



Rialtas na hÉireann  
Government of Ireland

# Technology Skills 2022

## Ireland's Third ICT Skills Action Plan

Prepared by the Department of Education and Skills



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Technology Skills 2022: Ireland's Third ICT Skills Action Plan is a collaborative effort by Government, the education and training system and industry to meet Ireland's high level ICT skills needs.

Government agencies, State-supported bodies and key industry stakeholders involved in the development of the Action Plan include:



connecting  
women **in**  
technology

# Technology Skills 2022

## Ireland's Third ICT Skills Action Plan

Government, the Higher & Further Education and Training Sector and Industry working together to meet Ireland's high-level ICT skills needs





## Foreword

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The development and attraction of high-level ICT skills is crucial to the growth of the Irish economy and job creation, and has been over many years. Ireland has established itself as a hub for the technology sector, and has formally sought to meet its associated skills needs through the ICT Skills Action Plan process, which was first introduced in 2012. Through a number of targeted measures the two action plans to date have been successful in boosting both the numbers of high-level ICT graduates from Ireland's education and training system, as well as the attraction of international talent, to help meet the increase in demand for high-level ICT skills over the last decade.

This has contributed towards the establishment of Ireland's status as a global centre for high end ICT talent. *Technology Skills 2022: Ireland's Third ICT Skills Action Plan* now seeks to build upon this momentum – but must do so in the context of a changed dynamic in the demand for high-level ICT skills. As detailed research undertaken by the Expert Group on Future Skills Needs has shown, demand for computing and engineering graduates will increase rapidly in the coming years, driven by the continuing growth of the technology sector, the impact of emerging technologies on all sectors of the economy and the spread of digitalisation.

The supply of high-level ICT skills is no longer just a sectoral issue, but a national economic priority. In developing this new plan we have worked extensively with industry and the education and training sector in devising measures that can boost supply to meet the ambitious level of demand forecast for the coming years. By 2022 the interventions outlined in this plan aim to deliver up to an additional 5,000 graduates per annum through indigenous supply, with the remainder serviced by inward migration.

This target will be met through a series of impactful measures within the education and training system, including an expansion of provision in higher education; the continued expansion and development of Skillnet Ireland programmes; growth in the number and intake of ICT apprenticeships, and the introduction of a new Pathways to ICT programme – a new reskilling pathway aimed at attracting learners from diverse professional backgrounds into high-level ICT roles. This will be supported by measures such as the Human Capital Initiative (from 2020), and reforms to the National Training Fund.

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This plan will also seek to maintain Ireland's attractiveness to international high-level ICT talent, by building on existing initiatives such as the Tech/Life Ireland portal and Graduate Stayback permission scheme, as well as through the implementation of the recommendations of the *Government's Review of Economic Migration Policy*<sup>1</sup>.

The plan will be implemented through a partnership between Government, industry and the education and training sector. Its success will ensure that Ireland's technology sector and, increasingly, other sectors of the economy, continue to thrive to the benefit of Ireland's competitiveness, economic prosperity and sustainable job growth.

Freastalóimid ar riachtanais scileanna TFC ardleibhéal na hÉireann, agus déanfaimid a leithéid trí roghanna foghlama nua a sholáthar do ré nua – ag tacú le daoine ar mian leo filleadh ar an bhfórsa oibre agus ag cruthú deiseanna athoiliúna mar aon lenár gconair oideachais níos traidisiúnta a fhorbairt agus déanfaimid fás an gheilleagair a bhrú chun cinn trí chéimithe, printísigh agus oiliúnaithe ardcháilíochta a sholáthar a bhfuil taithí acu ar an saol oibre agus tallann is fearr agus is cliste a thabhairt isteach ó thar lear.



**Joe McHugh T.D.**

Minister for Education and Skills



**Heather Humphreys T.D.**

Minister for Business, Enterprise and Innovation

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<sup>1</sup> <https://dbei.gov.ie/en/Publications/Publication-files/Review-of-Economic-Migration-Policy.pdf>

# 1 Overview

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This plan sets out those priority actions which will be undertaken in the four-year period 2019-2022 to meet the demands for high-level ICT skillsets in the Irish economy. It sets out to provide appropriate education and training pathways for people to train, learn and upskill in a variety of high-level ICT skills which are sought after by a diverse range of industries.

Ireland's success as a global technology hub has impacted positively not just on the growth of the ICT sector – the influence of technological advances has been felt across industries. High-level ICT skills, such as computing and electrical and electronic engineering skillsets associated with the design, building and maintenance of ICT systems are in high demand. It is essential that those who wish to learn and train in this area are provided with the pathways to do so.

The plan will be delivered through a partnership between Government, industry and the education and training system.

*We will expand opportunities to learn, train and upskill. We will deliver new conversion courses to attract professionals who traditionally did not consider ICT for a career.*

*We will call on Institutes of Technology, colleges and universities to develop and open new courses for the employed, for apprentices and for trainees.*

*We will drive engagement with multinationals and the best homegrown companies to support and answer their talent search.*

The priority actions outlined in this plan were informed by an Expert Group on Future Skills Needs forecast which identified a significant growth in demand for high-level ICT skills over the coming years. Consultation with stakeholders from across industry and the education and training sector identified a comprehensive suite of supporting actions which are outlined in the background paper, and which have informed the focus of the plan: meeting further demand for training and skills development through new and innovative pathways.

