Labour Market Review

Information & Communication Technology

Collins McNicholas
Recruitment & HR Services Group

July 2016

Executive Summary

Ireland's Information & Communication Technology industry:

- Employs over 105,000 people.
- Employment rose by 40% since 2010.
- Ireland is home to the top 10 technology companies in the world, as well as the top 5 security companies, top 3 enterprise software companies, and top 10 'born on the internet' companies.
- Dublin's 'Silicon Docks' is the centre of tech activity in Ireland.
- Demand for ICT professionals will grow at 5% per year through 2018.
- There will be a dramatic increase in ICT graduates between 2013-2018:
    - Level 8 Computer Graduates: 69% increase.
    - Level 9 Computer Graduates: 50% increase.
    - Level 8 Electronic Engineering Graduates: 106% increase.
    - Level 9 Electronic Engineering Graduates: 164% increase.
- Springboard is providing 1,800 student places across 50 ICT conversion courses in 2016.
- Ireland's international work permit scheme attracts some of the best international tech professionals.
- ICT salaries have risen moderately in Dublin and Cork but remain stable elsewhere. Regional ICT salaries are particularly competitive.
- Cloud computing, data analytics, cybersecurity and the internet of things are sectors of ICT that will experience strong growth in the next 5 years.
- With a strong talent pool, large base of tech companies, and strong government supports in training and research funding, the outlook for the ICT industry in Ireland is strong.

The Information & Communication Technology (ICT) sector directly employs over 105,000 people in Ireland and computer services are responsible for 22% of our national exports. It is one of the fastest growing sectors of the Irish economy, with employment up 40% since 2010. Roughly 75% of those working in the sector are employed by multinationals and we are home to the ten biggest technology companies in the world. Ireland's ICT sector covers a wide range of activities from hardware manufacturing to software development, as well as digital content creation, IT security, cloud computing, telecoms, and technical support services. This diversity ensures the ICT sector in Ireland has a broad skills base, making the country an attractive investment opportunity for multinational firms. There has been a significant number of companies investing in Ireland in recent years, with a considerable number of jobs created as a result. Correctly managing the supply of ICT skills will be the critical task in maintaining growth in the sector.

RECENT INVESTMENTS

ICT companies have invested in many locations throughout the country, but Dublin remains the preferred location for software and services companies, with Cork and Galway also attracting a significant number of investments. Despite this there are some very large ICT investments in Letterkenny, Waterford, Dundalk and Athlone. ICT manufacturing is more widespread, and can be found in a number of regions around Ireland.

Many of the jobs are in software development, programme management, data analytics and technical support. Ireland is increasingly being used as a base for EMEA customer and technical support services, which sometimes coincides with the establishment of a company's European or International HQ in the country. Some of these shared service centres are also branching into data analytics and cloud computing as a natural outcrop from their technical support role. Big data analytics has taken off recently with the likes of SAP, EMC, Qualtrics, 10Gen, Aon, and several other multinational companies investing in analytics programmes. IBM and Accenture have also established data analytics research centres.

The semiconductor and microelectronics sector employs 8,000 people and continues to attract investment from major companies such as Qualcomm, Hittitte, Xilinx, ZMDI, Huawei, and others. The increased role of R&D in Ireland is also a positive trend as it will enable us to stay at the cutting edge of the ICT market. Fujitsu, McAfee, Huawei, ON Semiconductor, Workday, Zendesk, and many others, have all invested in R&D in Ireland over the last 2 years.

Ireland has been attracting a healthy mix of first time and expansion business. Companies, including Google, Intel, Salesforce, Facebook, Twitter, Symantec, and Amazon, have all expanded their operations in Ireland; while companies such as FireEye, Aditi Technologies, Marin Software, SmartBear, Clio, have established operations in Ireland for the first time. The domestic tech scene is also thriving, across all subsectors, from Eblana, Duolog, and Decawave in semiconductor manufacturing, to software companies such as DataHug, Openet, pTools, Trustev and iQuate.

Given the locations of tech companies across Ireland, the volume of companies and expertise already here, and the small size of Ireland relative to other tech centres, such as Silicon Valley, the entire country has the potential to become a regional tech cluster in Europe. Given the short distances one has to travel in Ireland it is reasonable to suggest that the tech cluster that has developed in Dublin in recent years can spread across the rest of the country to form one single tech hub.

