The Greater Manchester Digital Strategy 2018-2020

Foreword by Andy Burnham and Sean Anstee

Our Greater Manchester Strategy (GMS) sets out our collective ambition to make Greater Manchester one of the best places in the world to grow up, get on, and grow old. A place of ideas and invention, with a modern and productive economy that draws in investment, visitors and talent. A place where all voices are heard and where, working together, we can shape our future.

We live in a world where the number of digital devices has now passed the number of people. Digital technology is re-shaping every aspect of our lives in ways which were inconceivable a generation ago: how we work, travel, shop, access services, meet people, communicate and are entertained.

Greater Manchester has always been a pioneer city region, with an eye for opportunity and the drive and pragmatism to seek out new solutions to old problems. With almost 8,000 digital and digital-intense creative businesses in Greater Manchester employing more than 82,300 people and generating £4.1bn of economic growth annually, Greater Manchester is already home to the largest cluster outside London.

In the Greater Manchester Strategy, we set out a clear ambition to be a world-leading digital city region, and committed to taking an open, innovative and connective approach to delivering that ambition.

But we want to put a uniquely Mancunian stamp on this: to be a Digital City-Region with a Difference and drive real change together, from the bottom up. We can only be a world leading city-region if we bridge the digital divide. Progress must be universal; geographically, socially and economically. It is this unique approach that we believe sets us apart. We will put people at the heart of our plans, for example, by using digital to connect young people to opportunity or tackle homelessness. At the same time, we will capitalise on GM's unique ability to use digital to connect and enhance our other high value sectors such as creative industries, health innovation and advanced manufacturing and materials

Our thanks go out to the great many people across Greater Manchester involved in shaping this Strategy and Action Plan since our first Digital Summit in July and the follow up in December 2017. Your enthusiasm, ideas and ownership of the commitment to become a world-leading digital city will be reflected in the actions we will take forward together.

This Strategy and Action Plan sets out a vision, describes where we are now and where we want to be, and how we will know that we're on the right track.

This is going to be game-changing for Greater Manchester. Let's all keep driving it forward.

1 Why it is vital for Greater Manchester to be a leading digital city-region

> **"The future vitality of cities is increasingly based on their ability to use digital networks in intelligent, strategic ways."**
>
> **Aspen Institute, Washington**

The Greater Manchester Strategy sets out the key priorities we are trying to tackle as a city-region. These include low levels of productivity and skills that are out of step with future economic

need; and too many of our people of all ages are without the tools and resilience for happy, healthy, productive lives.

The wholescale adoption of digital technologies has the potential to be hugely disruptive both for the UK but also for the GM economy, having a profound and potentially unprecedented impact on production techniques, supply chains, business models, workforce and global networks. Digital technology has catalysed the interconnection of the global economy, with the internet enabling the free exchange of goods and services, providing consumers with greater choice and businesses with access to skills, resources and customers. As a result, people are now accessing more digital content and services from outside their own country, cross-border payments are increasing, and small companies are more easily becoming more "multinational". A global survey and index on connectedness published by McKinsey found that 86% of tech-based start-ups globally reported cross-border activity, and that 360milllion people had participated in cross-border e-commerce[1].

Digital technology is increasingly the backbone of all industries, regardless of the nature and type of business. Embracing digital technology throughout all sectors, geographies and occupations is fundamental to GM's current and future international competitiveness. GM's workforce needs to be equipped with the range of skills required for future ways of working. The quality of GM's digital skills, assets and reputation will determine its future ability to create, attract and retain wealth and talent and strengthen our communities.

We want to be recognised as an international thought leader and do-er in digital innovation and adoption across our economy and communities. We know that innovation is driven by the divergent thinking that bring technologies and ideas together at the right time. This plays to the strengths[1] of Greater Manchester; the diversity of our businesses, our communities and the way we challenge the traditional way of doing things. Part of Greater Manchester's distinctiveness as a city-region comes from being big enough to matter, small enough to know each other, and hungry enough to make things happen quickly. Scale, diversity, ambition and a habit of collaboration have time and again put Greater Manchester on the world stage.

This strategy is therefore founded on evidence that becoming a leading digital city-region is imperative to deliver our wider vision. We *must* do it to deliver the economic, social and inclusion improvements we need and want to see. We *can* do it because we have the vision, leadership and both industrial and political will, coupled with strong academic, industrial and community foundations and an exciting and disruptive set of emerging activities and technology.

2 GM Vision: A Digital City-Region with a Difference

"It would be fantastic if we led the country in encouraging digital innovation which supports businesses and investment, creating jobs and opportunity, but focusing on improving outcomes for people such as loneliness or homelessness in our society."

"I don't want Greater Manchester to be just a smart city – I want it to be the *smartest* city."

- Andy Burnham, Mayor of Greater Manchester

[1] McKinsey Global Institute, "Connectedness", (2016)

Our vision is for Greater Manchester to be **one of the best places in the world for developing and harnessing digital technology**[2] and to be recognised as being a top 5 European Digital City Region by 2020 which:

- empowers and enables residents to have the highest quality of life; and
- supports the creation of high quality jobs and achieves the maximum possible productivity levels.

