CHESHIRE AND WARRINGTON DIGITAL STRATEGY AND DELIVERY PLAN

April 2019

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EXECUTIVE SUMMARY

A digital strategy addresses important issues for local authorities and public bodies for the delivery and improvement of services. It can benefit the way local employers do business, how people live, work, learn and play, and improve the protection of human health and the natural environment.

For a Local Enterprise Partnership (LEP), taking a digital approach can lead to greater employment opportunities, building future skills to support all businesses. Opening opportunities and improving the work-life balance drives productivity and wealth and creates a better quality of life for local people.

This is the first Digital Strategy for Cheshire and Warrington, and the first step on the journey to realising the potential opportunity digital technology presents for the region.

This Strategy covers:

- Drivers, vision and why we need a Digital Strategy
- The economic opportunity and benefit analysis
- What is our current level of 'Digital maturity?
- What should our strategic priorities be and our next steps?

Drivers, vision and why we need a digital strategy

In Cheshire and Warrington, the principle drivers behind development of this digital strategy are two-fold:

- The challenge of sporadic connectivity in a region with both rural and urban areas, combined with the image of towns not being hubs of innovation, and providing future of high-quality, well-paid, skilled employment opportunities.
- To extend and retain the productivity advantage through digital technology, local skills and businesses ready to embrace digital opportunity. In turn, enabling productivity growth, delivering higher paid jobs able to attract and retain a skilled workforce who want to live and work locally.

Our vision

Our shared vision for a Digital Cheshire and Warrington is based on core principles and objectives shaped by stakeholders and driven by the environment and the economy that characterises Cheshire and Warrington.

"Creating digitally-empowered, connected communities to support, grow and future-proof the vibrant local economy through a digital revolution."

Why a Digital Cheshire and Warrington?

A digital strategy for Cheshire and Warrington can support our growth agenda and address a number of sub-regional challenges: -

1. Economic growth and driving productivity

- Ambitious growth target - by 2040 grow the economy from £29 billion £50 billion GVA pa
- Productivity target to exceed the UK average by 20%

2. Skills and employment

- Gap in school leavers being 'work ready'
- There is a need to replace an ageing, highly-skilled workforce, of 230,000 jobs, by 2025
- Deficit of up to 60,000 graduates being lost to surrounding cities

3. Healthcare and wellbeing, local housing

- Ageing population growing at 4.2% pa, half the UK average
- 127,000 new houses needed by 2040

4. Cross regional transport challenges

- High Speed 2 service will include a new rail hub at Crewe and, along with the Northern Powerhouse rail at Warrington, will bring associated development and access benefits
- Rural areas suffer where public transport is limited and access is mostly by car.
- In physical network terms Cheshire and Warrington is well connected. It sits at the heart of the strategic road network, being served by nationally significant motorways and locally important motorways and trunk-roads, and is also well placed in relation to the strategic rail network. However, despite the existing strategic links, connectivity varies within the sub region, with lower levels of accessibility in some rural and intermediate areas. Furthermore, there is significant peak period congestion on the highway network and infrequent and indirect local rail services.

5. Local environment and sense of place

- Need to retain young people by creating a place they want to live in
- 'smart regeneration' of places

How

The LEP was supported by Consultancy PCSG in developing this Strategy. To inform the strategy the team:

- conducted desktop research
- carried out stakeholder interviews
- held a stakeholder workshop
- completed a top line fiscal review

The economic case and high-level benefit analysis

One of the key drivers for a digital strategy is the ability to deliver improved outcomes through digitalisation and using data and information to drive collaboration. This means doing things differently… indeed, one of the greatest challenges in delivering a digital strategy is driving change.

Research has demonstrated that taking a digital approach can realise significant savings capital and revenue budgets. PCSG to a high level look at how the councils in Cheshire and Warrington use their resources and what the efficiencies and benefits from digitalisation might look like.

The preliminary benefit analysis shows:

- potential **£69 million** of savings to be realised through digital transformation across the council budgets
- this is equivalent to almost the entire capital infrastructure budget
- the impact of this increase in capital investment will have significant benefits to be realised in terms of the £30 billion regional economy

The next step for this strategy is to analyse these figures in more detail and identify the programme of works to realise the opportunity.

Digital maturity

Digital maturity for a region is a measure of the extent of digitalisation in strategic management and service delivery. Whilst there are some pockets of excellence and a clear willingness to adapt to and adopt digital ways in many areas of work and life, Cheshire and Warrington is certainly on the journey towards digital maturity.

This is in part dictated by the basic connectivity and the need to improve this to enable the full range of possibilities digital can offer. There are some great examples where tentative first steps are bearing fruit, from the local authorities, education providers and local businesses.

The work undertaken to date in support of this strategy has identified a number of areas where more work is needed to increase our digital maturity, and these are reflected in the Strategic Priorities set out below.

Strategic Priorities

Three strategic priorities have been identified which align with the national strategic programmes of the Made Smarter Review and the UK Digital Strategy, and which will deliver a step change in the digital maturity of the Cheshire and Warrington Sub-Region.

1. **Strategic planning, collaboration and funding:** Using shared data and information to transform strategic planning; cross-sector programme implementation to enable the full realisation of benefits
2. **Digital people and digital services**: Presenting a clear need case for connectivity through a digital infrastructure plan to address the ‘last mile’ cost-benefits; incentivising digital options and services; supporting businesses and communities to make the transition and invest; embedding a

digital first culture and aligned to the need to build skills to activate the opportunity the connectivity presents

3. **Digital revolution:** Maintain the level of productivity and competitiveness, driving skill development and attract people to the area; high quality jobs in attractive and exciting places underpinned by digital innovation. Without addressing the 'Quality of Place' issues, the offer from industry and business will lack the support from people wanting to live and work in the region and bring the human perspective needed to service the next digital revolution

Digital Strategy Roadmap

This is the start of an exciting, innovative and valuable journey. One which can deliver the economic growth that stays ahead of the competition, with the greatest value for local communities, whilst providing the best kind of environmental protection for Cheshire and Warrington.

To reap the full projected benefits, the next steps will need a clear articulation of the programme with a roadmap where activities are evaluated for their economic, financial, social and environmental benefits within the policy planning framework. This strategic outline business case will identify the deliverability and impact of actions to take forward. Equally important is the identification of the interlinkages between projects and activities, creating a delivery timeline for achieving the long-term vision.

Whilst investment will be needed, the cost is far outweighed by the benefits that a Digital Cheshire and Warrington will deliver for everyone who lives, works, learns and plays in this important part of Britain. Whilst investment will be needed, the cost is far outweighed by the benefits that a Digital Cheshire and Warrington will deliver for everyone who lives, works, learns and plays in this important part of Britain.

Throughout the process of implementation, the LEP's Strategy Committee will maintain a strategic oversight role, although more specific task and finish groups may be needed for individual priorities and activities.

1 | A DIGITAL CHESHIRE AND WARRINGTON

Digital technology presents major opportunities for communities to benefit from its use. Technology is an enabler of economic growth and driver of productivity gains underpinning our manufacturing industries. It is also a means of delivering public services more efficiently and connecting isolated rural communities in a way that has not previously been possible. The recently launched Made Smarter[1] North West programme focuses on industrial digital technologies (IDT) that could revolutionise manufacturing processes, including robotics, artificial intelligence, 3D printing and the Internet of Things (IoT). However, this technology that enables innovation, growth and improved livelihoods also has the potential to create uncertainty and alienation for those who are left behind. The challenge is to identify those key areas where benefits can be maximised, and to move the community along together.

Cheshire and Warrington

In the 2018 Strategic Economic plan, the Cheshire and Warrington LEP recognised the opportunity of digital technology to drive and retain the high economic growth in the region and are now leading the development of this Digital Strategy for Cheshire and Warrington.

This is the first Digital Strategy for the region and is the initial step on the journey to realising the opportunity digital technology presents.

The strategy has been driven through collaboration between the LEP and its partners, as well as local businesses and organisations which contributed to stakeholder interviews and the strategy workshop. It has brought together input from a range of public and private stakeholders to establish the vision and priorities for action. The approach, developed and led by digital and sustainability experts from PCSG, aligns to the UK's Digital Strategy[2] and aims to enhance delivery of regional plans and policy through a digitally enabled service. The UK Digital Strategy sets out how we will develop a world-leading digital economy that works for everyone. It has seven strands:

1. Connectivity - building world-class digital infrastructure for the UK
2. Skills and inclusion - giving everyone access to the digital skills they need
3. The digital sectors - making the UK the best place to start and grow a digital business
4. The wider economy - helping every British business become a digital business
5. Cyberspace - making the UK the safest place in the world to live and work online
6. Digital government - maintaining the UK government as a world leader in serving its citizens online
7. The data economy - unlocking the power of data in the UK economy and improving public confidence in its use

[1] *https://www.gov.uk/government/publications/made-smarter-review*

[2] *https://www.gov.uk/government/publications/uk-digital-strategy*

The Strategy

This strategy has been founded on the framework for digitally enabled sustainable communities specified in the international standard for smart cities and communities (ISO 37106). This standard presents a working definition of a smart city or community developed by the ISO Technical Management Board, which is adapted for a rural community such as Cheshire and Warrington:

> *A digital authority can be described as one that dramatically increases the pace at which it improves its sustainability and resilience, by fundamentally improving how it engages society, how it applies collaborative leadership methods, how it works across disciplines and its diverse urban and rural geography and how it uses data and integrated technologies in order to transform services and the quality of life for those in and involved within the authority (residents, businesses, students, visitors).*

The strategy sets out the community vision and identifies the strategic priorities for action, the economic opportunity and a roadmap to guide the next steps towards the realisation of a Digital Cheshire and Warrington.

