Sector Intelligence Workshop: Technology

10th May 2019

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The graduate market in the UK

441,000 PROFESSIONAL-LEVEL JOBS WERE ADDED TO THE ECONOMY

291,000 NEW GRADUATES ENTERED THE WORKFORCE (ACROSS ALL LEVELS OF QUALIFICATION)

73.9% OF EMPLOYED GRADUATES WERE IN A PROFESSIONAL-LEVEL JOB (UP FROM 71.4%)

GRADUATE UNEMPLOYMENT (5.1%) WAS AT ITS LOWEST LEVEL SINCE 1979.

Dr Charlie Ball analysis of the *Destinations of Leavers from Higher Education (DLHE) survey*, HESA

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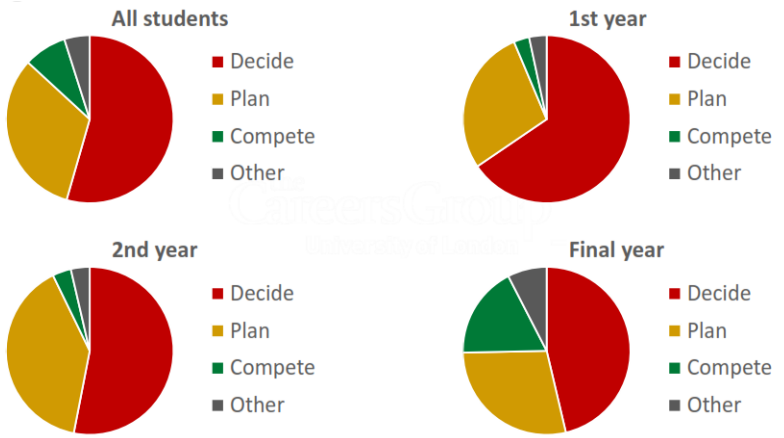
48% of undergraduate finalists are still in the “decide” stage of their career thinking

(HEFCE Learning Gain Project: Careers Registration)



The graduate labour market is unevenly distributed and graduates are not particularly mobile

- 69% of graduates go to work in the same region where they grew up
- 13% move to go to university and stay there for work
- It is vital to work with your local university on talent attraction.
- London is the only major city with an oversupply of graduates

Dr Charlie Ball analysis of the *Destinations of Leavers from Higher Education (DLHE) survey*, HESA, 2016-2017

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87.5% of leavers said they were satisfied with their career to date after 3.5 years

(HESA Longitudinal DLHE)

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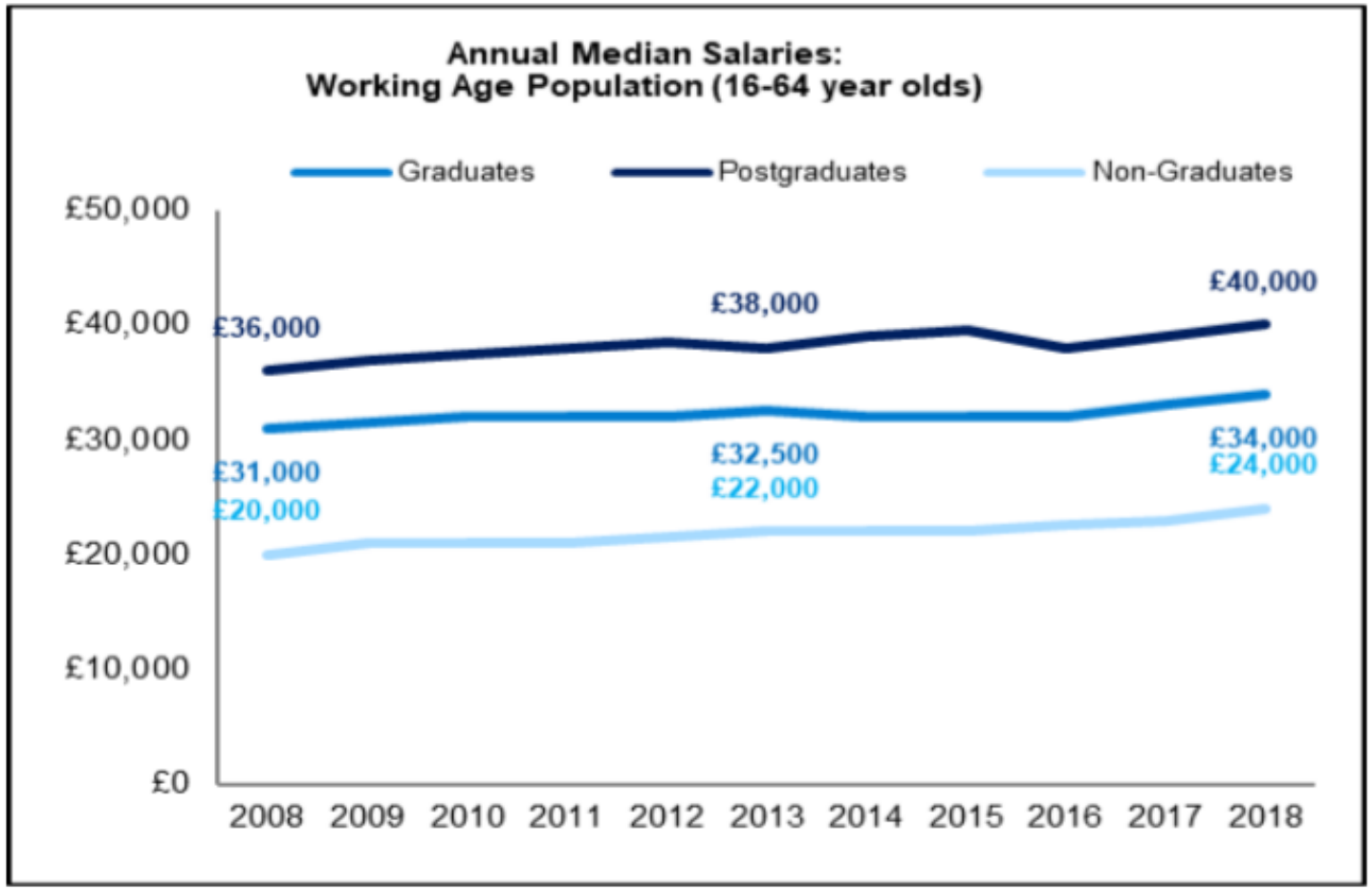
Over time, graduates earn significantly more than non-graduates



