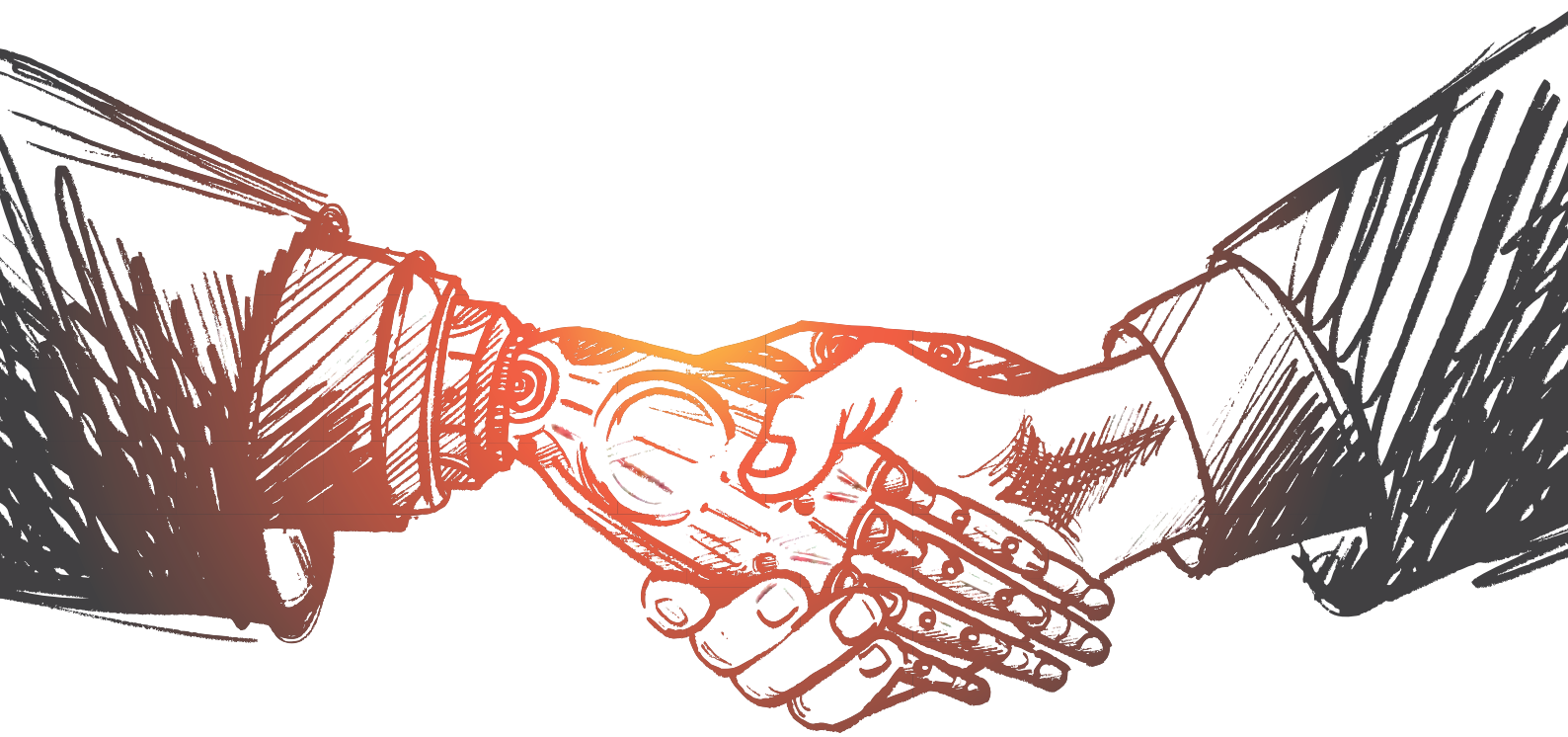
KEY CITIES UNLOCKING POTENTIAL

NLGN



CITIES IN ACTION 1

WORKPLACE AUTOMATION

KEY CITIES UNLOCKING POTENTIAL

The Key Cities Group was formed in 2013, comprising 25 of the UK's cities which play a key role in their regional economy.

For more information on the work of Key Cities and the Economic Growth Commission, please contact:

www.keycities.co.uk | keycities@wakefield.gov.uk | 01924 304447

NLGN

Many thanks to New Local Government Network for researching, drafting and designing this document.

www.nlgn.org.uk

July 2019

FOREWORD

Cllr. Peter Box CBE

Chair of the Key Cities Group and Leader, Wakefield Council

I'm delighted to introduce this, the first in a series of city innovation reports. These reports are not solely about producing research or data, or about asking government for more money. Our ambition is to propose new solutions to the most pressing issues in small to medium cities. We will identify good practice and new approaches that have worked either in the UK or across the globe and use these to understand how we can apply them to help places grow their economies and improve lives for residents.

These reports will frame our discussions with both the UK and devolved governments with an aspiration to test out these solutions in both our member cities and other places across the UK. The learning from these pilots will be available to everyone so that places across the UK can adopt and amend to fit their local circumstances and economies.

I hope government will respond favourably to the suggested projects in this report, and work with us to put them into action and learn from their experiences. Key Cities are far more than a lobbying group – we want to be a go-to delivery partner to transform and make the most of the untapped potential in Britain's cities and towns.

Cllr. John Merry CBE

Chair of the Key Cities Economic Growth Commission and Deputy City Mayor, Salford City Council

Automation, with both its opportunities and its risks, is one of the most vital challenges of today for both our national and local economies.

This report sets out tried and tested ideas from around the world to ease the transition to an automated high skill/high wage economy, and make sure all our places and workers have opportunities to reap its benefits. As Chair of Key Cities' Economic Growth Commission, I have looked at solutions and innovations from around the world. All the projects in this report have, I believe, not only the potential to transform local economies but deliver real benefits to families and communities in terms of their income and quality of life.

The potential and opportunities are huge. Taking just our existing Key Cities members up to the national average in productivity per worker would add over £22bn a year to our national economy. I also strongly believe the proposals in this report would act as a catalyst in placing our cities as global leaders in the coming industrial revolution.

As we progress, we will be producing further reports and projects. I hope both this and future reports make a real difference, for both our Key Cities and places across our country.

ABOUT THE KEY CITIES

Key Cities is the UK's fast-growing city leadership network. With a current membership of 25 cities spanning the length and breadth of England and Wales and a collective population of over 6.5 million, Key Cities is the recognised democratic and authentic voice of urban Britain.

