early 80's the NIHE innovated every day. It turned education upside-down every day. We wrote our own courses. I don't know how we got away with it but they left us alone. We tore up the rulebook and shook up all the universities in Ireland. Students were leaving them to come to us because we were highly relevant. I've looked at the computer courses today and they are all copies of what we invented in the early 80s. Then somebody decided we should become a university – not just political will but academics looking to be associated with a respected institution. Then it descended into mediocrity. We became one of the crowd. They followed international best practice. The question is just who to follow. And, in my experience, if you aim to be part of the pack, you end up at the end of the pack. We were really spoilt and they took all of our toys away from us. B\*\*\*\*\*s! If I can quote from an old mentor of mine, Michael Ryan. "Once the armchairs came out we were in trouble"

**(I mentioned the Goodbody/Microsoft report)**

There are seven national universities. It needs someone to break ranks. In the 80s when we set up the NIHEs at Dublin and Limerick, we pulled multinationals into Ireland. I remember meetings with top US executives and they were impressed. We were bright. We were hungry and we were cheap. There was a confluence of interests between the US and Ireland. We were doing the real stuff. Not academic. It needs a novel approach.

**What is the leap we need to start this?** Maybe we set up an elite institution from the start where nerdy is good. Where the campus has no bar, no swimming pool.

**No bar in an Irish institution? I don't think you'd get away with that.** No. Probably not. We take a market approach to education. Rather than the system, it is the lecturer's fault if students fail. Also there's the problem with fees. We want to educate hungry kids, not rich kids (citing an example of eager Chinese students sitting in the first few rows of his lecture hall, and having to lower his voice deliberately for the Irish kids at the back who were head-down and hungover). We have to make education free. Get rid of the swimming pool. And what about the library? These are objects of huge prestige for universities but not necessary. The infrastructure costs are just irrelevant (referring back to his basic teaching to earnestly enthusiastic kids in Malawi).

**So, are we stuffed?** More students are getting the message through that they have to work harder. During the Celtic Tiger 2007 was our lowest year and I felt sorry for the kids. They didn't understand. Everything was so easy out there. But this will eventually be flushed out of the system and we will make a come back in three to four to five years. Short-term the situation is bad. Longer term I would be much more optimistic.

The present system needs reform. We are settling for mediocrity. We need courageous leadership. Even something simple like incentivising particular courses. For instance, at the moment Law and Government, Nursing and IT course fees are all the same. How about increasing the cost slightly of Law and Government or Nursing to discourage away from them into IT?

**Where is the spark for this going to come from?** Not from this Government anyway. Not from the university presidents or government. Ruairi Quinn will not risk anything dramatic. And this is what is needed or else we will stagger our way to recovery. We need to differentiate ourselves (as in the 80s) but we're not. It needs someone with the balls to do something novel and new. But maybe we don't deserve it right now. We're not showing enough bottle.

[ENDS]

### APPENDIX 3 HR RECRUITMENT AGENCY SECTOR INTERVIEWS

#### Interview # 5 **Peter Cosgrove**, CPL Group

##### Reason for selection

CPL is an Irish quoted company and the recognised market-leading organisation in Ireland for recruitment and HR outsourcing services. Their traditional focus was Computing (hence CPL – Computer Placement Limited) but aggressive growth has seen them acquire many competitors in the Irish market to diversify into all market sectors.

Peter Cosgrove is the Director with responsibility for ICT, Science & Engineering. With 12 years senior management experience in the recruitment industry, he holds himself out as and 'Recruitment and Career Management Expert'. He is a recognised commentator on the sector.

##### Detailed Interview

During the initial introductions, Peter confirmed that CPL is the market leader in Ireland.

**How many vacancies are you currently trying to fill in the ICT sector?** 'Around 500+ We have 40 recruiters, each working on around 10 – 15 jobs at any one time for infrastructure, software developers and project managers', but there are also many sales and administrative jobs in IT companies.

##### **Are these for bigger market players or smaller entities?**

'A cross section right across the entire industry. Multinationals and smaller companies as well.'

**Are [recruitment] agencies the preferred route to market by the big players?** Yes. He mentioned one or two big players by name, but identified two notable exceptions of the top companies [named, but names omitted] who go directly to the market using the Internet and Facebook. Some of the multinationals have the ability to recruit abroad from their local offices there and sometimes choose to do so for specific skills where they have experienced difficulties filling vacancies in the past.

##### **There is a lot of talk about skills gaps in the ICT industry. Are you finding jobs hard to fill?**

He said it can be slower sometimes to fill some positions, especially for software engineers and developers. He attributes this to ICT companies being cautious and looking for (and being prepared to wait for) a perfect candidate that fits their exact profile – what he calls "A-players".