This strategy for Greater Manchester as an **open**, **connected** and **innovative** city region, encompassing our collective Action Plan, describes how this will be done.

Our vision of a digital Greater Manchester is holistic, with digital technology driving improvements across all areas of economy and society. A world-leading digital city is therefore; one where its businesses, public service providers and citizens are using digital technology by default and to the fullest: to grow their businesses and improve productivity; to access skills, training and employment opportunities; to address global challenges that have a local impact, such as ill health, social isolation, homelessness and pollution; to improve living standards and well-being; and to improve the quality and value for money of public services.

3 Goals and Measures

Digital is a cross-cutting theme across the Greater Manchester Strategy, and will be a key enabler of productivity growth in the Greater Manchester Industrial Strategy. Following consultation with partners, and having considered a range of indices and reports, we have concluded that currently there is no one robust measure or index that includes all the factors that are central to GM's vision of a successful digital city, such as digital inclusion or diversity in tech companies. Some are very narrowly focused on tech companies or the digital and/or creative sector, others look at inclusion or take a broader ecosystem approach. Some indices extrapolate from national data rather than examining the genuine differences between places. Common across many of these is that these indicators are not robust or comparable between places or over time.

We want to be able to benchmark against our peer city-regions as well as focusing on those indicators that we care most about and best reflect our priorities and values in Greater Manchester. This will have to be an incremental process as new, relevant and comparative data become available that reflects the ambition, and wide-ranging impact of the Digital Strategy. Therefore, seven high-level robust indicators are proposed at this point. Over time we will move to a broader set of measures that will capture the outcomes that are best able to describe the kind of 21st Century digital city that we want to be. These may include an ability to measure the size and health of our digital ecosystem, the diversity of our digital economy, and the impact of digital on citizen empowerment. Meeting the targets we have and will set in all these areas and continuing to improve is what being a world-leading digital city region means to us: our businesses, our residents, our employees, our communities.

[2] In this document, we broadly use digital technology to mean the electronic creation, manipulation, distribution, analysis and storage of data and the technology platforms on which this can be achieved. Within this definition we include, for example: Internet of Things (IoT), Artificial Intelligence (AI), Robotics, Data Analytics, Additive Printing, Cognitive Computing, Augmented Reality, Virtual Reality, Block-chain, and Drone Technology.

Measure	Target
1. **Growth and Productivity - GVA per job**	To grow GVA per filled job from £41,984 to £44,500 by 2020.
2. Digital Skills - pipeline	To reduce the percentage of GM digital businesses that report turning down work as a result of being unable to find the right talent of talent from 27% (2017) to 5% by 2020.
3. Digital Inclusion – possessing basic digital skills	Increasing the percentage of Greater Manchester residents that have all five basic digital skills (communicating, creating, transacting, problem-solving and managing information) from 78% (2016) to 82% by 2020
4. Digital inclusion – basic digital skills usage	Increase the percentage of adults who have used all five basic digital skills (communicating, creating, transacting, problem-solving and managing information) from 42% in 2017 to 60%, with no borough below 50%, by 2020.
5. Growth and Productivity - Gender balance in digital companies	To change the ratio of men: women among IT and tech workers in technical roles from 79:21 in 2016/17 to 60:40 by 2020, as a milestone to 50:50 by 2025.
6. Digital Infrastructure – average download speed	By 2022/23, the average download speed across fibre, cable, mobile and wireless will exceed 100Mbps, compared to a Q4 2017 baseline of 32Mbps
7. Digital Infrastructure – fixed broadband speed	Increase the percentage of premises in Greater Manchester with fibre to the premises from 2% to 25% by 2020

There are also some factors that are critical to any modern city-region, which we see as fundamental to realising our digital ambitions and the wider ecosystem in which people and businesses operate. These other factors, which include transport infrastructure; housing offer; cultural and leisure offer, are not included above as they are also fundamental to the overall vision set out in the GMS and are already being tracked and benchmarked there.

These are ambitious targets to deliver an ambitious vision. GMCA will report progress against these targets publicly, on a six- monthly basis, in line with the reporting for the Greater Manchester Strategy.

4 What will feel different when we get there?

The headline indicators above will give focus to our efforts, drive progress and enable us to track and compare with other city-regions. But on their own they do not describe how GM will look and feel different; how the lived experience for all people, all businesses and in all parts of GM will change as a result of living in a world-leading digital city-region. This strategy therefore, includes some illustrative descriptions of how we believe life would change for the better.

Delivering this strategy will mean:

For **young people**, better connected insights on children's development from the very early years right through to leaving school, a transformative range of career opportunities and a means through which they can be accessed;

For **working age people,** the ability to access a broader range of high quality job opportunities, and set up your own business more easily;

For **business owners and investors**, far greater range of opportunities to access the technology and support to digitise, opportunities to physically and digitally collaborate will be readily accessible and there will be a more readily available flow of talent, capital, and support to new innovative ideas, and a market place that defines and presents problems and commissions solutions, rather than specifying and buying off the shelf products and services;

For **older people**, there will be new support and solutions to social isolation, more ease and control for you and your family in terms of managing your own health and care; and

For **all residents**, a city that works around you in terms of living your life, where you can move around the city more easily and safely, improvements in, for example treating illness, improving air quality due to insights from pooled data, greater control over how and when you access public services.