The Key Cities: Ready to Meet the UK's Biggest Challenges vision underlined that it is essential for UK and devolved governments to work more closely with Key Cities to achieve a united country, enhanced productivity, and a more inclusive and rebalanced economy across the UK.[1] *Key Cities: Cities in Action* builds on this vision by setting out how Key Cities intend to work in partnership with the UK and devolved governments to fulfil three shared ambitions: that Key Cities are the best places in the UK for people to get on, live and grow up.[2]

In June 2019, Key Cities announced the launch of two commissions: the Economic Growth Commission and the Cities in Action Commission. The commissions will identify the most innovative best practice from the UK and overseas that can help deliver better economic growth and social prosperity for all communities living in the UK's mid-sized cities. They will also make proposals on how national governments can work with mid-sized cities to trial domestic policy initiatives and international best practice in the UK.

This report, *Cities in Action: Workplace Automation*, is the first report produced by Key Cities' Economic Growth Commission.

1 Key Cities. 2018. *The Key Cities: Ready to Meet the UK's Biggest Challenges.*
2 Key Cities. 2019. *Key Cities: Cities in Action.*

BLACKPOOL
BOURNEMOUTH, CHRISTCHURCH & POOLE
BRADFORD
CARLISLE
COVENTRY
DERBY
DONCASTER
GLOUCESTER
HULL
KIRKLEES
LANCASTER
MEDWAY
NEWPORT
NORWICH
PLYMOUTH
PORTSMOUTH
PRESTON
SALFORD
SOUTHAMPTON
SOUTHEND-ON-SEA
SUNDERLAND
SWANSEA
TEES VALLEY
WAKEFIELD
WOLVERHAMPTON

EXECUTIVE SUMMARY

Automated technologies are already disrupting and transforming the modern work environment. In the coming decades, the increasing automation of routine workplace tasks is forecast to displace and create millions of jobs and change the types of skills employers need in the 21st century workforce. The challenge for governments is to prepare for this future now: to put measures and schemes in place that support all children, young people and adults to acquire skills that will be valued in the automation era and help them take on the higher-skilled, more interesting and better-paid jobs that automation is expected to enable.

Automation is predicted to displace 7 million jobs and create 7.2 million jobs in the UK by 2037.[3] But job losses will not be evenly distributed throughout the country. Certain types of places, such as mid-sized cities, have a higher share of occupations in their workforce that are at risk of automation compared to other parts of the UK. Although 20.2 per cent of the workforce in Britain's cities is in an occupation very likely to shrink by 2030 because of technological changes, this figure rises to between 20.7 per cent and 29.2 per cent of the workforce in 19 of the 21 mid-sized Key Cities featured in the analysis.[4]

That automation will have different impacts on different types of places strongly indicates that the UK's most effective policy response to workplace automation will be place-based. Key Cities' Economic Growth Commission, in collaboration with NLGN, undertook research on the international response to workplace automation to identify projects that could be adapted and trialled in the UK's mid-sized cities. Some examples of best practice are highlighted in this report, coming under the Commission's three priorities of: training people in valued skills; supporting displaced workers to find new jobs; and using automation to help people connect with the local labour market.

3 PwC. 17 July 2018. 'AI will create as many jobs as it displaces by boosting economic growth.' Available at: https://www.pwc.co.uk/press-room/press-releases/AI-will-create-as-many-jobs-as-it-displaces-by-boosting-economic-growth.html

4 Centre for Cities. 2018. *Cities Outlook 2018*. pp.13-4. Four of the 25 Key Cities (Carlisle, Lancaster, Salford and Wolverhampton) were not included in the *Cities Outlook 2018* analysis.

Based on this research, the Economic Growth Commission proposes that the UK and devolved governments **appoint mid-sized cities as the UK's AutoPilots**. This would see mid-sized cities working with national governments and partners to trial a series of wide-ranging policies and initiatives, all designed to support people and places to thrive in the automation era.

The Commission proposes the following to be included and tested in the AutoPilots scheme:

Comprehensive skills devolution to mid-sized cities, including devolving the Adult Education Budget and piloting the UK Shared Prosperity Fund, the National Retraining Scheme and a public voucher scheme for people to spend on training courses, potentially as part of a trial of Universal Basic Income.

All-Age Careers Service, which would make information on current and future careers opportunities in the local economy clearly accessible; work closely with existing public employment services to offer a drop-in advice centre on careers, job applications and skills training; and trial an 'early intervention' approach that provides one-to-one support to displaced workers and a rapid response team to work with trade unions and businesses to advise companies intending to lay off workers.

Automation Innovation Centre, involving close collaboration between national governments, local governments, LEPs, universities, businesses, other partners and residents to develop and trial ideas for forms of automated technology that would break down barriers for people to access the labour market and improve people's day-to-day lives.

INTRODUCTION

Technological advancements have always contributed to the changing nature of workplace tasks. Few people would now hire a horse-drawn vehicle to deliver goods or use typewriters rather than computers. As the Fourth Industrial Revolution heralds pioneering advancements in machine-learning and automated technologies such as Artificial Intelligence (AI), robotics and 3D printing,[5] it is no surprise that these innovations have already started bringing about significant changes to 21st century working practices and the labour market.

Workplace automation will provoke a major shift in the nature of available jobs and skills requirements. Occupations involving a large proportion of repetitive and routine tasks, such as shelf fillers, waiters and waitresses and elementary sales personnel, are expected to be at highest risk of shrinking or disappearing as such tasks can be performed more quickly and efficiently by AI and automated machinery.[6] However, studies on this topic forecast that automation will create more jobs than it will displace. PwC estimates that, although 7 million jobs in the UK will be lost to automation by 2037, the increasing adoption of automated technologies by employers will create 7.2 million jobs in the same period.[7] [8] A high proportion of these new jobs are expected to be in 'higher-skilled' sectors such as professional, science and technical services,[9] which are less easy to become automated and could therefore offer people better, more secure and more interesting employment than roles dominated by routine tasks.

5 Encyclopaedia Britannica. [no date]. 'The Fourth Industrial Revolution'. Available at: https://www.britannica.com/topic/The-Fourth-Industrial-Revolution-2119734

6 ONS. 25 March 2019. 'Which occupations are at highest risk of being automated'. Available at: https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/whichoccupationsareathighestriskofbeingautomated/2019-03-25

7 PwC. 17 July 2018. 'AI will create as many jobs as it displaces by boosting economic growth.' Available at: https://www.pwc.co.uk/press-room/press-releases/AI-will-create-as-many-jobs-as-it-displaces-by-boosting-economic-growth.html

8 International studies also conclude that automation is likely to create more jobs worldwide than it will displace. For example, see: World Economic Forum. 2018. *The Future of Jobs Report 2018*.