Our plan will target specific areas of high demand which the Expert Group on Future Skills Needs highlighted, including data analytics, artificial intelligence, robotics, animation and gaming, among others.

Previous ICT Skills Action Plans have made a major contribution to meeting targeted skills needs, with a particular focus on increased provision in the higher education sector. As a result of this, there will be a significant growth in the numbers of high-level ICT graduates over the coming years.

The plan builds on this growth and in addition to the planned increases in higher education provision will provide new pathways to skills development, through further education, in-work training and innovative models of learning. This approach has the potential to make a substantial contribution to the enhanced provision required to support even greater development of high-level ICT skills, to meet the projected demand in industry and help grow the Irish economy.

We have set an ambitious target to increase the numbers of learners graduating with high-level ICT skills by over 65% by the end of 2022. That represents an additional 5,000 graduates, apprentices and trainees who will be skilled in technologies vital to Ireland's future growth.

We recognise the critical role of labour flows from abroad, both from within the EU/EEA and also the importance of the employment permit system in facilitating the attraction of skilled ICT professionals from outside the EEA to work in Ireland.

Development of the specific supply responses as set out in this plan takes place against the backdrop of the development and ongoing delivery of a number of significant strategies across the entire education and training system which seek to strengthen high-level ICT skills across the labour force as a whole.

The benefits of these reforms and initiatives will be harnessed over the medium-term in meeting the rapid increase in high-level ICT skills needs anticipated by the EGFSN forecast and help continue to build on the initiatives undertaken under the first two ICT Skills Action Plans.

The work in this field has delivered a 54% increase in mainstream high-level ICT graduate numbers between 2012 and 2018 and amounts to a 70% increase at level 8+ when upskilling and reskilling programmes are taken into account.

Our aim is to keep building on the momentum.

**We will meet growing demand and drive economic growth by producing top quality high-level ICT graduates, apprentices and trainees with experience of the world of work and by attracting the best and brightest talent from overseas.**



## 2 Introduction

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Ireland is a global technology hub, with 16 of the top 20 global technology firms, 9 of the top 10 US ICT companies and 4 of the top 5 IT service companies locating strategic operations in Ireland<sup>2,3</sup>. The ICT sector is a driver of Ireland's productivity growth, a key contributor to total value added to the economy, as well as a driver of exports and high quality, highly paid employment.

The application of technological advances to other sectors of the economy has also driven their productivity, competitiveness and economic resilience. The wider ICT sector has therefore played a central role in supporting the Irish economy's export led recovery from the economic crisis of the late 2000s and early 2010s and the creation of strong and sustainable economic growth as the decade comes to an end.

The actions identified in this plan are designed to ensure that the projected increase in demand for high-level ICT skillsets in the Irish economy over the coming years is met in order to realise Ireland's medium-term growth potential.

Rapid growth in the sector is driving increased demand for high-level ICT skills. This is also evident as digitalisation takes hold across the economy and as the international labour market tightens and competition intensifies for skilled professionals.

*Technology Skills 2022: Ireland's Third ICT Skills Action Plan* sets out to achieve a step-change in Ireland's supply performance, through a focussed set of impactful actions that will underpin the State's continuing status as a global centre for high-level ICT talent. This ambition will be realised through a concerted partnership approach between Government, industry, and the education and training sector.

Meeting these skill needs will be delivered through three main actions:

- expanding the numbers of ICT graduates at level 8+, both through higher education academic pathways and through new apprenticeship models;
- strengthening existing pathways and the creation of new structured opportunities for the development of high-level ICT skills through progression from the further education and training system into higher education; and
- facilitating inward migration of skilled ICT professionals both from within and outside the EEA.

These measures will be enabled by current investment in Ireland's higher education system as well as funding decisions announced in Budget 2019<sup>4</sup> including the +0.1 percentage point increase in the Training Levy in both 2019 and 2020 and the establishment of the €300m Human Capital Initiative for the period 2020 - 2024.

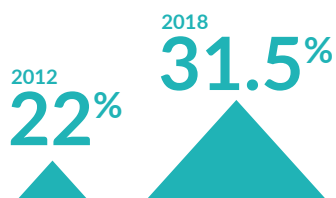
2 <https://www.idaireland.com/doing-business-here/industry-sectors/ict>

3 <https://www.idaireland.com/doing-business-here/industry-sectors/software>

4 <http://www.budget.gov.ie/Budgets/2019/Documents/2.%20Budget%202019%20Tax%20Policy%20Changes.pdf>

## Performance to Date

### Creating student demand:



The percentage of students opting for the Higher Level Leaving Certificate mathematics examination has increased from 22% in 2012 to 31.5% in 2018.

#### Building the basics



In 2017, a total of 55 summer and autumn ICT camps for second-level students were held with overall participation of 3,893 student attending from all over the country. Female participation was 46.6%.