Elaborating on this last point, he noted that one major multinational in his view de-selected potential candidates by insisting on a minimum of a 2 1 college degree rather than looking at their experience. He pointed out that by the age of 50, success was equally represented across the full A,B,C,D,E spectrum so college achievement was not necessarily a valid indicator of suitability.

He also said that companies are more likely to retain staff, that there are less movers.

When this discussion moved onto **the quality of the graduates from the Irish education system** (with reference to the Expert Group findings) he said

‘With IT grads there are no problems but the market needs are for candidates with 3 to 5 to 8 years experience’ ‘The funnel was not there 10 years ago for IT grads, most went into construction’ Adding that ‘the funnel is not improving’ He specifically mentioned the Springboard programme as being ‘significant’ ‘The 5 to 8 years experience does not necessarily need be in IT, it could be Architecture The challenges are that not everyone can move into IT’

**Is there a high level of movers in the ICT market at present?** No

**Why not, with a booming market out there?** ‘Most people are worried about moving jobs People are risk averse Wherever they join there will be a probationary period and they will be the last in, so first out in a downturn They need a “real” reason to move’ ‘The market is different now There is less disposable income More risk’ He also added that organisations ‘don’t generally hire from competitors’ because they have found that, in a short-skills market, that this can become self-defeating

**Is this placing upward pressure on salary levels?** ‘It’s less competitive than it was More within the multinationals than the Irish companies But many don’t want to work in the multinationals They offer basic roles, not “cool” roles The best roles are not in the big organisations For instance, Eircom opportunities are better than Google because they give better access to latest technology Most people stay because of these opportunities and because they like their manager Why would they join Google and work long hours, 12 hours per day, when that is not the case in Irish companies? It’s a lifestyle choice’

**Can the Irish firms compete salary-wise?** For software development and engineering there is a clear link to the revenue stream so rewards can be competitive It’s not so well defined in standard IT manager or Infrastructure roles But we’re not comparing like with like [between multinationals and Irish firms]

**So, how are the positions being filled then?** We are actively looking overseas through advertisements and LinkedIn We have a candidate database of overseas people built up over 25 years in the market Job fairs are also used

**In the light of the economic recession and negative press, do you have any difficulties in attracting non-nationals into Ireland?** ‘The optics are not great but, generally when they come over they are pleasantly surprised They can see that it’s booming the companies [multinationals] will draw them They offer global mobility’ ‘They are not coming to Ireland for life’

He added that ‘most companies prefer to hire Irish [people] first’ ‘The risks from abroad are much greater This brings a hugely added external factor that is important There is also the language barrier’

**Is this reliance on non-nationals a cause for concern?** ‘Hiring from abroad is not an issue at senior level It’s important to have a combination from Ireland and abroad’

He went on to explain that he sees Ireland as a hub for the IT industry Non-nationals ‘won’t replace Irish people They help to build our skill-sets locally’

‘Initially there were challenges to Polish workers, fears that the money would be sent back to Poland This is not the case They have settled down and are paying taxes They are putting money back into the [Irish] economy’

‘The companies coming to Ireland want a diverse workforce The Irish have always exported people There were 40,000 emigrating at the height of the boom but it was not an issue at that time It is part of the Irish psyche to travel’

Overall, he sees migrant labour as a ‘positive that has brought skill-sets here’ He believes the biggest issues in relation to vacancies are on the ‘multilingual side’ ‘Irish people are not learning foreign languages Languages should be taught as subjects from primary school’

**At a macro, infrastructural level what would you most like to see changed for the future of the industry in Ireland?** ‘Improve the use of technology in schools Increase the numbers of computers, give more access to iPads, to show kids that computers are not just for games Computing should be made part of the curriculum but the teachers are the problem’

[ENDS}

## Interview # 6: **Caroline Browne**, HRP Group

### Reason for selection:

HRP is an Irish niche market company that offers 'best in class HR consultancy'. It is a leading provider of outsourced HR support and employment law at both strategic and tactical levels.

Caroline Browne is the Managing Director. She has been a HR professional for over 16 years with extensive experience in HR both from an industry and consultancy perspective. She is a regular conference speaker and contributor to the media on a range of HR issues and topics.

### Detailed Interview:

During our introductions, upon discovering the topic of this dissertation, Caroline reported that her colleague was at a conference in Cork at the weekend [Cork Institute of Technology]. 'All of the big tech companies were there and they were all moaning about the skills gap'.

**The current dual economy market must be an interesting contradiction for you as a HR professional. What are you experiencing on the ground?** This year most of our clients were in a better position from a HR perspective. The worst year was 2009-10. Since then a lot of re-organisations took place. Even at ICT companies who have been in good stead. Everyone got the conniewobbles in 2009 and all have gone through some form of re-organisations and were cutting back. Some are now saying that they may even have gone too far. People are working longer hours, but they want to - because it means some job security.