9 PwC. 17 July 2018. 'AI will create as many jobs as it displaces by boosting economic growth.' Available at: https://www.pwc.co.uk/press-room/press-releases/AI-will-create-as-many-jobs-as-it-displaces-by-boosting-economic-growth.html

The UK's policy response to workplace automation

The Industrial Strategy contains most of the UK Government's key policies designed to maximise the benefits of automation.[10] Reinforced by the accompanying AI Sector Deal,[11] the Industrial Strategy commits the UK Government to increasing spend on R&D, digital infrastructure and innovation that contribute to resolving four Grand Challenges, one of which concerns AI and data.[12] The Government also used the Industrial Strategy to announce plans to improve digital and STEM skills, introduce vocational T-levels in England, widen access to apprenticeships, and create a National Retraining Scheme to improve the resilience of the labour market by assisting working-age adults to acquire new skills that will be valued in the age of automation.

In the devolved nations, responding to the risks and opportunities of workplace automation is also high on the policy-making agenda. For example, the Welsh Government's Economic Action Plan underlines the importance of supporting workers and businesses to adapt to the fourth industrial age,[13] particularly as research indicates around one-third of jobs in Wales are at risk of automation.[14] In March 2018, the Welsh Government launched a review into digital innovation and the future of work in Wales, which is due to report in summer 2019.[15]

Below the national level, local government has limited influence over skills policy in their area. Through devolution deals, mayoral combined authorities have the greatest flexibility to tailor skills policy to local labour market requirements. These deals will see the Adult Education Budget devolved in full to some mayoral combined authorities from August

10 BEIS. 2017. *Industrial Strategy: Building a Britain fit for the future*.
11 BEIS and DCMS. [Last updated 21 May 2019]. 'AI Sector Deal'. Available at: https://www.gov.uk/government/publications/artificial-intelligence-sector-deal/ai-sector-deal
12 BEIS. [Last updated 22 May 2019]. 'The Grand Challenges'. Available at: https://www.gov.uk/government/publications/industrial-strategy-the-grand-challenges/industrial-strategy-the-grand-challenges
13 Welsh Government. 2017. *Prosperity for all: Economic Action Plan*.
14 BBC Wales. 18 April 2018. 'Automation: '1 in 3 Welsh jobs at risk by early 2030s''. Available at: https://www.bbc.co.uk/news/uk-wales-43712829
15 Welsh Government. [no date]. 'Review of digital innovation for the future of the economy and the future of work in Wales'. Available at: https://gov.wales/review-digital-innovation-economy-and-future-work-wales

2019.[16] Through funding from the National Retraining Scheme secured as part of its Skills Deal, the West Midlands Combined Authority has established a 'Beat the Bots' fund to raise digital skills in the West Midlands.[17] Skills Advisory Panels and Local Industrial Strategies are being developed gradually throughout the country to align Industrial Strategy policies with local economic strategies and ambitions, but only two Local Industrial Strategies have been signed off since the Industrial Strategy was published in 2017.[18]

The European Social Fund (ESF) currently provides an additional source of skills development funding for the UK's regions, but it is not yet known whether the UK Shared Prosperity Fund (UKSPF) will match ESF allocations on skills, nor whether the UKSPF allocations will be managed by local authorities.

The international response to workplace automation

The Fourth Industrial Revolution is a global development, not one confined within the UK's borders. The case studies featured in this report are projects led by countries, states and cities across the world to address the risks and opportunities of workplace automation. Although other countries have different skills policy frameworks, this report highlights some examples of best practice that could be usefully adapted to the UK context.

The selected case studies are grouped into the following sections:

- Training people in valued skills;
- Supporting displaced workers to find new jobs;
- Using automation to help people connect with the local labour market.

16 Education and Skills Funding Agency. [last updated 27 March 2019]. 'Adult education budget (AEB) devolution'. Available at: https://www.gov.uk/guidance/adult-education-budget-aeb-devolution

17 West Midlands Combined Authority. 20 May 2019. 'Mayor launches 'Beat the Bots' fund'. Available at: https://www.wmca.org.uk/news/mayor-launches-beat-the-bots-fund/

18 Local Industrial Strategies have been agreed for the West Midlands and Greater Manchester to date. See:
HM Government. May 2019. *West Midlands Local Industrial Strategy*.
HM Government. June 2019. *Greater Manchester Local Industrial Strategy*.

SECTION 1

TRAINING PEOPLE IN VALUED SKILLS

SECTION 1
Training people in valued skills

Workplace automation is expected to have an impact on jobs across the labour market. Some tasks performed in 'higher-skilled' occupations, such as financial services data analysts, are as likely to be automated in the near future as tasks in 'lower-skilled' occupations, such as cleaning and shelf-filling.[19]

For jobs created between now and 2030, skills that are likely to thrive and be highly sought-after by employers include: mathematical and advanced digital competencies, creativity, complex problem solving, critical thinking, emotional intelligence and people management.[20] [21] These conclusions are supported by ONS analysis, which determines that medical practitioners and senior professionals of education establishments, whose jobs involve a high degree of situational management and unscripted interaction with members of the public, are at the lowest level of risk from workplace automation.[22]

It will not just be in new jobs where such skills will be needed. Many current occupations, such as customer services and sales, could see their skills requirements shift as routine tasks become automated. Strong decision-making, fluency of ideas and analytical skills are among the most important 'complementary skills' that, alongside the skills that already make up a particular occupation, will improve the chances of occupations involving routine tasks remaining in demand in the age of rising workplace automation.[23]

The challenge for UK policy-makers is to help the current and future workforce obtain the valued skills that will allow people to adapt to shifting skills requirements and take on the rewarding and fulfilling jobs that automation is expected to create.

19 PwC. 2018. *Will robots really steal our jobs? An international analysis of the potential long term impact of automation*. p.3.
20 See Deloitte. 2017. *What key competencies are needed in the digital age?*. p.4.
21 World Economic Forum and Visual Capitalist. 02 July 2018. '10 skills you'll need to survive the rise of automation'. Available at: https://www.weforum.org/agenda/2018/07/the-skills-needed-to-survive-the-robot-invasion-of-the-workplace
22 ONS. 25 March 2019. 'Which occupations are at highest risk of being automated'. Available at: https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/whichoccupationsareathighestriskofbeingautomated/2019-03-25
23 Bakhshi, H. et al. 2017. *The Future of Skills: Employment in 2030*. p.15, pp. 77-9.

This will require a different approach to incentivising learning and skills development. Only 15.2 per cent of workers in elementary occupations, which have a high proportion of routine tasks and are therefore at risk of automation, currently take in-work training programmes compared to 37.3 per cent of people in professional occupations.[24]

Improving access to skills

Access to skills is a key challenge for people interested in re-skilling or up-skilling. Difficulties accessing skills can take a range of forms. These include not knowing where to find information about careers opportunities in the local area and skills needed to fill them, not having the time or money to take courses outside school or working hours, poor transport and digital connectivity, and low availability of certain courses in the local area. Many young people are unhappy with the quality of careers advice they receive,[25] and adults seeking careers advice tend to need to go through Jobcentre Plus services, which are targeted more at helping people not already in work.