5 Playing to our strengths

"We can only see a short distance ahead, but we can see plenty there that needs to be done"

- Alan Turing

Greater Manchester is well-positioned to be a world player with a progressive digital agenda based on a number of important local strengths and assets:

- The **digital and digitally intense creative sector** in GM currently accounts for 82,300 jobs and generates GVA of £4.1bn per annum. There are 7,500-8000 businesses, and nearly 1,600 tech start-ups formed in Manchester in 2016. Additionally, there are 15,000 creative, digital and IT students at GM's four HEIs. Digital was identified as one of GM's fast growth opportunities in the 2016 Science and Innovation Audit.

- **MediaCityUK**, a nationally significant digital industry cluster is home to the BBC and ITV and 250 digital companies providing 7,000 digital jobs. It continues to expand – the BBC recently advertised 200 digital specialist jobs. Additionally, the University of Salford provides over 30 courses there for 1,700 students; while the University Technical College

(UTC) and Oasis Academy are training young people in the digital technologies of the future.

- **The Sharp Project** in East Manchester is growing new creative and digital business in its incubator spaces. The **Northern Quarter** in Manchester City Centre is seeding successful disruptive businesses; Spinningfields is attracting tech hubs wanting to be close to the city's finance and professional service centres (**fin-tech**).
- **The School of Computer Science** at the University of Manchester has major strengths in Big Data, Artificial Intelligence and novel computer architectures; UoM's Data Science Institute brings together over 250 researchers in Big Data from across the University; UoM is a lead partner in the N8 High Performance Computing Centre across the wider North of England.
- GM universities have a strong reputation for knowledge transfer to boost growth of SMEs. All have Innovate UK funded **Knowledge Transfer Projects**. MMU is in the top 5 of UK universities and its School of Computing, Maths and Digital Technology is involved in 8 live KTP projects.
- Manchester Metropolitan University, the University of Manchester and other university partners will be leading **a new £40million National Institute of Coding**. This will bring together universities, large corporations, SMEs and industry groups to tackle the shortfall in the digital sector – the digital skills gap. Funding will develop new undergraduate and postgraduate courses, attract new staffing talent to the University, encourage more women into the sector, address challenges experienced by mature students and students from ethnic minorities, create new pathways to transfer knowledge to industry and inspire a new generation of tech leaders through community outreach.
- GM has a growing strength and significant opportunity in the field of **cyber security**, including a new **Centre of Excellence**.
- The UK's internet of things demonstrator project led by Cisco and Manchester City Council with a wide range of academic and commercial partners: **CityVerve**
- **The Hartree Centre** at Daresbury is one of the world's most powerful supercomputing and data analysis infrastructures, with over £350m from government and IBM to support research into the next generation of data-intensive systems.
- Corridor Manchester hosts the **European Big Data Laboratory**, the European HQ of Hitachi's Global Centre for Innovative Analytics, with strong links to the US, as well as the Cisco CREATE UK R&D team.
- Start up and scale up facilities at **Wayra North** in Oldham and **Ashton Old Baths** in Tameside.
- MMU were one of the first places in the UK to offer **Tech Partnership Gold accredited** degree apprenticeships- BSc (Hons) in Digital & Technology Solutions, with 4 different specialist pathways (Software Engineer, IT Consultant, Data Analyst, Cyber Security). MMU will be launching a new MSc in industrial digitisation from September 2018.
- The University of Salford has been the site of the UK's **National Advanced Robotics Research Centre** since 1987, and offers MSc in Robotics and Automation, Robotics and Artificial Intelligence and PgDip in Robotics and Automation.

- Universities of Manchester and Salford, and RU Robots, one of the UK's foremost Advanced Robotics and Cognitive Science Company were two of the founders of the **Northern Robotics Network**, which works across the North to identify ways in which world class research, cutting edge companies and innovative application, can help drive the future of robotics in the UK. NRN have already identified a strong cluster of activity around robotics in hazardous environments related to the nuclear industry (where GM also has particular academic strengths).
- **The Siemens factory** in Didsbury focuses on industry automation and drive technologies.
- A number of organisations also provide **specialist support and opportunities** to digital companies, entrepreneurs and young people including Manchester Digital, Design Manchester, Tech North (soon to be Tech Nation), and Madlab.
- The **GM Business Growth Hub** operates a programme that supports SMEs to scale up – "Greater Connected". Firms get to work closely with a dedicated specialist advisor to ensure their business is on-track, alongside a number of masterclasses throughout the year including digital transformation, digital marketing, email and content market as well as infrastructure including cloud and cybersecurity. Plus access to networking events, in partnership with The Landing, UK Fast and Creative England.
- Investment in strategic information sharing capabilities through the GMCA's Digital programme, **GM Connect**, which has already opened up access to Government datasets and is enabling support for families and communities in GM and is now testing new digital approaches that support our wider strategic priorities.
- Accelerating digitisation of health & social care via the **Digital Collaborative** through investment in new technologies and enabling system wide improvements in partnership with other agencies.

These assets and capabilities lie within a rich, synergistic ecosystem that already makes Greater Manchester one of the most attractive places in the UK to develop and grow digital businesses or have a digital career.