These next steps will be the systematic identification of the priority actions to take based on key factors from strategic, financial, economic, social and environmental impacts.

While there are a number of existing digital initiatives in the region, digital transformation is still in its infancy. To enable digital transformation, these and other initiatives need to work together as part of a coherent strategy to avoid duplication and maximise impact. In the more rural areas, the process is stifled by low levels of connectivity and in other areas by a lack of adequate skills, knowledge or the business case for change.

Vision

Our shared vision for a Digital Cheshire and Warrington is based on core principles and objectives shaped by stakeholders and driven by the environment and the economy that characterises Cheshire and Warrington.

"Creating digitally-empowered, connected communities to support, grow and future-proof the vibrant local economy through a digital revolution"

2 | WHY A DIGITAL STRATEGY?

The 2018 Strategic Economic plan describes the successful economy that has doubled in size since 1997 and continually exceeded UK performance benchmarks on several measures. However, the plan also identifies the challenges that exist around maintaining the productivity advantage. This is one area where digital technology will be a key enabler for the region to stay ahead in terms of economic growth and maintain its place at the heart of the UK's manufacturing industry.

Economy

Cheshire and Warrington Local Enterprise Partnership (LEP) has responsibility for over £200 million of public money across the local growth fund to support infrastructure, skills and innovation. With the aim of unlocking a further £280 million investment over next 10 years, it is the strongest performing economy in the North of England. The LEP Strategic Economic Plan's stated aim is by 2040 to grow the economy to £50 billion GVA from the current £29 billion, to be 20% more productive per resident than the UK average, and create an additional 120,000 jobs.

By 2040 grow the economy from £29 billion £50 billion GVA pa

Productivity

The ambitious targets of growth and productivity levels set across the region (exceeding the UK target by 20%) are supported by the recognition that digital technology will be a key enabler to achieving this growth. However, locally based companies providing technology to digitally manage the whole product manufacturing life-cycle, enabling customisation (future delivery of Industry 4.0[3]) and delivery of the circular economy, have found limited local uptake and greater interest with the American market. This is not unexpected, as manufacturing businesses tend to work as part of global value chains, so where these value chains are based outside of the UK, the UK uptake may be low. Integration of value chains through digital technology may enable expansion and a wider supply chain to be enabled.

Manufacturing is a significant part of the regional economy and generally product-driven by lean manufacturing processes and some digital technology. The sector acknowledges the need to embrace technology to ensure that, in future, competitiveness with China and other international markets remain. Larger companies are keen to share their experience and approach with SMEs and suppliers, as this ultimately improves their own product, service and price to their customer. In other sectors such as farming, productivity is currently low – particularly compared to European farms. Parts of this sector are likely to be hit by changes to European subsidies and will need to become more competitive and increase productivity to remain viable.

[3] https://innovateuk.blog.gov.uk/2017/03/28/what-does-the-fourth-industrial-revolution-4ir-mean-for-uk-business/

Skills and employment

Whilst the qualification base is higher than average, the existing and any future digital business base will be reliant on STEM skills. Currently there is a clear discrepancy between the skills employers need and the skills individuals choose to acquire, particularly in relation to Science, Technology, Engineering and Mathematics (STEM) and digital skills. There is concern about the large gap in school leavers being 'work ready'. In certain areas, maths and English literacy is required before 'digital literacy' can be addressed. The recent introduction of T Levels[4] by government is designed to address the skills gaps between schools and industry. These new 2-year courses are designed with employers, to give young people the skills that industry needs. From 2020, they will give post-GCSE students a technical alternative to A levels and will help them to get a skilled job. T Levels will offer students a mixture of classroom or workshop-based learning and 'on-the-job' experience in the following industries:

- digital
- construction
- education and childcare
- engineering and manufacturing
- health and science
- legal, finance and accounting
- hair and beauty
- agriculture, environment and animal care
- business and administration
- catering and hospitality
- creative and design

These initiatives may help address the issue that young people are often unaware of opportunities in STEM related careers. Increasingly, people use smart phones for digital apps and social media at home, but this practice is not often taken across into the workplace. There are some cases (e.g. in the NHS) where people use screens in their work with digital technology, but they are not using apps or technology in analytics or work management. There is also concern that digital technology will displace jobs rather than reduce repetitive work, improve quality, eliminate errors and prioritise human input where it is really needed. The technology actually enables increased productivity and the value of the individual's role, rather than displacing the role entirely[5].

There is a need for upskilling as well as a cultural shift to more creative and innovative thinking. Digital transformation requires a different way of thinking, not only in creative areas but across all sectors. Termed 'creative ecology', this new approach will be needed to enable the widespread uptake of digital technology. World-leading businesses such as AstraZeneca, Bentley Motors, Unilever and Jungheinrich, are located in the region and will create a demand for digitally enabled employees as well as key digital skills in order to remain competitive. Future employment challenges are real. There is a need to replace an ageing, highly-skilled workforce, of 230,000 jobs, by 2025[6], and a deficit of up to 60,000 graduates being lost to surrounding cities. Furthermore, 25% of workers earn below the living wage and are working unstable, low-hours contracts. Digital technologies can help bridge the gap by supporting the realignment of skills.

4 https://www.gov.uk/government/publications/introduction-of-t-levels/introduction-of-t-levels

5 http://www3.weforum.org/docs/WEF_Future_of_Jobs_2018.pdf

6 http://www.871candwep.co.uk/resources/revised-strategic-economic-plan/

Skill development programmes such as apprenticeships have met with mixed success. It has been successful within larger companies able to provide mentoring and time off for apprentices, but it is more difficult to manage for small and medium enterprises (SMEs). There are also a limited number of apprentice programmes in the digital sector and only 11.5% of all apprenticeship starts were in STEM subjects, compared to 15% nationally and 16% in the North West.

230,000 skilled jobs need replacing by a younger workforce by 2025

Transport

The Cheshire and Warrington region is generally well-connected with good access to Manchester airport, major motorways and rail networks. The planned High Speed 2 service will include a new rail hub at Crewe and, along with the Northern Powerhouse rail at Warrington, will bring associated development and access benefits. However, whilst transport connectivity is good into the town centres, the rural areas suffer where public transport is limited and access is mostly by car. Digital technology provides an opportunity to connect these remote areas where digital connectivity can be a flexible working enabler, benefitting individual productivity and environmental conditions by keeping cars off the roads. Future planned developments have clearly stated aims to give priority to walking, cycling and public transport.

Congested motorways and links to motorways within Cheshire and Warrington, along with poor road connections between the main areas of population, result in long journey times and poor journey reliability. Congestion and network resilience are already issues on sections of the M6, M62, M56 and M53 and on key approaches to the M6. Expected growth in traffic levels will further increase pressure on these strategic links. Congestion and delay is also a particular issue at congestion hot spots and pinch points on links connecting major centres. Lack of resilience to incidents and maintenance works on the network are other factors that result in significant delay.

There is relatively low use of buses across the sub-region and is often uncompetitive with travel by car for large parts of the sub-region. Similarly, many local rail links are unattractive due to the quality of local service rolling stock, the length of journey times, rail frequency and reliability. The need to transfer between services can also add to journey times, cause delays, and reduce the legibility of services. These issues are particularly prevalent for east-west rail services. These issues are compounded by a lack of integrated ticketing both across bus operators and between bus and rail.

There are opportunities for digital solutions to address a lot of these problems, e.g. smart motorways can help reduce the delays caused by incidents by giving early warnings and indicating alternative routes, smart ticketing solutions could help ensure that customers get the cheapest prices, and which cover all modes and operators. Better information provision can help people know how long the wait is to the next bus or train in real time, and further into the future connected and autonomous vehicles should be able to make better

use of exiting highway capacity e.g. by travelling closer together, by people renting vehicles when needed rather than owning them.

Housing and development

There are around 1 million people in the Cheshire and Warrington LEP area, with population growth of around half the national average at 4.2%. The target is to build 127,000 additional homes by 2040, with planned development including £1 billion in non-housing construction and £753 million in new housing.