The SkillsFuture programme in Singapore (see case study 1, p.16) has put in place a comprehensive skills system designed to give Singaporeans more control over their learning and career development by making information on key sectors, skills requirements and training opportunities accessible to residents of all ages. Adopting a scheme similar to SkillsFuture Credit as part of the National Retraining Scheme would be beneficial: there is little public information available yet on how the Scheme will operate, but a voucher submitted directly to residents to take courses under the scheme would help incentivise all workers, including those who are self-employed or on part-time, temporary, zero-hours or agency contracts, to seek training rather than have training linked to organisational culture or the ability of the business to afford to send staff to training. It would also encourage people who have retired to continue learning, developing a culture of lifelong learning that will permeate through the generations.

24 ONS. 9 May 2019. 'Characteristics and benefits of training at work, UK: 2017'. Available at: https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/characteristicsandbenefitsoftrainingatworkuk/2017

25 For example, see Key Cities. 2018. *Changing the Future: Youth Insight Report.* p.5.

CASE STUDY 1
SkillsFuture
Singapore

A national skills programme designed to foster a culture of learning in people of all ages as well as promote skills development, SkillsFuture comprises a number of component initiatives connecting learners, employers and training providers.

One initiative is the Skills Framework. Co-created by Government, industry and educational partners, the Skills Framework provides clear and detailed information on key sectors, career pathways and the skills and experience required for job roles. Learners are encouraged to use the Skills Framework to make informed decisions on education and career plans, and employers are advised to use the information to develop talent development plans tailored to specific roles.[26]

Another is the SkillsFuture Credit. From January 2016, all Singaporean citizens aged 25 and over receive a voucher of $500 to spend on a list of approved skills courses linked to the career pathways set out in the Skills Framework. The aim of the initiative is to promote individual ownership of skills development and lifelong learning.[27] In 2017/18 SkillsFuture Credit benefited over 192,000 Singaporeans.[28] The next credit top-up date has not yet been decided by the Singaporean Government.[29]

A two-day SkillsFuture for Digital Workplace workshop was launched in 2017/18 to give Singaporeans basic digital skills and help them adapt to digital disruption in the work environment. Over 7,000 people took part in the workshop in 2017/18.[30]

26 SkillsFuture Singapore. [no date]. 'Skills Framework'. Available at: https://www.skillsfuture.sg/skills-framework#howdoesitwork
27 SkillsFuture Singapore. [no date]. 'SkillsFuture Credit: Frequently Asked Questions'. Available at: https://www.myskillsfuture.sg/content/portal/en/header/faqs/skillsfuture-credit.html
28 SkillsFuture Singapore. 2018. *Celebrating a nation of lifelong learners and skills masters: annual report 2017/18*. p.19.
29 SkillsFuture Singapore. [no date]. 'SkillsFuture Credit: Frequently Asked Questions'. Available at: https://www.myskillsfuture.sg/content/portal/en/header/faqs/skillsfuture-credit.html
30 SkillsFuture Singapore. 2018. *Celebrating a nation of lifelong learners and skills masters: annual report 2017/18*. pp.19-21.

Enhancing digital skills

Digital skills are needed to access skills and training opportunities as well as jobs. The school curriculum in all UK nations now incorporates elements of coding and computer science, but people in work or retirement will be left behind if they do not have regular opportunities to update their digital skills.

Ghent city government in Belgium has spent over ten years working with local partners and welfare services to promote digital inclusion (see case study 2, p.18). This has involved working with residents to organise digital skills programmes targeted specifically at people of all ages and backgrounds, making digital skills learning a fun and affordable activity that brings people together. The West Midlands Combined Authority is so far the only part of the UK to receive funding from the National Retraining Scheme to develop digital skills in the area.

CASE STUDY 2

Digitaal.Talent@Ghent

Ghent, Belgium

A collaboration between the City of Ghent, the social welfare services, local organisations and Digipolis, the governmental ICT services provider for Ghent and Antwerp, Digitaal.Talent@Ghent (DTG) was launched in 2006 to promote digital skills and inclusion in the city. The large number of projects established by the DTG collaboration includes: free computer and internet access in more than 70 buildings in Ghent, with a special focus on free access for disadvantaged neighbourhoods and digitally excluded groups; a 'Digital Week' of multimedia activities; 'Digipolis lending service', which makes over 100 digital devices available for people to borrow for e-inclusion projects; 'Together Media Wise', a project designed to open the digital world to people living with a mental disability; and several projects focused on digital access and skills for children, elderly people and other social groups at risk of digital exclusion.[31]

DTG has improved the digital skills and inclusion of over 20,000 people per year.[32] The DTG team involves citizens and social partners in the design of the projects it runs.

31 City of Ghent. [last modified 29 April 2016]. 'E-inclusion program Digitaal.Talent@Gent'. Available at: https://stad.gent/ghent-international/city-policy/e-inclusion-program-digitaaltalentgent

32 Nesta. 19 December 2018. 'Digital Frontrunners Spotlight: Belgium'. Available at: https://www.nesta.org.uk/blog/digital-frontrunners-spotlight-belgium/

SECTION 2

SUPPORTING DISPLACED WORKERS TO FIND NEW JOBS

SECTION 2
Supporting displaced workers to find new jobs

Although forecasts indicate that, in theory, job losses will be offset by the many new jobs and sectors that will be created by greater workplace automation, it should not be assumed that people who lose their job because of automation can be easily shifted into one of the new jobs.

Losing a job is a devastating experience for any worker and their family. Losing many jobs in a local labour market over a short period of time is also devastating for the communities living in that area. Research highlights that mass unemployment events lead to a rise in unhealthy behaviour and mental ill-health among workers; put strain on local businesses and services that provide support to workers; and place older, unskilled workers at higher risk of remaining unemployed or obtaining insecure and low-paid jobs post-redundancy than their younger, skilled counterparts.[33]

Workplace automation presents genuine opportunities to increase business productivity and help people move into more fulfilling jobs that are better suited to their talents and aspirations. But it would not be reasonable to expect people to find and move into those more fulfilling jobs without help. Developing schemes to enhance the skills of the local population is an important policy response, but it is not the only response that should be considered.

33 Public Health Wales NHS Trust. 2017. *Mass unemployment events (MUEs) – Prevention and response from a public health perspective*. p.1.

Early response approach

When large-scale redundancies are likely, the best time to support displaced workers is in the period between notice and dismissal. Public employment services only tend to reach displaced workers after dismissal, which risks workers spiralling into unhealthy behaviours and overwhelming local employment services when many people lose their job in a short period of time.

