FIT ICT SKILLS AUDIT

*The **FIT ICT Skills Audit** was undertaken in response to the unprecedented number of unfilled vacancies in the ICT sector. The findings are significant and provide valuable insights for policy makers, the education and training sector and for ICT sector companies.*

fit
The ICT Talent Pipeline

Responding to Skills Needs in the ICT Sector

Foreword

Since 2010, a staggering 15,000 jobs have been announced by indigenous and multinational technology companies in Ireland. With this phenomenal growth comes a strong demand for skills. However, this demand is global. Germany for example is currently looking for more technologists than Ireland has employed in our entire technology sector.

Continued research and fact finding is fundamental to sustaining Ireland's success in addressing the skills demand.

In recognising the skills demand issue early, Ireland is now leading the way in the development and implementation of solutions. We are well ahead of competing jurisdictions. Out of a potential problem, Ireland has shown once again that it can act quickly, nimbly and effectively in solving major issues.

A host of Government policies, joint industry / Government initiatives and private sector activities are enhancing Ireland's reputation as a technology hub for key skills. Ireland is well on its way to achieving the ambition set out by Government in the 2013 Action Plan for Jobs: Ireland will be best location in the world for tech talent.

This comprehensive FIT Skills Audit highlights two important points: Specific skills employers are seeking; Work remains on the skills agenda. We must keep our shoulder to the wheel and build on the competitive advantage we have created.

Paul Sweetman
Director, ICT Ireland and the ISA
Irish Business and Employers Confederation (IBEC)

Preface

Accenture is delighted to be associated with FIT and this very insightful report. The current IT skills gap in Ireland is of huge concern to business with a particular shortfall of graduates in STEM (Science, Technology, Engineering and Maths). The concern also extends to the impact it could have on our future economic growth. The President of the European Commission Manuel Barroso said in Dublin recently that there would be 900,000 IT vacancies across the EU by 2015.

The opportunity for Ireland is to try and address this problem as quickly as possible and ensure that Ireland remains a location for FDI and new IT companies.

We need to quickly "join the dots" across Government, Academia and Business to ensure we address this skills problem in a cohesive manner. This FIT report provides a comprehensive picture (i.e. specific insight around the gaps in technology at a very detailed level) of the current situation and provides policy makers with a template to make key decisions.

Accenture has also collaborated with FIT to develop the Emerge programme in line with Accenture's Skills to Succeed initiative, which provides long-term unemployed jobseekers with access to courses in the areas of computer programming, cloud computing, digital and mobile technologies. Accenture employees are directly involved with FIT through facilitation of company visits, mentoring, mock interviews and internships.

Mark Ryan
Accenture - Country Managing Director Ireland

Introduction

An unrelenting constraint on the growth of the Information and Communication Technology (ICT) sector has been the persistent shortage in the number of ICT practitioners available to fill the expanding number of related jobs. This global problem is of particular concern in Europe where the shortage persists despite the manifest efforts of policymakers over the last decade. Given Europe's high unemployment level, especially the crisis of youth unemployment, new approaches must be developed to resolve this perverse situation.

In March 2013 European Commission President, José Manuel Barroso called on Europe's digital businesses, governments, training and education sectors to join a Grand Coalition for Digital Jobs to address up to 900,000 ICT job vacancies expected to exist in Europe by 2015. Despite the current levels of unemployment, the number of digital jobs in the EU is growing by more than 100,000 per year but the number of additional ICT graduates and skilled ICT workers is not keeping up.

Ireland has experienced the same problem and currently has over 4,500 unfilled ICT vacancies and the potential to generate over 10,000 new ICT jobs in the short term if it can unclog the 'skills bottleneck'. FIT believes this can be done but that it needs new insights based on a deeper understanding of what the OECD call the 'skills eco-system' in this instance related to ICT practitioners.

FIT identified a gap in the existing research in that there are authoritative reports that present skills needs findings at a macro level and skills taxonomies at a micro level but neither provide the information needed to methodically address the skills shortages by developing the necessary skills training interventions or updating higher level degree and diploma programmes.

The number of digital jobs in the EU is growing by more than 100,000 per year but the number of additional ICT graduates and skilled ICT workers is not keeping up.

[1] Vacancy Overview 2012 – FAS / Expert Group on Future Skills Needs, February 2013.

[2] EUCIP (European Certification of Informatics Professionals) certification programme is a professional certification and competency development scheme which consists of a core certification as well as specialised certifications for a range of competences which are set out in an array of job-specific profiles.

FIT has a decade long track-record of analysing the ICT skills eco-system in Ireland and has applied that knowledge by matching market-led ICT skills training with smart people experiencing long-term unemployment, resulting in over 8,000 getting jobs and embarking on new careers.

Building on this experience FIT commenced the FIT ICT Skills Audit research programme in early 2012 which it strongly believes has the potential to allow Ireland to reposition itself as a leader in solving the ICT skills bottleneck and in so doing, give talented people who are now unemployed access to the growing pool of unfilled ICT vacancies.

In embarking on this process FIT adopted the European Commission definition of the relationship between ICT and the workforce which can be classified into three categories:

- ICT practitioners have ICT as the focus of their work, for example they develop, sell, and maintain or support ICT systems. It is worth noting that across Europe 55% of practitioners work in user industries rather than in the ICT industry itself.
- ICT users apply ICT in support of their own work. Typically, this implies the use of common software tools and specialised tools that support business functions within an industry.
- Entrepreneurs and individuals in management positions exploit strategic opportunities provided by ICTs and require a particular set of skills, called e-business or e-leadership skills.

The FIT ICT Skills Audit 2012 focuses on the current shortages of ICT practitioners and on the related skills that employers have identified as those most in need. FIT will expand the scope and scale of the FIT ICT Skills Audit in future years with the goal of presenting to policymakers, industry, the education and training sector and prospective ICT practitioners a roadmap for their strategies and decision making. As an ICT industry initiative with a social purpose FIT is committed to making an ongoing contribution which results in a positive change at a national level and over time internationally.

[3] Exploiting the employment potential of ICTs - European Commission Staff Working Document, Strasbourg 18-4-2012.

Executive Overview

The Aims of this Report are:

1. To present to readers a clear and simple picture of what specific ICT skills are most needed in Ireland in 2013.
2. To give readers an understanding of the relative needs at different levels of expertise.
3. To assist the education and training sector in planning and developing higher level, conversion and further education programmes and guiding their potential participants.
4. To inform prospective ICT practitioners whether they are young people, those who are unemployed, those considering a career change or entrepreneurs seeking to start a new business.
5. To give the ICT sector a coherent and valid overview of the skills needs of the sector.
6. To inform national and regional development agencies and assist them in creating their development strategies.
7. To assist policy makers in developing suitable policy responses, identifying priorities and putting in place effective funding strategies.

Key Features and Findings:

- There were a total of 38 respondents comprising of most of the major multi-nationals and a number of representative SME's.
- Numbers employed within respondent companies are in excess of 25,000 employees providing a large sample size in the context of Ireland's ICT sector.
- Clear and apparent skill shortages and unfilled vacancies emerging.
- Areas noted with particular vacancies include:

  1. **Programming Technologies**
  2. **Mobile Technologies / Development Platform**
  3. **Games Development**
  4. **Web Development / Technologies**
  5. **Cloud Computing / Virtualisation**
  6. **Platform Administration**
  7. **Digital /Creative Media**
  8. **Networking / PC Maintenance**
  9. **CRM**
  10. **Project Management**
  11. **Contact Centre Support**

- Within the occupational areas outlined over 100 skill-sets requirements were analysed.
- Requirements range from entry level positions, through competent to expert level.
- Estimated to be in excess of 4,500 immediate vacancies which could be addressed through technology skills development programmes ranging from 6 months to 18 months.
- FDI companies participating indicated that they would compete within their global operations for additional business development opportunities to be located in Ireland, if confident that the skills required were more readily available locally – resulting in significant job creation opportunities.
- Desire to engage with appropriate interventions which could address needs in a timely and efficient manner.
- Growing acceptance of the need to broaden the scope of interventions and to recruit candidates beyond traditional cohorts.
- General consensus with the concept of promoting 'smart people with smart skills' as a means of widening the pool of candidates interested in pursuing career in the technology sectors.
- Sense of urgency, shortages need to be addressed forthwith to prevent any reallocation of particular technology jobs to other global destinations in order to meet corporate business imperatives.
- See attached detail analysis highlighting the 'most wanted' skill sets ranked by entry, competent and expert levels.