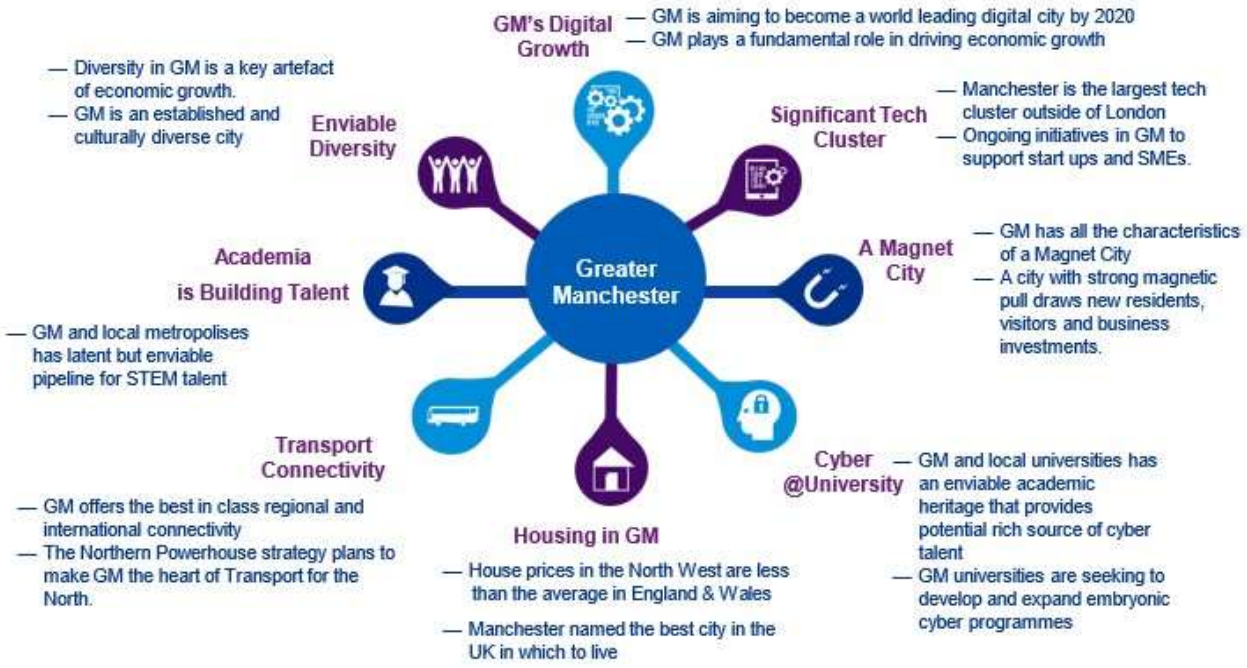

Figure 1. The GM digital ecosystem overview.

This strategy and its Action Plan aim to build on this base and at the same time address identified challenges.

6 Strategy into Action: Our approach

"Alone we can do so little, together we can do so much."

Helen Keller

Greater Manchester is fortunate in that a great many dynamic and committed people across the region have been working and continue to work, individually and collectively, to promote and support Greater Manchester as a leading digital city region.

In recognition of that passion and ambition, and the unprecedented opportunity for the people, businesses and institutions of GM to use digital technology to build a better, smarter, happier city region, the GM Mayor held a Digital Summit in July 2017 to galvanise industry and others to drive an action plan for GM to become a world-leading digital city region. The Summit highlighted some of the great work that companies and individuals are doing to transform Greater Manchester, and the enthusiasm and commitment to using digital technology to benefit our economy and society.

Based on feedback at the July 2017 Summit, work on the Action Plan was divided in order to address the five challenges[3] as illustrated below. Over 120 key influencers and entrepreneurs across GM came together across the themes in Working Groups plus an overall Digital Steering Group each with a clear Terms of Reference. Together they agreed practical actions that will contribute to GM's ambition.

[3] Digital Infrastructure, Skills and Talent, Economic Growth and Productivity, Inclusion, and Communications and Marketing

Figure 2. The GM Digital strategy.

Inherent within this approach is the recognition that Greater Manchester's success in this area is not in the gift of any individual or sector but can only be achieved through collaboration. In addition, this approach is engaging some of the best minds available in the city region and is strengthening the city region's networks, creating conditions which evidence suggests engender further innovation.

The recommendations to address the five challenges were presented at a second Digital Summit on 8 December 2017. This event, six months on from the first summit, brought back together the digital community and provided a mechanism for review and prioritisation of the recommendations, forming the basis of the Action Plan to take forwards.

In addition, reflecting the importance of the digitising public services to the "digital with a difference"[4] agenda in Greater Manchester, work in this area has been aligned with this strategy, reflecting the digital component of the city region's public service reform programme.

7 Challenges

At the outset of this work the Mayor, Andy Burnham, asked Greater Manchester to recognise that we have some way to go to fulfil our collective digital ambition, despite the significant strides and assets that already exist. All these challenges were voiced clearly at the Mayor's Digital and Tech Summit in July 2017 and are summarised here to form a backdrop to the Action Plan.