Its only now that companies are beginning to look forward again. They are introducing Pay-related Performance schemes and the likes. This is great as a HR professional. It was all negative – cut-backs, redundancies, pay freezes – but now they are looking at remuneration in creative ways. They are asking how they can differentiate ourselves from the competition.

I recently did some feedback surveys for a company [a service industry company with an IT section] and the feedback was quite interesting. This is a company that has been doing well. It seems it's the little things that are annoying people. They understand there's hardship out there but smaller things are controllable. Some of the areas of criticism were:

The working environment (male-dominated) was untidy and unkempt. It was as if nobody was taking control. The remuneration structure was unstructured. It had mushroomed rather than being planned. Some staff were on pension others not; some on bonuses, others not. It was haphazard, yet they have around ninety staff. But people talk, so, were aware. The criticisms were actioned by management so staff felt that they were being listened to. (Caroline felt strongly on this point because staff do take risks in openly criticising their employer and should get a positive response).

We also initiated Exit interviews. They had turnover especially in the ICT area but there had been no information capture for the statistics needed to drive remedial action. It was important to determine whether there were 'push' or 'pull' factors. The initial findings of these are 1) Money and 2) Opportunity – moving to a bigger organisation. Even though they were going to be more silo'd they felt they were overworked where they were and were happy with the new 9 to 5 certainty of hours.

**Are there parallels in the current ICT market with the Dot.Com bubble?** IT is the one area where we are seeing many opportunities there. The staff are very mobile but they are much more cautious about what they are getting into. It's not like during the boom. They are

now checking the detail There is much more of a thought process going on There is also much more competition between ICT companies Potential candidates can have a couple of offers, and even counter-offers from their existing employer, on their table But this is very peculiar to ICT Entrepreneurs are all jumping into IT so they are all chasing the same pool of people Some companies are going abroad for candidates but this brings its own challenges

She gave me the example of a start-up ICT software company that had been around for five or six years They entered a venture with O2 and needed ICT staff quickly They also had the cost constraint so they went to Poland and the Czech Republic where they found staff for salaries of €30-€35k per annum However, two years down the line the staff, hearing what was happening in the Irish market, realised they were underpaid (market rate was about €50k) and started churning out And they now had a pedigree in Ireland so they were very marketable The company took a strategic view on this and decided that 'we got two years out of them' and were happy to continue down their existing path because of cost constraints

For overseas staff their 100% motivation is salary – not pension or benefits

**So is this driving salary inflation in the sector?** Not necessarily Another example, a company went to the market for software developers They were €10-€15k too expensive With software they can match the revenue stream to salary so they will only go to a certain level There is push-back from employers

(At this point we were joined very briefly by Leisa, their recruitment expert)

**And what about more generic roles such as IT Managers where the link is not so clear?** (Leisa) The roles in IT are becoming more specialist The mid-career roles are different, for example IT Administrators, they are easy to fill It depends on what you are looking for The more senior, the most specialist, the more difficult they are to fill

They are also more difficult to retain The only way to hold onto them is by paying for their certification Certification is expensive so they don't like to pay for that for themselves (She mentioned two big multinational players in the market who do this successfully)

**(I raised the findings of the Acton/Golden report on training as a failed long-term retention tool)** It depends on what you mean by long-term In the IT sector it's three to four years It takes much longer to find good candidates

**Are they here in Ireland?** Not necessarily

**How do you find them?** We use our networks across Europe, social media sites, personal links

**What are the best tools for retention?** Retention can be difficult The Eastern Europeans are culturally different They are very direct and literal The Irish are the exact opposite

At the Cork conference they were trying to address some of the difficulties For example, Visas the government are trying to ease the difficulties of getting visas She used the example of a Ukraine national who it took over two months to get him in

Another initiative is Bill Laoi's Coder Dojo. This is aimed at Primary School children to teach them how to code. They are trying to stream kids into Computer Science. The plan is to roll this out to all national schools.

(At this point Leisa left us and Caroline resumed)

Companies with low attrition rates – I know it sounds funny – but the staff “feel the love” OK, they know they have to work hard as well and have strong performance criteria but they feel part of the company.

She gave the example of a company she deals with in Shannon. It's a specialist company who are very proactive with HR. Their MD is a good manager, gives people their space but is very supportive. He embraces HR and looks at HR strategy and training. He lives and breathes engagement. HR is represented strongly at board meetings and HR is embedded into their planning process – direction, what training is required, what skillsets do we have, upskilling, not necessarily costly training but mentoring, secondment. He identifies gaps, benchmarks salaries annually (they are all on very good salaries). There is an on-site gym, subsidised canteen, an EAP programme. Proactivity in HR is ingrained into the psyche of the company. They have twice yearly appraisals. Communications can be a big issue for companies so appraisals are a great feedback mechanism.

