Shropshire Council

Appendix 1 - ICT & Digital Strategy 2022-2025

January 2023

Foreword

Following engagement with the public, our partners, and local businesses, Shropshire Council agreed 'The Shropshire Plan' at its meeting in May 2022. This plan sets out the Council's vision, purpose and priorities, grouped into 4 themes:

- healthy people,
- healthy economy,
- healthy environment, all via
- a healthy organisation.

This update to the Council's ICT & Digital Strategy describes how Shropshire Council is continuing to develop its use of technology, and outlines the changes planned to ensure that Shropshire maximises its use of the benefits of the digitisation in delivering the Shropshire Plan.

A clear strategy helps us all to stay ahead of emerging issues and to be agile in our response to new challenges, as we have during the pandemic. It helps us to plan ahead, by connecting our overall objectives as set out in the Shropshire plan with how we will ensure that technology not only enhances the efficiency of council operations, but also aligns to our vision – which is that residents and visitors alike are "Living the Best Life".

As the introduction to the Shropshire plan concludes: *"The challenges and experiences we have shared over recent years put us in a strong position to step up and move forwards together and adapt our plans to meet the changing situations we face."*

This ICT & Digital strategy is part of that 'stepping up' to meet those challenges.

Lezley Picton
Leader of the Council

Andy Begley
Chief Executive

Introduction

This ICT & Digital Strategy takes note of the advances in technology in recent years that have transformed the way that society operates and have allowed many organisations in both the private and public sectors to deliver better service whilst also reducing their costs. This technical progress is predicted to continue for years to come, and it allows Shropshire Council to help ensure that both local residents and visitors to the county enjoy the benefits of the digital world. Many already do so, and we will support that majority to continue to interact with us and our partners digitally, while we ensure others are not left behind – so while keeping up with those most at home with technology, we will also commit to 'digital inclusivity' to ensure that all communities are supported to use simple and effective digital options when they choose to.

Our headline priorities support a vision of an inclusive 'digital county', where we -

- **DIGITISE AND AUTOMATE -** To pursue and promote a 'digital county' in which as many transactions as possible are done through IT and digitally-enabled routes, rather than being on paper or face to face, while also accepting that some interactions, and some individuals, will be better served in the traditional manner.
- **ENABLE AND DEVELOP -** To encourage and support residents and Council staff to develop their ability to use technology and to be comfortable doing so.
- **SAFEGUARD AND PROTECT -** To ensure that the data the organisation holds, the software it operates, and the transactions it enters into are protected as effectively as possible against continually escalating and evolving cyber-threats.

We look forward to working with staff, residents and partner agencies in the coming years to realise the benefits of digital technology while also protecting the technology that enables that and the data it retains.

Rob Gittins
Cabinet Member for Digital, Data, Insight & Built Housing

James Walton
Executive Director of Resources

Shropshire Council

Supporting the Council's Strategic Objectives

The council's four top level aims, expressed in the Shropshire Plan, are:

- Healthy people
- A healthy economy
- A healthy environment
- A healthy organisation

How does this ICT and Digital Strategy support these aims? Irrespective of the fact that ICT supports the council in virtually everything it does, it is possible to be more specific in demonstrating links to these core aims:

Healthy People: Working with the NHS through the ICS, the digital technology outlined here will assist people throughout their lives, through remote monitoring of their health, online consultations with medical practitioners, enhanced data sharing, and ultimately more personalised medical care. This in turn will be enabled through having a better-connected county, and a population that understands and is enabled to use digital technology. Older people in particular will benefit in the coming years, as digital technology helps them to remain healthy for longer, while remaining in their own homes.

A Healthy Economy: It is clear that the UK and the wider world's economy is becoming increasingly dependent on digital technology, and that future prosperity and a strong local economy will depend on Shropshire being a well-connected county with digitally-skilled workers. The council's work in improving connectivity, improving digital skills in the population, providing support to digital start-ups, and working to make the county an attractive place for high-tech businesses will play strongly into this agenda.

A Healthy Environment: Shropshire's natural beauty and strong 'green' credentials give it a head start in this area, but the technology-enabled move to remote working has been a bonus in reducing road use and hence pollution, while the continued move to the cloud will reduce energy use by the council. Indeed, major cloud providers compete in terms of their green credentials, with one of the council's leading providers promising to be not merely carbon-neutral but carbon-negative by 2030[1].

A Healthy Organisation: ICT and Digital Technology is the life-blood of any efficient organisation, and the improvements planned in this strategy will take council efficiency (and the quality of the services it delivers) to a new level, with digital end-to-end services, a more digitally-skilled workforce, and significantly better use of data.

Target Operating Model: The council continues to develop a new Target Operating Model, which focuses on improving our overall operational efficiency and effectiveness, in support of the four key aims of the Shropshire Plan. This is documented elsewhere, but a key part of it is the vision of a 'Digital County', and encompasses a range of

[1] https://blogs.microsoft.com/blog/2020/01/16/microsoft-will-be-carbon-negative-by-2030/

projects that will ensure that both the council and the wider community are able to make the best use of digital technology. Projects (currently being finalised) will include:

- Enhancing connectivity, including broadband, 5G, gigabit, and low-bandwidth IoT;
- Ensuring 'digital inclusivity' throughout the community by understanding the needs of different communities, aligning our offer around those needs, and supporting them to make use of those options in ways which make sense to them;
- Improving internal and external council services so that they are easier to access on-line, and operate digitally and with maximum automation, end-to-end;
- Ensuring that council information technology is secure, available, and that the organisation is resilient in the face of ever-growing cyber threats;
- Ensuring that the council's workforce is well-educated in digital technology, and embraces its use throughout the organisation and is able to promote it within the community.
- Ensuring that the council makes the best possible use of its data, unlocking its power to make better informed decisions.
- Extending the use of technology in social care, and in particular in supporting older people to stay in their homes as long as is possible.
- Supporting digital start-ups with accommodation, connectivity and business advice.
- Ensuring that digital options are available to support moves towards more digital (non-cash) transactions, and that we reduce enhance our capacity to manage the business of the council with little (or no) reliance on paper documents.;
- Ensuring that digital technology enriches and inspires the cultural life of the county.