The principle behind an early response approach is to protect the worker rather than protect the job. The case of Job Security Councils in Sweden (see case study 3, p.22) demonstrates that early support brings positive results in terms of supporting displaced workers to gain new jobs and reducing pressure on public employment services during mass unemployment events. The Job Security Council approach is tailored towards the needs of the individual, with each displaced worker having access to a dedicated personal adviser and counselling services in recognition that self-confidence is as important in securing a new job as having the right skills.

CASE STUDY 3
Job Security Councils
Sweden

Job Security Councils (JSCs) are private organisations that provide support to laid-off permanent workers, particularly in the 'transition period' between notice and redundancy. The epitome of Swedish workplace culture, which advocates 'protecting people, not jobs', JSCs aim to help transfer displaced workers to new jobs as soon as possible and ideally before the job loss comes into effect.[34]

Each JSC is managed by collective agreements between social partners in a given sector or occupational field (e.g. white collar workers in the private sector)[35] and financed through payroll contributions by affiliated employers.[36]

JSCs offer a range of activities to support displaced workers during the transition period, including: counselling, coaching, training, competence and personal development activities, and assistance to start a business.[37] Every displaced worker has a dedicated personal adviser, who assesses the skills, experience and aspirations of the individual and develops a tailored programme of support to help them obtain new employment.[38] JSCs also provide advice and consultation to employers and trade unions during the transition period.[39]

JSCs are highly successful in helping displaced workers into new jobs. On average, between 80 and 90 per cent of displaced workers who use JSC services find new jobs within 7 to 8 months of receiving notice, often without needing to use Sweden's Public Employment Service.[40]

34 OECD. 2015. *Back to work: Sweden: Improving the re-employment prospects of displaced workers*. p.76.
35 OECD. 2016. *Back to work: United States: Improving the re-employment prospects of displaced workers*. p.71.
36 Eurofound. [last modified 10 April 2019]. 'Job Security Councils'. Available at: https://www.eurofound.europa.eu/observatories/emcc/erm/support-instrument/job-security-councils
37 OECD. 2015. *Back to work: Sweden: Improving the re-employment prospects of displaced workers*. p.79.
38 Ibid.
39 Eurofound. [last modified 10 April 2019]. 'Job Security Councils'. Available at: https://www.eurofound.europa.eu/observatories/emcc/erm/support-instrument/job-security-councils
40 OECD. 2015. *Back to work: Sweden: Improving the re-employment prospects of displaced workers*. p.80.

Job-matching technology

Many partners in a city or region hold data on employer needs and employee skills and interests that could help align workers with vacancies and train young people and workers in future skills more effectively. But that data is often not well coordinated and used.

There is real potential in developing a recruitment tool to create better links between jobseekers and available vacancies at city or regional level, matching them better in terms of skills levels, experience, attitude and ambitions.

Job-matching technology is helping to address the skills mismatch and skills shortages in key sectors, but the technology alone is not enough to resolve the issue. As Amazon's experience developing a recruitment tool has shown, AI can inadvertently be designed to demonstrate bias.[41] The success of Ascend Indiana (see case study 4, p.24) proves the value in combining data analysis with human interaction. Using job-matching technology to analyse big data, combined with inviting the worker to have a one-to-one discussion with a human adviser on the results of the analysis and next steps, is having a positive impact in Indiana.

41 Reuters. 9 October 2018. 'Amazon scraps secret AI recruiting tool that showed bias against women'. Available at: https://www.reuters.com/article/us-amazon-com-jobs-automation-insight/amazon-scraps-secret-ai-recruiting-tool-that-showed-bias-against-women-idUSKCN1MK08G

CASE STUDY 4
Ascend Indiana
Indiana, USA

Ascend Indiana's mission is to "give every Indiana employer access to the skilled workforce necessary to thrive, and every Indiana citizen the opportunity to pursue a meaningful career path."[42] Launched in its current form in 2016, Ascend Indiana is a cross-sector, industry-led organisation that works with corporate, education and community partners to address the mismatch between skills supply and employer demand in the region of Central Indiana.[43]

Ascend Indiana combines a cloud-based platform with human interaction to produce a data-driven but individual-focused job-matching service, known as the 'Ascend Network'.[44] The service uses an algorithm to connect Indiana higher education students with jobs in the region based on shared interests. It also offers coaching to help link students with resources to improve their job applications and works with Indiana employers to ensure the language used in job descriptions makes it clear which skills are required to take on the role.[45] In its pilot phase, the Ascend Network involved 70 partner companies, 14 higher education institutions and over 12,000 early-in-career workers.[46] The organisation aspires to expand its Network to include underemployed and laid-off workers in future.[47] Ascend Indiana also works with partner organisations, such as Community Health Network, to develop programmes targeted at addressing skills shortages in specific jobs, such as nurses and clinical social workers.[48]

The Ascend Indiana initiative is sponsored by the Central Indiana Corporate Partnership, a group bringing together the Chief Executives of Central Indiana's prominent corporations, foundations and universities to collaborate more strategically on initiatives to enhance prosperity in the region.[49] Its launch was supported by $7 million funding, including a $5 million grant from the Lilly Endowment Inc. and contributions from the Indiana Department of Workforce Development and the Central Indiana Community Foundation.[50]

42 Central Indiana Corporate Partnership. [no date]. 'Initiatives'. Available at: https://www.cicpindiana.com/sector-initiatives/
43 Ascend Indiana. 25 October 2016. 'Central Indiana Corporate Partnership unveils new initiative brand, announces focus and $7 million in funding'. Available at: https://ascendindiana.com/about/news/2016/central-indiana-corporate-partnership-unveils-new-initiative-brand-announces-focus-and-7-million-in-funding
44 Ascend Indiana. [no date]. 'Ascend Network'. Available at: https://ascendindiana.com/talent
45 Indianapolis Business Journal. 22 June 2018. 'Indy Group raises $9m in effort to fill talent gap'. Available at: https://www.ibj.com/articles/69332-indy-group-raises-9m-in-effort-to-fill-talent-gap
46 Central Indiana Corporate Partnership. 22 June 2018. 'Ascend Indiana receives Lilly Endowment, Nina Mason Pulliam Charitable Trust funding, grows talent pipelines and Ascend Network'. Available at: https://www.cicpindiana.com/ascendfundingpipelinesnetwork/
47 Indianapolis Business Journal. 22 June 2018. 'Indy Group raises $9m in effort to fill talent gap'. Available at: https://www.ibj.com/articles/69332-indy-group-raises-9m-in-effort-to-fill-talent-gap
48 Ibid.
49 Central Indiana Corporate Partnership. [no date]. 'About CICP'. Available at: https://www.cicpindiana.com/about-cicp/
50 Ascend Indiana. 25 October 2016. 'Central Indiana Corporate Partnership unveils new initiative brand, announces focus and $7 million in funding'. Available at: https://ascendindiana.com/about/news/2016/central-indiana-corporate-partnership-unveils-new-initiative-brand-announces-focus-and-7-million-in-funding

SECTION 3

USING AUTOMATION TO HELP PEOPLE CONNECT WITH THE LOCAL LABOUR MARKET

SECTION 3

Using automation to help people connect with the local labour market

Smart cities in the UK and across the world are harnessing digital technology and AI to help people lead fulfilling lives. The core of the smart city concept is that technology can and should be used to make people's lives better. Research on the impact of workplace automation has to date tended to focus on changing skills requirements and jobs, but this underestimates the full potential of automated technologies in the working environment. There also needs to be consideration to how automation can be used to help people connect with jobs and skills programmes in their local labour market.