Conclusions and Recommendations

FIT proposes that we redouble our efforts to generate a much greater quantum of talent from the significant human resource of Irish people to support the ICT and technology sector. It proposes a transformation of both our policy approach and our educational and training structures. FIT has carried out a range of consultations during 2012 and generated a number of white papers exploring these issues in parallel with the practical and related work on the FIT ICT Skills Audit.

FIT proposes a three point plan which will engage a group of key stakeholders from industry, government and education in this much needed journey of transformation:

1. **Fashion a Workforce Development Plan for Ireland**

2. **Revise the National Skills Strategy and introduce a framework for regular review**

3. **Initiate a Dual Education system to foster a new Associate Professional stream of talent for the ICT/technology workforce.**

The proposed three point plan is well within our grasp as a small country that has shown its capacity to implement change quickly. What is needed above all is the will to do it; the vision to set the goals and the understanding that second-best is not good enough for our most open of economies and population of talented and flexible people.

We will do our best to share this report with a wide range of stakeholders and we hope that it stimulates reflection, discussion and fosters an optimistic attitude towards the effort that is required to put in place the new foundations for a successful and sustainable future. The potential of our workforce as the remedy for Ireland's growth and prosperity demands it.

Mapping Skills Needs / Vacancies

The ICT sector has a complex skills eco-system encompassing a wide range of technologies and expertise which constantly changes, evolves and re-invents itself. FIT developed a methodology to reflect this complexity and in particular to capture a granular snapshot of the most needed skills presenting as hard-to-fill vacancies.
The resulting FIT ICT Skills Audit 2012 survey questionnaire was piloted and tested in face to face interviews with experts from major ICT multi-national organisations operating in Ireland. The respondents to the skills audit were facilitated by an interview process or alternatively filled out the survey responses unaided. The face to face interviews and discussions contributed invaluable qualitative inputs and strengthened the findings related to the measurable data collected in the survey.

Participants in the skills audit were asked to map the main skills needs / vacancies in their organisation using a questionnaire which listed 114 specific skills categorised within eleven occupational disciplines e.g. the specific skill ASP.Net was listed within the discipline 'Programming' - Appendix 1 contains the questionnaire. The disciplines and specific skills included are not intended to be exhaustive but instead to form a robust framework reflecting in-demand skills. This framework is a 'live' structure and will continue to evolve to serve the purpose of understanding ICT skills needs and vacancies in Ireland and indeed in other markets where it is applied.

The FIT Skills Audit survey questionnaire allows respondents to define the level of expertise at which they require the specific skills which they need and in order of increasing expertise these are entry level, competent level and expert level.

The FIT Skills Audit framework is a 'live' structure and will continue to evolve to serve the purpose of understanding ICT skills needs and vacancies in Ireland and indeed in other markets where it is applied.

- Entry level was described as jobs that call for a set of useable ICT practitioner skills but that the employee would work in either a highly structured environment or else would be supported by regular supervision or mentoring.

- Competent level was described as jobs that call for a set of well-established ICT practitioner skills and where the employee would work independently on individual tasks or as a fully-fledged team member with occasional supervision.

[4] Peter Davitt, CEO of FIT, who carried out the field work, met with leaders of ICT companies and with a range of ICT experts employed in the industry in Ireland. He interspersed these face to face discussions with desk based research and developed the survey questionnaire as the output from this collaborative process.

- Expert level was described as jobs that call for a set of advanced ICT practitioner skills and where the employee would work as a technology expert or lead teams and projects.

Survey respondents can also define the extent of their need by giving a figure for the number of full-time equivalent roles that are needed and just over half of the respondents elected to provide this information. The questionnaire also allows respondents to flag specific skills they require which are not listed and thereby captures significant information for analysis and in addition contributes to enhancing future versions of the survey questionnaire. It is intended to carry out FIT ICT Skills Audits on a regular basis over the coming years, fine-tuning and improving the methodology on an ongoing basis.

The survey responses were analysed to determine the specific skills most in demand for each discipline. This information is presented in radar charts which display the multivariate data in a form that is easy to assimilate and which gives readers an overview of the 'skills eco-system' for each of the eleven disciplines.

- Top Ranked Specific Skills / Vacancies by Discipline Chart:

  For each of the eleven disciplines the top ranked in-demand specific skills are shown on the spokes of the radar diagram.

  - Different coloured markers show the extent of demand for entry, competent and expert levels by placing then on the rings of the radar diagram with the outermost ring representing highest demand.

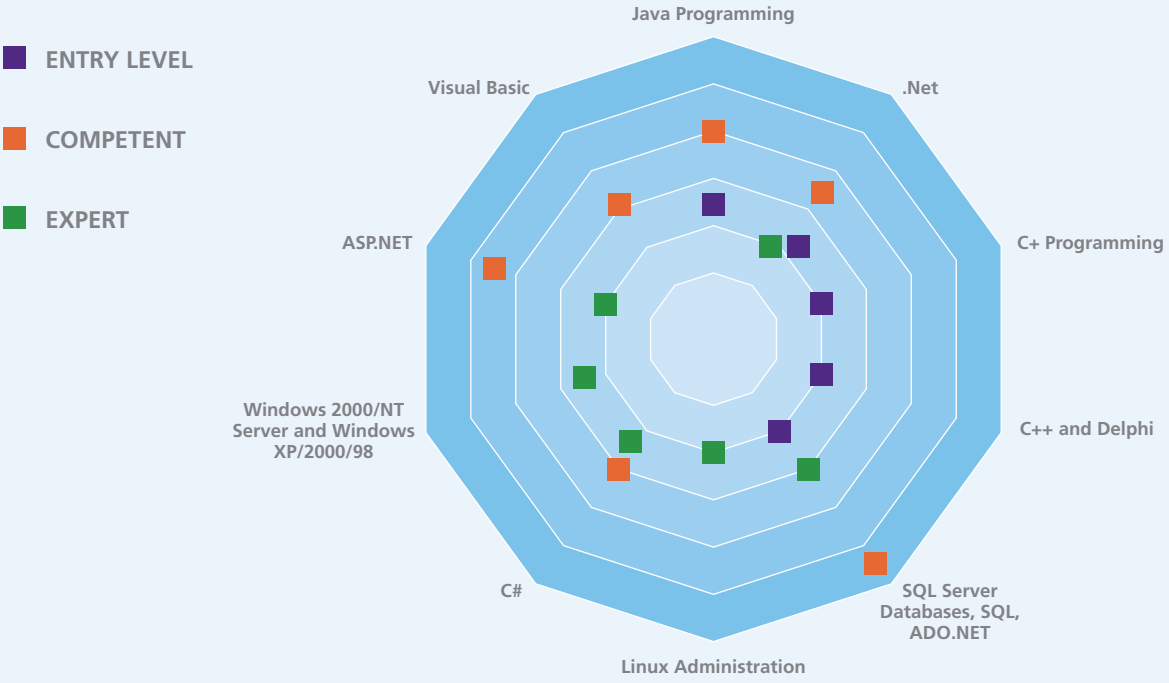
  - All rings represent significant demand even the inner ones. For example in the discipline 'Programming' the specific skill 'ASP.Net' is a spoke on the radar chart shown overleaf. The placement of the red marker on the 'ASP.Net' spoke in an outer ring indicates that there is a high demand for 'ASP.Net' skills at competent level and the placement of the green marker indicates a significant demand at entry level.