The Department for Digital, Culture, Media and Sport predicts a "golden age for technology" in the UK[2]. Shropshire is well-placed to enjoy its place in the sun, provided the council plans its technology investments carefully, drives project delivery through to benefits, and ensures the population are encouraged, equipped, skilled and connected, so that they can enjoy the bounties of the digital age.

[2] https://dcms.shorthandstories.com/Our-Ten-Tech-Priorities/index.html

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Our Digital County

The Council has developed a number of key proposals it intends to realise over the coming years, which are part of this strategy. Together, these initiatives set out a vision for a 'digital county', where services are automated and on-line as much as possible and where it makes sense to do so.

This digital strategy sets out the overall rationale and vision for delivery of these digital county proposals (separate decisions will be required by Councillors as they are developed and before full implementation).

These county-wide initiatives include a range of proposals. Some are specific items to be delivered, others relate to ongoing pieces of work that will continue to evolve over time. The broad headings and subjects of these are set out below.

<table>
<tr><th></th><th>Immediate development and delivery</th><th>Later development, once 'enabling' actions are completed</th></tr>
<tr><td></td><td>DIGITAL ACCESS - Promotion of digital advice, support, and information provision (and enable reduction of paper-based and face-to-face or telephone transactions).</td><td rowspan="3">Develop further digital tools and resources to be made available and reduce the need for human intervention in routine processes as much as possible. Embed and support their use.</td></tr>
<tr><td></td><td>ON-LINE FINANCE - Promotion of on-line payments (and enable reduction of cash transactions).</td></tr>
<tr><td></td><td>AUTOMATED PROCESSES - Increased extent of automated processes to increase staff efficiency; change, reduce or remove inefficient activity.</td></tr>
<tr><td rowspan="3">Ongoing activities</td><td colspan="2">INFRASTRUCTURE - Work with broadband engineers and others to maximise overall coverage within the county; update our website to ensure it will accommodate more on-line activity and is suitable for a range of users and technologies (e.g. low bandwidth, smartphones, and broadband connections).</td></tr>
<tr><td colspan="2">DIGITAL CONFIDENCE - Working with residents and businesses and others to maximise their use of digital and on-line resources and to grow their confidence in doing so.</td></tr>
<tr><td colspan="2">RESILIENT – Ensure the confidentiality, integrity and availability of systems and data from both external and internal threats</td></tr>
</table>

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Applying Digital Technology within the Council

Digital delivery of the council's transactional services (where appropriate - some may never be digitised) is expected by our customers. We will be able to provide better service and achieve lower costs if services are digital and largely automated end-to-end, but it will be a substantial task to achieve this for the majority of existing services. We must prioritise in the first instance, based on:

- The volume of transactions;
- Transaction complexity, including the proportion of non-standard cases requiring human intervention and judgement;
- The complexity of the back-office processes that sit behind it;
- Interdependence with other processes/systems;
- The scope for process redesign and automation, including the inevitable change management issues involved;
- The potential for cashless and paperless ways of working. These are already a priority for the council, and should be pursued as part of process redesign;
- The environmental benefits, and alignment with the council's climate strategy[3].

The 80:20 principle should be applied, rather than trying to cover all circumstances. Local government has faced the digitisation challenge for over 25 years: the first ambitions to bring local services online appeared in a Green Paper in 1996[4]. Some processes in Shropshire Council are now fully digitised, such as paying a parking fine, while some are part-digitised, requiring the completion of an online form, which users download, complete and submit. There remains too much reliance on telephone contact with the council, and as digital services improve, the council's customers should be 'nudged' into interacting digitally rather than by telephone – an approach used with success by central government[5].

The way ahead is to catalogue the council's services, evaluate them in terms of the parameters outlined above, undertake a prioritisation exercise, and plan a thorough **programme of service digitisation**. This should not necessarily be seen primarily as a cost-cutting exercise: past digital investments promising major savings have not always succeeded. The benefits include:

- providing better services to the council's customers;
- creating more efficient back-office processes with shorter turnaround times;
- reducing errors and failure demand;
- moving staff to different and more fulfilling work;
- promoting income generation by offering new and exciting tech-based products and services;
- ultimately – if staffing requirements are reduced and IT systems rationalised – financial savings.

[3] https://shropshire.gov.uk/shropshire-climate-action/what-have-we-achieved/policies-strategies-and-guides/climate-strategy-and-action-plan/
[4] https://www.paperbackswap.com/Government-Direct-Prospectus-Great-Britain/book/0101343825/
[5] https://www.instituteforgovernment.org.uk/explainers/nudge-unit

Digital transformation can save money – GDS reported in 2015[6] saving central government £1.7Bn per year. We must however distinguish between hours freed up to do other work, cost avoidance, and genuine cashable savings.