#### Providing experience



In 2018, over 11,500 students registered a first preference for a level 6-8 engineering/technology course through the CAO, nearly 15% of first preferences.

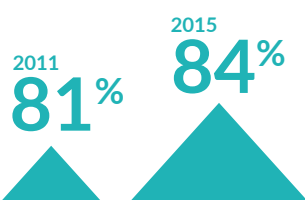
#### Delivering choice

### Meeting our skills needs:



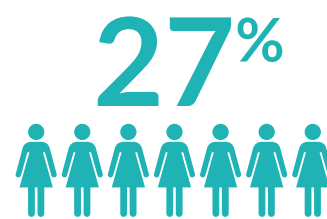
The number of level 8+ ICT graduates in mainstream settings rose by 46%, from 2,310 in 2012 to 3,378 in 2016 and is estimated to reach 3,549 in 2018. This represents a 54% increase over 2012.

#### Increasing provision



Retention rates on ICT degree programmes have improved from 81% in 2010/2011 to 84% for the 2014/2015 student entry cohort.

#### Enhancing retention



The proportion of females participating in Springboard+ ICT courses is 27%. This is almost double that entering through the CAO system to mainstream courses at 15%.

#### Supporting opportunity

### 3 The ICT Skills Action Plan 2012–2018: Performance to Date

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The two previous ICT Skills Action Plans developed and published since 2012 have demonstrated a strong collaborative industry-Government partnership towards building the domestic supply of high-level ICT personnel.

Significant progress has been made in meeting key objectives under the previous 2012 and 2014 ICT Skills Action Plans:

- The number of mainstream level 8+ graduates rose from 2,310 in 2012 to 3,378 in 2016. This is expected to reach 3,549 by 2018. This represents a 54% increase over 2012 levels. When graduates from ICT Conversion programmes, Springboard+ and incentivised places are taken into account, the increase is 70% with an estimated 5,310 qualified ICT personnel expected to have graduated in 2018.
- Retention rates on ICT degree programmes have improved from 81% in 2010/2011 to 84% for the 2014/2015 student entry cohort.
- The percentage of students opting for higher level Leaving Certificate Mathematics has increased from 22% in 2012 to 31.5% in 2018. This upward trend should be assisted by changes to the Leaving Certificate grading structure and the widening of higher level grade ranges counting towards CAO points accumulation which took effect in 2017.
- Computer Science is being introduced on a phased basis as a Leaving Certificate examination subject commencing in September 2018. Coding has been available as a short course at Junior Cycle level since September 2014.
- The development and launch of the Tech/Life Ireland initiative in 2016 to promote Ireland internationally as a destination for high-level ICT skills has increased the awareness of Ireland as a destination for highly skilled ICT professionals from abroad.
- The streamlining of the work permit application system since 2014 has also been an important element in the growth achieved in ICT related permits (new and renewal) which have increased incrementally from 1,872 in 2014 to 4,021 in 2018.

## 4 Expert Group on Future Skills Needs: Skills Demand Forecast 2017 to 2022

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Increased demand for ICT professionals is significantly exceeding previous projections.

The 2013 skills demand forecast set out by the Expert Group on Future Skills Needs (EGFSN) included as its central baseline scenario, a compound annual growth rate (CAGR) of 4.9%. The main objective of the 2014-2018 ICT Skills Action Plan was to achieve an ambitious target of meeting almost three-quarters of these skills needs from the national education and training system.

In 2013 and 2014, this target was in fact exceeded.

From 2015 onwards, buoyed by the recovery in the economy and wider labour market, demand for high-level ICT skills moved onto the higher growth scenario as set out by the EGFSN in 2013 – at a CAGR rate of 7.2%. As of 2018, national graduate numbers are now forecasted to meet 57% of demand, reflecting the acceleration in high-level ICT skills demand from that initially forecast.

In order to underpin the development of a new ICT Skills Action Plan, the EGFSN updated its 2013 ICT skills demand forecast. It examined the demand for high-level ICT skills in Ireland over the five-year period 2017 to 2022, within both the broad ICT sector as well as other sectors of the economy.

The central scenario set out in the EGFSN's study projected that the high growth ICT skills scenario set out in 2013 will not just be maintained, but will accelerate in the coming years. The forecasted CAGR in ICT skills demand of 8.5% will increase the demand for high-level ICT professionals from 85,000 in 2018 to 139,000 by 2022, relating to all sectors of the economy.

As set out in Table 1 opposite, the total projected job openings for high-level ICT skills over the period 2018-2022 amounts to almost 73,000. This encompasses both replacement demand and additional demand driven by growth within the technology and wider sectors.

Annual job openings are forecast to increase from 11,594 in 2018 to 17,795 per annum by 2022, an increase approaching 60% and substantially in excess of the levels projected under the 2014-2018 ICT Skills Action Plan.