FIT considers the results of the skills audit to be highly informative and the findings have already proven to be of benefit in the design of ICT training programmes which FIT is rolling out in 2013.

DISCIPLINE 1:
Programming

Demand was highest for those at the 'competent level' and at this level there was a measurable peak for SQL Server skillsets. There was also a moderate demand for both 'expert' and 'entry level' skill sets as shown in the radar diagram below.

Top Ranked Specific Skills / Vacancies - Programming



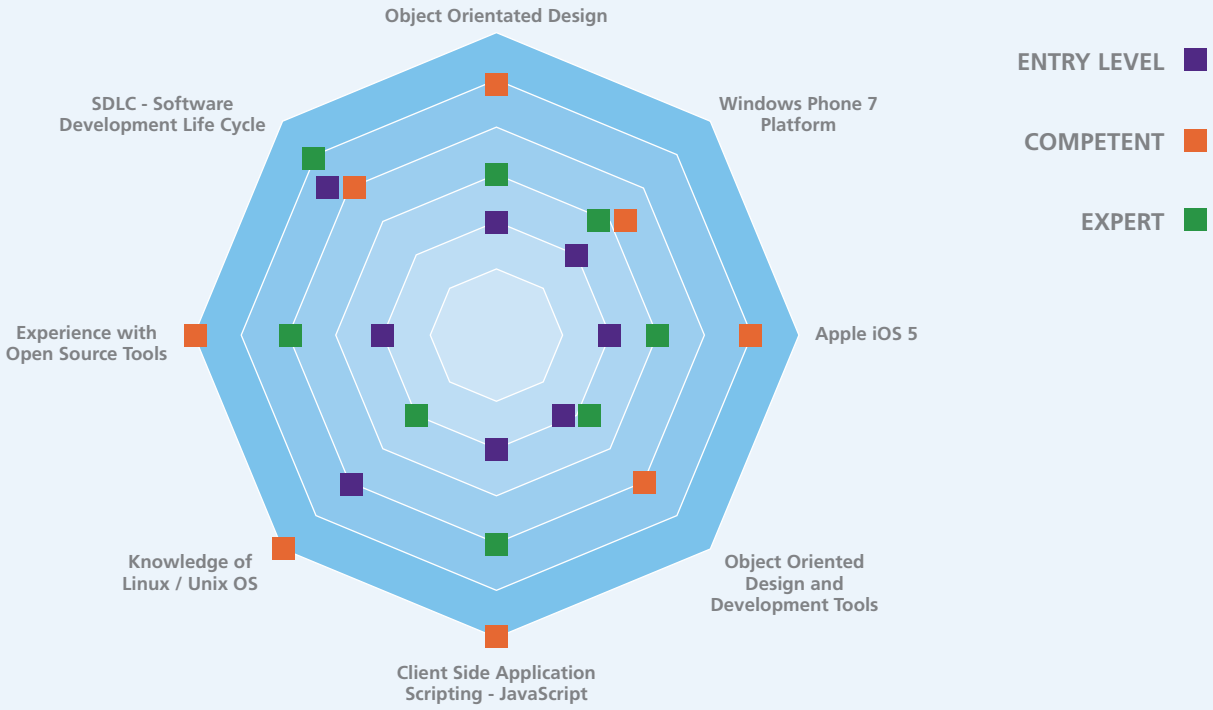
Outer rings are highest demand

Entry Level	Competent Level	Expert Level
Java Programming	SQL Server Databases, SQL, ADO.NET	SQL Server Databases, SQL, ADO.NET
.Net	ASP.NET	C#
C+ Programming	Java Programming	Windows 2000/NT Server and Windows XP/2000/98
C++ and Delphi	.Net	.Net
SQL Server Databases, SQL, ADO.NET	C#	Linux Administration
	Visual Basic	ASP.NET

DISCIPLINE 2:
Mobile Technology / Development Platform

Demand was highest and evenly spread across a number of skill sets at both 'competent' and 'expert' levels. The same pattern was evident at 'entry level' where demand although lower was clearly demonstrated.

Top Ranked Specific Skills / Vacancies - Mobile Technology / Development Platform



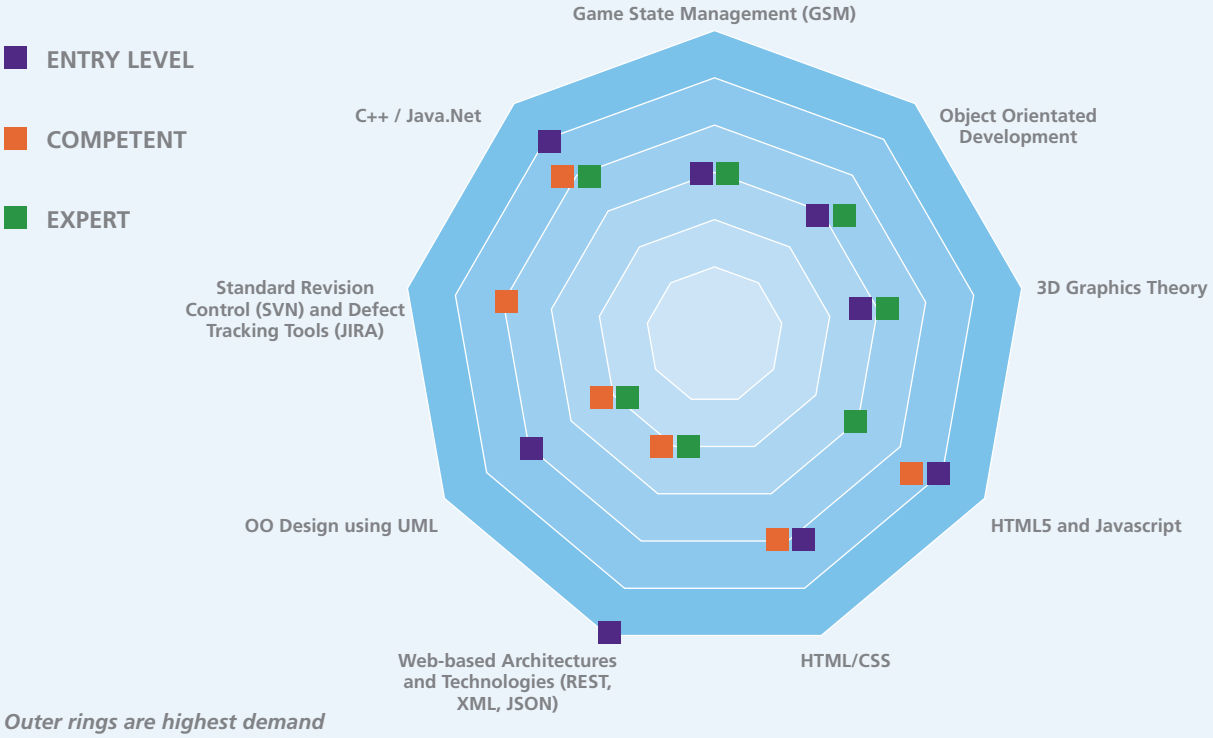
Outer rings are highest demand

Entry Level	Competent Level	Expert Level
SDLC - Software Development Life Cycle	Client Side Application Scripting - JavaScript	SDLC - Software Development Life Cycle
Knowledge of Linux / Unix OS	Knowledge of Linux / Unix OS	Client Side Application Scripting - JavaScript
Android (Honeycomb / Ice Cream / Sandwich)	Experience with Open Source Tools	Experience with Open Source Tools
Apple iOS 5	Apple iOS 5	Windows Phone 7 Platform
Client Side Application Scripting - JavaScript	Android (Honeycomb / Ice Cream / Sandwich)	Android (Honeycomb / Ice Cream / Sandwich)
Windows Phone 7 Platform	SDLC - Software Development Life Cycle	Apple iOS 5

DISCIPLINE 3:
Games Development

Analysis of the survey results showed demand at all competency levels for those skill sets shown in the radar diagram and table below. In particular there were clear opportunities to enter the Games Development sector with 'entry level' skill sets as noted below.