Data: Valuable information is held all over the organisation, and if properly collated could lead to better decision-making. Many commercial organisations now collect large amounts of data and interpret it to make better business decisions, and for some it is fundamental to their business operations[7]. These techniques can be applied in local government. One important goal is to create a 'single view' of, for instance, a child – such as the LGA report[8] that other councils are now doing, to:

> *…facilitate an integrated multi-agency approach based on targeted, early interventions. Such a proactive, rather than reactive, model should improve both efficiency and outcomes.*

Better data-based decision-making can be applied across many of the services the council supplies, to become a 'data-led organisation'. There are of course challenges in achieving this; if it were simple, it would have been done long ago:

- Data may be in formats that makes it difficult to collate;
- Data may be wrong, incomplete, or duplicated ('dirty' data which needs 'cleansing');
- Two sets of data may refer to the same thing – for instance, the name of a person may be captured in two different systems differently, leading to ambiguity;
- Data may be in free-text form, requiring encoding in standard data formats;
- Data may sit in spreadsheets or locally-crafted databases, used by individuals or small groups, and not known about more widely;
- Data is sometimes not readily shared: some staff are reluctant to share data, fearing that it may not be treated securely, or that sharing it may infringe data protection rules;
- There may be reservations in terms of ethics: some may fear that a government knowing too much about its population could infringe privacy, or lead to excessive control.

If these reservations can be overcome, we could over time achieve sound business intelligence, a single version of the truth, and eventually predictive analytics. The council should make the most of its data, while acting ethically, basing the most difficult decisions on the strongest analysis, and using data-driven technology to transform its services to the benefit of those it serves. This area is of such importance that it is the subject of a separate strategy now in preparation.

[6] https://gds.blog.gov.uk/2015/10/23/how-digital-and-technology-transformation-saved-1-7bn-last-year/
[7] https://www.businessmodelsinc.com/exponential-business-model/netflix/
[8] https://www.local.gov.uk/case-studies/single-view-childs-record

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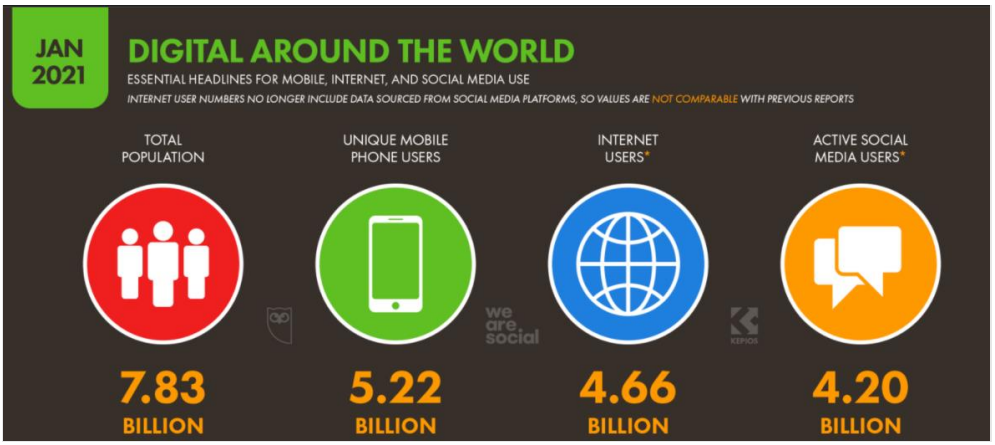
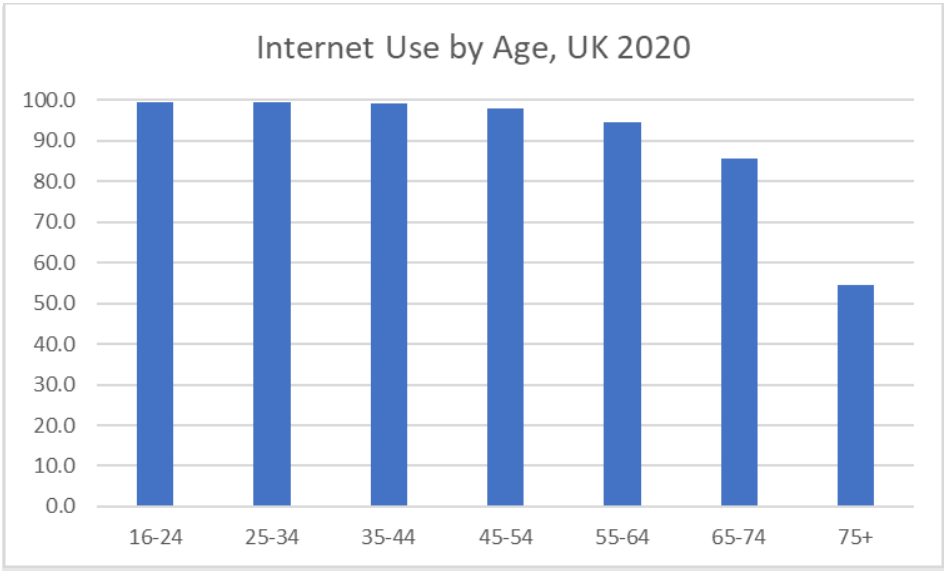
The Digital Opportunity and Digital Inclusion

It's a Digital World: We now live in the digital era, and this is changing our lives in many ways. This is happening universally[9], as the illustration below shows:



Worldwide Digital Statistics

The UK's Office for National Statistics (ONS)[10] records that 92.2% of UK adults were internet users in 2020, with most up to their mid-50's using the internet regularly. The graph below shows usage by age. Correcting for Shropshire's age distribution, local usage is estimated as 89.9% in 2020, but will have grown a little since then. The UK has shown clear growth trends in internet use among older age groups: use by over-75's grew from 29% in 2013 to 54% in 2020. Specific Shropshire figures are not available but can be assumed to be following national trends.