**Table 1: EGFSN forecast Central Baseline Scenario: Potential Job Openings for High-level ICT Professionals by Skills Type and NFQ Level, 2018-2022**

		Annual Job Openings					Total job openings 2018-2022
		2018	2019	2020	2021	2022	
Computing	Level 6/7	1,410	1,560	1,700	1,840	1,990	8,500
	Level 8+	8,590	9,680	10,990	12,260	13,710	55,230
Electronic and Electrical Engineering	Level 6/7	324	340	369	396	415	1,844
	Level 8+	1,270	1,340	1,440	1,560	1,680	7,290
Total potential job openings		11,594	12,920	14,499	16,056	17,795	72,864



**We will expand opportunities to learn, train and upskill. We will deliver new conversion courses to attract professionals who traditionally did not consider ICT for a career.**

**We will call on Institutes of Technology, colleges and universities to develop and open new courses for the employed, for apprentices and for trainees.**

## 5 Assessment: Meeting High-level ICT Skills Needs to 2022

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The forecast level of demand for high-level ICT skills over the next four years to 2022 is such that - notwithstanding significant projected growth in high-level ICT graduate output - it cannot be met exclusively through existing mainstream sources.

A key theme for *Technology Skills 2022: Ireland's Third ICT Skills Action Plan* is the introduction and further development of new and innovative structures to meet high-level ICT skills needs.

To date, demand for high-level ICT skills has largely been met through academic programmes at level 8+. Evidence from the skills demand forecast indicates that the greatest demand over the coming years is for individuals who are appropriately qualified and also have a number of years of industry experience.

Transversal skills have also been identified as critical in an individual's ability to leverage their high-level ICT skills. The development of vocational programmes, such as apprenticeships, at varying levels of the NFQ, and widening opportunities for entry to academic computing and engineering programmes provide for a wider range of upskilling and reskilling options for a rapidly developing technological environment.

This plan will also support and enable learner-centred progression across the framework of qualifications through the availability of structured pathways. The education and training system, working closely with industry partners, has an important role to play in expanding its range of offerings in terms of flexibility and responsiveness in meeting current and emerging high-level ICT skills needs.

Finally, the further promotion of Ireland as a location of choice for high-level talent, supported by a user-centric and responsive work permit system to attract international talent has a crucial role to play in responding to immediate demand for high-level ICT skills across the economy.

## 6 Delivering high-level ICT skills needs

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Graduate output from the national education and training system continues to be fundamental to meeting Ireland's high-level ICT skills needs. The system has responded well to date and, without additional intervention, has planned to meet the need for an additional 1,800 graduates per annum by 2022 – a percentage increase approaching 25%.

However, based on the central baseline scenario set out in the EGFSN projections, up to 18,000 job openings will be available for persons with high-level ICT skills on an annual basis by 2022. This equates to 73,000 job opportunities for graduates with high-level ICT skills over the next four years.

Without additional interventions we will deliver over 9,200 graduates per annum (including graduate apprentices) from the national education and training system by 2022. In addition, in the region of 4,000 work permits were issued in the last year to migrants with high-level ICT skills.

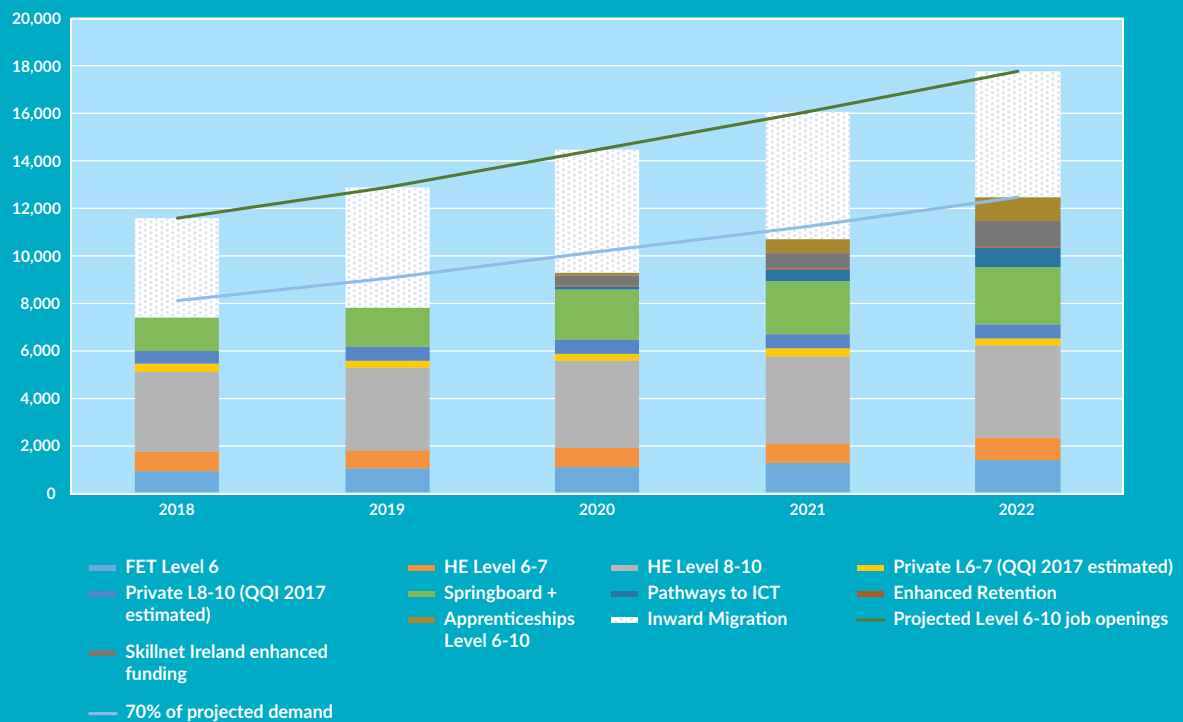
To meet the projected increase in demand for skilled individuals, it will be necessary to supplement the increases which are already planned with a suite of new, impactful actions that will help meet the ambitious new level of demand, and maintain Ireland's status as a global leader for the development and attraction of high-level ICT talent and skills.