Each council has ambitious delivery targets:

- Cheshire East Council's plans for 2010-2030 include: a new sustainable village near Manchester to meet housing needs; a commitment to contribute to reducing carbon emissions; tackling climate change through high energy efficiency of new and existing buildings; and planning development to enable sustainable forms of transport for local communities.
- Cheshire West and Chester's 2020 Plan includes: 4,400 new houses, 1,000 of which will be affordable; £277 million capital investment committed to regeneration, housing and key infrastructure, with the aim of creating 5,000 new jobs and ensuring 5,500 council homes meet the decency standard; and to develop Chester as a sub-regional city.
- Warrington's Vision 2020 aims to build 1000 new homes each year, establishing their own housing company, Warrington and Co. Within the region, Warrington New City is already one of the most dynamic and fastest growing urban economies in the UK and looking to deliver significant numbers of affordable houses. The local plan also identified the need to support growth in the local and sub-regional economy by providing 277 Hectares of employment land between 2006 and 2027.

As with all regions, the delivery of enough affordable homes is crucial to ensure that local community employment prospers, particularly in the more rural areas. Digital engineering approaches can assist in the delivery of greater number of affordable homes, with reduced costs per unit as well as potential benefits from wider engagement with local suppliers. If homes are designed and able to incorporate the right digital technologies (e.g. broadband) then they are also able to support flexible working, home working and more local employment in rural areas. Individuals then have the choice to live in a rural areas or cities, rather than just be dictated as to where the offices are.

127,000 new houses by 2040

Healthcare and wellbeing

With the younger population continuing to migrate to Manchester and Liverpool, attracted by the city lifestyle and job opportunities, there is an aging population across the region. Whilst the region is relatively affluent, this aging population places pressure on the finite local authority budgets and challenges the ability to coordinate and deliver healthcare.

Traditional ways of delivering local authority and health services will not meet the needs of the population going forward. Digital technology can help at the point of care by enabling self-care scenarios to manage long-term conditions before they become illnesses. There is a need to adopt new approaches but being risk-averse can stifle innovation. New products are available, but development often lingers in the 'valley of death' from education and proof of concept to commercial realisation.

Directly linked to the provision of digitally enabled and adaptable housing, a key target for the region is to keep people in their homes and the community for longer. A good example of self-care deployment of technology has been seen in a programme to manage hypertension in pregnancies. Traditional methods, with visits to the GP / hospital and attendance by a midwife, costs around £3,000 per pregnancy. This compares to just £90 for monitoring equipment supplied to expectant mothers at home, with results relayed digitally back to a medical team, and follow-up visits only required where necessary. While there is a clear financial case for this example, some benefits of digital technology across health and social care can be difficult to prove.

Aging population growing at 4.2% pa, half the UK average

Local environment

The region is adjacent to the Peak District National Park, which is seen as a desirable place, providing green infrastructure and accessible green spaces to support health and wellbeing.

The region recognises the national goals of 80% reduction in carbon emissions by 2050, and with nationally significant industrial users in the region, energy is clearly a challenge. The energy innovation centre in Ellesmere Port has an aspiration to be at the forefront of research and development activity in power and energy systems. 30% of regional energy consumption is by transport, of which 45% is by non-domestic users. Fossil fuels account for 70% of the total energy consumption in the sub-region. 10% of homes in the region (c. 40,000) currently experience fuel poverty. Smart energy grids, energy efficient technology and enabling domestic and commercial properties to be digitally informed about their energy consumption will help to achieve these carbon targets.

As we move to greater use of electric vehicles there will be an increased load on the local supply network. Digital technology can balance supply and demand and help reduce the need for extensive and expensive network reinforcements.

Increasing access to high speed internet in rural areas reduces driving to work and the associated emissions through transport. Cost-benefit analysis of infrastructure needs to account for the benefits in service provision for existing residents, but also on the potential to support new entrants to an area that currently don't come because of lack of access to jobs and services.

80% reduction in carbon by 2050

Sense of place

As already stated, Cheshire and Warrington is losing its younger population to regional cities, attracted by higher salaries and a more vibrant lifestyle. This is also true of large digital companies which are recruiting young people with digital degrees or skills and paying higher than average salaries.

The region needs to create a reason for young people to want to live there – the image of the location is as important as promoting it. The creative and digital sector will attract young people for work, but do they also want to live in the area? Some digital employers wait for individuals to be trained and settled with young families, and then recruit them.

A potential way to address this is the 'smart regeneration' of areas where there is exceptional connectivity to attract innovative and digitally-enabled businesses.

Council services

All councils are facing fiscal challenges and are looking for budget savings. The region aims to improve the integration of public services and scale-up One Public Estate pilot projects, to transform and integrate local service delivery, by developing a network of integrated Hubs across the sub-region. To realise these ambitions, there must be a focus on reducing demand on public services, enhancing productivity and driving growth, specifically through ensuring transport and digital connectivity to support an economy that will be more than twice its current size.

Connectivity

'Connecting Cheshire' is a digital infrastructure collaborative funding programme running until 2020. The programme states that fibre broadband is now available to over 97% of homes and businesses across Cheshire and Warrington. The actual level of connectivity in rural areas is unclear, but it is believed that large

rural areas remain unconnected to fibre broadband. Ofcom figures from May 2018[7] show the following, and contains detail to postcode level:

Local Authority	Superfast broadband availability (% premises)	Ultrafast broadband availability (% premises)	% of premises unable to receive 5Mbit/s
Cheshire East	61.4	29.2	1.7
Cheshire West and Chester	77.9	14.5	1.2
Warrington	40.1	56.6	0.3

Superfast broadband with download speeds of 30 Mbps will be sufficient for the majority of businesses and households. A download speed of 5Mbps is recommended for streaming of high definition videos and films such as on Netflix.

The uncertainty around reported figures may be connectivity is to the cabinet rather than premises and whilst capacity is there, the actual uptake is lower. Further action is needed to incorporate the remaining 3% and enabling them access to super-fast broadband. The Connecting Cheshire programme will benefit 1,470 SMEs and is expected to create 441 additional Full Time Equivalent jobs, generating a net growth of £42 million GVA. This represents a return of £5.80 for every £1 invested. Business and domestic voucher schemes appear to be working well.

Establishing the case for investment for rural areas can be challenging. It needs to account for the wider social and environmental benefits that will result from providing adequate connectivity to these areas, rather than looking at the financial return from user licence fees. Smaller providers are presenting innovative solutions but often struggle to break into the market – although these may well be the solution where fibre broadband is uneconomical. Connectivity can be overcome through self-investment; this has already succeeded in some areas.

Independent providers may offer more certainty with time-scales and delivery plans, and this will attract individual businesses and communities to self-invest. There has been success with collaboration between regional businesses for the £3,000 Government grants to enable fibre broadband to be brought into offices. This could also work for domestic properties with facilitation from parish councils.

Securing connectivity through planning conditions is largely required in new construction. It could also be enabled through S106 agreements for additional local connectivity. However, this appears to be being eliminated on appeal, and fibre cables are being laid along routes adjacent to existing houses but not connecting to them. There is also the potential to enable Wi-Fi masts as an alternative solution which can also get caught up in planning obstructions, particularly in rural areas.

While the focus is currently on 5G, 6G will be implemented in the near future, and more sophisticated and data-hungry technologies and applications will continue to fill the bandwidth. It is widely believed that Wi-Fi will become ubiquitous and probably free to use within 5 years.

[7] *https://www.ofcom.org.uk/__data/assets/pdf_file/0019/122194/connected-nations-october-2018.pdf*

Economic opportunity

Affordability of service delivery, infrastructure and housing delivery is a key concern for the Cheshire and Warrington Councils, aligned with the changing demographics and increased expectation of service levels. As a result, the region, like many UK regions, faces a widening fiscal gap.

In this context, it is vital that the LEP and local authorities within the region consider significant changes to the way services and infrastructure is planned and delivered, in order to reduce whole-life costs and support the economic growth and productivity of the region. It is critical to ensure the right service is delivered and social outcomes are achieved. Digital enablement can provide a platform for integrated planning and improved design, driving efficiency in construction and delivering a 'digital twin' to optimise asset operations, enabling smart services across the public and private sector.

This section identifies some of the high-value opportunities that can be unlocked by developing and implementing a digital strategy for Cheshire and Warrington.