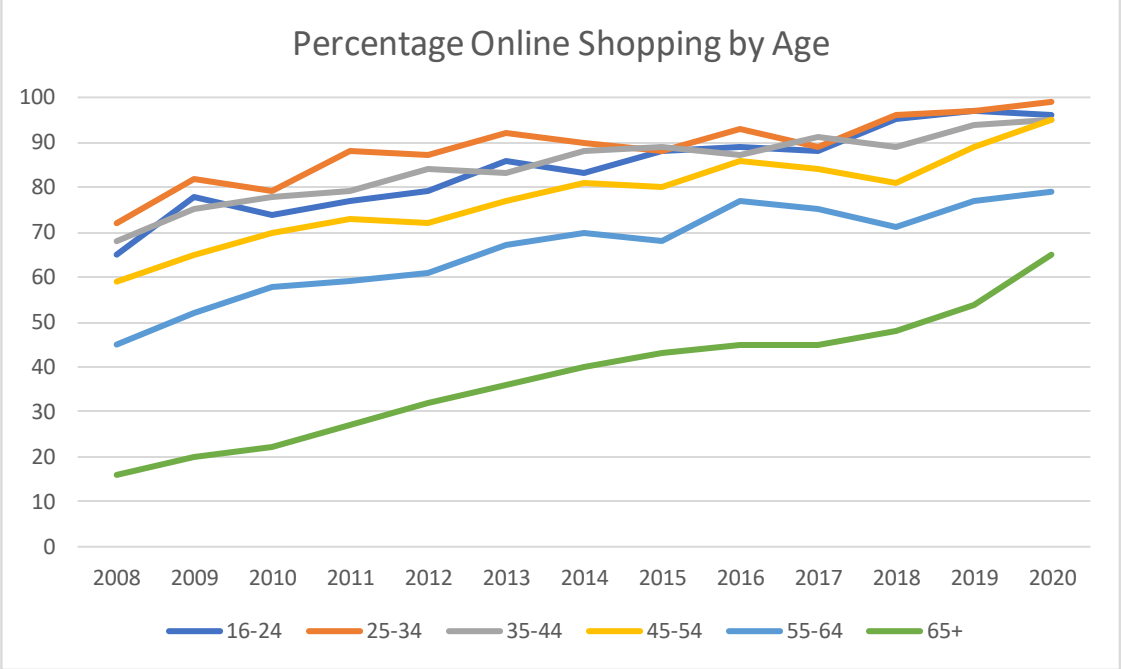


[9] https://datareportal.com/reports/digital-2021-global-overview-report
[10] https://www.ons.gov.uk/businessindustryandtrade/itandinternetindustry/bulletins/internetusers/2020

Internet Use by Age Group

ONS figures[11] state that there were 36,956 people in Shropshire aged 75+ in 2019 (and that number will have grown slightly since then). If we assume that 46% are not on-line, that equates to approximately 17,000 older people in Shropshire who are not interacting with the rest of the world via the internet. This must be born in mind in future planning, and the issue of 'digital poverty' needs to be properly addressed.

The graph below shows how one typical internet activity, online shopping, has grown in the UK since 2008[12]. Note the growth among the older age groups, rising steadily but still well behind younger people.



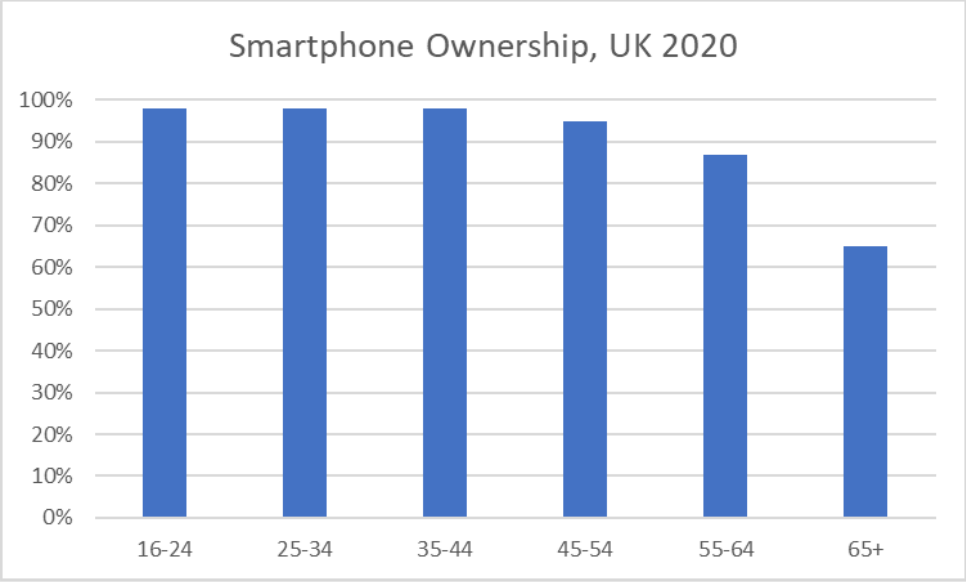
UK Statistics for Online Shopping

It is clear that users within the council and the public have high and rising expectations of technology, from positive experiences in their everyday lives. Digital technology has transformed society, through online news, shopping, banking, social media, entertainment, access to information and much more. The enforced move to home working during the Covid-19 pandemic would not have been possible without it. Happily, most users across the UK enjoy good internet connectivity and cheap, powerful end-user devices.