Department for Education,
Graduate labour market statistics

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/701720/GLMS_2017.pdf

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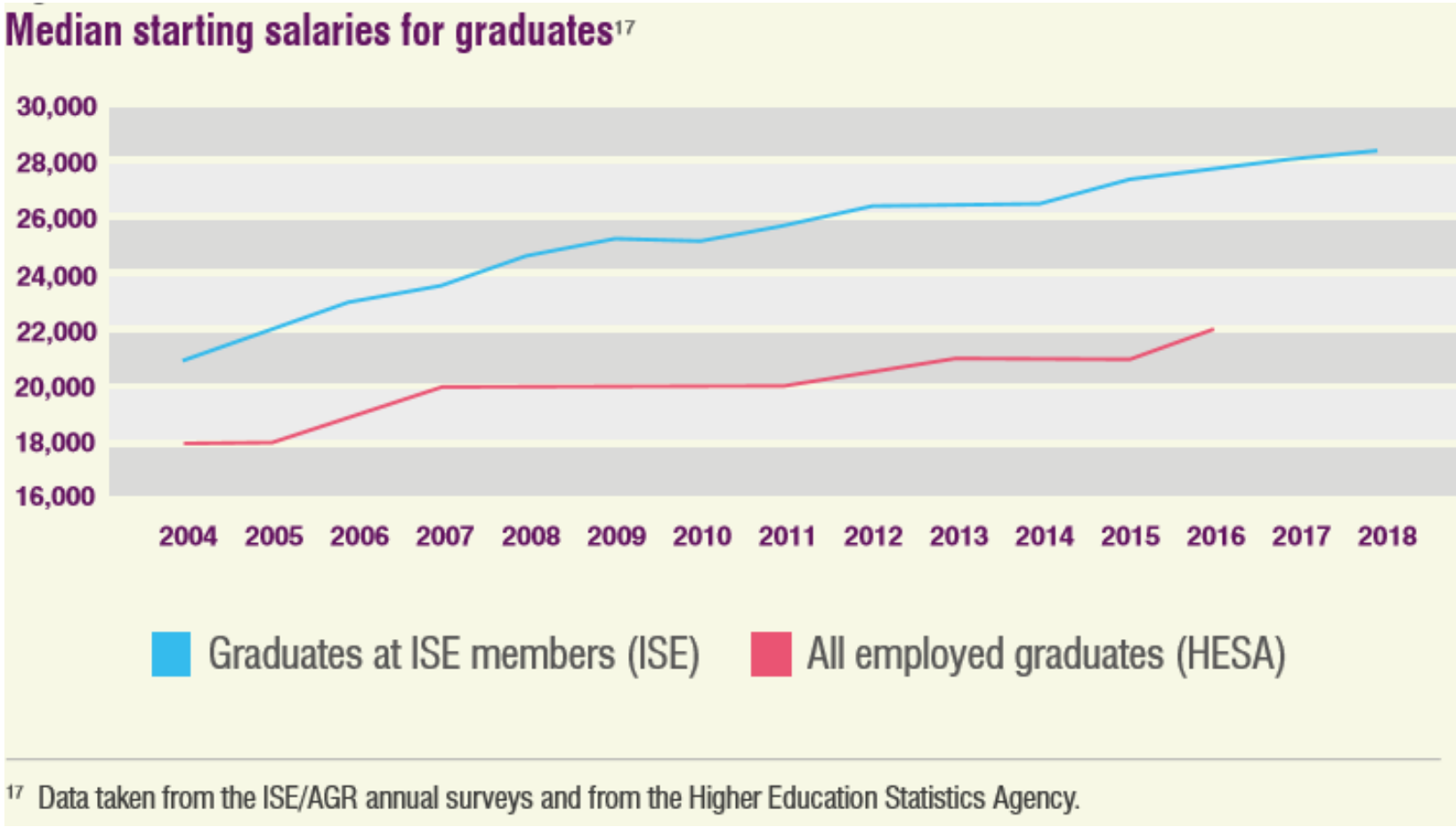
The graduate market in the UK



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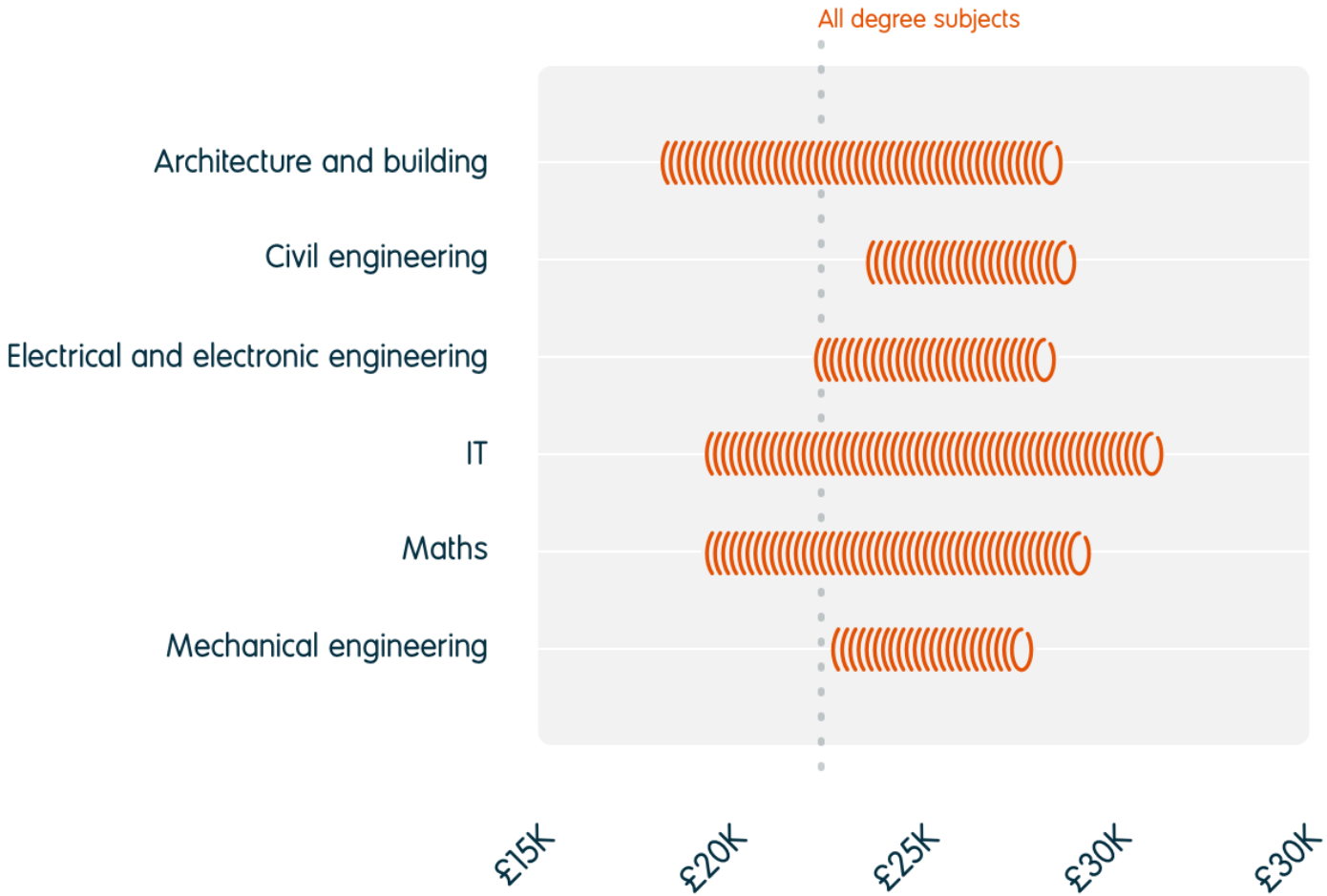
The graduate market in the UK