Top Ranked Specific Skills / Vacancies - Games Development



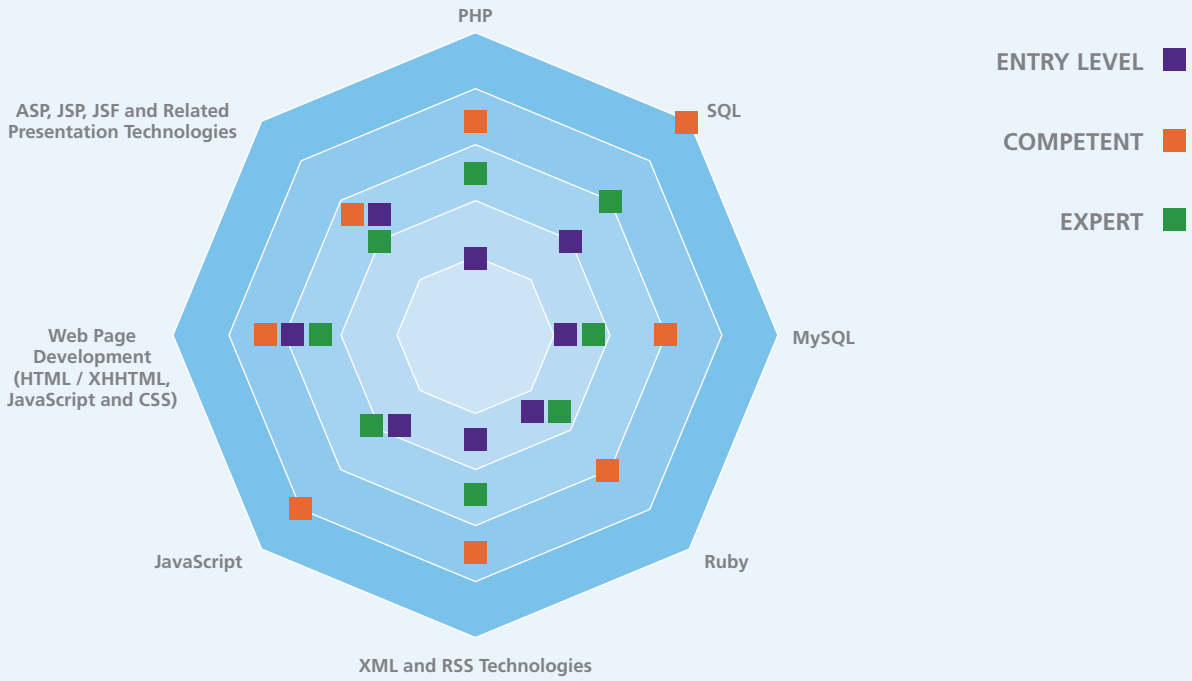
Outer rings are highest demand

Entry Level	Competent Level	Expert Level
Web-based Architectures and Technologies (REST, XML, JSON)	HTML5 and Javascript	C++ / Java.Net
HTML5 and Javascript	HTML/CSS	Game State Management (GSM)
C++ / Java.Net	Standard Revision Control (SVN) and Defect Tracking Tools (JIRA)	Object Orientated Development
HTML/CSS	C++ / Java.Net	3D Graphics Theory
OO Design using UML	Web-based Architectures and Technologies (REST, XML, JSON)	HTML5 and Javascript
Game State Management (GSM)	OO Design using UML	Web-based Architectures and Technologies (REST, XML, JSON)

DISCIPLINE 4:
Web Development / Technologies

Demand is strong for those with 'competent level' skill sets and there is a peak demand for relational database skill sets e.g. SQL and MySQL. Demand is moderate and spread across a range of skill sets for 'expert' and 'entry level' skill sets as shown in the radar diagram below.

Top Ranked Specific Skills / Vacancies - Web Development / Technologies



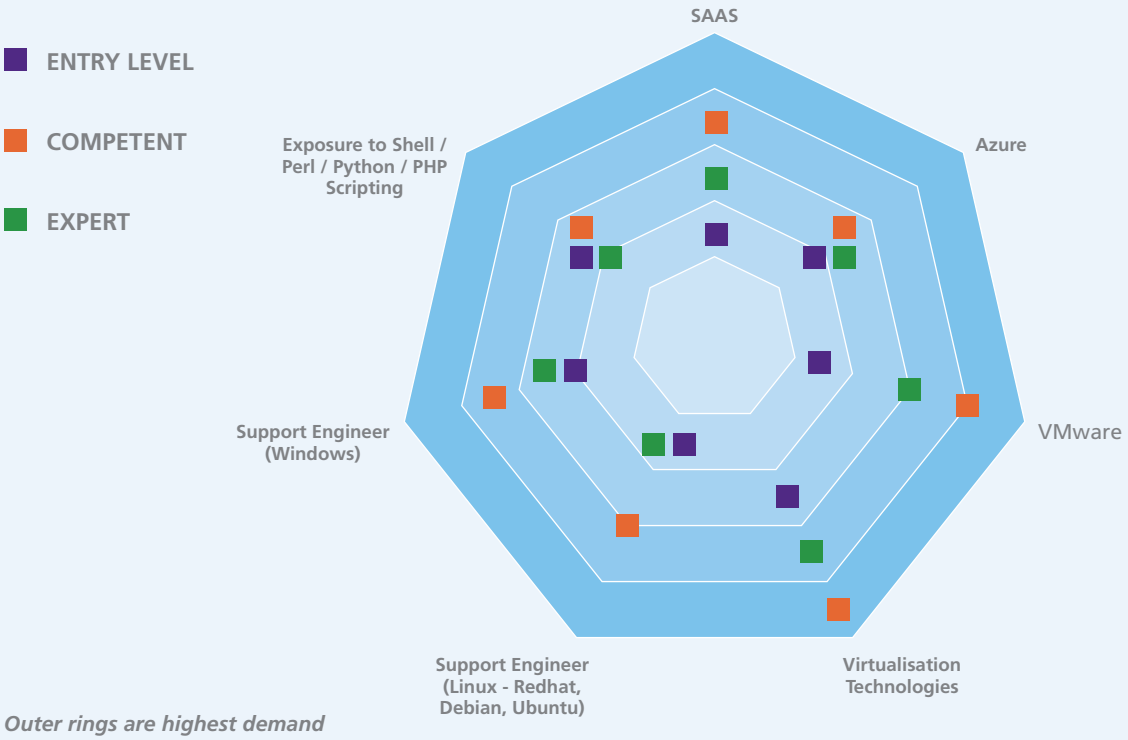
Outer rings are highest demand

Entry Level	Competent Level	Expert Level
Web Page Development (HTML / XHHTML, JavaScript and CSS)	SQL	SQL
SQL	JavaScript	PHP
ASP, JSP, JSF and Related Presentation Technologies	XML and RSS Technologies	Web Page Development (HTML / XHHTML, JavaScript and CSS)
MySQL	PHP	XML and RSS Technologies
Ruby	Web Page Development (HTML / XHHTML, JavaScript and CSS)	ASP, JSP, JSF and Related Presentation Technologies
XML and RSS Technologies	MySQL	JavaScript
JavaScript	Ruby	Ruby

DISCIPLINE 5:
Cloud Computing / Virtualisation

The strongest demand, evident at all skill levels, was for those with skills in Virtualisation Technologies. This was further reinforced by the expressed need for VMware skill sets. Demand was very strong for those with 'competent level' skills but was also quite robust for those at 'expert' and 'entry' levels as shown in the radar diagram and table below.