Smartphone ownership in the UK is high, as the graph below shows. Aggregating across all over-16's, the total for the UK was 88.3% in 2020, and may have grown a little since then. The estimated figure for Shropshire (based on local demographics) is lower at 85.3%, due to the greater proportion of those aged 65+ in the county.

[11] https://www.ons.gov.uk/businessindustryandtrade/itandinternetindustry/bulletins/internetusers/2020

[12] https://www.ons.gov.uk/peoplepopulationandcommunity/householdcharacteristics/homeinternetandsocialmediausage/bulletins/internetaccesshouseholdsandindividuals/2020



Smartphone Ownership by Age, UK-Wide[13]

Digital Inclusion: There are those who cannot or choose not to use the internet, and reasons cited in a 2020 study by AgeUK[14] include: difficulties in keeping up with changing technology, not having anyone to help when problems arise, health-related issues, lack of interest, and cost. Nevertheless, as the ONS[15] put it:

> *The internet is being used increasingly across all areas of life. Digital technology offers a number of benefits to the individual, which those who are digitally excluded are missing out on.*

The Healthy People aim of the Shropshire Plan includes the strategic objectives of tackling inequalities and self-responsibility, and the Healthy Economy aim includes the strategic objective of supporting people and our communities with the right skills and access to lifelong learning; our digital approach will support these objectives. We will respect the wishes of the individual, always ensuring that there are non-digital means for them to interact with the council, it will be important to reduce digital exclusion within the community, which seems to be focussed mostly in the older age groups. There are already multiple initiatives addressing digital exclusion within the council and the wider community, and these are to be supported and promoted as widely as possible. There is a bid to expand the Digital Skills Programme, supporting a further 3,000 digitally excluded Shropshire residents aged 55 or over to interact with the Council digitally.

Digital users need more than just encouragement and education, they need affordable connectivity, they need devices, and in some instances, they will also need specialist

[13] https://www.statista.com/statistics/300402/smartphone-usage-in-the-uk-by-age/
[14] https://www.ageuk.org.uk/globalassets/age-uk/documents/reports-and-publications/lapsed_users_report_march-2020.pdf
[15] https://www.ons.gov.uk/peoplepopulationandcommunity/householdcharacteristics/homeinternetandsocialmediausage/articles/exploringtheuksdigitaldivide/2019-03-04#how-does-digital-exclusion-vary-with-age

software that supports those with disabilities. Our Shropshire Local customer service points offer a place for our citizens to talk to friendly council staff face to face and get support with a range of services, if citizens don't have a computer at home, they can use our public access computers.

With devices, councils elsewhere have participated in schemes to redistribute unwanted but serviceable laptops, tablets and smartphones. The source of these can be the general public and as well as organisations (including the council itself) which regularly replace their equipment. A good example is the Community Calling initiative in London, which local councils support, working with charities and a leading network provider[16].

Although we increasingly live in a virtual world, communities need physical spaces to come together, and the council will in the future provide these as multi-functional facilities, serving as physical and digital libraries, community support facilities, locations for partner agencies and charities to operate from, and so forth. From a technology viewpoint, they could serve as places for improving digital literacy, and locations where digital start-ups could be allocated space and connectivity – along with support from appropriately-qualified volunteers offering technical, financial, marketing and other business advice.

[16] https://www.hubbub.org.uk/communitycalling

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Technology and Health & Social Care

Digital technology is increasingly being brought to bear in healthcare in general, and is thought to offer huge potential for the future, although as the King's Fund[17] recently reported:

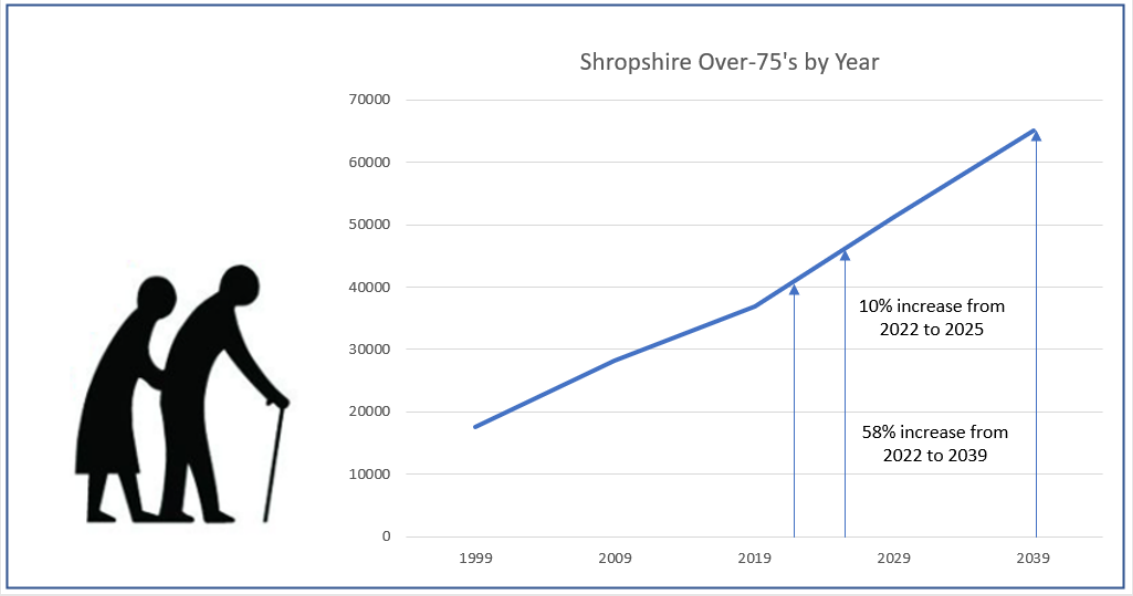
> *The potential of digital technology to transform the health and social care system has still not been realised, though the Covid-19 pandemic has caused a rapid shift towards the remote delivery of care through online technologies*.