Economic Analysis

Current spending and value generated across the Cheshire and Warrington LEP and the 3 councils (Warrington, Cheshire West & Chester and Cheshire East) has been divided into broad categories of:

- Capital expenditure (CAPEX),
- Operations and maintenance (OPEX),
- Service provision
- Gross value added (GVA)

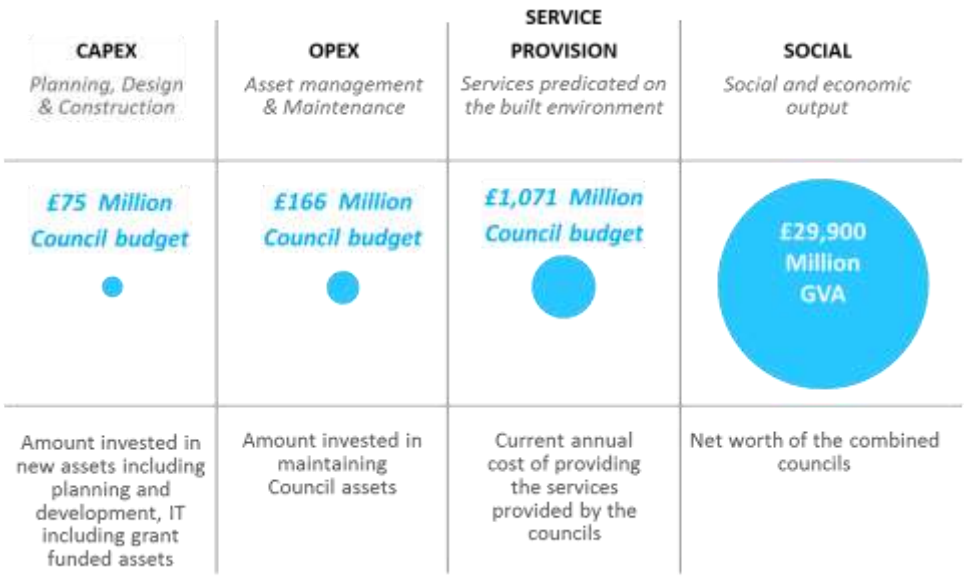

Figure 1 Summary of expenditure categories over the last 3 years for the Cheshire and Warrington Councils and the LEP

CAPEX – Planning, Design and Construction

The figure presented is the average combined CAPEX expenditure for the 3 Cheshire and Warrington councils from their core budgets, as well as the spend from Cheshire and Warrington LEP. This includes all capital expenditure on both physical and digital assets.

OPEX – Asset Management and Maintenance

The OPEX figure presented is the average combined OPEX expenditure for the 3 councils from their core budgets as well as the spend from Cheshire and Warrington LEP.

These costs extracted from the annual budget figures that related to the operation and maintenance, repair, refurbishment and energy use of council assets. Typically, CAPEX to OPEX ratios are:

Infrastructure Category	Ratio CAPEX: OPEX
Buildings / Housing / Property	1:3
Roads / Water	1:0.42
Rail / Electricity / Health	1:6

Service Provision – Services that are predicated on the Built Environment

The service provision figure presented is the average combined service provision expenditure for the 3 councils from their core budgets, as well as the spend from Cheshire and Warrington LEP.

Whilst built assets are developed and exist to provide services to an end user, natural assets also play an important role in the Cheshire and Warrington economy. The quality and performance of the built assets has a direct effect on the cost and quality of the services supported and delivered across the built environment. The service provision of these built assets has been estimated from the annual budget figures for the 3 councils.

Social outcomes: Gross Value Added (GVA)

The mean average GVA for the LEP area, across the 3 councils, is presented to provide a sense of scale and to indicate the extent of the council services in supporting the contribution to the overall regional economy.

Regional expenditure and value added

The expenditure figures outlined in Figure 1 have been complied using an average taken from the last 3 years of the respective councils' budget papers and the published UK Government gross value added (GVA) figures for local authorities.

Benefits Analysis

In order to estimate the potential economic benefit of a Digital Cheshire and Warrington across the lifecycle of the three Councils' spend, reference has been made to several case studies, consultancy reports and business cases relating to differing levels of digital application. Appendix A shows a breakdown of some of

the most recent and relevant business case outcomes and analytical reports relating to the economic benefits of digital engineering adoption.

Utilising the economic analysis from the Digital Built Britain strategic outline business case, Figure 2 demonstrates the potential savings that can be realised across the CAPEX, OPEX and service provision aspects of the combined authority budgets respectively.

Figure 2 Economic benefits analysis

Applying these savings to the annual spend in the equivalent categories shown in Figure 1, highlights the opportunity for up to £7.5 million savings for capital delivery, £8.3 million across whole life operational delivery and a further £53.6 million in service provision – representing a potential cross-sector benefit saving of £69 million. This analysis aligns to the Government estimates that every 10% increase in broadband penetration yields 0.25% in GDP growth.

The next step of the Digital Cheshire and Warrington journey is to carry out a full business case assessment of the implementation options, providing clarity across the social, economic and environmental benefits by adopting a digital approach for the LEP region. This will ultimately develop the prioritised roadmap underpinned by the business case for funding the region's digital transformation.

3 | CURRENT DIGITAL MATURITY

Smart communities are those where the vision is clear, compelling and inclusive and a citizen centric approach is developed to all aspects of service design and delivery. Digitisation of spaces and systems is integrated and ubiquitous and an open sharing approach to the way regions work is attained (Smart Communities Standard, ISO 37106). Regional digital maturity can be examined across both strategic management and service provision. While there are some isolated areas of excellence, Cheshire and Warrington is undoubtedly at the start of its journey towards digital maturity.

Strategic management

Strategic collaboration

Delivery must be collaborative. The sharing of information and resources, and decision making based on multiple criteria, becomes faster and easier with digital technology, whether through access to better data, better systems or better analytics. Shared digital data platforms servicing multiple users, both public and private, are enabled only through collaboration delivering time-cost savings and improved decision making.

Areas of delivery are inextricably linked. For example, economic growth leading to better wealth will lead to better health outcomes for the population. Initiatives such as the NHS-Innovation programme are looking to improve the healthcare sector economy, driving technology in the health space, but also drive the growth of businesses, leading to increased wealth and therefore healthier people. In manufacturing, sharing knowledge of digital applications, driving lean processing through the supply chain, will improve costs and productivity and ultimately improve the quality of the product at all stages of the manufacturing process.

Delivering digitally enabled, adaptable housing will keep people in their homes for longer and provide educational resources to homes, improving the skills and knowledge base. Incorporating requirements into the design and planning process for new homes will lead to benefits in other sectors.

Improving the image of towns and the wider region goes beyond attracting visitors – it helps to ‘sell’ skills and opportunities. Developing the idea of ‘creative ecology’ and promoting the culture of creative thinkers will help all aspects of the digital transformation.

Cross-sectoral benefit realisation

The realisation of benefits can be difficult to demonstrate and is therefore often hard to realise. Quantifying the value of deliverables, including natural capital and social benefits, will unlock new funding opportunities. Taking this cross-sectoral approach across the whole region will identify the benefit of connectivity. Opportunities to showcase the return on investment from installation of connectivity in rural areas will include the health, education and public service benefit.

Enabling economic growth through connectivity reduces people going about their business by car, which would lead to congestion and pollution. The value of natural capital should also be considered in evaluating benefits, particularly as the Government is incorporating natural capital into the UK environmental accounts

by 2020, promoting valuation of public good for the environment. This aligns to the LEPs commitment to undertake a natural capital audit as part of their Quality of Place Strategy.

To ensure Cheshire and Warrington's successful journey towards digital maturity, the collaborative engagement started in the development of this strategy needs to continue. In addition, extending collaborative working across the wider North West region and linking to the urban centres of Manchester and Liverpool which are further advanced in embracing digital technology could offer valuable insight, as well as potential economies of scale through opportunities to integrate into existing technology.

Service provision

Citizen-centric service provision:

There is already significant activity in transferring manual council services to online applications. Planning portals are already online but essentially comprise of PDF documents which can be accessed to view, rather than enabling digital queries, analysis and interaction. In some cases, digital healthcare access has been given to patients and the uptake is promising. When accessing personal healthcare data online, consent must be given for the data to be used for specific purposes; everyone must be in control of their own information. Initially digital 'apps' will need to work on the 3G/4G network, or Wi-Fi, to ensure maximum uptake and accessibility.

Uptake and skills:

Generally, uptake of digital services and the required skills to use them is low. In the healthcare sector, this is particularly prevalent in the older generation. However, even though 90-year-olds may not use screens regularly, it may be possible to engage 50% of older people. The younger generation are generally healthier and have a lower demand on healthcare but will embrace digital access to their records and making GP / hospital appointments online. Even though many individuals use social media to stay in touch with friends and family, many may well resist using technology in replacement of human interaction.

Industries such as farming are currently 'low-tech' in many areas and will require significant upskilling. In Germany and the Netherlands, the agricultural industry is very focused around technology and productivity – 84% of farms are managed by up to 38-year-olds, whereas UK farms are mainly managed by the over 60s.