Dr Charlie Ball analysis of the *Destinations of Leavers from Higher Education (DLHE) survey*, HESA

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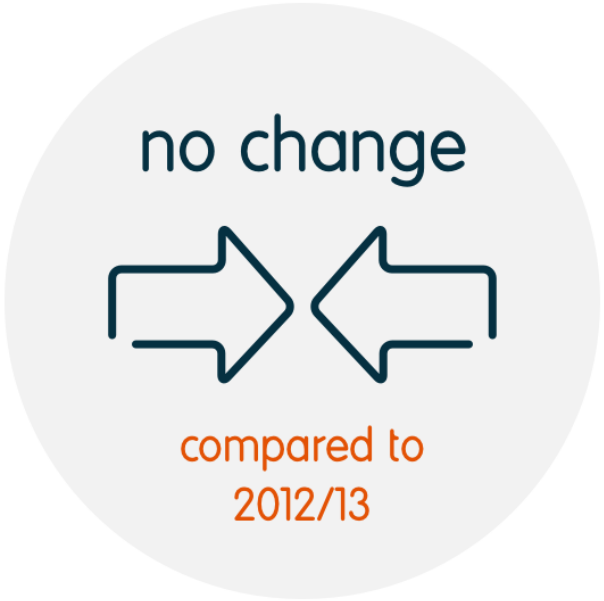
The graduate market in the UK

UK technology, engineering, and maths graduates in the year 2016/17, making up over 10% of that year's total graduating cohort.

2016/17

35,975



IT GRADUATES: 13,490

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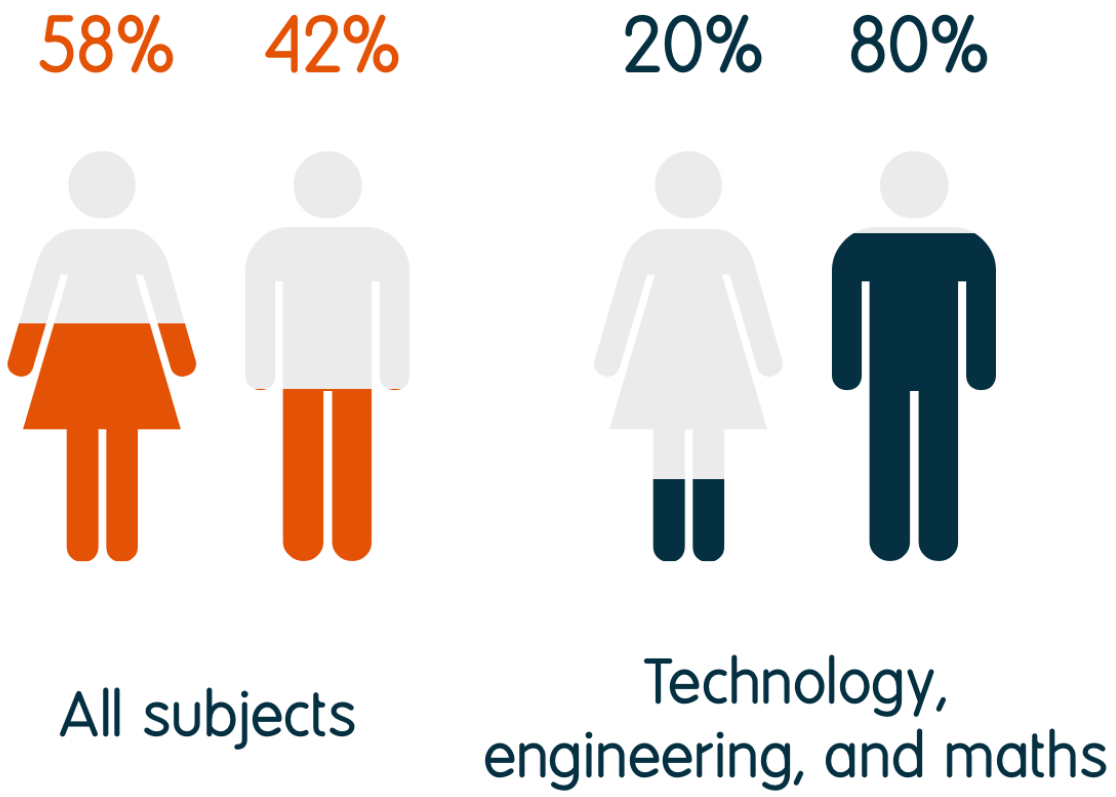
The graduate market in the UK



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Institute of Student Employers

ise.

The proportion of corporate employers who say graduates lack specific skills or behaviours