Shropshire Council and Telford & Wrekin Council work closely with NHS colleagues through the Integrated Care System, and this collaboration will grow in the coming years. The council rather than the NHS, though, has the primary responsibility for social care in the county. A large proportion of the council's net budget was spent on social care in 2021/22, and this will continue to rise as the proportion of older people in the county increases. Nationally, social care spending on adults is much higher than on children: £21.2Bn was spent on adults in 2020/21[18] vs £10.9Bn on children[19]. Shropshire has a higher proportion of older people than the national average, and this will become more pronounced over the coming years. The figure below shows the age distribution predicted by the ONS for Shropshire in 2039 (the left-hand profile) compared to the UK[20] average.

ONS Predictions of Age Distributions in 2039, Shropshire vs UK

This ONS dataset shows that, from 2022 to 2039, there will be a **58% increase** in Shropshire of people aged 75 and over. (Care homes are mostly populated by those aged 75-plus[21], hence the focus on this age group). Even over the three years of this ICT and Digital strategy, the growth will be 10%, as the figure below shows.

[17] https://www.kingsfund.org.uk/sites/default/files/2021-04/Shaping%20the%20future%20of%20digital%20technology%20in%20health%20and%20social%20care.pdf
[18] https://digital.nhs.uk/news/2021/latest-key-statistics-on-adult-social-care-include-council-spending-in-2020-21
[19] https://www.communitycare.co.uk/2021/10/25/english-councils-need-2-7bn-more-for-childrens-social-care-by-2025-lga-warns-government/#:~:text=The%20LGA%20estimates%20that%20costs,over%20the%20three-year%20period.
[20] https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/articles/overviewoftheukpopulation/january2021#the-uks-population-is-ageing
[21] https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/ageing/articles/changesintheolderresidentcarehomepopulationbetween2001and2011/2014-08-01



The Number of Over-75's in Shropshire, by Year (ONS data)

Local authority costs for social care are high: Shropshire's spend is a substantial proportion of net income and rising. As older people move into residential care or nursing homes, the costs are partially or wholly met by the local authority. Government policy seeks to limit personal care costs to £86,000, with the balance being met by the local authority. The average cost of a residential care home across the UK is £2816 per month, and a nursing home £3552 (Sept 2021 figures[22]). Shropshire costs are higher, typically £4000+ per month at this time.

Most older people prefer to remain in their own homes, and social services already help them to do so, contributing to the costs of homecare (subject to a means test). Digital technology has an important part to play here, in extending that at-home period. There are now systems that monitor movement around the house, bathroom usage, time spent in bed, etc, plus wearables that monitor vital signs, and allow users to summon help if they fall. There are medication dispensers, home temperature sensors, monitors for fires or floods, gas or smoke, and doors left unlocked at night. Pilot trials have been conducted in the UK (including in Shropshire) to address not merely medical wellness but also problems of loneliness - which in turn impacts on health - and this technology holds real promise[23]. Assistive technology is already used to some degree and is part of Shropshire's Adult Social Care Strategy[24] (published in 2018 and due to be updated).

The challenge is how to move to the next stage. The benefits of using telecare at scale must start to be realised over the next few years, to avoid the growing costs of adult social care causing major financial challenges in the future. A recent Northumbria University report described a critical barrier as "the lack of evidence in business cases

[22] https://www.carehome.co.uk/advice/care-home-fees-and-costs-how-much-do-you-pay?faq=1
[23] https://www.which.co.uk/reviews/assistive-technology/article/telecare-information-for-the-elderly-adCkx1V2ifWh
[24] https://www.shropshire.gov.uk/media/10674/adult-social-care-strategy-aug-2018.pdf

that would create sufficient value for the stakeholders involved"[25]. A London School of Economics-led study concluded that (in the case of those suffering dementia – and 70% of those in care homes have dementia[26]), "assistive and safety technologies postponed care home admission by eight months", and "the technology would be cost-effective from a health and social care perspective if it postponed care home admission by at least three months"[27]. The study also said: "for these devices to reach the full spectrum of people who could potentially benefit from them there must be better internet access, improved technological literacy and a change in perception". Research by local universities could assist: this area needs specialist academic analysis. Meanwhile tracking the activities of other councils will be helpful. For instance, Dorset Council are using simple sensors in older people's homes, connected via IoT, to detect changes in behaviour patterns that then trigger alerts via text or email to nominated people. Life-saving interventions have already been reported[28].