*Technology Skills 2022: Ireland's Third ICT Skills Action Plan* sets out actions to further expand provision from the education and training system to deliver an additional 3,200 high-level ICT graduates per annum over and above the existing planned increase in provision to 2022. This means that there will be 5,000 more graduates with high-level ICT skills graduating every year by 2022, allowing Ireland to meet up to 70% of annual expected demand from our own education and training system.

This is a significant ask and will rely on diversifying the range both of students entering the system and the offerings from the system. The scale of increase demonstrates the level of commitment from the Government, industry and the education and training sector to meeting high-level ICT skills needs.

Growth in the level of inward migration both from within the EU and non-EU/EEA migrants will also be required, particularly in the immediate term.

Figure 1: High Level ICT Skills - Demand estimates and Supply response 2018-2022



## 7 Priority Action Areas Technology Skills 2022

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Targeted, impactful actions are necessary to complement existing measures and boost the supply of high-level ICT skills in the coming years.

This is critical to support the continued competitiveness and growth of the broad ICT sector and, increasingly, other sectors of the economy as digitalisation takes hold. As referenced, this also takes place in the context of near full employment in the Irish economy, with a resulting tightening of the labour market; as well as intense competition for ICT professionals internationally, particularly within the EU.

This action plan will target five priority areas to increase the supply of high-level ICT skills across sectors. This will increase the domestic supply of skills while targeting international talent to the sector – a vital factor which will assist in addressing emerging skills needs in terms of new technologies in addition to contributing to the absolute supply of skilled professionals.

The expansion of provision in further education and training as well as at the higher education level will assist in widening access to the education system for learners wishing to reskill and upskill, increasing the number of high-level ICT graduates.

Priority areas for action under the Plan discussed further in the section below are as follows:-

- Expansion of Provision in Higher Education
- Pathways to ICT
- ICT Apprenticeships
- Skillnet Ireland
- International Talent

### 7.1 Expansion of Provision in Higher Education

Increased provision of high-level ICT places in higher education will continue to contribute significantly to the supply of skilled graduates to the ICT sector.

Previous action plans have primarily focussed on increasing capacity within the higher education sector. In addition to supporting the current levels of provision, this plan now places a strategic focus on fully utilising the range of learning opportunities available across the tertiary education system to deliver a range of pathways to meet high-level ICT skill needs now and into the future.



## 7.2 Pathways to ICT

This action plan will build on existing partnerships between the further and higher education sectors to deliver a new reskilling pathway which provides an entry point at the further education level with a defined progression pathway to higher education ICT programmes at NFQ levels 6 and 7.

The Pathways to ICT programme will build on the success of the Springboard+ programme in attracting learners from diverse professional backgrounds into ICT with a particular focus on attracting females into the sector. It will aim to reskill returners and individuals who are currently employed in industries which may be at risk due to technological advancements and upskill individuals through conversion pathways to ICT. It will formalise progression pathways between the relevant education and training board (ETB) and higher education institutions (HEIs) in agreeing course content and design.

Pathways courses will be delivered in collaboration with regional employers to ensure that participants are being equipped with the skills needed for the region. The programme will be implemented at the regional level with participation from the Regional Skills Fora in identifying ICT skills needs and adapting the programme to the needs of that specific region. This is important for the development of industry regionally and to ensure that individuals are equipped with the appropriate skills for regional industry needs.

## 7.3 ICT Apprenticeships

The continued growth of ICT apprenticeships can play a major role in meeting high-level ICT skills needs. Under both the Programme for Partnership Government, and *Action Plan to Expand Apprenticeships and Traineeships in Ireland, 2016-2020*<sup>5</sup>, the Government has committed to enrolling 31,000 people on apprenticeship programmes between 2016 and 2020. This ambition is being supported by significant increases in the budgetary allocation for apprenticeship training (€122m, an increase of almost 24% on 2017).

This includes expansion of the apprenticeship model into non-craft areas, including ICT. Two programmes in ICT (Associate Professional Network Engineer and Associate Professional Software Developer) have been validated along with a level 7 apprenticeship in Industrial Electrical Engineering with their first intake of apprentices in situ as of September 2018.

### **PATHWAYS TO ICT IN PRACTICE**

James is currently employed and is aware of the employment opportunities in the technology sector, but is unsure as to which aspects of computing he is most interested in.

The Pathways to ICT Programme will be delivered in his local PLC centre and will provide an opportunity to gain essential skills in computer programming with a level 5 or 6 qualification.