**Is the location possibly also a factor in staff retention?** Possibly, but the point is that if you want to retain staff you can't just give “lip service HR”. You have to have the HR right up there. It's not a side issue. It has to be built into the planning. The remuneration has to be fit-for-purpose. They also look at non-cash rewards such as prizes (weekends away).

**Do the same rules apply for the multinationals in the ICT sector?** They have more traction. Employees are much more attracted to them so it's an easier sell. They also have much more diverse HR practices and policies. But there are some challenges still there.

There is as much movement out of multinationals. Employees can feel stuck in a silo in Corporate-land. It can be worth the risk to move to smaller organisations. The attraction is that they can enjoy much more autonomy, more flexibility and creativity. But, they do still want to match the salary package they were on.

**And can indigenous companies match the multi-nationals salary-wise?** We try to get them to look at the entire package and benefits. We try to put it into total monetary terms. Indigenous companies won't get a person who is risk-averse. The multinational is a much more stable environment. But let's face it most companies in Ireland are SMEs. Employees want to see structure in place. It gives them a sense of a company who knows what they are about. The environment, impressions are very important.

**How do you attract people away from the multinationals?** We target individuals. We bring opportunities to their attention and sell it to them to go for an interview. It requires a lot more “pulling”.

**With the transfer of skills within the sector from hardware to software, I'm curious if there have been redundancies in the ICT sector?** I'm not aware of any. There was a joint venture involving TUPE [Transfer of Undertakings] but no scenario of redundancies. There were re-organisations and, maybe, natural attrition.

On further reflection, she did mention one large quoted software company who had redundancies a few years ago but their business has been re-organised since then

**Employer of Choice Does it work?** I don't think so It's a bit of a swizz It works if you are living and breathing HR but if it's just rhetoric the staff are not stupid It means nothing and the staff can see beyond it It's more of a marketing tool than for HR

(I mentioned one prominent multi-national as an example) She said she knew a few in there and it's not the reality Some are dying to get out of the place It's like a sweatshop in terms of the hours and the work (She also made further comments which I cannot repeat here)

**You mentioned engagement earlier How can staff be engaged?** It's down to the environment They have to enjoy working but they can be given time off for, say, charitable endeavours They don't have to be at their desk all the time This flexibility makes the physical and mental environment more enjoyable They feel their managers trust them For instance, here [with an all-female staff] we give our staff time off for their hair appointments

I'm privileged When I visit clients I can feel the atmosphere in a company Sometimes you get the sense "I'd love to work here" Others you can hear a pin drop when you walk in The staff are like rats in a cage Some companies are not proactive with managing remuneration packages – they wait for staff to complain

Engagement is more about a sense of enjoying coming to work It's not just a job "I know what I have to do and I'm allowed to get on with doing it" This needs a good, supportive manager and the right tools like a strong appraisal system

**So, it's about applying 'best practice' HR?** Yes

[ENDS]

## APPENDIX 4 ICT INDUSTRY REPRESENTATIVE GROUP INTERVIEWS

Interview # 7 **Regina Moran**, Chair of ICT Ireland at IBEC and Managing Director of Fujitsu Ireland

### Reason for selection

ICT Ireland is the representative body within IBEC for the ICT sector. Its members constitute the major IT companies in Ireland and form a very strong employer lobby group with Government. ICT Ireland was one of the primary campaigners for the new government ICT Action Plan.

Regina Moran is Chair of ICT Ireland. She is also a council member of the Dublin Chamber of Commerce, a member of the Dublin City University Governing Authority and a non-executive director of Eirgrid. Regina is a regular commentator on industry developments.