In manufacturing whilst there may be awareness of the opportunity, there is reluctance to change or uncertainty about what to do, even though it is recognised as an enabler of achieving productivity gains and growth, particularly around digital management of the product life-cycle.

For the delivery of digital services to the community, there is a need to ensure digital inclusion by, for example, having iPads available in community centres to support online access to services.

IT architecture

The lack of interoperability of IT systems can be a barrier to digital transformation. Some industries are more advanced, such as manufacturing, whilst others, such as farming, lag behind. The lack of digital technology in the farming sector is an issue, particularly in the light of future BREXIT and changes to land payments, where profit margins are likely to be further squeezed. Conversely, IT systems within the manufacturing tend to be quite advanced.

Digital construction / infrastructure

The built environment has seen on-going commitment from the UK Government through the Digital Built Britain[8] programme, setting targets for delivering and realising significant cost savings across major infrastructure projects.

There is currently minimal use of digital engineering approaches in infrastructure developments in the region. While the benefits of digital engineering are recognised in ongoing building operations and maintenance, there is a need to demonstrate its tangible value (particularly through Building Information Modelling (BIM)) in capital delivery.

The planning process is the ideal opportunity to engage with developers in this area. Tentative first steps have been taken in enabling planning officers to access and utilise real time information on site. This should be an enabler to make developments smarter and better connected to attract people into rural and urban areas alike.

Building 'smarter', using digital engineering techniques, can deliver a number of benefits – not only reducing the traditional cost of construction but also increasing local supply chain opportunities and supporting new skills development. It can enable more homes to be built quicker, cheaper and better. This is linked to wider opportunities to digitise the planning and development control process.

Building 'smarter' buildings will also enable the cross-sector benefit realisation that is possible through a digital built environment underpinning delivery and accessibility of digital services.

Data sharing

This is under-utilised at present due to concerns over data security. While secure data sharing is a challenge, it can be implemented successfully with the appropriate controls in place. Collaborative data platforms will become increasingly important and essential for efficient delivery of regional planning, natural capital assessments and carbon budgets. Whilst there is a recognisable challenge to deliver these public / private platforms, such as for planning, a cross sectoral business case should identify the overarching benefits. In healthcare, the ultimate objective is to create one digital record per patient.

Data and information security

As an increasing amount of information is stored online or available digitally, the risk of data security must be addressed. This is not just about the protection of our personal data, but also data about physical assets, how we use those assets, as well as data which is commercially sensitive. Personal data is regulated through the General Data Protection Regulations (GDPR), and digital engineering models of nationally important

[8] *Centre for Digital Built Britain: https://www.cdbb.cam.ac.uk/*

infrastructure assets can be regulated through PAS 1192 Part 5, a specification for security-minded building information modelling, digital built environments and smart asset management. Standards, methods and procedures to protect this data should be identified and put in place with the correct level of training and awareness from the data users. Data should only be accessed by those with valid reasons to access it and stored online rather than on the convenience of the multiple access points we are increasingly used to.

Additionally, data is only as good as the person who has input or established the data source. Procedures around compiling data, establishing and calibrating sensors all needs to be checked and verified to ensure that information is correct, up to date and its provenance is clearly understood.

Summary of current maturity

High-level stakeholder engagement across the region, involving a total of 30 business leaders and representatives, council officers and service delivery managers were involved through face-to-face interviews and a workshop. During the workshop, participants evaluated the current level of maturity across a range of digital aspects based on the criteria set out in ISO 37106. These aim to benchmark Cheshire and Warrington so that progress towards these key criteria can be tracked over time. While this is a very simplistic approach, it provides an initial high-level assessment.

Figure 3 Summary digital maturity identified by workshop participants illustrates the initial assessment of digital maturity across the region based on the outputs of the workshop as summarised in the preceding sections.

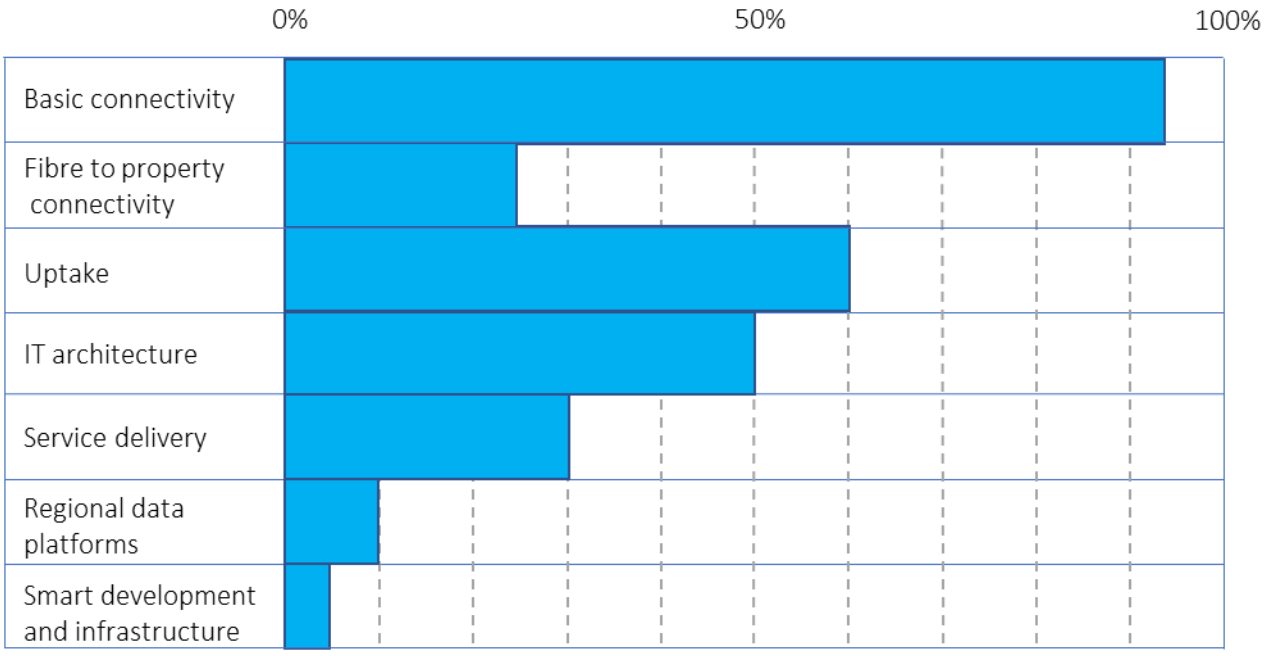

Figure 3 Summary digital maturity identified by workshop participants

4 | STRATEGIC PRIORITIES & DELIVERY PLAN

It is essential to ensure that solutions are targeted at the right problems to help reduce the cost of service provision and deliver better outcomes. The workshop and subsequent analysis have identified three strategic priorities to address the challenges identified.

Strategic priorities

There is a clear recognition and desire to embrace the opportunity that digital technology offers to ensure that Cheshire and Warrington remain ahead of the competition. To achieve this, collaboration between public and private sectors will be needed from driving up the skills base to ensuring infrastructure development is carried out in a way that will support the region's digital future. The stakeholder engagement helped to identify the regional challenges, both digital and non-digital, and these are summarised in Table 1.

Non-digital challenges	Digital challenges
• Policy and interventions priority; fully connected; understanding gaps; future planning • Collaboration and engagement; break down silos • Transparency of information • Widespread exposure to upskilling • Digital brand / destination brand • Confidence • Create an environment for creative industries • 'Place' offer; vibrancy for young people; cultural offer • Skills and college offer; incubation; university links • Transport and accessibility; difficult for rural; need for co-working space • 'Grown up' spatial planning • Inclusion; avoiding social isolation	• Infrastructure in the ground; future-proofing • Ongoing review and utilisation of technologies • Plan for growth; evolving strategy • Support for public sector; match-funding, incentives, pressure on Government, competition • Digital hubs • Connectivity that's readily available; fibre connectivity for rural areas • Smart data analysis • Lack of mobile connectivity • Skills pipeline / workforce career paths • Awareness of issues / opportunities, technology and inspiration • Infrastructure; 'plumbing' and how systems talk to each other

Table 1 Non-digital and digital challenges identified by stakeholders

The process then prioritised these challenges and started the discussion on actions that needed to be taken to enable progress in each area. The three strategic priorities identified are:

1. Digital people and digital services
2. Digital industrial revolution
3. Strategic planning, collaboration

In setting out our Delivery Plan for the next 18 – 24 months the LEP will focus on these three priorities. Not all

of the suggested areas of improvement are matters for the LEP, so only actions within the LEP's controlled are shown below.

Priority 1 - Digital people and digital services

The challenge

The greatest challenge identified by stakeholders was that of 'getting people digital'. Connectivity is inconsistent, and coverage is unreliable – there are gaps in the current service which makes it difficult to commit to a large-scale shift of services and thus to encourage people to adopt digital technology.