James can then decide to progress within the Pathways programme to his local Institute of Technology/ Technological University to complete a level 7 qualification in software engineering.

### **ICT APPRENTICESHIPS IN PRACTICE**

As a Leaving Certificate student, Stephen would like to enter the ICT sector but does not wish to undertake a four year academic programme. The ICT Associate Professional apprenticeships offer an opportunity to gain a qualification at level 6 through on-the-job experience as well as college-based learning while being paid.

Emma has been working in a multinational technology company for a number of years – with her employer she signs up for a Professional Doctorate in Engineering under the apprenticeship model, combining her workplace learning with the additional academic support provided by the university partners to push the boundaries of technology.

<sup>5</sup> <https://www.education.ie/en/Publications/Policy-Reports/Action-Plan-Expand-Apprenticeship-Traineeship-in-Ireland-2016-2020.pdf>

A further seven apprenticeship programmes are in development at the current time at levels 6-10 of the NFQ. The ICT and engineering apprenticeships will be promoted to multi-national corporations as well as indigenous companies at a regional level to ensure that skills needs nationwide are being addressed.

#### 7.4 Skillnet Ireland

Skillnet Ireland has demonstrated a strong capacity to work closely with its business learning networks, responding flexibly and in innovative ways to meet specific ICT skill needs. Specific technology and ICT focussed Skillnets include animation, robotics, green tech, internet of medical things, medtech, electronic systems, ICT and software.

The Technology Ireland ICT Skillnet, in collaboration with University of Limerick, also launched Ireland's first Masters degree in Artificial Intelligence (AI) in early 2018, in response to a growing demand by industry for AI skills in Ireland.

Continued expansion and development of Skillnet Ireland networks through programmes aligned with the National Framework of Qualifications can encourage professionals to remain in the wider ICT sector. These will be supported by clear career pathways which highlight opportunities for companies and individuals in employment.

#### 7.5 International talent

The education and training sector will increase the number of high-level ICT graduates by over 5,000 per annum by 2022. In light of the accelerated pace of demand for ICT professionals, there will be a continuing requirement to ensure the attraction of international talent, both from within the EU and EEA and through the Employment Permits System for skilled professionals outside of the EEA.

Building on reforms to the Employment Permits system from 2014, a review of the wider economic migration policy was also undertaken in 2018, to ensure the permits system remains responsive to the changing labour market as the economy approaches full employment.

Recommendations made and actions taken as part of this review will further enhance Ireland's attractiveness to high-level ICT professionals internationally.

#### SKILLNET IRELAND IN PRACTICE

As an employer in a SME in the technology area, Rob is planning to leverage technology developments to expand into new areas. His existing team will need upskilling in this new and emerging area.

Together with his Skillnet Ireland network, he can work to design a training programme directly relevant to his development needs, from a short course to a Level 9 online Masters in Cybersecurity through distance and blended learning.

#### ATTRACTING OVERSEAS WORKERS

Ahmed is a highly skilled developer based in a non-EEA country. He has expertise in an emerging field of robotics and is looking for new challenges in the area. He can access information on jobs in Ireland, Irish society and immigration information on an easy to understand, centralised government website.

## 8 Other Strategic Actions

A number of other initiatives are also planned that can be expected to play an important role in contributing to the achievement of the objectives of this plan.

### Human Capital Initiative (HCI)

The HCI will deliver additional investment of €300m over the five-year period 2020-2024, with the spend targeted towards increasing capacity in higher education in skills focused programmes designed to meet priority labour market needs such as are identified in this plan and seeking to promote innovative and responsive models of programme delivery.

### Reform of the National Training Fund (NTF)

Delivery of the recommendations contained in the independent review of the NTF set out in the Implementation Plan published as part of *Budget 2019*<sup>6</sup> can be expected to strongly support the achievement of the objectives of this plan.

In particular, the establishment of a new advisory group to the National Skills Council (NSC), chaired by an employer representative on the council, to make recommendations to the NSC on NTF expenditure priorities will help ensure that meeting ICT skills needs continue to be prioritised.

### Review of the Funding Model for Higher Education

The continuing implementation of the recommendations of the Review of the Allocation Model for Funding Higher Education Institutions is being prioritised. This will help shape the future direction, performance and impact of higher education which will include an analysis of ICT courses and funding and infrastructure, which is essential in providing high-level ICT graduates to the sector.

### Female Labour Force Participation

With the economy approaching full employment, there is a major emphasis on continuing to expand the labour force, partly to address the increasing need for skills and talent. Promoting female labour force participation which stands at 56% (compared with 69% for men)<sup>7</sup> is a key focus by addressing barriers to entering or re-entering the labour market.

#### PROVIDER OPPORTUNITIES

Education and training providers will be able to access funding which will support collaboration across the sector and partnerships with industry. The delivery of innovative learning programmes will be funded through a series of targeted calls throughout the lifetime of this plan under existing and future initiatives such as Springboard+ and Pathways to ICT. Increased provision of learner places in key skills areas is a major response by Government to National Strategic Objective 5 contained in Project Ireland 2040 – A Strong Economy Supported by Enterprise, Innovation and Skills.