### Detailed Interview

Following our introductions, during which we briefly discussed the 2012 ICT Action Plan, Regina explained the genesis of the plan from an IBEC/ICT Ireland perspective. First of all, ICT Ireland set out a strategic roadmap. Ronan [Harris of Google] is my vice-chairman and Paul Sweetman is the permanent IBEC member of ICT Ireland. We developed this plan in conjunction with the ISA [Irish Software Association] as both of us have common needs and skills. We also set out a number of key deliverables. These included bonus points for Maths. The Springboard programme to cross-train people into the industry - the first graduates are due out after Christmas - we were trying to attract Civil Engineers, QSs [Quantity Surveyors], Architects, anybody from a mathematical, computing base into IT. JobBridge was set up. Smart Futures was designed to get at kids and their parents. There was a 30% increase in CAO applications [into ICT] last year. We hope for another 30% this year. We wanted to drive up the quality of maths being taught. Also, how to up-skill teachers - 40% of maths teachers have no primary maths qualifications. We did the Smart series of talks with the Dublin Chamber on the global shortage of ICT skills [referring to a report produced on the IBEC site, and specifically mentioned shortages in China], especially how the likes of Canada and Australia tackled the issue. We looked at online deliverables - you've heard of Project Maths - Google highlighted a lack of high quality education at the maths and language end. The Steps Programme was set up with Engineers Ireland who worked closely with ICT Ireland to bring Chartered Engineers into the Technology/IT arena through CPD [Continuing Professional Development] and the Research route. The real challenge is how to keep the collective brainpower in the country. How do we stay open as an economy and continue to attract inward immigration of skills? There may be high unemployment but all of them do not naturally want to be in the IT sector. How can we maintain the melting pot of diversity? We are making it more difficult for people to enter the country.

**Are we losing the race against the likes of Canada or Australia?** We are certainly less attractive than we were five years ago. I blame our own PR to a large extent. The media are talking us down. You've seen the video produced by IBEC and the IDA showing that we're first for this, that and the other [I had]. I used this to attract Fujitsu Japan to base their research in Ireland and to invest in this country. There were thirty-six different nationalities on that video, which made it very attractive for the Japanese because it showed diversity. This is worth \$1.4 billion per annum. It's a big achievement for Ireland. They asked me is it world class in Ireland? I said that I don't know about research but Cisco, HP, Microsoft - all of the big companies - are doing research here. Diversity was attractive to them. I honestly

worried at the time about the sustainability of skills in Ireland but we have done a lot of good things to create indigenous skills Science weeks, Engineering weeks, and the likes They are now talking about making science subjects compulsory at second level Things are no longer discussion groups They are turning into action plans With a red, orange, green dashboard prioritising things

**The Expert Group was there since 2008 The Plan was only released this year Why has it taken so long to get there?** The Department of Education There is a strong union presence with strong resistance to change But it will change Ruairi Quinn [Minister for Education] is a man determined to change things He has already effected some change Project Maths is going to happen He took on the universities They need to change as well It's down to the Presidents [in the universities] Brian [MacCraith] in DCU is very open to change He is shaping the university but some others are still in their ivory towers They wouldn't take pay cuts They were still looking for security of tenure Tom [Boland] at the HEA is trying to force change and things are starting to change They're doing Clustering (citing an example of inter-college co-operation in the Bio-Chem arena) , Shared Services is another This is because they are cutting the funding Did you know that there are seventy-eight different versions of engineering courses in Ireland It's gone too far Staying current over a four year period with the speed of technology change is impossible They need to focus on core problem solving and general skills They should standardise, using lean engineering principles, and look at content delivery Why do we need lecturers standing in front of students when they could be given online access to a world-class Stanford lecturer? We should have a more open approach to education delivery But there is a pressure point They are short of funds and this is making them more innovative

Canada have a campaign for IT staff Are Ireland? No The IDA don't want to advertise that we have a skills shortage This could trigger fears with the multinationals that there are insufficient staff in the country

**Will we have sufficient skills to fill positions? (I mentioned the Goodbody/Microsoft report) How are positions being filled?** Sometimes they rob from us, but we're not too bad at holding onto staff For instance, when Facebook came in they took staff from Google There are 2,500 to 3,000 unfilled jobs out there The price-point is going up Java Developers DotNet Developers Hyperion Reporting There's a flashpoint of skills and I've sometimes wondered if we [Fujitsu] should take these off-shore Try maybe Poland, the Philipines, India

**What should we be doing differently?** Programmes such as Springboard can help produce Java Developers with guaranteed core skills Graduates are guaranteed jobs We should put them through bootcamp, like Ericsson are doing with DIT Sheep-dip them The price-point will become much more competitive But there are some challenges We need more publicity, more public awareness of schemes like Springboard We need to generate a bit of a buzz around it We need to try different PR routes, for example, social media We need to attract new cohorts into the sector

At the moment everyone needs a primary degree to get into the sector We could take people at entry level, for example, with a Technician Certificate, who could be trained up A bit like the Coder Dojo programme The Apprenticeship level is the piece that is missing from the ICT Action Plan, with a CPD [Continuing Professional Development] stream

**How do we change the male bias in the industry? This effectively knocks out half of the potential candidates straight away** The Steps Programme with Engineers Ireland is a good example. Transition Year girls at schools level need role models to encourage them. One idea tried was to match companies with school cohorts in their catchment area and bring the kids out there. Give them 'a day in the life' of the industry.