				Some Recent Job Announcements	
May 2016	500 jobs	Amazon	Dublin	Hiring data centre technologists, software engineers & customer support staff
April 2016	80 jobs	Slack	Dublin	Expanding its European HQ
April 2016	320 jobs	HubSpot	Dublin	Expanding its EMEA centre
April 2016	100 jobs	Kellton Tech	Drogheda	New EMEA HQ
April 2016	200 jobs	Facebook	Meath	investing €200m in a new data centre
March 2016	100 jobs	PayPal	Dublin	Expanding its EMEA Operations Centre
Jan 2016	300 jobs	First Data	Tipperary	New technology centre and R&D hub
Jan 2016	450 jobs	Oracle	Dublin	Expanding its EMEA centre
Nov 2015	1000 jobs	Apple	Cork	Expanding on its 5,000 person multipurpose site
Nov 2015	160 jobs	Squarespace	Dublin	Expanding its EMEA HQ
Sept 2015	50 jobs	Asystec	Cork	Expanding data management business
Sept 2015	110 jobs	IBM	Cork/Dublin /Galway	Cloud, collaboration and software analytics jobs
Sept 2015	200 jobs	Accenture	Dublin	€25m new Innovation Centre investment
Sept 2015	80 jobs	Tableau	Dublin	Expanding its software visualisation service centre
July 2015	150 jobs	Uber	Limerick	Investing €4m to establish a Centre of Excellence
May 2015	100 jobs	eSentire	Cork	New European HQ and Security Operations Centre
April 2015	200 jobs	Zalando	Dublin	Establishing an Insights Centre for data analytics
April 2015	100 jobs	Movidius	Dublin	Expanding its Design Centre
March 2015	60 jobs	IDT911	Galway	Establishing its European HQ
March 2015	100 jobs	Marsh & McLennan	Dublin	Established a data analytics Innovation Centre

Dublin is the centre of the tech industry in Ireland and the majority of ICT investment is concentrated in the city. Cork and Galway are also important locations in Ireland for tech investment. Dublin is increasingly seen as an attractive location for globally minded tech talent. The cost and availability of housing in the Dublin area may see some investment shift to other locations despite the highly competitive packages offered by most tech companies. The lower cost of living will ensure the flow of tech talent to the regions.

Dublin

Dublin has many of the world's largest ICT companies; online service companies such as Google, which has over 2,500 staff, Facebook, Amazon, Yahoo, Twitter, Hubspot, Dropbox, LinkedIn, and countless other companies all call Dublin their home.

The Silicon Docks is the hub for the ICT industry in Dublin, with a thriving mix of multinationals and start-ups. Opportunities exist for the broadest range of skillsets – software development, cybersecurity, networking and infrastructure, data analytics, cloud computing, and tech support.

South

Cork is the location of several major multinational operations as well as numerous smaller companies. EMC, Apple, VMWare, McAfee, CitCo, Tyco, Qualcomm, and Amazon, all have facilities in the city. EMC employs 3,000 people and has expanded its staff as recently as 2013. It is looking to continue this expansion by pushing its research agenda, focusing on cloud storage, cloud security and compliance. Apple has continued to expand its workforce and now employs over 5,000 people.

South East

Ciphertechs in Kilkenny, an information security firm, and Bluefin Payment Systems in Waterford, a fintech company, have both announced plans to expand their workforces in the region. Waterford operates a number of research institutes out of Waterford IT that are collaborating with tech companies. Sunlife, a fintech firm, employs almost 400 people in Waterford, and Nearform, a software development company is also based in Waterford.

West

Galway has over 190 tech companies, including multinationals such as Avaya, IBM, Oracle, EA, Cisco, SAP and Apple, which is investing $850 million in a new data centre. Indigenous companies like Ex Ordo and Altocloud, which develops communications software, make up an important part of the Galway ICT ecosystem as well. Galway has a thriving start up scene. Initiatives such as PorterShed, which brings together government agencies and educational institutes to provide support to local start-ups, play an important role in assisting local ICT companies expand. The Information Technology Association Galway, WESTBIC, Startx6, and Galway Technology Centre provide further support to local tech companies.

Midwest

In Limerick Analog Devices employs 1,200 people in manufacturing and invested €50 million in an R&D facility in 2011, creating 100 high skilled jobs. Uber set up a Centre of Excellence in Limerick in 2015. Creating 150 jobs. Limerick is also home to Thomson Reuters, QAD, Intel, Arista, Dell, and several other tech companies.