The challenges are therefore clear for Shropshire Council:

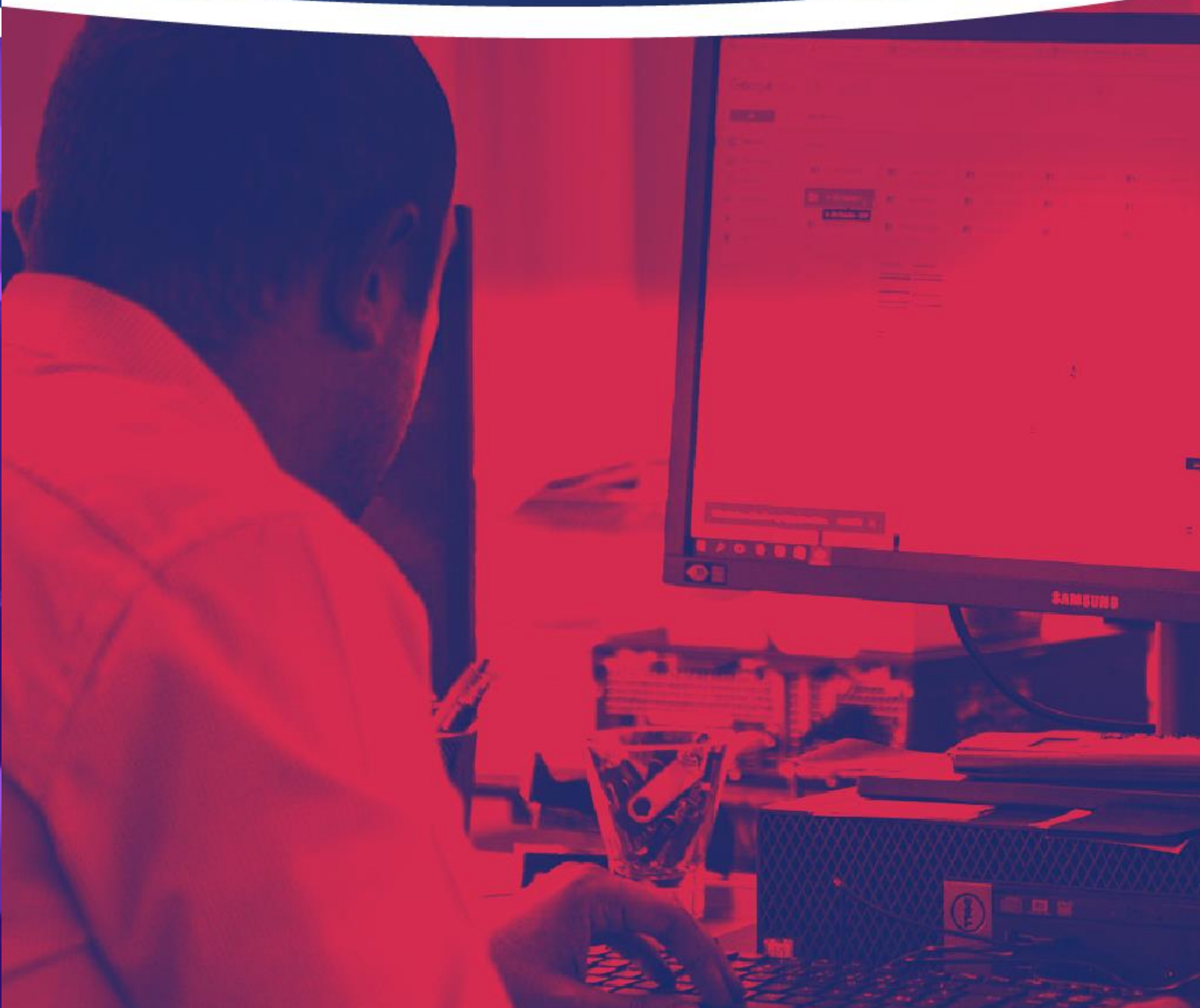
1. To determine the costs and benefits of these technologies, to inform the business case for investment and the avoidance of future financial challenges;
2. To achieve further improvements in internet access;
3. To further address technological literacy among older people;
4. To address the human factors: how to use the technology, how to afford it, and the potential stigma (for some) of having it in the home. These concerns will not be insurmountable, but will require education, support, help from younger relatives, the involvement of social workers and more, until it becomes the acceptable norm. All change is hard, and perhaps more so for older people.

It is therefore recommended that further investigation takes place, working with academics and ICS colleagues[29], to explore the business case for investment, to plan how to overcome the other barriers, and to achieve expanded use of this vital technology across the county.

[25] https://www.tandfonline.com/doi/full/10.1080/09540962.2021.1992123
[26] https://www.alzheimers.org.uk/about-us/news-and-media/facts-media
[27] http://eprints.lse.ac.uk/66482/1/__lse.ac.uk_storage_LIBRARY_Secondary_libfile_shared_repository_Content_LSEE_The%20case%20for%20investment%20in%20technology.pdf
[28] https://www.bbc.co.uk/news/uk-england-dorset-59077412
[29] https://www.england.nhs.uk/tecs/

Shropshire Council

ICT Best Practice: Moving and Improving



The ICT Department's role may be summed up as 'Moving and Improving'.

Keeping the council moving requires that systems are available as needed by staff and residents, that adequate security and resilience is in place to mitigate threats emerging from the wider digital environment.

Supporting the ongoing improvement journey of the council requires a clear pipeline of improvement activities, adequately resourced and effectively managed and delivered. This is highlighted by the requirements of digital county vision and the operating model proposals.