7.1 Infrastructure

In terms of infrastructure, GM, like the rest of the UK, is falling behind its international competitor cities in terms of full fibre to the premises (FTTP) connectivity- this is the ultimate in fixed bandwidth connectivity because it has no known bandwidth ceiling and therefore critical to

[4] EY, 'Capitalizing on the Digital Challenge', August 2016

establishing the kind of data-intensive activities that are necessary for a truly world-leading digital city-region.

Currently, FTTP coverage is on average only 2% in the UK and 4% in GM, but 60% in Spain and Portugal. In terms of mobile internet, despite good public WiFi coverage in most public buildings across GM, and on Metrolink and many buses, WiFi provision is patchy in public places and there are still barriers to access (registration requirements and cost) in many parts of GM.

7.2 Growth and productivity

In terms of growth and productivity, GM still suffers from gaps and blocks in its ecosystem. Businesses and would-be entrepreneurs often struggle to access what they need to start or grow their digital business, e.g. finance, advice and mentoring and talent. Despite great progress, Greater Manchester (and in particular, areas outside central Manchester and Media City), still lacks the density of knowledge-intensive businesses, organisations and workspaces that truly world-leading digital cities can boast.

Our numbers of digital start-ups and scale ups are lower than we need to realise our digital ambition. We are facing a potentially highly significant lost opportunity if our businesses across all sectors fail to introduce digital technology into their processes and products. Whilst the GM digital ecosystem currently demonstrates great collaborative spirit alongside constructive competition, fragmentation still exists, and there is more that could be done to pull together to maximise the benefits of the assets, talent and leadership of GM's ecosystem.

Our business leaders and other organisations all have a role to play in ensuring that our digital ecosystem is as frictionless as possible, and in presenting GM to the world as having the best environment to nurture, welcome and grow digital businesses. We also increasingly need, across all sectors, including the public sector, to rethink the way we do business. This means changing the way we commission new ideas, products and services.

If we get it right, this could have a very positive effect on our productivity and innovation levels as well as on public service outcomes.

7.3 Inclusion, skills & talent

To become a world-leading digital city-region with a difference GM needs to grasp the opportunity to increase digital skills for the benefit of local economies and communities. This means ensuring that all residents have the basic level of digital skills needed for day-to-day life and to function productively in the modern workplace; as well as developing the advanced digital skills needed for specialist digital roles in both the tech industry and across the broader economy.

There are a number of barriers to achieving a more highly skilled and inclusive digital economy:

- **Young people, parents and teachers lack awareness of the range of careers and opportunities available in digital/tech** and pathways into the industry. There is enthusiasm for digital up to age 13/14 but this tends to dissipate over the next five years particularly amongst young women.

- Industry highlights that the **fast pace of technological change** requires constant upskilling of the existing workforce, which the education & skills system can find difficult to respond to. There is particularly high employer demand for technical skills combined with softer skills. The pace of change also challenges teachers and lecturers to keep up

to date with the latest developments, often finding themselves unaware of how digital skills are being applied in the workplace. Furthermore, as in the rest of the UK, the digital workforce lacks diversity, particularly in relation to gender.

- In GM in 2017, 11% of people had not been online in the previous three months and 21-25% lacked all five basic digital skills[1]. A key barrier is motivation – 10% of people have no intention of being online, of which over half said they see no reason to. **Digital exclusion** is closely linked with social exclusion and has a real impact for our residents; nationally 22% of the 4.8m that are not online are chronically ill/disabled, 72% of employers will not interview a candidate who lacks basic computer skills and people in-work who acquire digital skills achieve a rise in earnings of 3-10%.

In addition, to the actions set out in the GM Digital Strategic Action Plan to tackle these challenges, there is a range of complementary activity being progressed through implementation of the Greater Manchester Strategy. For example; utilising GM's devolved adult education budget to support basic digital literacy, growing the largest movement of education & business leaders to inspire and prepare young people for the world of work; working with the Gatsby Foundation and ten GM FE Colleges to support teaching staff to be able to deliver the new digital t-levels; and bidding to DfE for a GM Institute of Technology which will focus on developing the higher level skills needed for industrial digitisation.

7.4 Communicating and marketing our vision and strengths

GM lacks a consistent city-region wide digital narrative and brand that showcases our global aspiration to a both domestic and international audience. One that presents, in a compelling manner, the benefits of living, studying, working and locating here and GM's commitment to becoming a world-leading digital city-region with a difference.

This Strategy and Action Plan will set a clear path for the journey we are on to become established as a world-leading digital city region. It issues a call to action for businesses and citizens of Greater Manchester to work together to accelerate progress towards that goal.

7.5 Digital public services

Whilst the Digital with a Difference ethos runs through the whole GM Digital strategy there is a particular element which relates to better public services and "tech for good".

The Greater Manchester Strategy sets out the vision for Greater Manchester, and in line with the devolution of powers from Government to Greater Manchester, one of the most ambitious programmes of public service reform is underway in the city region. This work embodies a desire to shift from reactive, fragmented and disjointed public services to services that are that joined up, based on insight into a person's needs, provide early support and are therefore also cost effective. Several of the priority areas in the GMS reflect this, such as joined up working on homelessness and improving school readiness.