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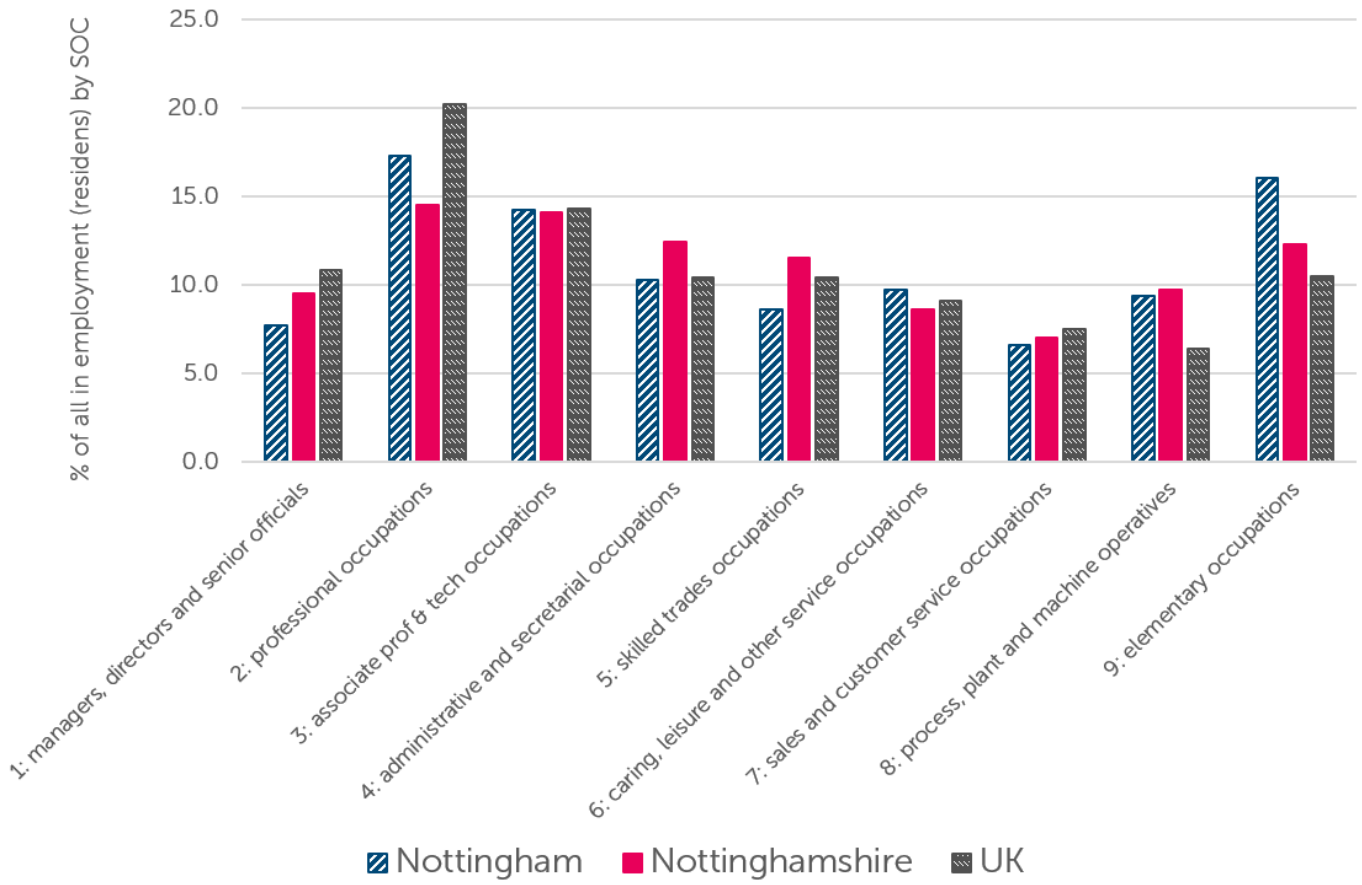
The graduate market in Nottingham

Chart 15: Structure of employment by SOC, 2017 (% of total in employment)



Source: ONS Crown Copyright, 2018. 'Annual Population Survey', January—December 2017 [From NOMIS, accessed on 25 January 2019].

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The graduate market in Nottingham

City	Indexed disposable income measure	Graduate starting salary
Derby	1.637	£22,840
Sheffield	1.483	£20,633
Belfast	1.474	£20,700
Coventry	1.464	£22,548
Portsmouth	1.439	£23,446
Glasgow	1.427	£21,776
Nottingham	1.426	£20,907
Liverpool	1.413	£19,940
Aberdeen	1.379	£22,917

https://luminate.prospects.ac.uk/these-cities-give-graduates-the-best-value-for-their-salary

Luminate blog: These cities give graduates the best value for their salaries

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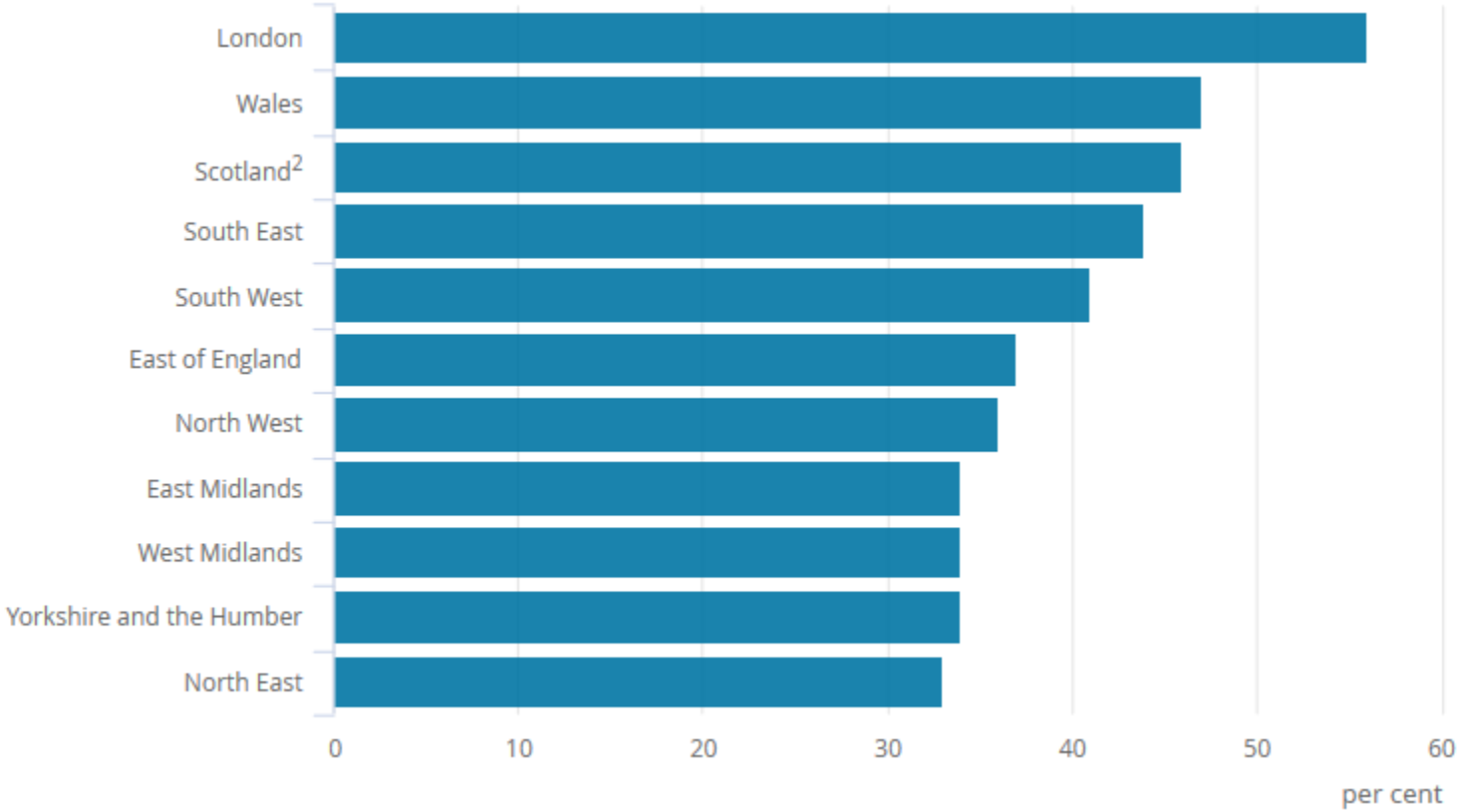
The East Midlands has a lower percentage of the population with degrees than many other regions