**Is it too late at Transition Year stage?** It might be Sixth Class [primary school] would be a better place to start when they are making their subject choices for secondary. They should also make Science compulsory up to at least Junior Cert level. They are asking the kids to choose too early. They should set out for the kids the implications of the different subject choices and the career paths that are being closed to them as a result. ICT Ireland hold a Guidance Counsellor conference every year to advise them of what we need but

They had dumbed down the points [for Technology/Science/Computing] but that is changing. Medicine and Law is where the big bucks are. Professional Services' attractiveness is out of whack with the economic situation of the country. Barristers' fees need to come down. Supernormal profits are being made by them. Medicine, the same. We need to attract people into Economic Value Added Sectors. These are what create wealth. The difficulty is how to make this sound exciting to a bunch of teenage girls. Engineering adds value. With technology you can travel anywhere. Your skills are 100% transportable. That's not the case with Law. It's often said that when you are young, you have plenty of time and energy but no money. When you are older, you have plenty of money and energy but no time. When you get old, you have plenty of money and time but no energy. Technology gives money when young and that is important. We need to answer the question for them why they would go into the IT sector but say it at their level – would you like to see California?

There needs to be a cycle to get them in. Once they're in you have them. It is very difficult to get into the sector later. You can re-train Engineers for Business or Law, but not the other way around. Technology is a young person's sector. They get to create stuff, great stuff, but we need to express the attractiveness of the sector in their language.

**It seems that the cycle to get them in is too late. At the height of the boom in 2007 was the lowest Computer Science intake, which we are now seeing the results of. How can we prevent a repeat of this?** It's different now. Computers are all-pervasive, they're everywhere, not just in IT. It's not like the Dot Com bubble. There were small numbers of job losses at the time because there were small numbers of people in IT. It's not the same cycle now. People are no longer locked into a career path. They need transferable skills. For instance, DCU have identified six core graduate attributes to build credits into their system. Social Interaction, for example. Employers are looking for a wider perspective in students. They need to be more rounded and work-ready. Journalists like John Herlihy are reporting that that kids are coming out without the necessary skills. This is the era of the kids of plenty. The idea of work-ready is not there. They are more fun-ready than work-ready. But I think that's changing.

We [Fujitsu Ireland] have a schools partnership in place with a Community School in Rush. This is for a number of reasons. 1) it's close and in the area, 2) it's Co-Ed, which is important and 3) it is one of the more disadvantaged schools. We bring them in here for "a day in the life", put them through the full interview process, psychometric tests, the works. We offer two work placements for during the Summer. This needs to be done right across the country. Transition Year is handy for that because they can get the time off but it could be too late.

Can everyone have an association? The wealthier schools have but they don't necessarily need it. The social strata are still there. We give a Fujitsu Leadership Programme to teachers to send out the message. Don't be limited in their thinking. DCU do an Outreach programme in Ballymun. Cohorts from disadvantaged areas are not usually on the radar. And we need more cohorts.

**So, in summary, your solution to the skills issue is to do much more PR – both internally in Ireland and externally to skilled non-nationals?** We need to promote the sector more to show its attractiveness. We need to influence both the kids and their parents. Push more programmes like Smart Futures. Get the message out there at a national level. For overseas skills we need to incentivise people with the right skills to come here. Maybe offer an attractive tax programme, like no USC [Universal Social Charge] for 2 years. We are competing on a world stage. Against the Chinese, the Canadians, New Zealand. The gloves should be off.

[ENDS]

(During the conversation as I was leaving, I mentioned the headlined 93% implementation to date of the ICT Action Plan. Regina said that she would be questioning this at the next meeting.)

## Interview # 8 **Maurice Mortell**, Secretary of the Irish Internet Association and Managing Director of TelecityGroup Ireland

### Reason for selection

The Irish Internet Association (IIA) is the representative body within industry for promoting e-commerce. Its membership consists of industry corporates and SMEs. Its working groups produce regular white papers with recommendations to Enterprise Ireland, ICT Ireland and the Department of Enterprise, and it forms a strong lobby group at both national and regional levels.

Maurice Mortell is Secretary of the IIA. He is also a member of the Telecommunications Information Federation Committee (TIF) within IBEC and a former chairman of the Outsourced Group within IBEC. Maurice is a regular speaker on topical thought leadership issues including Ireland's Innovation Taskforce (Digital 21) and the Green Economy.

### Detailed Interview

During the introductory stage Maurice explained that the IIA was originally set up to inform and educate non-internet-using people but, with the proliferation of e-commerce, that it had morphed into a 99% front-end website/online marketing organisation whose members' focus was to enable the web to further their business, to make better use of the infrastructure to enhance business. Notably, it is for indigenous organisations and excludes FDIs.