Top Ranked Specific Skills / Vacancies - Cloud Computing / Virtualisation



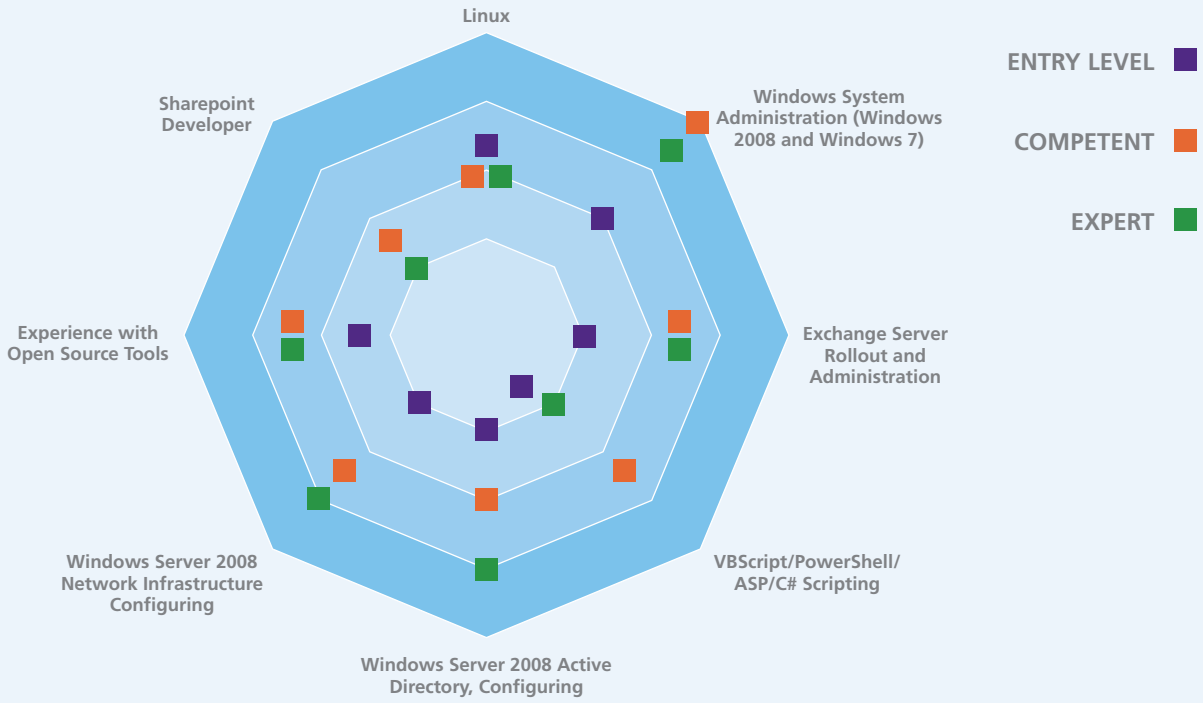
Outer rings are highest demand

Entry Level	Competent Level	Expert Level
Virtualisation Technologies	Virtualisation Technologies	Virtualisation Technologies
Support Engineer (Windows)	VMware	VMware
Exposure to Shell / Perl / Python / PHP Scripting	SAAS	SAAS
Azure	Support Engineer (Windows)	Azure
SAAS	Support Engineer (Linux - Redhat, Debian, Ubuntu)	Support Engineer (Windows)
VMware	Azure	Support Engineer (Linux - Redhat, Debian, Ubuntu)
Support Engineer (Linux - Redhat, Debian, Ubuntu)	Exposure to Shell / Perl / Python / PHP Scripting	Exposure to Shell / Perl / Python / PHP Scripting

DISCIPLINE 6:
Platform Administration

There is steady demand at all skill levels in the Platform Administration discipline. Strongest demand is for those with 'competent' and 'expert' level skill sets related to Windows System Administration but this need is also evident for those with 'entry level' skills in this area.

Top Ranked Specific Skills / Vacancies - Platform Administration



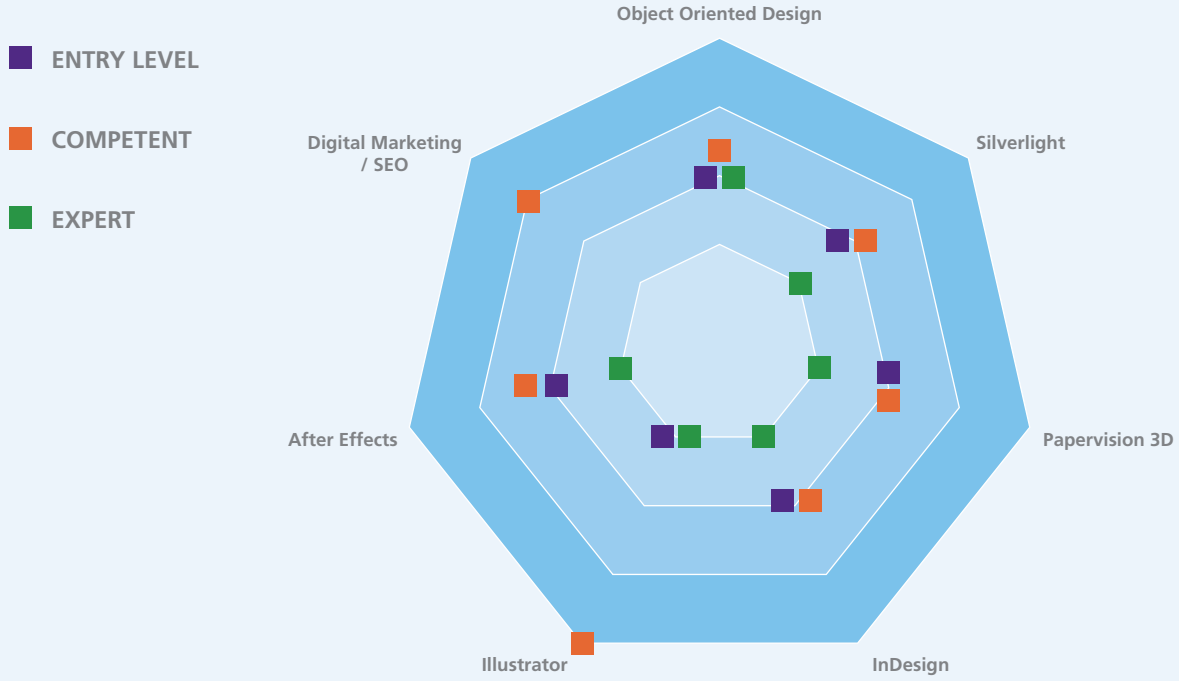
Outer rings are highest demand

Entry Level	Competent Level	Expert Level
Linux	Windows System Administration (Windows 2008 and Windows 7)	Windows System Administration (Windows 2008 and Windows 7)
Windows System Administration (Windows 2008 and Windows 7)	Exchange Server Rollout and Administration	Windows Server 2008 Active Directory, Configuring
Windows Server 2008 Server Administrator	VBScript/PowerShell/ASP/C# Scripting	Windows Server 2008 Network Infrastructure Configuring
Exchange Server Rollout and Administration	Windows Server 2008 Network Infrastructure Configuring	Windows Server 2008 Server Administrator
Windows Server 2008 Active Directory, Configuring	Windows Server 2008 Server Administrator	Exchange Server Rollout and Administration

DISCIPLINE 7:
Digital / Creative Media

Demand was evident but somewhat modest compared to other disciplines surveyed. Skills in industry standard Adobe Illustrator were evident at all levels with peak demand for 'competent level' skill sets.