Midlands

The midlands has a small but thriving ICT presence. Ericsson has a large R&D software development centre in Athlone. The Software Research Institute collaborates will several companies locally and specialises in network communications management.

North West

Online retailer, Overstock, has a software development operation based in Sligo. Socrates Healthcare is a domestic ICT company in Sligo that makes management software solutions for healthcare practitioners. UnitedHealth Group and Pramerica are leading companies in the North West, employing over 1,500 people in Letterkenny. Cora Systems in Carrick-on-Shannon builds project management software.

ICT is the fastest expanding industry in Ireland. There is a relentless demand for new employees with the right ICT skills. Demand cuts across virtually every industry. Approximately 60% of ICT professionals are employed in the broad ICT sector, while 40% are employed in other sectors of the economy. Demand for ICT professionals will grow at 5% a year until 2018 and there is expected to be 44,500 job openings in the period 2014-2018. The European Commission estimates that Europe could face an 800,000 person ICT skills shortage by 2020. The shortage of talent in ICT is a global problem. This is due to unprecedented growth and innovation in the sector. What matters most is what the government is doing to grow the supply of tech talent for the industry in Ireland.

The ICT sector is constantly transforming, this impacts the demand for certain skills, and creates new areas of expertise. Subsectors with the most vacancies include programming technologies, mobile technologies, games development, web development, cloud computing, platform administration, digital and creative media, networking, CRM, project management, data analytics, and contact centre support.

Skills Shortages

The greatest need within ICT in Ireland is for professionals with experience as: software engineers and programmers, with programming ability in Java, JavaScript, C#, C++, C+++, .Net, SQL, Perl, Ruby, and Python; web developers, with skills in HTML, CSS, XHHTML, Ruby, and an understanding of Web 2.0 technologies; games developers; software developers for operating platforms, especially Windows and UNIX/Linux;

computer architects and administrators, with skills in big data analytics, customer relationship management applications and SQL server database administrators; cloud computing specialists, with cloud infrastructure, VMWare and other virtualisation technology skills; network specialist engineers; security experts; mobile technology applications developers; ICT project managers; and tech support experts.

Conversion Courses

A report by FIT, an industry-led research group, in 2014, suggests that many of the 5,000 or so vacancies could be filled by people that have completed a 6-24 month conversion course. Springboard, and other ICT skills conversion courses, have been addressing this problem and have made a large number of course places available. Springboard launched 21 ICT courses as part of its 2014 curriculum and offered 40 ICT conversion courses in the 2015/16 academic year.

STEM Programme

The STEM programme encourages students to pursue science, engineering, and technology careers by promoting the benefits of working in these professions to secondary students. Since 2012, and the introduction of bonus points for taking higher level maths in the leaving certificate, there has been a 58% increase in the numbers taking higher level maths. The number of NFQ Level 8 graduates has doubled since 2012, and there has been 2,000 graduates from ICT conversion courses at Level 8 or higher, up to 2014. The level of industry demand being met

through domestic higher education output has increased from 45% in 2012 to over 60% in 2014. This is considerable progress in a short amount of time, nevertheless, with almost 40% of demand either being supported by international recruitment, or going unmet, there is still a lot of progress to be made before the skills shortage problem is resolved.

Overall, the outlook is positive, with the Higher Education Authority (HEA) projecting a 69% increase in Level 8 computing graduates, a 50% increase in Masters level computer graduates, a 106% increase in level 8 electronic engineering graduates, and a 164% increase in Masters level electronic engineering graduates, for the period 2013-2018. The development of a thriving domestic tech scene is further inculcating an interest in the tech industry and the career potential it offers. Initiatives such as Coderdojo, which teaches young kids to code, are key to stimulating an interest in this sector at an early age in the next generation of students.

International Workers

The international recruitment of ICT professionals will be a key tool in limiting the shortages in ICT labour supply. The streamlining of the work permit application system has been an important element in this strategy. Ireland is increasingly seen as an attractive destination by the tech community and we are successfully luring some of the best international talent to our shores.