**What do you understand by Cloud Computing?** Cloud is one of the most misused terms in the IT industry. It is essentially made up of two components: Software as a Service (SaaS). This is access to software over the Internet. You don't need to buy and install any hardware yourself. You can just link into the software with your computer. It is hosted applications with access. Infrastructure as a Service (IaaS). This is hardware being outsourced in a private cloud. The applications are stored on the hardware. For example you can have it shared like at Amazon or Microsoft or private, which is what we offer at Telecity. There are also mobile apps, which is where it is all headed, towards devices – iPhones, iPads, Notebooks – the location of the information and the infrastructure is now less relevant. It's now Everything as a Service – digital media, apps, email. They are not so concerned about security any more. People are now much more sophisticated about the Cloud. You can get Google docs or Microsoft Outlook Dot Com from any web browser in the world. This is nothing new. The capability has always been there but they were called different things – Application Server Provider (ASP), dedicated server environment – it wasn't branded as Cloud.

**Why has it taken off?** For three reasons: 1) The infrastructure is now top rate from a telecoms and data centre perspective. 2) Apps development. There is a proliferation of mobile apps. 3) The requirement to access content and data has quadrupled. There are regulatory requirements to store more and more digital data. And we are heading more in that direction.

**How will this change the skills and resource base needs?** There are specific types of skills already there: Software, Infrastructure, Hardware. Now, increasingly, M&E [Mechanical and Electrical] appreciation is also required. Apps development is being self-taught from what I can see. It is not specifically being taught in college. The traditional courses there are not equipped for the speed of change. Engineering and Computer Science cover a broad range but they are not Cloud-specific.

**Does this require in-house re-training?** There is some third level education but businesses do most of this by in-house training. The colleges cover a basic level but not all of the components are captured. The courses are not rounded. For example with data centres they don't understand the electrical aspects. They have the Information Systems, the Operating Systems and the Networking knowledge but not the [virtual] Servers or Infrastructure elements. We [TelecityGroup] had some educationalists from the DIT Tallaght in here six months ago. They were looking at the gaps in their Computer Engineering courses that have arisen with the proliferation of data centres in Ireland. For example, M&E, multiple clients, platforms, virtualisation. They can't cover them all but they need a basic exposure. Otherwise we will have to continue to recruit and train.

**Is there a heavy reliance then on non-nationals for the more expert roles? (Referring to the Expert Group findings on 55% non-nationals)** There are some specific roles that can only be covered by non-Irish. Even with the price, the availability is not there. These roles tend to be in the management area where you need a broad range of skills. The [data centre/Cloud] industry is not as mature in Ireland as it is in other jurisdictions.

**Are we competing directly with these jurisdictions for the specialised skills?** With the proliferation of data centres in Ireland there is a lot of movement around the industry. There is a lot of poaching of staff within ICT, particularly in the telecoms sector where it is cut-throat at the higher end skills. NOC [Network Operations Centre] 24 x 7 support, Technical Service Managers, Network Managers. These are areas that need people with experience. And they are prepared to pay over the odds. They are more managerial roles than specialised skills.

**Is this driving salary inflation?** Yes but Ireland is seen to be more competitive internationally again. The economic climate has affected this, even in IT. Austerity has slowed the immigrant numbers. There are less of them and they are now more specialised. Companies are headhunting specific skills. "Gateway to Europe" have global offices so there is no particular allegiance to Ireland or to the multinationals. It's not necessarily a bad thing. It [immigration] generates a mix of people, skills, cultures, which is good. We need to train the Irish staff. We don't want to miss a trick. We need a skilled workforce and we need strong quality candidates coming out of our universities.

**And is the quality there coming out of universities?** You need to go further down the food chain on this to secondary level to look at what's going on there. Look at the schools that do well in Science and Maths. How do they do well? There is a direct link between the school and the subjects. When the "Broadband for Schools" project was launched in 2008, the Government funded broadband into 140 secondary schools but there were no computer rooms. No PCs. No environment or infrastructure. And there were no teachers who understood computers. This is getting better now. The teachers, the younger ones in particular, understand. But there is still no link up between the syllabuses and the IT infrastructure. There are no online exams for instance. There is a disconnect between the Department of Communications and the Department of Education, between what's been put in and what's being taught.

**How do we attract kids into the industry?** Financial Services, Solicitors, Accountants, this is where they get best recompense. The ICT industry has not been the best payer in the world. But look at what's happened in Financial Services since 2008, the banks and it is getting worse there. IT was the poor relation of careers but this has and is changing.

The focus is now on how to do better business using the technology. For instance, with DIT trying to engage with Industry. How they should modify their syllabus to meet industry requirements. There is still a disconnect but it is improving.