8 GM Digital Strategic Action Plan

Taken together, the following actions will deliver GM's Digital city-region ambition and will in turn contribute towards relevant targets outlined in the Greater Manchester Strategy and its associated Action Plan.

Work will begin immediately, with this Strategy and Action Plan being reviewed in line with the Greater Manchester Strategy process, to assess progress towards the targets we have set ourselves.

The full Action Plans for each of the themes have been developed and are being taken forwards under the GM Digital Portfolio and its Steering Group which will report to the GMCA Board on progress.

8.1 Infrastructure - the connectivity which Greater Manchester requires

These actions will increase average mobile and fixed broadband internet speeds, and expand the availability and reliability of online access to a wider group of people. They will therefore contribute to local demand for digital services, and enabling industrial and service delivery models that are highly data- intensive.

Infrastructure Actions
Accelerate market investment in full fibre networks through public sector demand aggregation, including by: securing Government (DMCS) Local Full Fibre Networks Challenge funding; making public assets including Metrolink and National Rail ducting available to the market; adopting a Standardised Wayleave across Greater Manchester (to reduce the cost and time involved in delivering fibre to the premises); driving demand through a targeted voucher system for businesses; fully mapping dark fibre and ducting assets and introducing a 'one dig' approach in GM. Improving call and mobile coverage including securing a national 5G test bed status, thus positioning **GM at the forefront of next generation 5G mobile.** Deliver a "one login" solution for GM that enables that expansion of **WIFI in all city and key town centres** in GM. Liaising with industry to improve **minimum superfast broadband speeds** and growing GM's position as a recognised **data and digital exchange hub**.

8.2 Skills and Talent - the abilities of its people

These actions will increase the flow of young people with the right skills and aptitudes into the digital industry, help to bridge the gap between industry and the formal education system, and create flexible models that will respond to the pace of technological change, thus supporting GM's reputation as a great place to train, work and set up in business in the digital industry. Informal and flexible routes will also bring currently under-represented talent into the industry.

Skills and Talent Actions
Establish a **digital talent pipeline** programme to create pathways from education into the digital industry for young people including; curriculum support and enhancement; teacher Continuous Professional Development (CPD); careers inspiration; quality digital apprenticeships; and industry placements. Establish a programme of **informal learning** to develop digital skills among GM residents, including 'making and doing' experiences to GM residents, e.g. code clubs, hack events, mentoring. The programme will target young people who have not had this opportunity before and adults from priority groups eg. female returners to work, unemployed and over 50s.

Pilot a recyclable **'digital skills fund'** that individuals and companies can borrow from in order to access non-accredited courses eg. bootcamps and graduate conversion courses. The fund will also provide additional support to those currently under-represented in tech and who wouldn't otherwise be able to access these kinds of opportunities.

For each of the actions above **further private sector contributions** will be leveraged to scale and continue these programmes based on evidence of their effectiveness.

8.3 Inclusion - ensuring no-one is digitally left behind

These actions will increase the percentage of residents who have and are motivated to use basic digital skills in their daily lives, which will reduce social isolation and demand on public services. This will ultimately feed through to business decisions to adopt digital technology and ensure that all businesses recruit local residents with the general digital skills needed for work.

Inclusion Actions
Develop a transformational digital inclusion programme across GM, **'Get GM Digital'** using new approaches to engagement to motivate excluded residents to develop digital confidence and basic digital skills. Scale up the network of **digital champions** across GM encouraging businesses, charities and public sector employees to pledge to support organisations and individuals to get online and improve their basic digital skills and financial literacy. Roll out the IdEA digital enterprise award across GM so that we have an easily accessible free way for any young person or adult across GM to develop **digital skills for life and work.**

8.4 Growth and Productivity - the ways in which both the digital sector can grow and other sectors adopt digital ways of working

These actions will increase the adoption of digital technologies by business, the availability of early stage funding, and expenditure on R&D. They will also support gender equality (and the associated innovation, growth opportunities and size of the talent pipeline) in the digital sector, and they will increase the likelihood of a growth in the number of accelerators in GM.

Growth and Productivity Actions
Encourage all GM businesses to embrace digital technology, starting with securing a significant industrial digitization pilot as part of our local industrial strategy; working with large companies to drive digital innovation through their companies by engaging differently with GM SMEs**;** and adopting the recommendations from the LEP Task & Finish Group on business digitisation. **Establish a Digital Ecosystem network and microfund** that will streamline and rapidly accelerate the process of scaling up digital companies in Greater Manchester; **Establish Greater Manchester as the best city-region for social innovation,** by transforming how our public sector engages with GM SMEs to solve societal challenges using new technology and approaches; and

Drive the exploitation of GM's industrial and intellectual assets by identifying opportunities for 'market-making' based on GM's 'triplet' strengths of health innovation, advanced materials and digital technology.

Convene a group of industry and other representatives to agree a programme of activity to address the current gender imbalance in the digital sector.

8.5 Communications and Marketing - promoting Greater Manchester on a worldwide platform

These actions will make an indirect contribution across a range of measures by improving and expanding GM's reputation as a digital city-region, thus increasing its attractiveness as a location to live, work and invest.