#### INCREASING FEMALE LABOUR FORCE PARTICIPATION

Niamh graduated with a degree in computing in 2004, but hasn't worked in the technology sector for a number of years having taken a career break. She would like to return to the workforce, but is aware that the rapid pace of change in the sector may mean that her skills are not fully up to date.

The Software Skillnet Women ReBOOT Programme supports a clear path towards returning to work through coaching, work placements and technical skills development.

<sup>6</sup> <https://www.education.ie/en/Publications/Education-Reports/review-of-national-training-fund-implementation-plan.pdf>

<sup>7</sup> <https://www.cso.ie/en/releasesandpublications/er/lfs/labourforcesurveyquarter32018/>

## 9 Implementation

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The detailed actions established under this action plan are set out in the schedule below.

These actions will be implemented through a partnership between Government, industry and the education and training system and will complement the ongoing upskilling of its talent base by the enterprise sector.

Overall implementation of this plan will be driven by a High-Level Steering Group which will be chaired by the Department of Education and Skills (DES), with senior representation from the Department of Business, Enterprise and Innovation (DBEI), and composed of representatives from Government Departments, agencies, industry and education and training providers.

The Steering Group will update, refine and adapt the action plan in light of relevant developments and its assessment of the effectiveness of the plan in meeting the economy's high-level ICT skills needs.

**Action 1: Provide pathways for reskilling into ICT/Technology roles**

Deliverable	Industry Partners and Required Inputs	Scheduled Delivery	Responsible Body
Deliver reskilling pathway which provides entry point at level 5 and 6 of the NFQ with a defined progression pathway to HE level ICT reskilling programmes at NFQ level 6 & 7: Pathways to ICT programme	Engage with the Regional Skills Fora as necessary for determining skills needs	Q2, 2020	HEA, SOLAS, ETBs, HEIs, RSF
Continue Springboard+, ICT upskilling and NFQ Level 8 conversion courses, in collaboration with industry in the design of programmes and the provision of structured work placements	Promote career opportunities within the sector to encourage uptake of additional places	2019-2022	DES, HEA, HEIs
Issue a call for further ICT conversion/upskilling courses under Springboard+, targeting the unemployed and those wishing to return to the workforce after inactivity		Q1 per annum	DES, HEA

**Action 2: Incentivise additional places in Further Education and Higher Education in ICT/Technology Programmes**

Deliverable	Industry Partners and Required Inputs	Scheduled Delivery	Responsible Body
Issue a call for expressions of interest in providing additional places in ICT disciplines in levels 6-10 through apprenticeship and traineeship models	Employer engagement in formulation and delivery of apprenticeship programmes	Q3, 2019	HEA, HEIs, SOLAS, FET
Assess the feasibility of additional ICT apprenticeship programmes for inclusion in reskilling and lifelong learning agenda		Q1, 2020	SOLAS, HEIs
Test two-year Traineeships which have 4 months intensive training in college at L6 followed by eight-months work experience in a sponsoring company (with one Day training per week) each year		2020	SOLAS
Develop a protocol for engaging with multi-national and indigenous companies to promote ICT apprenticeship scheme		Q1, 2020	SOLAS, Apprenticeship Council, DES, HEA
Conduct a review of funding allocation for ICT courses under the Revised Funding Allocation Model for HEIs		Q3, 2019	HEA, DES



**Action 3: Skillnet Ireland networks to deliver targeted ICT technical and management programmes to industry**

Deliverable	Industry Partners and Required Inputs	Scheduled Delivery	Responsible Body
Deliver Skillnet Ireland ICT conversion programmes focusing specifically on software engineering	Engage with education and training providers to target ICT sector	Q1-Q4 2019	Skillnet Ireland
Delivery of Skillnet Ireland ICT conversion courses focused on hardware and infrastructure skills and job role as well as in IT service functions	Investment in ICT programmes jointly funded by Skillnet Ireland Networks and Industry	Ongoing	Skillnet Ireland
Target areas for investment should be high demand areas as evidenced by the EGFSN Skills Forecasting: Data Analytics, Artificial Intelligence/Cognitive Systems, Robotics, Animation, Gaming, Blockchain, Internet of Things, 3D Printing, Augmented and Virtual Reality, Cybersecurity/Next Generation Security. Conduct review of delivery against priority areas	Leadership of enterprise and identification of training needs Industry experts input to the development of level 9 programmes for industry practitioners	Q4 annually	Skillnet Ireland, DES, DBEI, HEA
Continue and monitor the outcomes of the Skillnet Ireland Women ReBOOT programme		Q4, 2019	Skillnet Ireland

**Action 4: Attract and retain talent, promoting Ireland as a destination for high-level ICT skills, and for ICT education and training**