International Work Permits Issues in 2015	
Employer Name	**No. of Permits**
Health Services Executive	1,573
Google	**286**
Wipro	**212**
Infosys	**194**
IBM	**176**
Intel	**160**
Amazon	**114**
HCL Technologies	**99**
Accenture	**91**
Beaumont Hospital	74

Despite the publicity that the employment permit programme has received, the number of permits issued annually is small, 7,353 in 2015, and although the tech sector recruits a high percentage of these, the amount recruited relative to the size of the industry is minor. Taking into account the positive impact of recruiting these highly skilled individuals, the benefits of this programme are significant. As the table shows, 8 of the top 10 groups being issued permits are tech companies. The government is supporting this trend with its sponsorship of the Tech/Life Ireland initiative, aimed at attracting the best international tech talent to Ireland.

Demand & Career Prospects

We are seeing strong demand for ICT professionals across the sector and the career prospects for those entering the industry are excellent. There has been significant progress in increasing the supply of ICT professionals to meet expanding industry demand. This has gone some way to alleviating the skills shortage in the sector. International recruitment will continue to be an important factor in the Irish ICT sector, but the increase in domestic output must be maintained at its current pace for the sector to continue to thrive on these shores. Despite the tight skill supply we are seeing the better tech companies filling the majority of their positions without much difficulty. These firms typically offer the best packages to recruits and are able to attract the very best talent as a result.

The country is moving in the right direction and the medium term outlook is strong. The correct steps have been taken to increase the skills supply, and are already beginning to bear fruit.

Salary Outlook

A study of our database indicates that there has been some upward pressure on salaries in Cork and Dublin as demand has grown. However, in contrast to this, salaries in other regional locations are not undergoing the same upward pressure. These regional locations offer a significant cost advantage. This wage differential is most evident at upper and lower levels; management and entry level positions are considerably lower in regional locations than in Cork and Dublin. Given the availability of skills in these regions, this represents a great opportunity for tech companies, whether domestic or international, to set up an operation that provides excellent cost competitiveness. There has also been a growing interest in remote working, which provides further opportunities to reduce costs. In light of recent investments in the national broadband network this is becoming a more viable option throughout the country.

TRENDS IN THE ICT SECTOR IN IRELAND

The Expert Group on Future Skills Needs (EGFSN) identified what it termed 'third platform' technologies as the key technological developments that would have the biggest impact on the ICT sector in the future. These are: cloud computing, mobile devices and technologies, the internet of things (IOT), big data analytics, social technologies, artificial intelligence, advanced robotics, 3D printing, augmented/virtual reality, and cybersecurity. The EGFSN estimates that there will be $5 trillion in ICT spending globally by 2020. About 40% of this revenue, and most of its growth, will be from these 'third platform' technologies. This growth will be driven by a rapid expansion in the number of users, the number of connected devices, and the number of applications and services.
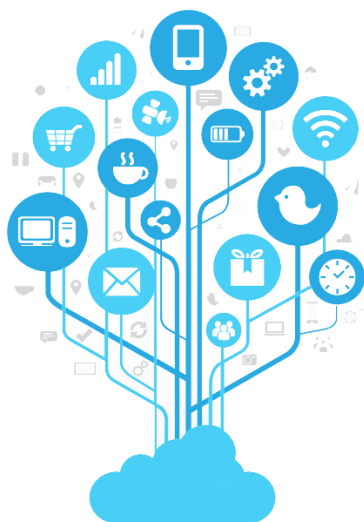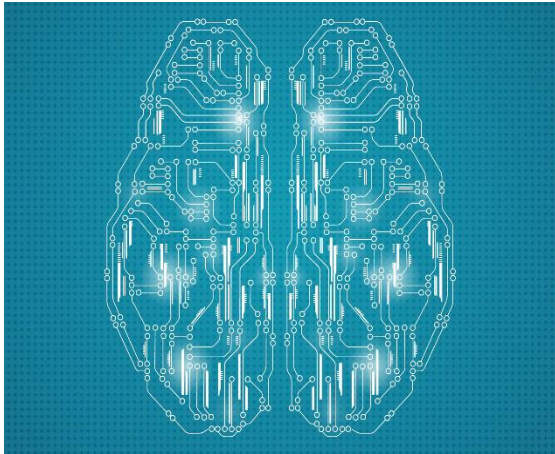