Communications and Marketing Actions
Produce a GM headline Digital story, co-produced with industry and others, focused on showcasing Greater Manchester to a public and investor audience and demonstrating how it is becoming a world-leading digital city-region based on our agreed measures. **Stage a high-profile digital-themed event in GM** with a national and international audience for example, 'Year of Digital' or an industry/thought leadership conference. **Establish a network of digital champions/heroes across all parts of GM** to act as advocates and tell the story.

8.6 Digital Public Services

As stated in the Greater Manchester Strategy:

"We will make full use of the opportunities that digitally-enabled approaches can bring to improving public service delivery: tackling issues sooner and better together; speeding up responses; and joining up support around individuals, as well as giving people access to the information relating to them so they can help us to help them."

Better use of information is critical to better public services in Greater Manchester and in recognition of this, GMCA created the GM Connect programme and a sister programme, within the Health & Social Care Partnership in 2016.The actions of these programmes are instrumental to the delivery of better public services including reducing homelessness, improving school readiness, creating employment opportunities and making Greater Manchester an age-friendly city-region. In addition, this work aims to support Health Innovation Manchester to create a single research hub focused on new care pathways, novel diagnostics, more targeted treatments, and the use of digital technologies to enhance self–care and greater patient empowerment. Partnerships with industry are a key element of this work and investment is being sought from government to grow this socially and economically important capability.

Digital Public Services Actions

Progress cross sectoral working and innovative opportunities to progress digital solutions and support that enable residents to be supported more effectively in line with the **Greater Manchester Strategy**, particularly with regards to:

- Children starting ready to learn
- Young people equipped for life
- Good jobs, with opportunities for people to progress and develop
- Safe, decent and affordable housing
- Safe and strong communities
- Healthy lives, with quality care available for those that need it
- An age-friendly Greater Manchester

8.7 Supporting industry specialisms

There are at present a range of digital technologies gaining resonance. For example, the Internet of Things (IoT), Artificial Intelligence (AI), Robotics, Data Analytics, Additive Printing, Cognitive Computing, Augmented Reality, Virtual Reality, Block-chain, and Drone Technology. However, these technologies should not be seen as static: they continue to evolve. It is not the particular technology that matters, but rather that GM organisations have organisational cultures and strategies that mean they are open to using mature and evolving digital technology to make their organisation more efficient and to respond to changing demand and opportunity.

The issue is not confined to any one sector, but instead needs to be considered across the whole of the GM economy. Most focus has tended to be in the area of manufacturing where the trend is commonly understood as Industrial Digitalisation or Industry 4.0 – a term for the use of automation and data exchange in manufacturing technologies, including cyber-physical systems, IoT and cloud computing.

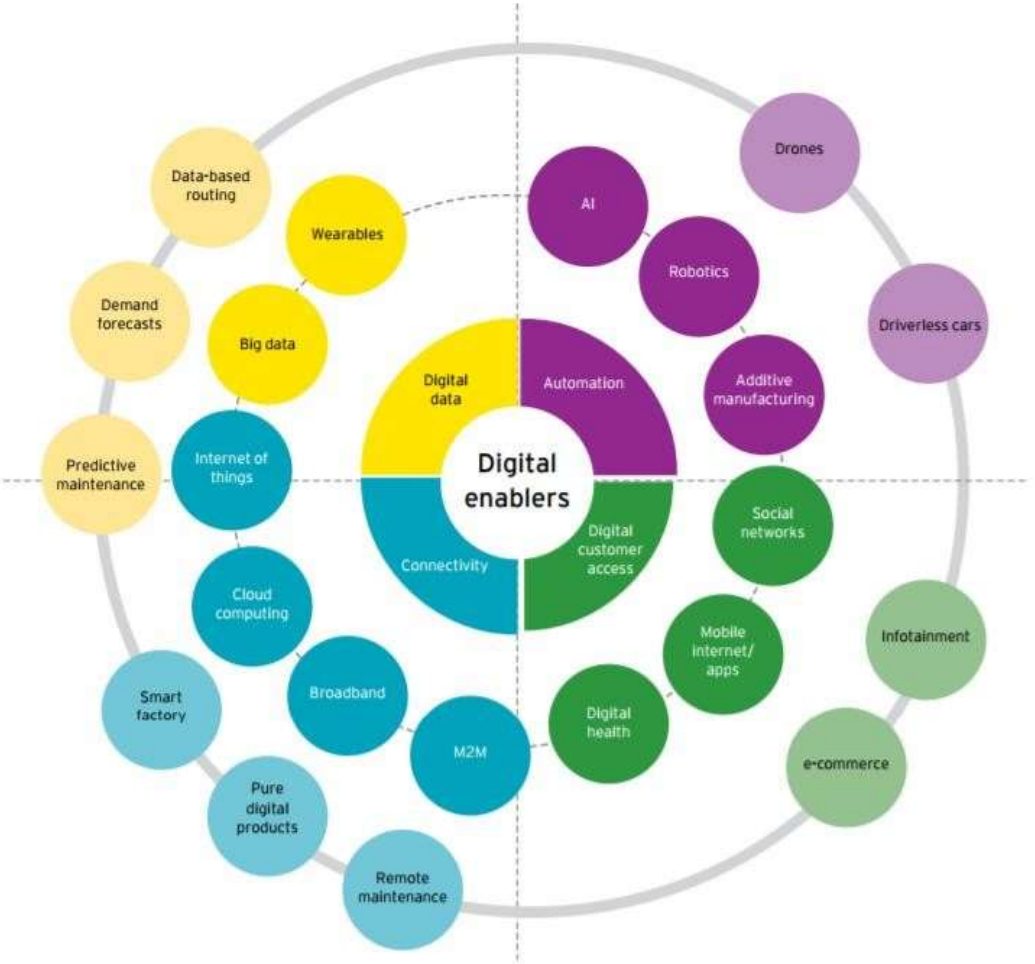

Figure 3: Mapping the enablers for digital technologies[6]