Top Ranked Specific Skills / Vacancies - Digital / Creative Media



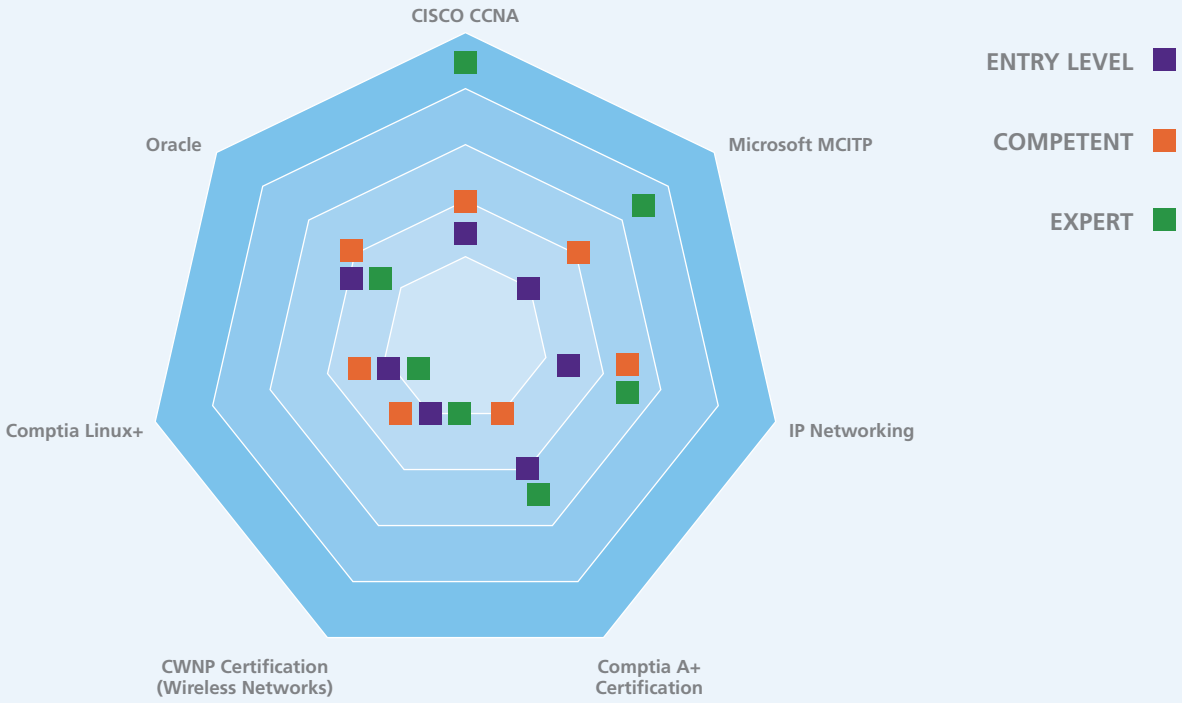
Outer rings are highest demand

Entry Level	Competent Level	Expert Level
Object Oriented design	Illustrator	Object Oriented design
Silverlight	Digital Marketing / SEO	Silverlight
Papervision 3D	Object Oriented design	Papervision 3D
InDesign	Silverlight, InDesign	InDesign
Illustrator	Papervision 3D, After Effects	Illustrator, After Effects

DISCIPLINE 8:
Networking / PC Maintenance

Demand was strong for those with 'expert' level skills sets reflected in the Cisco CCNA and Microsoft MCITP qualifications. However outside of these peak demands there are needs and opportunities at all levels for the skill sets shown in the radar diagram and table below.

Top Ranked Specific Skills / Vacancies - Networking / PC Maintenance



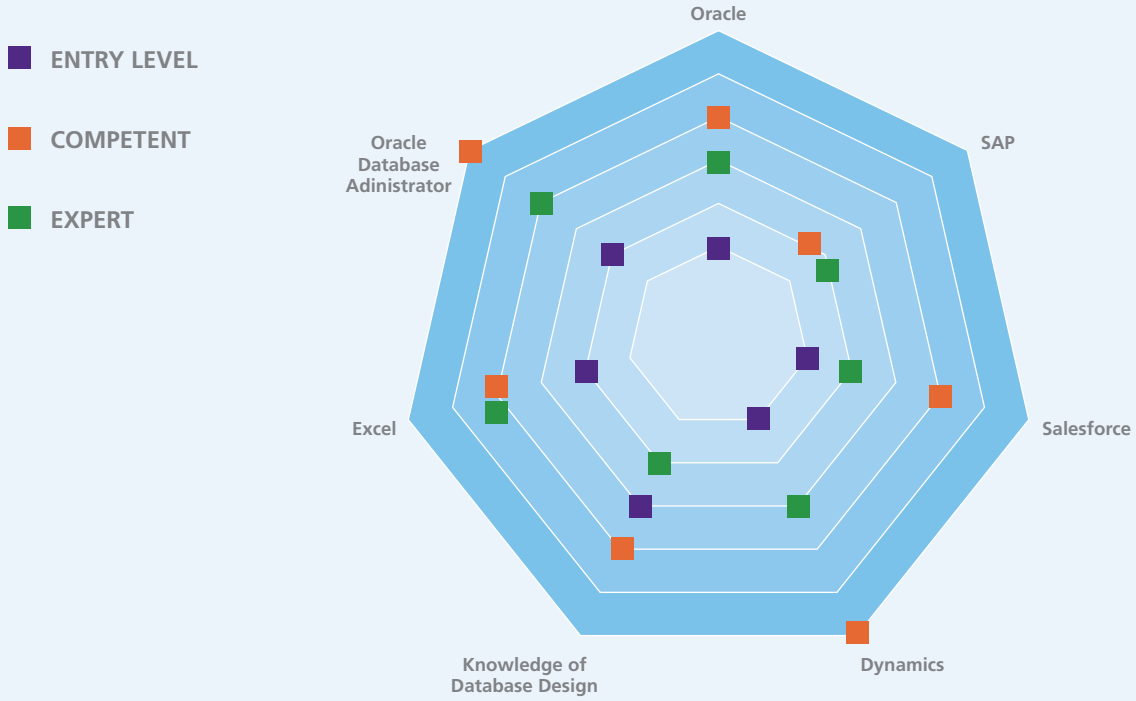
Outer rings are highest demand

Entry Level	Competent Level	Expert Level
Comptia A+ Certification	IP Networking	CISCO CCNA
Oracle	CISCO CCNA	Microsoft MCITP
CISCO CCNA	Microsoft MCITP	IP Networking
IP Networking	Oracle	Comptia A+ Certification
Microsoft MCITP	Comptia Linux+	Oracle
IP Networking	Comptia Linux+	Oracle

DISCIPLINE 9:
CRM

Demand was evident but somewhat modest compared to other disciplines surveyed. Skill sets at 'competent level' in Microsoft Dynamics or as an Oracle Database Administrator were the peak demand. Knowledge of Database design was a skill set in demand at all levels as shown in the radar diagram below. Advanced Excel skills sets were also in demand.