Technology is already helping people to access jobs and training in the UK. For example, advances in telehealth and medical diagnostics will help more people to be physically and mentally healthy and stay in the workforce for longer. Technology is also being designed to improve worker safety in occupations that are at times physically demanding or risky. [51]

Much of the AI technology intended to facilitate smart cities is still in development. The best practice examples studied from other parts of the world are often testbeds rather than the finished article. This offers the UK an opportunity to develop ideas and establish a global reputation in emerging automated technologies that support people to access their local labour market.

Autonomous vehicles

Lack of suitable transport is a key barrier to accessing jobs and skills opportunities. Although digital connectivity helps to bring work and skills to people's homes, it has not yet fully replaced the commute. Since some of the most sought-after skills of the automation era are emotional intelligence and communication skills, it is crucial that opportunities are created for people to interact with each other in person, outside the digital sphere.

51 Preston City Council are working with the University of Central Lancashire (UCLan) and Nesta's Challenge Prize Centre on the 'Flying High' project to investigate uses of drones to support urban construction schemes. Nesta's report on the findings of the project highlighted that greater use of drones in construction and urban regeneration reduced risk of injury for workers and increased efficiency in construction site management.
See Nesta. 2018. *Flying high: Shaping the future of drones in UK cities*. p.76.

The importance of supporting transport connectivity is reflected in one of the four Grand Challenges being the Future of Mobility.[52] A key element of the response to this Challenge is developing autonomous vehicles, sometimes known as driverless cars. The Chancellor of the Exchequer, Philip Hammond, announced that autonomous vehicles could be on the UK's roads by 2021,[53] with advanced trials already underway in London and Edinburgh.[54]

Autonomous vehicles have real potential to improve the mobility of people living in more rural and sparsely populated places. If these areas are underserved by public transport and there is no possibility to buy or share a car, it becomes more of a challenge for people living in these areas to connect with their local labour market as well as other services and leisure activities. Autonomous vehicles trialled safely outside large urban centres could open new avenues for people who feel isolated and cut-off to explore their area and access jobs and skills opportunities that they might have previously considered off-limits.

There is also great potential for autonomous vehicle technology to help people with physical disabilities to travel around their area with greater freedom. This technology is still a pipedream in the UK, but is currently being developed in places such as Texas (see case study 5, p.28). No matter people's age or background, living with a disability should never exclude people from learning and being part of their local community.

52 BEIS. [Last updated 22 May 2019]. 'The Grand Challenges'. Available at: https://www.gov.uk/government/publications/industrial-strategy-the-grand-challenges/industrial-strategy-the-grand-challenges

53 BBC. 19 November 2017. 'Hammond: Driverless cars will be on UK roads by 2021'. Available at: https://www.bbc.co.uk/news/business-42040856

54 UK Government. 22 November 2018. 'From science fiction to reality: People in London and Edinburgh set to be the first to trial self-driving vehicle services'. Available at: https://www.gov.uk/government/news/from-science-fiction-to-reality-people-in-london-and-edinburgh-set-to-be-the-first-to-trial-self-driving-vehicle-services

CASE STUDY 5
Autonomous Vehicles
Texas, USA

Texas is one of ten areas in the USA which the Department of Transportation has approved as testbeds for automated transport technology.[55] Innovative projects include:

- Arlington launched what it described as the USA's first autonomous public shuttle network in 2017 to take NFL fans from remote parking lots to the Texas Rangers' stadium.[56] Arlington has been piloting on-demand autonomous vans travelling on public streets in one section of the city's Entertainment District since October 2018.[57]
- Texas A&M University and the Texas A&M Transportation Institute are developing algorithms and protocols for autonomous shuttles designed for people with a range of disabilities.[58]
- The Texas Department of Transportation has created a Connected and Autonomous Vehicle (CAV) Taskforce to coordinate CAV projects taking place in Texas and publish information on the projects' development.[59]

55 US Department of Transportation. 19 January 2017. 'U.S. Department of Transportation Designates 10 Automated Vehicle Proving Grounds to Encourage Testing of New Technologies'. Available at: https://www.transportation.gov/briefing-room/dot1717

56 Fort Worth Star-Telegram. 11 August 2017. 'Arlington's new driverless shuttle is ready. Here's when you can catch a ride'. Available at: https://www.star-telegram.com/news/local/community/arlington/article166672082.html

57 Transport Topics. 22 August 2018. 'In one Texas city, you can soon request an autonomous vehicle on demand'. Originally published in The Dallas Morning News. Available at: https://www.ttnews.com/articles/one-texas-city-you-can-soon-request-autonomous-vehicle-demand

58 The Conversation. 6 October 2017. 'Are self-driving cars the future of mobility for disabled people?'. Available at: https://theconversation.com/are-self-driving-cars-the-future-of-mobility-for-disabled-people-84037?xid=PS_smithsonian

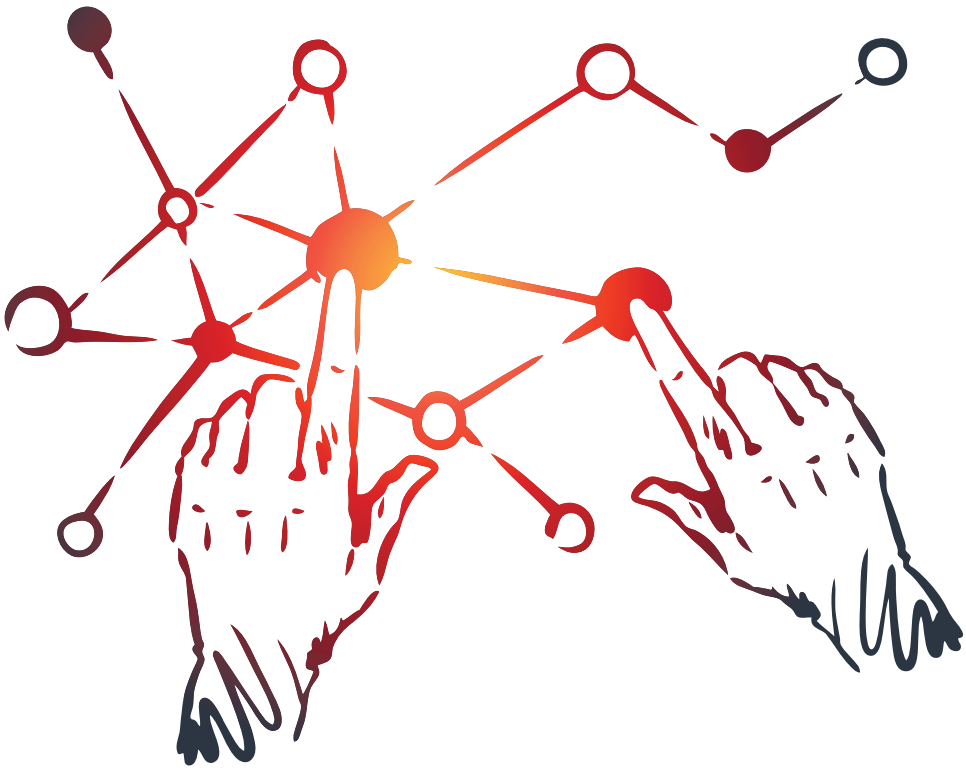
59 Texas Department of Transportation. 22 January 2019. 'Texas to form connected and automated vehicle task force'. Available at: https://www.txdot.gov/inside-txdot/media-center/statewide-news/020-2019.html