Cloud Computing & Big Data Analytics

Two of the fastest growing subsectors within ICT are cloud computing and big data analytics. The global cloud computing market is expected to reach $287 billion by 2018, according to research firm Gartner Inc., giving it a Compound Annual Growth Rate (CAGR) of 17.1% from 2011-18. The global market for big data analytics is forecasted to grow at a CAGR of 18.45% to 2021, taking the size of the market from $28.6 billion in 2016 to $66.8 billion in 2021. Big Data is a relatively small but fast growing subsector of ICT. There will be a strong demand in business for users with the data analytical and statistical skills to utilise this resource. The Irish government has funded several academic research facilities in this space to foster the skills and technologies necessary for future growth. All of these research facilities are partnered with international companies. The Centre for Applied Data Analytics Research, the INSIGHT Centre for Data Analytics, the Irish Centre for High-End Computing, the Irish Centre for Cloud Computing & Commerce, and Tyndall, are all conducting industry leading research. This investment will ensure that Irish graduates will have the right skills to fill the exploding demand in this area.

The Internet of Things & Cybersecurity

The Internet of Things (IoT) will see more than 20 billion devices connected to the internet by 2020. This will require intensive R&D and ICT management skills to develop and integrate these technologies. Expertise will be required in architecture and object identification, security, software development, interfaces, smart sensors, testing, and standardisation and interoperability. This will also lead to a greater demand for complex engineering skills, particularly in relation to microelectronics, nanotechnology, and material science. The explosion of devices gathering data and sharing it via the internet will be a key driver of growth in everything from semiconductors and sensors to cloud computing and cybersecurity.

Cybersecurity is set for rapid growth, spurred by the expanding cloud computing and IOT industries. According to Gartner Inc., the global cybersecurity market will reach $170 billion by 2020, up from 75 billion in 2015. Data breaches can impose a large cost on companies, and with ever more data being stored on the cloud, demand for professionals with cybersecurity and cloud computing skills will increase steadily over the next five years.

Many of these trends are complementary. Cloud computing offers the storage and processing power for big data analytics which can source much new data through the proliferation of IOT. In turn, semiconductor and sensor manufacturers will experience growth in demand to support these thriving sectors. The proliferation of these technologies will also generate security and privacy concerns that will call for stronger and more robust cybersecurity. Data breaches at major tech firms over the last 12-18 months, in which personal details including financial details, were stolen by hackers highlights the need for more secure data storage and management technologies.

Other sectors likely to experience growth in the next 2-5 years are advanced robotics, artificial intelligence, augmented and virtual reality, and 3D printing. Ireland is well placed to take advantage of these trends with many of the biggest players in these sectors already having a presence in the country.

CONCLUSION

Investments in research and education and the presence of major multinational ICT companies in the country puts Ireland in an excellent position to take advantage of the growth in demand for technology globally. Talent remains the central criteria for this industry. Shortages in key skills are impacting the industry across the world, and the regions that produce the best talent, and can meet industry demands, will go the furthest in attracting ICT investment. We expect the strong pipeline of talent that has been developed in recent years to largely satisfy the growing demands of the tech industry in Ireland. Ireland's prospects within the global tech industry look very positive.

Niall Murray

Niall Murray
Managing Director
Collins McNicholas Recruitment & HR Services Group

Email: niall.murray@collinsmcnicholas.ie
Phone: 087 2860239

MEET THE COLLINS MCNICHOLAS ICT TEAM

Aideen Cummins
Principal Consultant

Phone: 071 9140252

aideen.cummins@collinsmcnicholas.ie

Rory Walsh
Regional Manager, Cork

Phone: 021 4809203

rory.walsh@collinsmcnicholas.ie

Gillian Nicholson
Principal Consultant

Phone: 091 706714

gillian.nicholson@collinsmcnicholas.ie

Donie Shine
Recruitment Consultant

Phone: 090 6450666

donie.shine@collinsmcnicholas.ie

OFFICE CONTACT DETAILS

Galway Head Office

Tel: (091) 706706
galway@collinsmcnicholas.ie

Cork Office

Tel: (021) 4809118
cork@collinsmcnicholas.ie

Sligo Office

Tel: (071) 9142411
sligo@collinsmcnicholas.ie

Athlone Office

Tel: (090) 6478104
athlone@collinsmcnicholas.ie

Dublin Office

Tel: (01) 6620088
dublin@collinsmcnicholas.ie

www.collinsmcnicholas.ie

Collins McNicholas
Recruitment & HR Services Group