Top Ranked Specific Skills / Vacancies - CRM



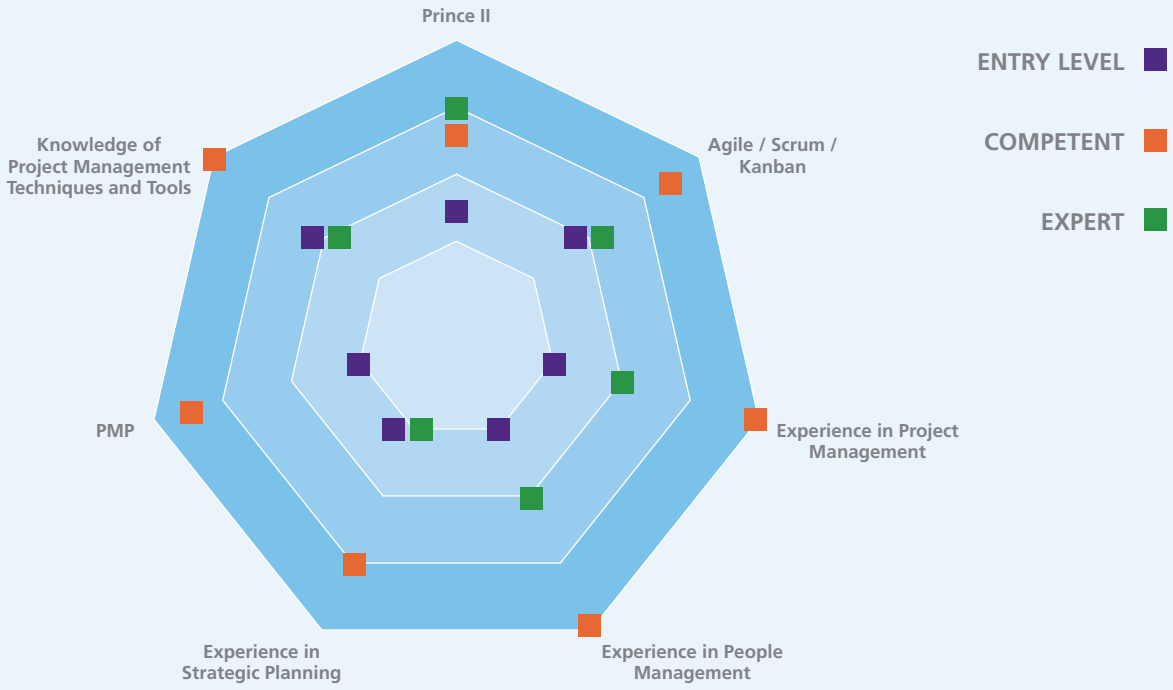
Outer rings are highest demand

Entry Level	Competent Level	Expert Level
Knowledge of Database Design	Dynamics	Oracle Database Administrator
SAP	Oracle Database Administrator	Excel
Excel	Salesforce	Dynamics
Oracle Database Administrator	Knowledge of Database Design	Oracle
Dynamics	Excel	SAP
Oracle	Oracle	Salesforce
Salesforce	SAP	Knowledge of Database Design

DISCIPLINE 10:
Project Management

Strong demand was evident for 'competent level' skillsets across a range of areas within the Project Management discipline as illustrated in the radar diagram below. Agile/Scrum/Kanban and Prince II skill sets are in demand at all levels.

Top Ranked Specific Skills / Vacancies - Project Management



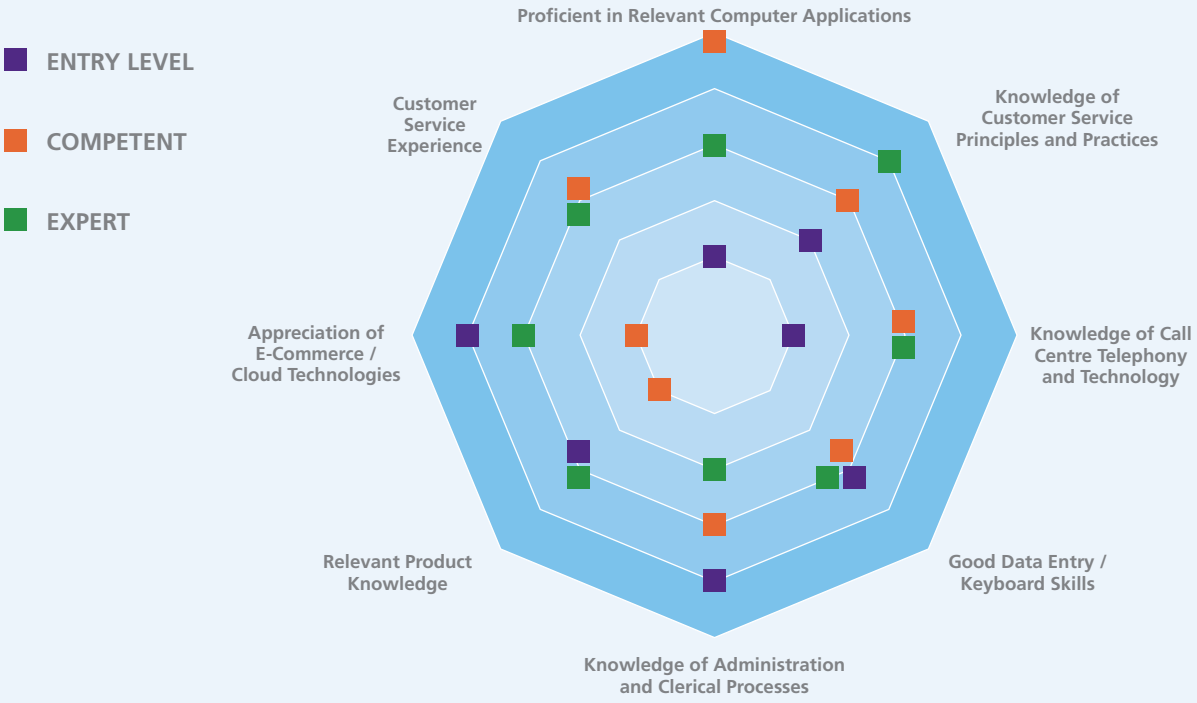
Outer rings are highest demand

Entry Level	Competent Level	Expert Level
Knowledge of Project Management Techniques and Tools	Experience in Project Management	Prince II
Agile / Scrum / Kanban	Experience in People Management	Agile / Scrum / Kanban
Prince II	Knowledge of Project Management Techniques and Tools	Experience in Project Management
Experience in Project Management	Agile / Scrum / Kanban	Experience in People Management
Experience in People Management	PMP	PMP
Experience in Strategic Planning	Experience in Strategic Planning	Knowledge of Project Management Techniques and Tools
PMP	Prince II	Experience in Strategic Planning

DISCIPLINE 11:
Call centre / Contact Centre Support

Demand was moderate and evenly spread across all skill levels although the mix of skill sets required were somewhat different except for Customer Service Experience and Good Data Entry / Keyboard Skills which were needed at all levels.

Top Ranked Specific Skills / Vacancies - Call Centre / Contact Centre Support



Outer rings are highest demand

Entry Level	Competent Level	Expert Level
Knowledge of Administration and Clerical Processes	Proficient in Relevant Computer Applications	Knowledge of Customer Service Principles and Practices
Appreciation of E-Commerce / Cloud Technologies	Customer Service Experience	Proficient in Relevant Computer Applications
Good Data Entry / Keyboard Skills	Knowledge of Customer Service Principles and Practices	Knowledge of Call Centre Telephony and Technology
Relevant Product Knowledge	Knowledge of Call Centre Telephony and Technology	Good Data Entry / Keyboard Skills
Customer Service Experience	Good Data Entry / Keyboard Skills	Relevant Product Knowledge

Conclusions

The FIT ICT Skills Audit survey questionnaire also provided employers with an opportunity to give feedback on their requirements for soft skills and in this final section of the report these will be presented and comparisons will be made with feedback from a broader IBEC[5] survey. Respondents to the FIT ICT Skills Audit 2012 indicated that top ranked soft skills required are as shown in the table below.

Top Ranked Soft Skills required

Entry Level	Competent Level	Expert Level
Leadership	Teamwork	Customer Focus
Presentation Skills	Communication Verbal	Communication Written
Customer Focus	Leadership	Communication Verbal
Initiative	Project Management	Project Management

In its face to face meetings with employers FIT frequently heard a preference for new recruits who are innovative, entrepreneurial and have project management skills.

It was clear that soft skills of the nature indicated above are important to employers in the ICT sector and this is reflected in the findings of the IBEC survey in which employers flagged written communication, business awareness, entrepreneurial skills and the 'right attitude' as important. Another recurring theme is a lack of hands on experience and a desire for new ICT recruits who can 'hit the ground running'.

The sub-set of employers in the IBEC survey who recruited 'Computing Graduates' had a number of concerns where higher rates of dissatisfaction were expressed compared to other sectors. Almost one-third of these employers felt that too few computing graduates were available now and that this would continue over the next five years; and over one-quarter were dissatisfied with the speed at which course content is being adapted to meet changing business needs.