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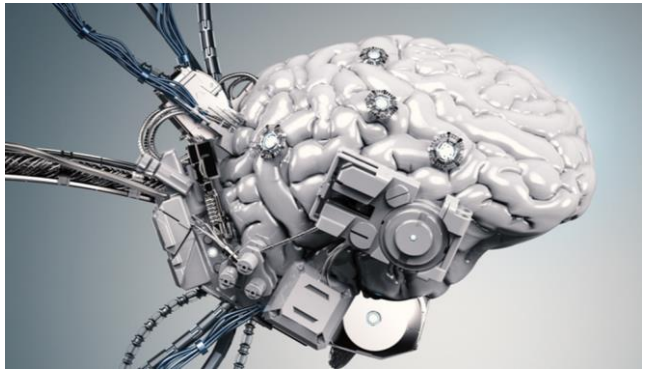

Sector trends

- Artificial intelligence & machine learning
- Cloud-based and edge computing
- Combinations of technology: rather than creating brand new tech (eg using cloud and edge computing together)
- Personalisation vs privatisation: balancing cybersecurity and user experience
- Environmental smart tech: sensors to measuring impact (eg air quality) or create efficiencies/innovation (eg solar power)

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Challenges

- **Impact of robotics and artificial intelligence:** IT companies are resorting to the recent advancements in the IT technology like robotics and artificial intelligence leading to employees losing their jobs. These tasks were previously performed by manual labour and were replaced by recent technologies to lower risk of error and increase efficiency.
- **Cybersecurity:** The tech industry companies must speed up the finding and resolution time for a security breach to protect themselves from the increased number of security breaches.
- **Maintaining innovation:** IT industry players need to keep themselves updated and incorporate new technologies to survive in this highly competitive market where the number of big and small players are increasing continuously.

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Challenges

61% consider the recruitment of engineering and technical staff with the right skills as a barrier to achieving business objectives over the next three years

81% agree that more employers need to provide work experience for those in education or training to help improve the supply of engineers and technicians

75% of those that plan to introduce/increase use of digital technologies need to develop new skills in their existing workforce

30% have firm plans to introduce or extend their current use of digital technologies in the next three years

The Institution of Engineering and Technology

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Challenges

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Threats

Business Continuity Institute

2
IT and telecom outage

3
Adverse weather/natural disaster
(e.g. hurricane/earthquake)

4
Critical infrastructure failure

5
Reputation incident

6
Regulatory changes

7
Lack of talent/key skills

8
Supply chain disruption

9
Interruption to utility supply

10
Political change

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Horizon scanning

Accurately Anticipating Market Demand

- A lot of companies get into trouble because they base product development on what they hope will be a future demand, and all too often that market demand never materialises. While sometimes the results are inspiring, they can also lead to failure.

- That's why it is critical to be more measured, taking steps and not leaps based on current market demand and how it is likely to change over time.

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Discussion

- What are the key challenges facing your sector in the next 5 years?
- What skills, knowledge or behaviours will your business and sector need in order to meet these challenges?
- Are there any specific trends you see as being particularly business critical?
- Where do you see the industry going in the longer term?

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Recruitment challenges

- There are an estimated 600,000 tech vacancies in the UK, a figure predicted to jump to 1 million by 2020. This costing the UK economy an estimated £63 billion a year in lost additional GDP (Tech Nation)
- There is a significant gender disparity within the IT sector, where women are underrepresented, making up only 17% of IT professionals. (House of Commons, Science and Technology Committee)
- The industry relies on EU citizens to fill about 180,000 jobs in the sector (Recruitment and Employment Confederation)

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Recruitment challenges

46%

face difficulties in the availability of people in the external labour market with the right skills when they try to recruit

51%

expect to employ more engineering and technical staff over the next three years

87%

*3% don't know/refused

don't have LGBT/BAME diversity initiatives in place*

11%

of the UK engineering and technical workforce is female

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Case study

An undergraduate placement scheme is helping our business thrive

Struggling to fill a skills gap, ProspectSoft hired an undergraduate – an approach that has since become vital for recruitment

ProspectSoft

Integrated CRM and eCommerce

Over the years we have had 102 people on placements join us and have employed nearly 60% of those in full-time positions. On average, they've gone on to spend another six years working with us.

To say that our placement programme is important would be a huge understatement. Out of our 51 staff, we have recruited 38 people via placement and they are filling roles throughout the business, including one who is now a director.