Whilst connectivity is generally good, there is concern over the 'last mile' and the remaining 5% who will become increasingly marginalised without connectivity. In addition, new building and connectivity upgrades need to be future-proofed to ensure that further enhancements can be achieved both easily and cost-effectively, as new technology comes online.

Digital services will require providers to work together to deliver these services in a coherent and accessible way. There are also a broad range of decision makers to influence, priorities to evaluate and legislation to be met, so a balance must be found between collaboration and competition to ensure that all parties are satisfied, and progress is unhindered.

For some, poor skills or awareness can lead to a lack of confidence and/or understanding of how best to engage, adopt, upgrade or change current methods of operating. This is exacerbated by concerns over use of personal data (particularly in understanding the General Data Protection Regulations) and the security of online services. There is clearly a transition to be achieved from continuing with 'business as usual', to embracing innovation and creating a sense of place through a forward-thinking digital brand identity for the region.

What needs to be done

- Provide enough connectivity for all users, including homes, SMEs and business
- Drive uptake by ensuring that getting online is simple, affordable, readily available and reliable
- Foster an unbiased / non-political collaborative culture and build an appetite for change by demonstrating the tangible benefits of adopting a digital strategy
- Ensure clear advice and support is in place to enhance skills and knowledge to access online services
- Implement secure data handling protocols and provide assurance that personal data is secure, and that legislation is in place to ensure privacy in conducting business online
- Take a cross-generational approach to the transition to a digital Cheshire and Warrington, starting early for younger people and valuing the experience (and appreciating the inexperience!) of the older population
- Clear communication & phasing of move to digital services

Ideas

1) Collaborative connectivity

Currently, commercial viability is measured on return on investment for the provider, e.g. the number of homes or businesses that can be connected and the number of subscribers to a BT service. On this single measure, it is unrealistic to expect that connectivity will be delivered to every property across Cheshire and Warrington.

Connectivity becomes viable when productivity and requirements to access local authority services is considered. Government is providing financial incentives for businesses and individuals alike to install high speed broadband. The organisations which can bring companies and individuals together are able to pool their resources to bring the necessary investment to install the required level of connectivity.

2) Hubs of exceptional connectivity

Stimulate the creation of central hubs of exceptional connectivity to drive long-term innovation, creativity, skills, networking, business generation, opportunity and social interaction. Not only in remote, hard to connect areas but also in towns, colleges and business centres, where they could contribute to creating the 'sense of place'.

Community hubs can also address concerns over social isolation, deliver support for SMEs and provide human contact that alleviates pressure on other resources, e.g. health and social care, council services.

- *The LEP will undertake a study by July 2020 to explore how UK Shared Prosperity Fund can be used to continue the legacy of European Structural Funds in the creation of innovation centres and hubs to support development of the creative an digital community within Cheshire and Warrington.*

3) Smart housing provision

Using digital technology to evaluate the viability and rapid evaluation of land opportunities, combined with a more digital approach to project delivery (e.g. BIM Level 2 and connected supply chains) can enable more sites to be processed quicker. It will also allow greater quantities of social and affordable housing to be delivered at a lower economic and environmental cost using space, time and materials more efficiently.

Ensuring, and requiring that these buildings are smart, connected homes delivers additional social and health benefits in the short, medium and longer term. Ensuring that housing is adaptable will enable people to stay in their homes for longer. Connectivity should be required as a planning condition and treated as a 4th utility connection at the point of handover to the occupier. IoT enables data on performance of buildings, such as homes, to be measured, e.g. when a room is too cold, too damp, or is not being used. This type of information is key to caring for the sick and elderly in their homes for longer. A further challenge is that the older generation tend not to live in new build properties, so there needs to be a push to provide IoT in existing stock to address this issue.

These efficiencies must continue through improved operation and whole-life performance of buildings, and easy access to information by occupiers, estate managers and owners to ensure that buildings perform 'as designed' in use, for example reducing carbon emissions by an estimated 20%.

4) Transformation of local authority service provision – 'one service'

Transferring council services to online operation can deliver cost and efficiency savings for local authorities and improve the quality, flexibility and access for residents and customers. In some cases, 100% uptake may not be possible so ensuring enough support for those requiring face to face assistance will be necessary, although much reduced.

Transformation of services needs to go hand-in-hand with ensuring connectivity, uptake and the right level of skill or support is available to access these services. Engagement and training programmes will need to be developed and creative thinking about effective ways to engage those needing digital assistance. Digitising services across aspects of education, social care, housing and other sectors is critical – not only to cost effectively improve access to services, but to improving outcomes for residents, taxpayers and society.

Priority 2 - The digital revolution

The challenge

Making the case for the transition to a digital Cheshire and Warrington is clearly a significant task. People generally find comfort in 'business as usual' and are often reluctant to even consider change, let alone embrace it. A lack of understanding of all things digital only increases the desire to stay with the 'status quo'.

There is an assumption that a digital strategy is unaffordable, particularly within the current political climate of ever-increasing budget cuts to council services. Upgrading digital infrastructure can be expensive and there is a constant requirement to keep up with the pace of change in technology and digital processes.

The transition from traditional operational and procurement models to digital online services is also seen as a fundamental challenge, particularly in the skills and training required to use them.

What needs to be done

- Adopting a more flexible approach to work patterns will encourage people to periodically work from home or at remote locations, thereby embracing digital connectivity by default
- Creating attractive spaces to work to appeal to a new potential workforce of digital innovators
- Encouraging a collaborative approach to advocate and accelerate the necessary cultural and political change
- Developing a culture of creative thinking and an enthusiasm for upskilling and attaining agile digital qualifications
- Encouraging a rethink of local policies and commercial / industrial strategy to facilitate a digital future for the region
- Identify and communicate digital opportunities in existing industries within the region such as agriculture

Ideas

1) Productivity

Productivity and digital technology are not about losing jobs, they are about replacing the repetitive tasks to enable humans to concentrate on more rewarding tasks. It also drives quality, repeatability and, when implemented effectively, removes the human error factor. This may be through using complex AI technology

or more simple data sharing platforms and means to effectively and quickly access information. The result being greater productivity per individual and an increase in wealth generation per capital.[9]

- *The LEP, through its Growth Hub, will continue to support the roll out of programmes such as Made Smarter which aim to increase awareness and uptake amongst businesses of digital technologies and process to improve performance and productivity.*

2) Procurement

Local authorities spend a large proportion their budget in the regional economy. Digital procurement can be used to stimulate local economic growth, facilitating the use of local SMEs and minimising the administrative burden of multiple small contracts.

Digital information management and a 'digital first' approach to attracting, selecting and interacting with SMEs and other local and regional suppliers will ensure that growth and opportunities are enjoyed by local areas first.

Housing development supported by a local digital supply chain is a good example of combining both a planning system upgraded and improved through digitalisation, and building the right kind of homes better, quicker and cheaper using the best local suppliers. The use of digital tools can foster greater collaboration between planning authorities, housing authorities and service providers, which, together with their local supply chain, will bring wider reaching local benefits.

2) Employment, skills and economic growth

Providing skills support and training to employees, SMEs and residents is an important part of the transition to a Digital Cheshire and Warrington.

The support requirements for developing skills are wide-ranging and include:

- Embracing online tools to access services
- Adopting and using social media to market more effectively, reach target audiences or branch out into new areas more efficiently (including export markets)
- Investing in design services, professional advice and hardware such as 3D printing to enable rapid prototyping

All these requirements require a cultural shift – a major change-management process, but one that will enable both public and private organisations to benefit from Industry 4.0 and maximise the valuable opportunities afforded by digital technology.

SMEs and other organisations will require support in making the transition to a Digital Cheshire and Warrington, to make the most of the opportunity and collaborate in the right ways. There must also be a strategy to retain and attract young people and families and ensure they are not lost to the urban areas of Manchester and Liverpool. This will be crucial in retaining the appropriate talent and skills for the region.

- *The LEP will progress the development and roll out of its Virtual Institute of Technology, investing up to £30 million of funding between 2019/20 and2022/23.*

9 http://www3.weforum.org/docs/WEF_Future_of_Jobs_2018.pdf

Priority 3 - Strategic planning and collaboration

The challenge

Agreeing and demonstrating the measurable benefits of adopting a digital strategy can be challenging. The presence of siloed budgets and funding regimes is a tangible barrier to encouraging investment and acknowledging the financial gains to be made. This digital strategy and vision are the first step highlighting the opportunities that could be achieved through greater collaboration.

The public sector is renowned for being slow to adopt to change. This is then fuelled by deficits in information and data, and rigid procurement rules than can stifle the formation of partnerships which can bring innovation and value to public services. There can be an aversion to risk (political and financial) therefore effort is needed to better understand the risks associated to the shift in digital services so that these risks can be mitigated and better managed.