Deliverable	Industry Partners and Required Inputs	Scheduled Delivery	Responsible Body
Enhance and promote a web portal, such as Tech/Life Ireland, to attract international talent to Ireland	Cooperation from industry in promoting the web portal and participation in careers fairs	Q1, 2019 and ongoing	DBEI, Enterprise Ireland, IDA Ireland
Implement the recommendations of the Review of the Employment Permits system		Q1, 2019	DBEI
Assess the potential to reduce the administrative burden associated with obtaining Stamp 4 visas for holders of critical skills employment permits after two years		Q1, 2019	DJE
Assess the potential of further extending the Graduate Stayback permission for highly skilled international students		Q1, 2019	DES, DJE
Promote retention of international student cohort		Q4, 2019	DES, HEA, HEIs

**Action 5: Promote the new diversity of education and skills provision to the public and industry**

Deliverable	Industry Partners and Required Inputs	Scheduled Delivery	Responsible Body
Assess the outcomes of the Guidance review in the context of ICT Skills		Q1, 2019	DES
Deliver comprehensive skills development information to employers including the new ways employers can access funding supports and training opportunities		Q3, 2019	DES, DBEI, Skillnet Ireland

# Appendix 1

## Membership of the High-Level Group

<b>Co-Chair:</b>	William Beausang, Assistant Secretary General, Department of Education and Skills (from May 2018) David Hegarty, Assistant Secretary General, Department of Business, Enterprise and Innovation
<b>Leo Clancy</b>	Head of Technology, Consumer & Business Services, IDA Ireland
<b>Edel Creely</b>	Group Managing Director, Trilogy Technologies/Ibec President
<b>Tony Donohoe</b>	Chair, Expert Group on Future Skills Needs
<b>Leonard Hobbs</b>	Director – Trinity Research and Innovation, MIDAS
<b>Alan McGrath</b>	Director of Strategy, Research and Evaluation, SOLAS (from October 2018)
<b>Helen McMahon</b>	Senior Executive Client Skills, Enterprise Ireland (from April 2018)
<b>John McNamara</b>	Manager, ICT Department, Enterprise Ireland (from April 2018)
<b>Margie McCarthy</b>	Innovation and Education Directorate, Science Foundation Ireland/SmartFutures (from April 2018)
<b>Ted Parslow</b>	Chairperson, Third Level Computing Forum
<b>Vivienne Patterson</b>	Head of Skills, Engagement and Statistics, Higher Education Authority (from April 2018)
<b>Brendan Whelan</b>	Principal Officer, National Digital Strategy & Telecommunications Market Contracts, Department of Communications, Climate Action & Environment (from April 2018)

### Secretariat

#### Department of Education and Skills

Philip Crosby, Principal Officer

Trudy Duffy, Assistant Principal Officer

Rebekah Maguire, Administrative Officer

#### Department of Business, Enterprise and Innovation

Kevin Daly, Principal Officer

Alan Power, Assistant Principal Officer

## Appendix II

### Bodies Consulted

American Chamber of Commerce Ireland  
Connecting Women in Technology (CWIT)  
Engineers Ireland  
Enterprise Ireland  
FastTrack to IT (FIT)  
Higher Education Authority  
IDA Ireland  
Irish Computer Society / Irish Digital Skills and Jobs Coalition  
National Forum on the Enhancement of Teaching and Learning  
Science Foundation Ireland (SFI)  
Skillnet Ireland  
SmartFutures  
SOLAS  
Technology Ireland / Ibec  
Third Level Computing Forum

## Appendix III

### Background Documentation

*Forecasting the Future Demand for High-Level ICT Skills in Ireland, 2017- 2022*, Expert Group on Future Skills Needs <http://www.skillsireland.ie/Publications/>

*ICT Skills Action Plan 2019-2022*, Background Paper, Government of Ireland. <https://www.education.ie/en/Publications/Latest-Publications/>

*The Report of the Inter-Departmental Group on the Review of Economic Migration Policy*, Department of Business, Enterprise and Innovation, <https://dbei.gov.ie/en/Publications/Publication-files/Review-of-Economic-Migration-Policy.pdf>



## Appendix IV

### Abbreviations

AI	Artificial Intelligence
CAGR	Compound Annual Growth Rate
CSO	Central Statistics Office
CWIT	Connecting Women in Technology
DBEI	Department of Business, Enterprise and Innovation
DES	Department of Education and Skills
DJE	Department of Justice and Equality
EEA	European Economic Area
EGFSN	Expert Group on Future Skills Needs
ETB	Education and Training Board
EU	European Union
FET	Further Education and Training
FIT	FastTrack to IT
HCI	Human Capital Initiative
HE	Higher Education
HEA	Higher Education Authority
HEI	Higher Education Institution
IDA	IDA Ireland
IDSJC	Irish Digital Skills and Job Coalition
IoT	Institute of Technology
NFETL	National Forum for the Enhancement of Teaching and Learning
NFQ	National Framework of Qualifications
NPC-PP	National Parent's Council – Post-Primary
NSC	National Skills Council
NTF	National Training Fund
QQI	Quality and Qualifications Ireland
RSF	Regional Skills Fora
SPF	Systems Performance Framework
STEM	Science, Technology, Engineering and Maths
TLCF	Third Level Computing Forum
TU	Technological University

This Policy Statement and Framework for Practice is  
available on the Department of Education website:  
[www.education.gov.ie](http://www.education.gov.ie)



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Government of Ireland