[5] National Survey of Employers' Views of Irish Higher Education Outcomes – IBEC, December 2012 at the request of, and in collaboration with, the HEA.

FIT is of the view that Ireland is at a crossroads and has come to a point where employers in the ICT sector are starting to reflect their experience of persistent skills shortages and inadequate responses from the education and training sector in their strategic planning.

More planning and greater effort is focused on recruiting the skills needed outside Ireland and more policy advocacy is directed towards making that task easier for example the Open Ireland initiative which advocates the granting of automatic work visas to graduates of any of the world's top 250 technological universities and other similar policies.

FIT proposes that we redouble our efforts to generate a much greater quantum of talent from the significant human resource of Irish people to support the ICT and technology sector. It proposes a transformation of both our policy approach and our educational and training structures. FIT has carried out a range of consultations during 2012 and generated a number of white papers exploring these issues in parallel with the practical and related work on the FIT ICT Skills Audit.

The proposed three point plan is well within our grasp as a small country that has shown its capacity to implement change quickly. What is needed above all is the will to do it, the vision to set the goals and the understanding that second-best is not good enough for our most open of economies and population of talented and flexible people.

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2. **Revise the National Skills Strategy and introduce a framework for regular review**

3. **Initiate a Dual Education system to foster a new Associate Professional stream of talent for the ICT/technology workforce.**

In publishing this FIT ICT Skills Audit 2012 we hope to generate both heat and light. Heat in that we are encouraging a robust, passionate, challenging and inspirational debate around the issues raised and the proposals advocated. Light in that we are offering in this report some unique insights at a granular level into the skills needed in the ICT / technology industries and a methodology whereby this can be developed further.

We will do our best to share this report with a wide range of stakeholders and we hope that it stimulates reflection, discussion and fosters an optimistic attitude towards the effort that is required to put in place the new foundations for a successful and sustainable future. The potential of our workforce as the remedy for Ireland's growth and prosperity demands it.

APPENDIX 1:
FIT ICT Skills Audit 2012 Questionnaire

Use the table below to map the main skills needs / vacancies in your organisation. Include "Soft" Skills such as communications, teamwork etc. For each discipline indicate the level of skill required by assigning 1 – 3 level rating for each where: 1 = Entry Level, 2 = Competent, 3 = Expert

For each skill, assign a Full-Time Equivalent (FTE) measure that reflects the enterprise's volume requirement for that skill.

Technical Skills / Level	1	2	3	FTE Requirement
Programming				
Java Programming				
Objective C				
C+ Programming				
C++ and Delphi				
C#				
.Net				
Linux Administration				
SQL Server databases, SQL, ADO.NET				
Exchange Administration				
Visual Basic				
Windows 2000/NT Server and Windows XP/2000/98				
SourceSafe, Crystal Reports, Excel				
ASP.NET				
(Skill)				
(Skill)				
(Skill)				
Entry Criteria:				
Mobile Technology / Development Platform				
Android (Honeycomb / Ice Cream / Sandwich)				
Windows 7				
iOS 5				
BlackBerry				
Object Orientated Design and Development Tools				
Client Side Application Scripting – JavaScript				
Knowledge of Linux / Unix OS				
Experience with Open Source Tools				
SDLC - Software Development Life Cycle				
(Skill)				
(Skill)				
(Skill)				
Entry Criteria:				

Technical Skills / Level	1	2	3	FTE Requirement
Games Development				
Game State Management (GSM)				
Object Orientated Development				
3D Graphics Theory				
Game Logic and Design				
HTML5 and Javascript				
HTML/CSS				
Web-based Architectures and Technologies (REST, XML, JSON)				
OO Design using UML				
Standard Revision Control (SVN) and Defect Tracking Tools (JIRA)				
C++ / Java.Net				
MEL				
(Skill)				
(Skill)				
(Skill)				
Entry Criteria:				
Web Development / Technologies				
PHP				
SQL				
MySQL				
Ruby				
Web Page Development (HTML / XHHTML, JavaScript, and CSS)				
ASP, JSP, JSF and related presentation technologies				
XML and RSS Technologies				
Photoshop				
Dreamweaver				
Flash				
Javascript				
ADO.Net				
(Skill)				
(Skill)				
(Skill)				
Entry Criteria:				
Cloud Computing				
Virtualisation				
PAAS				
SAAS				
IASS				
Support Engineer (Linux – Redhat, Debian, Ubuntu)				
Support Engineer (Windows)				
Exposure to Shell / Perl / Python / PHP scripting				
Virtualisation Technologies				
VCP – VMware Certificate Professional				
CompTIA Network+				
VMWare				
Sphere				
Weeb Services SOAP, REST				

Technical Skills / Level	1	2	3	FTE Requirement
Cloud Computing				
Azure				
Visual Studio				
C#				
(Skill)				
(Skill)				
(Skill)				
Entry Criteria:				
Platform Administration				
Windows System Administration (Windows 2008 – Windows 7)				
Linux				
IOS				
Exchange Server Rollout and Administration				
VBScript / PowerShell / ASP / C# scripting				
Windows Server 2008 Server Administrator				
Windows Server 2008 Active Directory, Configuring				
Windows Server 2008 Network Infrastructure Configuring				
(Skill)				
(Skill)				
(Skill)				
Entry Criteria:				
Digital / Creative Media				
Object Orientated Design				
3D animation				
3DLive				
MXRToolkit				
ARToolkit				
flARToolkit				
Silverlight				
Papervision 3D				
InDesign				
Illustrator				
Firework				
After Affects				
(Skill)				
(Skill)				
(Skill)				
Entry Criteria:				
Networking / PC Maintenance				
CISCO CCNA				
Microsoft MCITP				
IP Networking				
Comptia A+ Certification				
CWNP Certification (Wireless Networks)				

Technical Skills / Level	1	2	3	FTE Requirement
Networking / PC Maintenance				
Comptia Linux+				
Oracle				
(Skill)				
(Skill)				
(Skill)				
Entry Criteria:				
CRM				
Oracle				
SAP				
Salesforce				
Dynamics				
Knowledge of Data-base Design				
Access				
Excel				
Oracle Data-base Administrator				
(Skill)				
(Skill)				
(Skill)				
Entry Criteria:				
Project Management				
Prince II				
Agile / Scrum / Kanban				
Six Sigma / Lean				
Knowledge of Project Management Techniques and Tools				
Experience in Project Management Capacity				
Experience in People Management				
Experience in Strategic Planning				
PMP				
Comptia Project+				
Oracle E-Business Suite				
(Skill)				
(Skill)				
(Skill)				
Entry Criteria:				
Call Centre / Contact Centre Support				
Proficient in relevant Computer Applications				
Knowledge of Customer Service Principles and Practices				
Knowledge of Call Centre Telephony and Technology				
Customer Service Experience				
Good Data Entry / Keyboard Skills				
Knowledge of Administration and Clerical Processes				
Relevant Product Knowledge				

Technical Skills / Level	1	2	3	FTE Requirement
Call Centre / Contact Centre Support				
Appreciation of E-Commerce / Cloud Technologies				
Contact Centre Metrics				
(Skill)				
(Skill)				
(Skill)				
Entry Criteria:				
Soft Skills and Level				
Communication Verbal				
Communication Written				
Presentation Skills				
Leadership				
Customer Focus				
Self-starter				
Teamwork				
Multi-tasking				
Prioritisation				
(Skill)				
(Skill)				
(Skill)				
Entry Criteria:				
Other Role / Requirement				
(Skill)				
(Skill)				
(Skill)				
(Skill)				
Entry Criteria:				
Job Specs / Vacancies Most Difficult to Fill				
(Skill)				
(Skill)				
(Skill)				
(Skill)				
(Skill)				

Other Comments

The ICT Talent Pipeline

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