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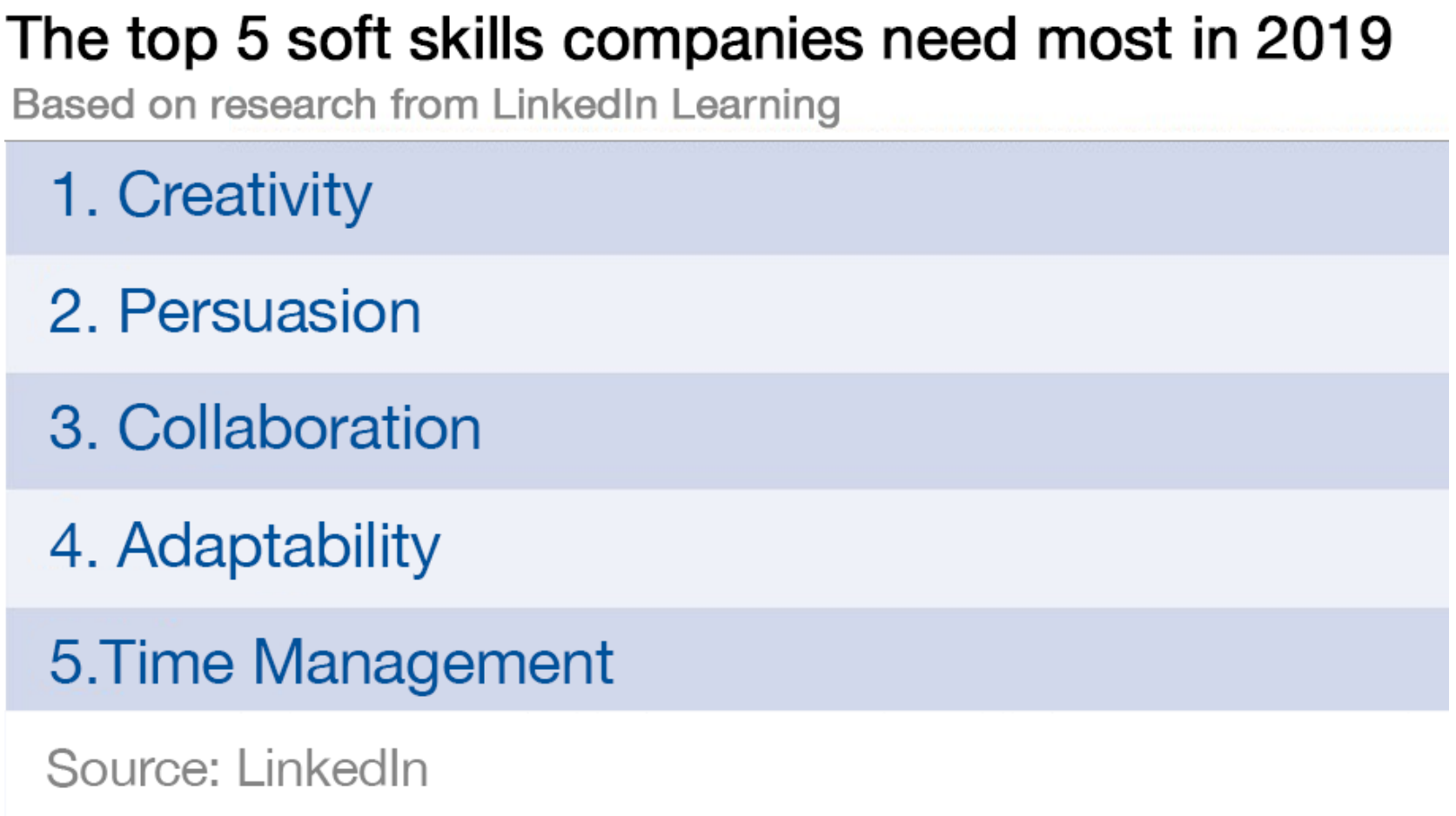
Skills shortages

Skills shortages



Discussion

- What challenges do you face when recruiting graduates?
- Are there any roles or areas where you have found it much easier to recruit? Why?
- Are there any roles or areas where you have found it much harder to recruit? Why?
- When you have made excellent graduate hires what has made them so successful?

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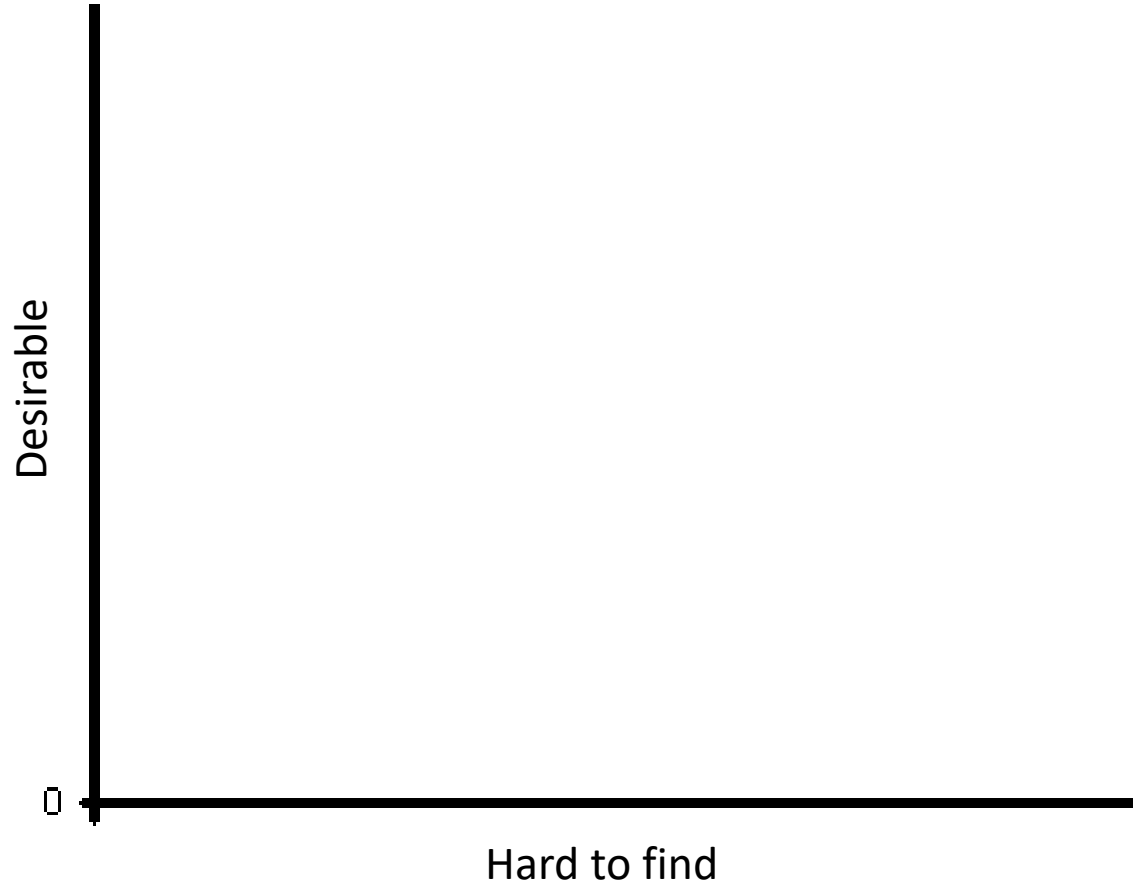
Skills mapping exercise



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The NTU talent pool for your sector

- 973 (UG & PG for Technology related courses) for 18/19

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Undergraduate course provision

Computer Science cluster:

- BSc (Hons) Computer Science
- BSc (Hons) Computer Science (Games technology)
- BSc (Hons) Software Engineering