Personalised digital platforms

Many services and activities take place within a city or region. Information on these can be spread across a variety of platforms and media, so it can be difficult for people to keep track and be engaged in what happens in their area.

A personalised platform such as DigiTel (case study 6, p.30) would be able to link residents with job vacancies and learning events in their city or region based on their preferences.

The technology would also have wider implications in terms of connecting people more closely to their place. As DigiTel demonstrates, a digital platform would use discounts and other incentives to encourage people to use local businesses, attend cultural events and participate in community initiatives and civic decision-making. It could be used to consult residents on ideas for new automated technology, as it is the people "on the shop floor, factory floor or office desk" who are often best placed to say how technology would improve their working practices.[60]



60 BEIS Committee. 30 April 2019. *Oral evidence: Automation and the future of work*. HC 1093. Q219. p.10.

CASE STUDY 6
DigiTel Residents Club
Tel Aviv, Israel

Tel Aviv's smart city strategy aims to advance its reputation as a leading technology hub. The centrepiece of that strategy is the DigiTel Residents Club, a web and mobile communication platform that uses data on residents' location, lives and preferences to provide tailored information and services. This could include informing club members of road closures near their home, alerting them to cultural events taking place in the city that might interest them, and giving them discounts on city services.[61]

The DigiTel Residents Club is open to all Tel Aviv residents over the age of 13 and now has over 206,000 users.[62] The goal of the platform is to deliver services more proactively to residents rather than expect residents to contact the city authorities for services and to aid residents to become more involved and engaged in civic life. The city uses the platform to seek resident participation in decision-making affecting, for example, construction projects and the future of education.[63]

The DigiTel platform also offers spin-off clubs for dog owners and parents of young children. A platform is being developed for tourists planning a trip to the city.[64]

61 Forbes. 22 March 2018. '6 lessons from Tel Aviv for successful digital transformation of smart cities'. Available at: https://www.forbes.com/sites/gilpress/2018/03/22/6-lessons-from-tel-aviv-for-successful-digital-transformation-of-smart-cities/#6f1e4b405330

62 Municipality of Tel Aviv-Jaffa. [no date]. 'Tel Aviv smart city'. Available at: https://www.tel-aviv.gov.il/en/abouttheCity/Pages/SmartCity.aspx

63 Microsoft. 16 May 2017. 'Tel Aviv engages citizens with innovative digital services, public participation'. Available at: https://customers.microsoft.com/en-us/story/tel-aviv-government-azure

64 Municipality of Tel Aviv-Jaffa. [no date]. 'Tel Aviv smart city'. Available at: https://www.tel-aviv.gov.il/en/abouttheCity/Pages/SmartCity.aspx

WORKPLACE AUTOMATION AND THE UK'S MID-SIZED CITIES

WORKPLACE AUTOMATION AND THE UK'S MID-SIZED CITIES

Workplace automation will have different impacts on different places in the UK, but those impacts will not be neatly defined according to regional or combined authority geography. Rather, they will be based on the shared characteristics of places which, like mid-sized cities, are located in all parts of the country. This implies that the UK's most effective response to workplace automation will be to develop policy that is specifically designed to address place-based impacts.

For instance, although 20.2 per cent of the workforce in Britain's cities is in an occupation very likely to shrink by 2030 because of technological changes, the share of the workforce at risk in most mid-sized cities is higher than this figure.[65] Of the 21 mid-sized Key Cities featured in the analysis, 19 cities have between 20.7 per cent and 29.2 per cent of their workforce in occupations likely to decline by 2030.[66] Four Key Cities (Sunderland, Wakefield, Doncaster and Kirklees) are in the top ten British cities most exposed to automation-related job losses.[67]

Aware of the risks facing their workforce and communities, mid-sized city leaders are taking action to create an environment that supports businesses to produce and test the technology needed to develop the UK's automation capabilities (see case studies 7 and 8, p.33). As well as generating additional high-skilled and automation-proof jobs in the area, mid-sized cities' move to host businesses specialising in emerging technologies makes them key partners for the UK Government in delivering the Industrial Strategy.

65 Centre for Cities. 2018. *Cities Outlook 2018*. p.13.
66 Ibid. p.14. Four of the 25 Key Cities (Carlisle, Lancaster, Salford and Wolverhampton) were not included in the *Cities Outlook 2018* analysis.
67 Ibid.

CASE STUDY 7

Compound semi-conducter investment

Newport

Newport hosts a significant cluster of technology companies, particularly in compound semi-conductors, which will be the foundation technology for a wide range of future applications such as autonomous vehicles. The project has created 1,200 jobs across the region and secured a further 450 jobs in Newport as part of the supply chain.[68]

CASE STUDY 8

UK Battery Industrialisation Centre

Coventry

The UK Battery Industrialisation Centre (UKBIC) will be a cutting-edge manufacturing research facility which transitions the UK to become a world leader in the design, development and manufacture of batteries for vehicle electrification, responding to the 'Future of Mobility' Grand Challenge set out in the UK's modern Industrial Strategy. UKBIC will create new employment opportunities and be a focus for national training and skills development in automotive and battery manufacturing.[69]

68 Key Cities. February 2019. *Cities in Action*. p.31.
69 Ibid.

For the UK, mid-sized cities are pivotal in terms of unlocking the full range of opportunities presented by automation. If automated technologies create as many jobs in mid-sized cities as they will displace, and if workers and young people are supported to obtain the skills required to take those new jobs, mid-sized cities will be the driving force behind the UK's efforts to become a global leader in developing Fourth Industrial Revolution technology.