This interaction and merging boundaries between physical and virtual in production is also known as the 'Fourth Industrial Revolution'. However, the same issue has resonance for all parts of the economy – not just manufacturing, but industry more widely, as well as the services sector, and of course, the public sector (including the important area of health). Systems, processes, machines and people everywhere are increasingly required to communicate with each other, exchange and analyse data and make decisions in real-time.

In line with the GM Digital Growth and Productivity Action Plan, these challenges and opportunities need to be seized. Existing firms cannot afford to overlook such fundamental shifts in the market, or fail to innovate and embrace new technologies that are on offer. In particular, they need to be aware of the changing demands of customers who increasingly look for more personalised and higher value services. In contrast, there is an unprecedented opportunity for start-up businesses in GM to get a foot-hold in a dynamic market, provided they are able to respond to customer needs around greater choice and convenience, and are prepared to make the right internal investments.The Action Plans proposed in this strategy aim to address this, however, the environment is by no means static and hence this work will necessarily evolve.

Recent work to establish Cyber GM is an example of this. This involves GMCA, Manchester City Council, Greater Manchester Police, MIDAS, the National Cyber Security Programme and Centre, a national security agency and four universities – Manchester Metropolitan University,

Lancaster University, Salford University and University of Manchester. In combination this is likely to develop into a £16m multi-year programme that will not only establish Greater Manchester as a major centre of cyber innovation and research, but demonstrate that Greater Manchester is a trusted place to do business.

Cyber GM

In 2016, the GMCA initiated a Cyber GM programme which has now spun out into a separate programme centred on a new Cyber Innovation Centre which is being hosted and co-funded by Manchester City Council. The principal aims are both economic and social and are being complemented with work by four universities on a combined cyber action Research and Innovation proposal that is seeking ERDF backing. Close collaboration with national security agencies and regional resilience functions is central to this work and together with industry partners offers the potential for Greater Manchester to become a recognised cyber powerhouse in what is now a USD$150 billion[5] and growing industry.

9 Resources

GM Digital's success is dependent on a whole-system response across Greater Manchester. Success is not in any one organisation's gift. The Action Planning process highlighted potential resources, often volunteered by academic, community and commercial organisations with aligned interests, such as Lloyds Banking Group's Digital Champions. It also highlighted that success could sometimes be governed not by investment, but changes in public sector behaviours, for example, in stimulating telecoms to invest in GM by making it easier to operate in all ten areas.

Work has already commenced on bids to Government in areas like digital infrastructure, leveraging investment from GM Connect and the new partnership with the Digital Catapult. If this work is successful, it would result in a significant investment in the city region's capabilities.

£2 million had previously been identified for Digital Skills and the Action Planning process has clarified how this can be invested most effectively alongside contributions in kind from industry and other organisations.

In areas such as inclusion, localities including Salford and Wigan have made great strides through local strategies and ways in which this work can be extended are been investigated. Similarly, discussions with the Growth Company are ongoing regarding their potential to support and deliver specific actions relating to digital economic growth & productivity and marketing and communications are in progress.

The Cyber GM programme as a whole aspires to a budget of £16 million including matched funding and a successful bid for the innovation research programme. Innovation and digitisation of the public sector is enabled by both GMCA Digital resource and that the Health & Social Care Partnership budget.

In addition, the GMCA has allocated a budget in 2018-19 to strengthen the coordination and delivery of this programme.

10 Governance

[5] https://www.statista.com/statistics/595182/worldwide-security-as-a-service-market-size/

We have set ourselves an ambitious goal that we can only deliver if we work in partnership across industry, the public sector, academic and voluntary sector and with our communities throughout GM. The Mayor of Greater Manchester and the Portfolio lead for Digital City Region are committed to convening and supporting the collective efforts however they can, and to holding everyone to account for delivery of these actions against our GM Digital vision and the wider Greater Manchester Strategy. Greater Manchester is depending on the skills, expertise and resources of all who have played a part of developing this strategy and action plan, and far wider, to make GM the world-leading digital city-region we know it can and must be.

As the Mayor outlined at December's GM Digital Summit, the Action Planning groups have drawn to a close and a refreshed governance model, under the GM Digital Steering Group, is progressing forwards so that high levels of engagement continue to underpin the GM Digital ambition. Where possible, this is being aligned with existing groups and so avoid duplication, but will remain centred on the five core themes. In addition, a programme of wider engagement in each theme is proposed which will develop communities of practice.