Equally, businesses being reluctant to work together to develop best practice, co-invest and cooperate with public sector service providers must also be changed. Concerns exist over data security, IP ownership and GDPR responsibilities when organisations collaborate, but can be overcome.

What needs to happen

- Multiple benefits accounting – the leveraging of investment on apportionment of value (including social value)
- The pooling of budgets and the enabling of devolution by the UK Government
- Facilitating collaborative bidding (public / private partnerships) on public service contracts to inject innovation and forward thinking into service delivery
- The use of public policy as a driver for change, i.e. the need for economic growth, improving healthcare services, etc.
- Tax incentives for adopting a digital strategy, particularly for businesses when upgrading the network infrastructure
- Bringing the appropriate governance and collaboration to the strategic planning and delivery of public services
- Creating a skilled, focused and adequately funded ‘digital unit’ within the Local Enterprise Partnership

Ideas

1) Digital infrastructure plan

The benefits of digital infrastructure are widespread and will bring social, environmental and economic benefits across the region. The uncertainty around the actual connectivity of individuals and businesses highlights the need for a local evaluation of current connectivity, the local need and the short- and long-term solutions. The case for investment in these next steps of digital infrastructure needs to be clearly articulated. This case for investment should go beyond the traditional economic and financial case and account for the

social impact on connectivity, as well as the environmental impact, whether that be from lower road congestion, air quality or landscape and natural capital value.

- *The LEP will commission support to develop a Digital Infrastructure Plan, which will, by July 2020, set out the current digital infrastructure position for the sub-region, consider the digital infrastructure needs to support a "£50 billion economy", create smart and connected places and at the steps required to maximise digital connectivity to support economic growth.*

2) Digital planning

Local planning authorities possess much of the necessary information to assess the viability of development plans. However, this information may not be in an accessible, digital format and the tools to rapidly assess viability may not be available within the authority. Further efficiencies flow from the digitisation of viability assessments and information provision, including the rapid review of planning applications, planning assessments and agreements to semi-automated (or even fully automated) building control checks, ensuring that what is built is 'as permitted'. This can focus planning officers' time on subjective decisions, and use digital technologies to assess the objective automatically, therefore not wasting time and expertise on simple, repetitive tasks.

3) Regional information collaboration

The same data can be used multiple times to support the efficient delivery of a range of different services. Good information management is digital, efficient, accessible, reliable and secure. Local authorities, adopting digital information management approaches, buy their data once, have access to reliable, up to date information and deliver better services. Achieving this whilst conforming to the increasingly stringent requirements of the General Data Protection Regulations (GDPR) will be a challenge but one which should offer long term benefits, especially if there is a consistency in how information is treated by different, collaborating organisations.

There are already some promising first steps being taken in Cheshire and Warrington, particularly around mapping and the information databases used by different departments in the three local authorities. However, much more could be done in this area to assist with getting people digital, supporting the right kind of economic growth and unlocking the true potential of the region through collaboration.

Centralising, sharing and linking data and analytics can benefit multiple council responsibilities, e.g.,

- Planning and development
- Nature conservation and land use change
- Environmental management and monitoring
- Service provision, service efficiency and demand management
- Customer relations / 'one-stop-shop' services by improving convenience and uptake
- Information services, i.e. tourism, travel, education, health, social care and youth
- Self-monitoring, semi-automated services and service efficiency
- Procurement and business engagement
- Consultation and community engagement

For example, integrated travel planning apps could enable customers to see where buses are, plan inter-modal journeys, access tourist information, book seats, gauge walking / cycling distances between public transport points or places of interest, set reminders, improve access to remote areas or places of interest, and find hotels and restaurants in remote areas.

The LEP will work with Transport for the North and other relevant stakeholders to understand the data requirements to support integrated journey planning.

5 | DIGITAL CHESHIRE AND WARRINGTON ROADMAP

The next stages which must be successfully delivered to help bring the Cheshire and Warrington digital programme to fruition are shown in Figure 4. Throughout the process of implementation, the LEP's Strategy Committee will maintain a strategic oversight role, although more specific task and finish groups may be needed for individual priorities and activities.

The starting point is the key priority areas identified through the stakeholder engagement process during the development of this Digital Strategy. These next steps will review and detail the ideas identified under each priority area in order to develop these into deliverable projects. At the same time identifying any gaps and assigning project champions to each project. An initial strategic screening of deliverability and benefits realisation is then undertaken.

Subsequent stages ensure care is taken to maintain a progressive approach. The three critical enabling stages identified ensure the programme is planned and costed accordingly.

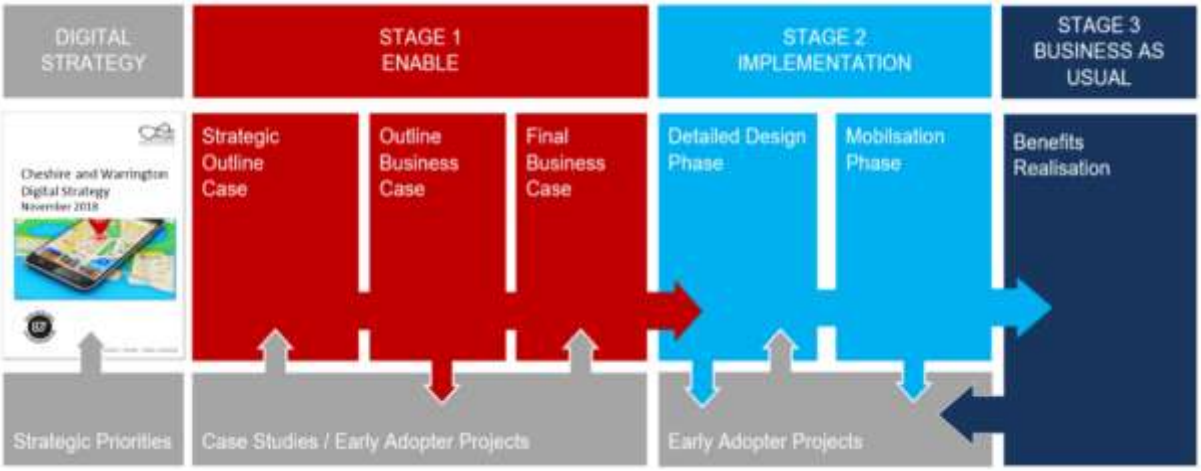

Figure 4 Digital Programme Stages

Stage 1 – Enable

Effective and proactive management of benefits realisation around the social, economic and environmental outcomes is a core responsibility for the leadership and governance of the digital programme. In the past, many regions and councils have failed to manage the downstream benefits proactively, after an individual project or programme has been completed, particularly where it affects multiple interested parties. ICT programmes are often considered complete once the technical implementation is initially operational.

To make full use of the projected benefits (e.g. efficiency savings, customer service improvements), ongoing management is essential, often involving significant organisational and cultural changes.

This enabling stage is critical to ensure what has been promised to residents can be delivered, and identifies the overall Digital Cheshire and Warrington actions, the strategic priorities, and – importantly – the

environmental, social and economic opportunities for the programme. It systematically identifies what can be achieved and what the most effective next steps should be, based on a prioritisation business case assessment.

Our approach is based on the UK Government Treasury's Green Book for investment business case assessments, adapted to include the assessment of environmental and social impacts alongside the financial impacts to align to the LEP's strategic priorities.

Project scoping - Strategic Outline Case

The strategic outline case (SOC) will help Cheshire and Warrington formalise the benefits of the proposed digital programme. It will demonstrate the case for change, presenting a clear rationale for making an investment against the strategic objectives of the regional authorities.

This process will provide important evidence and will set out robust assumptions at this early stage in the development of the business case for the digital programme. It will also explain how the various options have been assessed and, fundamentally, it will provide Cheshire and Warrington with a preferred programme of projects.

The five steps of the SOC are:

1. **Strategic Case**

This will set out the rationale and the context for the digital programme of projects and will make the case for implementation at a strategic level. It will detail the background to the proposal and explain the objective that is to be achieved. The strategic policy context and alignment with the wider Cheshire and Warrington policy objectives will also be referenced, as will any interaction with or dependency on other council programmes.