Proposals by Key Cities' Economic Growth Commission to the UK and devolved governments

Mid-sized cities want to work more closely with the UK and devolved governments to shape the UK's policy response to greater workplace automation. Their size, scale, cross-country locations and dynamism make them useful partners for piloting local strategies to address the risks and opportunities of workplace automation.[70]

Based on the research and case studies featured in this report, Key Cities' Economic Growth Commission proposes that the UK and devolved governments **appoint mid-sized cities to be the UK's AutoPilots**. The AutoPilots scheme would see mid-sized cities trial a series of wide-ranging policies and initiatives, all designed to support people and places to thrive in the automation era.

Based on research on international best practice, the Economic Growth Commission proposes the following to be included and tested in the AutoPilots scheme:

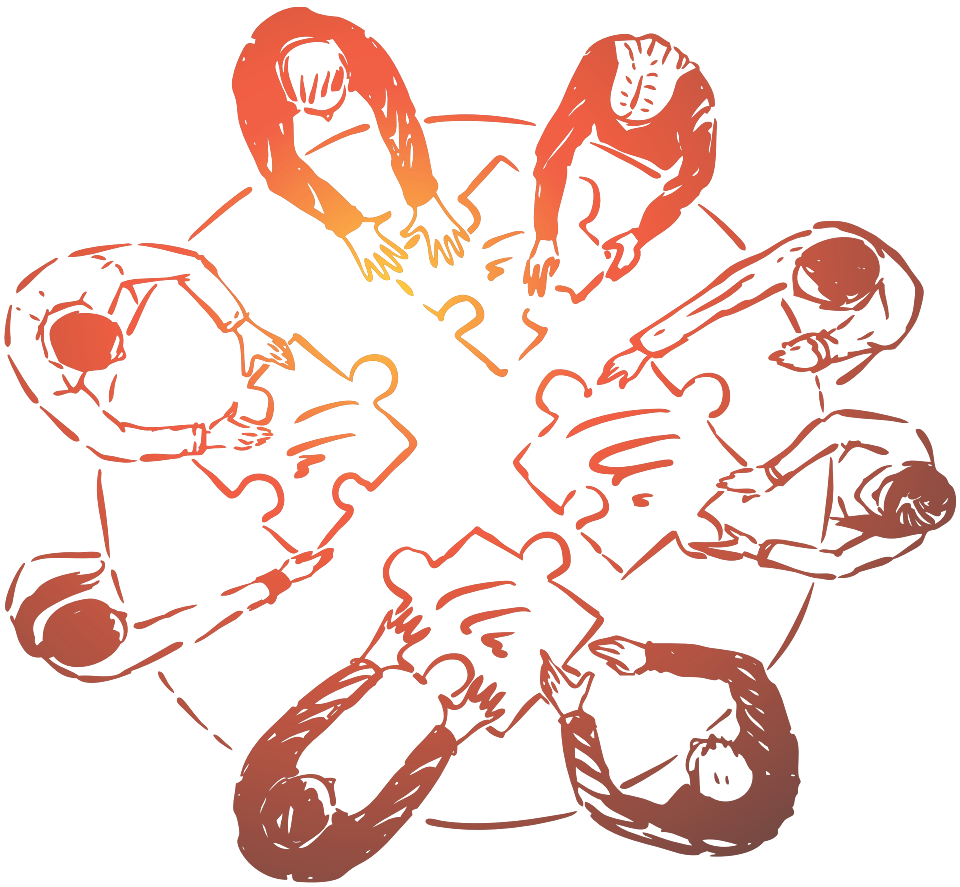
- COMPREHENSIVE SKILLS DEVOLUTION TO MID-SIZED CITIES, including devolving the Adult Education Budget and piloting UKSPF, the National Retraining Scheme and a 'SkillsFuture Credit'-style voucher scheme for people to spend on training courses, potentially as part of a trial of Universal Basic Income. This would cultivate a more accessible and locally-driven employment and skills system in mid-sized cities and promote a strong culture of lifelong learning.[71]

70 Mid-sized cities' offer to UK and devolved governments is set out more comprehensively in: Key Cities. 2019. *Key Cities: Cities in Action*.

71 For a more comprehensive list of proposals by Key Cities for ways in which UK and devolved governments can work with mid-sized cities to develop better and more joined-up education, employment and skills systems in mid-sized cities, see:
Key Cities. 2019. *Key Cities: Cities in Action*.
Key Cities. 2019. *Meeting the education, skills and employment challenges*.

ALL-AGE CAREERS SERVICE, which would make information on current and future careers opportunities in the local economy clearly accessible to people of all ages; work closely with existing public employment services, such as Jobcentre Plus, to offer a drop-in advice centre on careers, job applications and skills training for young people and working-age adults; and trial an 'early intervention' approach that provides one-to-one support to displaced workers and a rapid response team to work with trade unions and businesses to advise companies intending to lay off workers.[72]

AUTOMATION INNOVATION CENTRE, involving close collaboration between national governments, local governments, LEPs, universities, businesses, other partners and residents to develop and trial ideas for forms of automated technology that would break down barriers for people to access the labour market and improve people's day-to-day lives.



72 The All-Age Careers Service was originally proposed by Key Cities. 2019. *Key Cities: Cities in Action*. p.21.

CONCLUSION

CONCLUSION

Automation is often described as the future of work, but it is a future that has already taken root in the present. Self-service checkouts, online customer service chatbots and trials of autonomous vehicles are just a few visible examples of automated technologies that are now part of many people's everyday lives. The rise and influence of automation in the workplace will continue to expand significantly in the coming years.

Given that workplace automation will have different and varying impacts across the country, it is important that the UK's response to automation is not based on a 'one-size-fits-all' approach. The example of mid-sized cities demonstrates that places with similar characteristics will be similarly affected by the impact of workplace automation, even when they are located across the country rather than concentrated in one region. In the case of mid-sized cities, rising workplace automation will put a large number of predominantly 'lower-skilled' jobs at risk, but it will also enable opportunities for people to enter better-paid and more secure jobs in highly-skilled STEM industries, education and medical care. Places like mid-sized cities would make ideal testbeds for UK policies designed to mitigate the risks and unlock the full range of opportunities automation presents to increase productivity and social prosperity in all parts of the country.

The Fourth Industrial Revolution should not just be regarded as a period of major technological developments. It also offers the UK an opportunity to design policy that gives places and communities more autonomy over their own affairs, so that jobs and skills development become more accessible to all and more aligned with the requirements and ambitions of local governments, employers and residents. As national policy alone can only go so far to address broad variations in place-based impacts, it is clear that the UK's most effective response to the Fourth Industrial Revolution and to workplace automation has to be local.

KEY CITIES
UNLOCKING POTENTIAL

NLGN