**You are on record as saying that Ruari [Quinn, Minister for Education] is the man to do this. Do you still believe that to be the case?** He is the first minister in a long time to look at all the pieces and to try and address the issues. He sees Maths and Computing as the cornerstones. He has brought in the extra points [for Maths] and introduced more visibility when students move from one school to another. You can now assess students and understand how to streamline them better.

**Will the budget cuts constrain his initiatives?** He has managed to sustain a fair degree of the available budget. The infrastructure is still happening. The teachers, the number of teachers and their skillsets, he is trying to address. But this is not a quick fix. It needs a certain calibre of person to be a teacher. I see teaching as more of a vocation than looking at the coffers. They do a lot of unrecognised extracurricular activities and are very committed but they get a lot of bad press. The holidays, working times, study time, this is all union-led. Each school is very individual. It is down to the structure within the school. The Principal, the Vice-Principal. It's down to the environment they create for the kids.

The Department can sometimes be very restrictive but much of the negative publicity – the branding as ‘civil service parasites’ - could be avoided. For instance, in our local school [of which Maurice is on the Board of Management] we had an honours Accountancy teacher who was sick for four weeks. We were told we could only take relief teachers from within a certain catchment area, which is absolutely bizarre. They should be allowed to recruit the best available from the pool regardless of location. In the end, there were none suitable in the area and the kids suffered because we couldn't fill the vacancy for the four weeks.

But Ruari is progressive. He understands education. That it is the cornerstone to make things work. He is the most visionary guy we have had in there for a long time. And he is trying to change things. The ITT [Institute of Technology Tallaght] have introduced their post-grad course in Cloud Computing. They are also trying to re-educate out of work people but I'm not so sure how they can re-train brickies or carpenters to turn them into IT people. I'm not disparaging against brickies or carpenters. There are a lot of construction industry people on the dole but how to slot them in? I would love to see transfers from one to the other but it's a bit more basic than just looking at the unemployment register. They may be better off letting them emigrate and keeping the college places available for the school leavers.

**What is your view on college fees?** The fee paying college's dedication to technology is on the back of demand. We won't see the fruits of this for four to five years. In the meantime we'll still have to recruit from wherever. I'm just back from the US. Pre-med [degree course] costs \$125,000 for four years. And that excludes digs and living costs. We're not as bad but it's a Catch-22. I would love to educate our own but fee-paying [third level] colleges and universities produce good calibre students. It's the same at second level. The league table will be issued after the Leaving Certificate results. There is a high correlation between results and schools. If you pay you will generally get a better education.

**How does this translate into filling skilled jobs?** We [TelecityGroup] are not having any difficulty with getting skills but they are not necessarily all Irish. We generally find we have to recruit an individual with a skill and then we have to enhance that. They generally tick one

or two important boxes but we can't get a fully rounded candidate unless we poach from another data centre operator. That means we probably have to pay more money.

**Are many of your staff being poached?** It's quite stable now. We had a poor experience when the industry was much more volatile and people didn't understand what was required. We have a fairly stable workforce and we can recruit in relatively easily. We have to watch churn very carefully and then look at certain roles. Are we competitive? Is the salary realistic? Sometimes we need to tweak positions.

**Is retention an issue?** IT people are motivated with IT projects, technology and skills that they can be exposed to. It's all about learning and enhanced learning. Taking on new technology. They are interested in training and career progression. Career progression is not always possible. Sometimes there are dead-ends. There can be some job-hopping. Some can move more easily with certain skillsets.

**So is loyalty an issue?** Yes, there is still staff loyalty. We like to think we have it but you need all of the components to keep people involved and motivated.

**What are your views for the future of the industry in Ireland?** Very positive. Ireland is positioned well. The messaging is good. We are seen to be able to deliver the infrastructure and the skills. Overseas Ireland is seen as a top location. We need to maintain our favourable FDI banner – low Corporation Tax, English-speaking, Euro-zone, etc. In the short-term to medium-term we can go from strength to strength.

In terms of sourcing staff, we will produce sufficient numbers and quality from our universities. There is something like an alleged 2,000 vacancies out there but I would really like to see what and where they are. I heard on the radio that software developers needed overseas recruits. Being honest, I think some of this is a load of crap. There are jobs that they can get people for but they are looking for a perfect fit. The perfect fit is not there but they don't want to train them up. There's a lot of talk about emigration and a focus on the technology sector. That's only because the economy is falling apart but the IT sector is still doing OK. We didn't hear a lot of this during the boom times. The infrastructure is here. The skillsets are here. We will still need peripheral skillsets from overseas and ultimately there will be a hybrid model.

[ENDS]