Computer Systems cluster:

- BSc (Hons) Computer Systems Engineering
- BSc (Hons) Computer Systems (Networks)
- BSc (Hons) Computer Systems (Cyber Security)

Information Technology cluster:

- BSc (Hons) Computing
- BSc (Hons) Information Systems

Data Science:

- BSc (Hons) Data Science

bcs Accredited Degree

The BCS (British Computing Society) has accredited all of our undergraduate degrees

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Postgraduate course provision

- MSc Computer Science
- MSc Computing Systems
- MSc IT Security
- MSc Cloud & Enterprise Computing
- MSc Engineering (Cybernetics & Communications)
- MSc Engineering (Electronics)
- MSc Engineering Management
- MSc Data Analytics for Business
- Online MBA with Data Analytics
- MRes Electronic Systems
- MRes Computer Science

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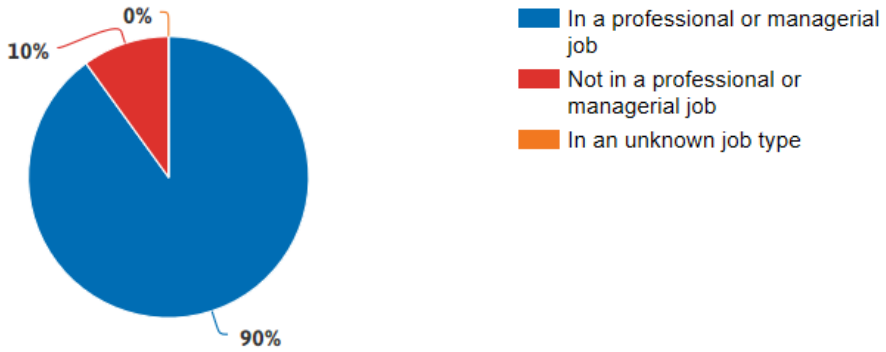
BSc Computer Science

Employment six months after the course



Most common jobs

These are the most common job types students do six months after finishing the course.

Job	%
Information technology and telecommunications professionals	75%
Science, engineering and technology associate professionals	10%
Business and public service associate professionals	10%
Sales occupations	10%

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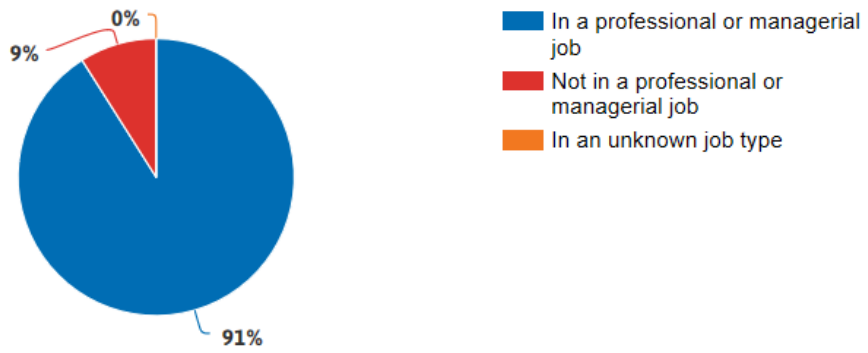
BSc Computer Systems Engineering

Employment six months after the course



Most common jobs

These are the most common job types students do six months after finishing the course.

Job	%
Information technology and telecommunications professionals	67%
Business and public service associate professionals	9%
Science, engineering and technology associate professionals	7%
Managers, directors and senior officials	2%
Media professionals	2%
Sales occupations	2%
Elementary occupations	2%
Engineering professionals	1%
Welfare and housing associate professionals	1%
Artistic, literary and media occupations	1%

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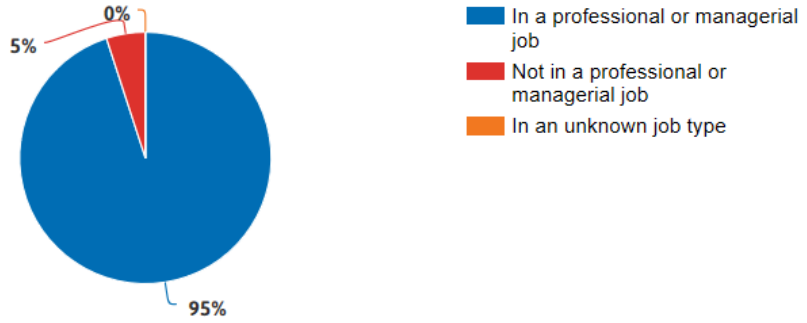
BSc Software Engineering

Employment six months after the course



Most common jobs

These are the most common job types students do six months after finishing the course.

Job	%
Information technology and telecommunications professionals	70%
Engineering professionals	5%
Science, engineering and technology associate professionals	5%
Business and public service associate professionals	5%
Sales occupations	5%