Areas which will be specifically addressed include:

- The underlying strategic requirement for the adoption of the digital programme
- Key objectives and critical success factors

2. **Economic Case**

This will assess the contribution of the programme across economic, environmental and social contributions of the digital programme. Several areas will be specifically addressed, including:

- The formulation of options to be considered
- The economic benefits quantified (Rough Order of Magnitude) for each option
- A cost estimate for each short-listed option
- Identification of the preferred option

3. **Financial Case**

This will assess the financial viability of the digital programme. Areas which will be specifically addressed, include:

- A summary of financial appraisal

- Consideration of overall affordability
- Funding Sources
- Risk Contingency

4. Commercial

This will assess whether the digital programme is commercially viable. Several areas which will be specifically addressed include:

- Ease of procurement, consideration of the capability and capacity in the supply chain to deliver the programme
- Procurement options and expected approach

5. Management

This will assess whether the digital programme can be delivered successfully, and addresses several specific areas, including:

- Project Management approach
- Internal capacity and capability considerations
- Benefits Realisation, including Financial (both cashable and cost avoidance) and Non-Financial
- Risk identification and mitigation
- Recommendation

Detailed planning phase - Outline Business Case

Following the strategic outline case, the preferred options are taken forward in an outline business case (OBC). Its purpose is to revisit the SOC in more detail, taking the preferred option, which demonstrably optimises value for money (VFM). VFM will account for the full range of economic, social and environmental benefits. It sets out the digital programme, demonstrates its affordability and details the supporting procurement and funding strategy, together with management arrangements for the successful rollout of the programme.

This stage will provide detail across the following:

- The Strategic Case – revisited
- The Economic Case – completed according to the Green Book
- The Commercial Case – outlines the envisaged Digital Programme structure
- The Financial Case – contains a detailed analysis of affordability and any funding gaps
- The Management Case – develops in more detail how the Digital Programme will be delivered, with an outline of the proposed programme / project management plan

Testing the Digital Framework on early adopter projects

Before moving to the final business case, there will be a period of testing to ensure that the newly developed technologies and ways of working are user-friendly, effective and deliver the anticipated outputs.

This would typically include the consideration of using early adopter projects to validate the new methods of working and better understand the impact of implementation on 'business-as-usual'. Lessons learned should be captured and addressed prior to rolling out technologies more widely. In selecting early adopter projects, it is necessary to assess whether they will enable new ways of working to be tested within the timescales required by the implementation plan.

Detailed final phase - Final Business Case

Following the outline business case, a Final Business Case (FBC) will be developed to support ongoing investment.

The purpose of the FBC is to revisit the OBC and record the findings of the subsequent procurement activities. It will also enable the recommendation of an affordable solution which continues to optimise VFM and detail the arrangements for the successful delivery of required goods and implementation of services from the recommended supplier(s).

This stage will provide the following:

- The Strategic Case – revisited and revised if required
- The Economic Case – record the findings of the procurement included in the analysis
- The Commercial Case – the drafting of the recommended Digital Programme
- The Financial Case – affordability and funding issues resolved
- The Management Case – recording the detailed plans for delivery and arrangements for the realisation of benefits, management of risk; and post evaluation

Stage 2 – Implementation

Upon agreement of the Strategy and FBC, the Implementation Stage should commence which will focus on designing and mobilising the Digital Cheshire and Warrington Task Group. The role of the group will be to coordinate and deliver proposed workstreams that will actively change practices and standards within the region to drive digital adoption, operating consistently and within predefined timeframes.

These activities will be necessary to counteract sub-optimal digital development driven by individual supplier interests instead of overall industry efficiency. This type of intervention will include creating and issuing policies requiring the application of a defined standard or procurement approach.

We recommend that the key focus of the Task Group follows the successful formula developed for the UK Government's Digital Built Britain program, enabling a core team to coordinate the delivery of funded work streams under the governance of a Steering Group.

Stage 3 – Business as Usual

This stage includes activities related to embedding technologies so that it becomes 'business-as-usual', and to also provide support structures to ensure that the new ways of working are followed. A program of lessons learned, commenced during the early adopter projects, should be continued so that challenges that arise from the new working practices are addressed.

As these new practices become business-as-usual, a process of measuring the required benefits should be undertaken, to justify the program expenditure and to drive continual improvement.

Continuous Improvement and Feedback

This phase includes activities related to embedding technologies so that it becomes business-as-usual and that support structures are in place to ensure that the new ways of working are followed. The program of lessons learned, commenced during the early adopter projects, should be continued so that challenges that arise to the new ways of working are addressed.

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APPENDIX A: BENEFITS CASE STUDIES

These are broadly in two groups: firstly, the implementation of Digital Engineering (BIM) within a specific government department or cluster; and secondly the broader application of digital transformations (e.g. DE/BIM, IoT, analytics, Smart technologies) and the resulting economic benefits across whole-of-government. Each business case and analytical report has differences in scope and approach to benefit estimation; however, the results suggest general corroboration of the predicted benefit within each group.

	Source / Department	Description of Scope and Approach to Benefit Estimation	CAPEX	OPEX	Service Delivery	Reference
Group 1	**Transport for NSW**	*Application of BIM at a similar maturity to Level 2, individual project example.* Benefit quantification determined by applying expert opinion to recent project examples, (CAPEX phase only) identifying the benefit BIM application would have created if applied.	1.7%			TfNSW Digital Engineering Conceptual Business Case (2016)
	UK Government Department (Transport Infrastructure)	*Application of BIM Level 2, across departments.* Analysis of the various benefit components with emphasis on risk mitigation and reduction of projects contingency (approx. 1%)	2%	1%		BIM Implementation Business Case
	Scottish Futures Trust BIM Program	*Application of BIM Level 2, individual project.* Provision of an RoI tool, requiring the input of project data to derive a predicted BIM RoI. A return is automatically calculated for CAPEX based on survey data of expected benefit during design and construction phases and other relevant case studies. CAPEX benefit of 3% indicated based on broad and comprehensive application of BIM Level 2. (OPEX RoI is also available but requires more subjective assessment of benefits).	3%			Scottish Futures Trust BIM Level 2 Return on Investment Calculator
	PwC BIM Benefits Methodology Digital Built Britain	*Application of BIM Level 2, individual project sample.* Application of a comprehensive BIM Benefit Framework across a sample of recently completed government projects to measure realised benefit. Level of BIM application also measured, with projects typically applying some, but not all, aspects of BIM Level 2.	Whole-life savings estimate ranging from 1.5% to 3%			PwC BIM Benefit Measurement Methodology (via Centre for Digital Built Britain).
Group 2	**Digital Built Britain** (UK BIM Level 3 Program)	BIM Level 3* A combination of relevant case studies and benefit logic analysis, exploiting expert opinion on the impact of digital intervention.	10-20%	5-15%	5-15%	Digital Built Britain: Strategic Outline Business Case (2017)
	BCG Study As reference by: EU BIM Task Group Handbook, 2017; World Economic Forum, Shaping the Future of Construction, 2016	'Full Scale Digitisation', including the adoption of BIM / Digital Engineering, robotics, data analytics, mobile interfaces, virtual reality & simulation. Estimates derived via application of case study data relating to individual technology applications to three theoretical scenarios (building, highway, power plant).	13-21%	10-17%		Digital in Engineering and Construction, BCG (2016)

Delivering local housing needs using digital technology

The Construction Products Association has identified the potential for digital engineering and a digitally configured residential development supply chain to delivery more for less[10]. Using a digital viability assessment tool to evaluate the delivery of the identified 127,000 homes between now and 2040 presents interesting and

[10] Construction Products Association, 2016. The Future of Construction Product Manufacturing: Digitalisation, Industry 4.0 and the Circular Economy

valuable data. The benefits measurement approach measures the impact of digital technologies in the construction of the houses, considering locality and planning constraints, and assumes a range of standard housing models. Three scenarios have been modelled:

1) **Traditional approach:** This assumes 30% affordable homes is achieved through a requirement under planning consent.
2) **BIM Level 2:** This approach uses digital engineering, Building Information Modelling (BIM) (where savings are achieved through better clash detection) and adequate information to make better informed decisions, resulting in the potential delivery of an additional 2% of affordable homes.
3) **BIM Level 2 plus a pre-configured digitally connected supply chain:** The project is delivered using digital engineering (BIM) alongside an outcomes-based digital procurement approach. Digitisation of the supply chain helps to identify gaps in procurement, timing and capability, and can drive additional benefit by enabling greater engagement with the local supply chain. Savings estimates identify that an additional 8% of affordable housing could be delivered, resulting in a total of 38% affordable housing delivered for the cost of delivering 30% affordable housing traditionally.

While there is a significant collaboration and transformational change in approach required to move towards a digitally connected supply chain, the opportunity looks significant. The potential benefits across the different scenarios are outlined in Table 2.

Scenario: To deliver 127,500 homes and maximise affordable housing provision	Traditional approach	BIM Level 2	BIM Level 2 plus a digitally connected supply chain
Additional affordable dwellings that can be delivered as a result of digital engineering technology for the same investment	0	110	512
Percentage of homes which are affordable (assumes baseline of 30% is achieved through current, traditional approach)	30%	32%	38%
Additional costs required to deliver shortfall in affordable housing - assuming a target of 30% of the forecast annual housing delivery target	£198 million	£178 million	£111 million
Efficiency across project delivery results in projects being finished earlier. Average additional weeks homes can be occupied due to early finish	0	41 weeks	102 weeks

Table 2 Affordability of housing provision enabled through digital engineering