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Example roles and salaries

NEXOR

Software Engineer Graduate- £25K

FUJITSU

Cyber Security Graduate- £29K

next

Developer- £22K

BUZZ Bingo

Software Developer Graduate- £22K

Nottingham City Council

Software Developer- £25K

Boots

Software Engineer- £29K

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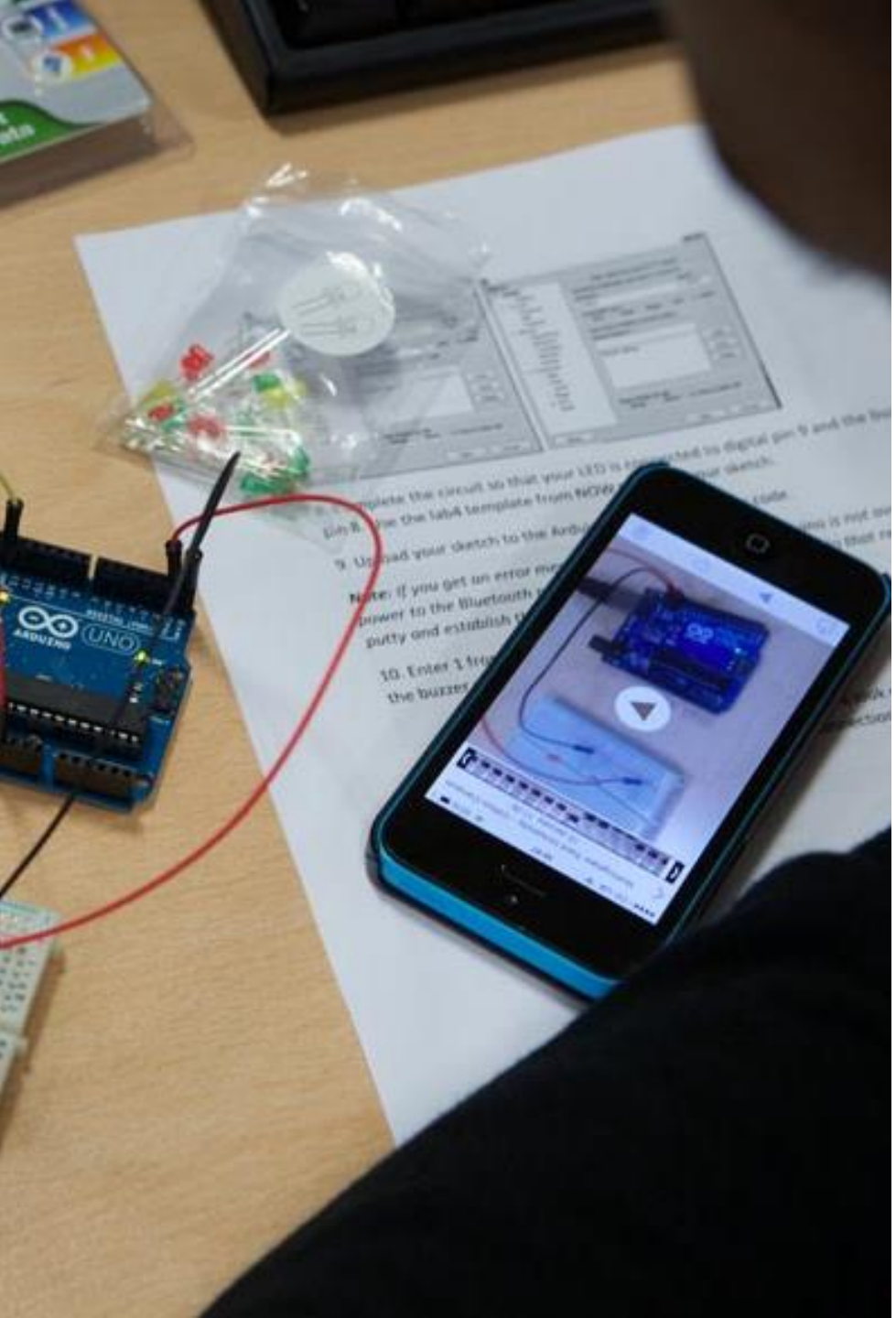

Case studies and opportunities to engage with NTU

- Computing & Technology Degree Showcase (*held annually – 2nd May 2019*)
- Work in Tech – series of employer talks promoting placement opportunities (*delivered in Term 1*)
- LoveTech (*event held annually in February – employers promoting placement and graduate opportunities*)
- Live projects
- Computing & Technology 'Digital Horizons' (*held in Term 1, includes work shadowing, insight days, visits to employers, employer challenges*)

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imosphere

‘We see graduate recruitment as a critical component of our expansion strategy and continue to seek out new, talented graduates from NTU to support the growth of the business. Many graduates stay with us for the long term as they continue to develop their careers.

Jack has been instrumental in introducing cutting edge DevOps tools and processes into the business, and sharing those experiences throughout the development team, which is significantly increasing our software development efficiency.

Our ongoing relationship with NTU provides us with an opportunity to work with capable graduates and placement students who bring huge potential to the organisation and are underpinning our long-term plan for growth.’

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inspHire
rental software experts

‘The recruitment fairs at NTU are a critical part of our efforts to source new talent and having such a local talent pool has been fantastic for us.

We have found that the graduates have an advanced capacity for learning as well as bringing fresh ideas and new perspectives as well as rapidly becoming productive.

After our first contact with NTU, the Employability team have continued to be extremely helpful and supportive; keeping us informed on recruitment events and supporting us in promoting our graduate opportunities both on Future Hub, targeting students by email and helping us to get the most out of the recruitment fairs.’

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Graduate attraction plan

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Research and references links (if not stated on slides)

- Accenture technology vision - https://www.accenture.com/us-en/insights/technology/technology-trends-2019
- Alphr tech skills gap - https://www.alphr.com/business/1004066/the-uk-tech-sector-has-a-skills-gap-problem-here-s-how-we-can-fix-it
- Axis Communications insights - https://www.axis.com/blog/secure-insights/tech-trends-2019/
- Bidwells UK skills gap - https://www.bidwells.co.uk/insights-and-research/uk-skills-gap-sector-vacancies-outweigh-student-enrolments/
- CompTIA industry outlook - https://www.comptia.org/resources/it-industry-trends-analysis
- Computer Weekly - https://www.computerweekly.com/news/252461647/Post-Brexit-IT-talent-shortages-concern-UK-CIOs
- CSG bridging skills gaps - https://www.csgtalent.com/blog/2017/05/bridging-skills-gap-technology-sector
- Exertis skills gap cost - https://www.exertis.co.uk/public-sector/skills-gap-costly-business/
- Explore Group - https://www.explore-group.com/blog/2017-uk-tech-skills-report-what-you-need-to-do-now/bp33/
- Fortune tech challenges - http://fortune.com/2016/01/29/tech-company-challenges/
- Hired UK tech sector skills gaps - https://hired.com/blog/highlights/mind-the-gap/
- House of Commons Science and Technology committee - https://publications.parliament.uk/pa/cm201617/cmselect/cmsctech/270/270.pdf

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Research and references links (if not stated on slides)

- IET skills and demand in industry - https://www.theiet.org/media/1362/2017-skills-survey-infographic.pdf
- Information Age skills gap - https://www.information-age.com/address-skills-gap-tech-sector-123467852/
- ITpro cyber security skills gap - https://www.itpro.co.uk/security/31932/has-demand-for-cyber-security-skills-hit-crisis-point
- McKinsey & Co sector in 2030 - https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/the-consumer-sector-in-2030-trends-and-questions-to-consider
- Nesta creative talent - http://data-viz.nesta.org.uk/creative-skills/index.html?_ga=2.222256668.583878235.1555406988-660823955.1555406988
- Nesta future of skills - https://www.nesta.org.uk/report/the-future-of-skills-employment-in-2030/
- New Statesman - https://www.newstatesman.com/politics/economy/2018/01/digital-skills-gap-teacher-knows-best
- NYSE tech industry challenges - https://www.nyse.com/network/article/tech-industry-challenges
- Shadbolt Review - https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/518575/ind-16-5-shadbolt-review-computer-science-graduate-employability.pdf
- Telegraph technology intelligence - https://www.telegraph.co.uk/technology/2017/03/22/tech-sector-growing-faster-uk-economy-72pc-investment-outside/