Best Practice in ICT is well understood, and it is important that it is applied within the council. Areas of focus for the period of this strategy include (and these are standard within the industry):

- Further adoption of ITIL, the universal standard in IT service delivery.
- The creation of an overarching programme of ICT & Digital projects, covering both the essential infrastructural improvements that are part of the department Service Plan, but also supporting departmental initiatives (such as upgrades to their line-of-business systems), and the cross-organisation Target Operating Model programme (see below), which will include many technological aspects. Careful planning here is vital, to understand dependencies between the many projects, and ensure that scarce IT resources are deployed as needed, and do not impede progress on important cross-organisational work.
- A strong focus on cyber security and cyber-incident preparedness, given the enhanced threat level being experienced, with the ambition of future compliance with ISO27001. ICT has a particular responsibility in terms of Safety and Resilience, keeping the organisation's data secure, and ensuring that vital systems remain operational in the face of external cyber-threats. (Note that the responsibility in this area does not sit purely with ICT – every department and all users of ICT have a vital role to play too).
- With both new and existing systems, it is proposed that there be a System Owner. For a cross-council system this would normally be a named person in ICT, but if within the business, a named person there. They would cover the whole lifecycle, and serve as sponsor of the original business case, the Executive on the project board implementing it (if a project were formed), and the contract manager (if an external contract were required). They would monitor the lifecycle of the system, planning for when it needed to be upgraded, replaced or ceased, and take responsibility for the data within it, as the Information Asset Owner[30].

[30] https://www.gov.uk/government/publications/information-asset-owner-role-guidance

ICT Department Structure: Form follows function, and the ICT department will need to have an effective staff structure and be ready to adapt that as our operating environment evolves.:

- The skills and roles needed for the future should be identified, and a skills audit of the current team undertaken to identify gaps.
- There is no universal template for an ICT structure, they vary from one council to another. A review will be undertaken to ensure that the teams are arranged in the best way to meet the needs of the council, with a structure accommodating the process improvements outlined, the goals of the strategy, current financial constraints, and the council's strategic aims.
- The structure should reflect major functions, with each team led by someone who is technically skilled and commands the respect of their staff. Management and leadership training is essential: technical skills alone do not an effective manager make.
- Most ICT departments include an Enterprise Architect who ensures compliance with good architectural principles and the strategic direction of travel, while following a widely adopted framework such as TOGAF[31];
- Some role gaps have been identified by Internal Audit, and these must be addressed.
- Adoption of an appropriate skills framework will be important. One option is the SFIA*plus* framework from the British Computer Society. It defines ICT and digital skills and the levels which each person must achieve to further their careers. ICT staff should be constantly undertaking formal training and self-study to achieve appropriate qualifications, whilst learning on the job from more experienced colleagues, all as part of their Continuing Professional Development.
- Once the new structure has been designed there should be consultation with staff to further refine it as appropriate, followed by implementation in accordance with HR processes.

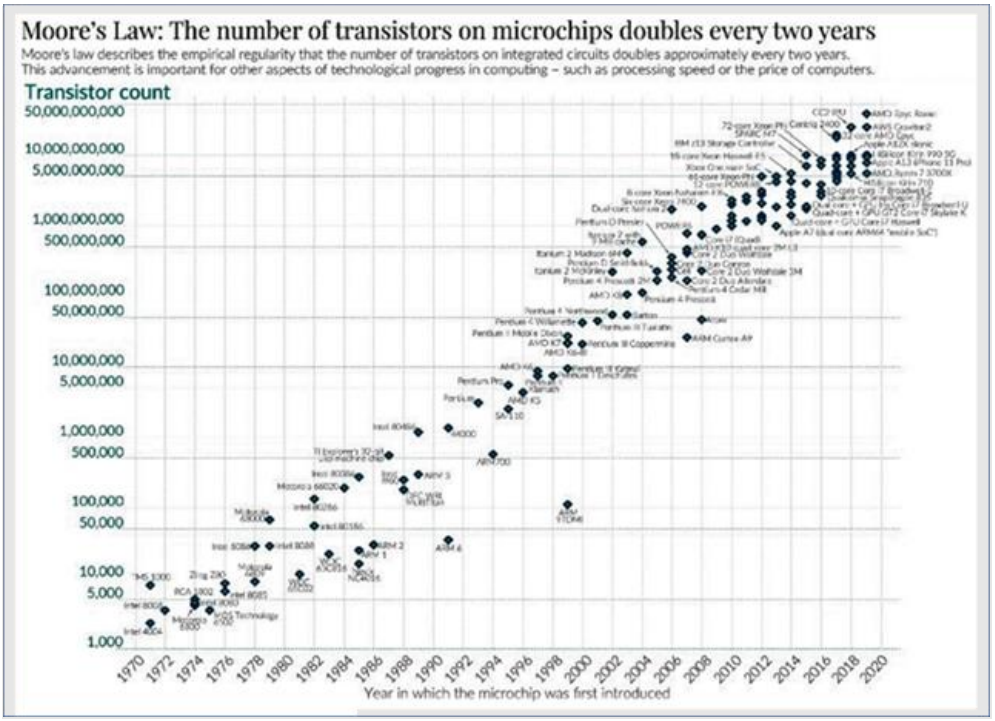
[31] https://www.opengroup.org/togaf

Shropshire Council

Background:
Technology Trends

Important Trends in Technology

It is helpful to be aware of some trends in technology which will affect ICT and digital activities within the county and the council in the next few years. At its heart, computer development is driven by the exponential growth in microprocessor power, which has continued for over 50 years. Put simply, the microchips at the heart of all our digital technology just keep on getting more powerful, as can be seen from the graph below.

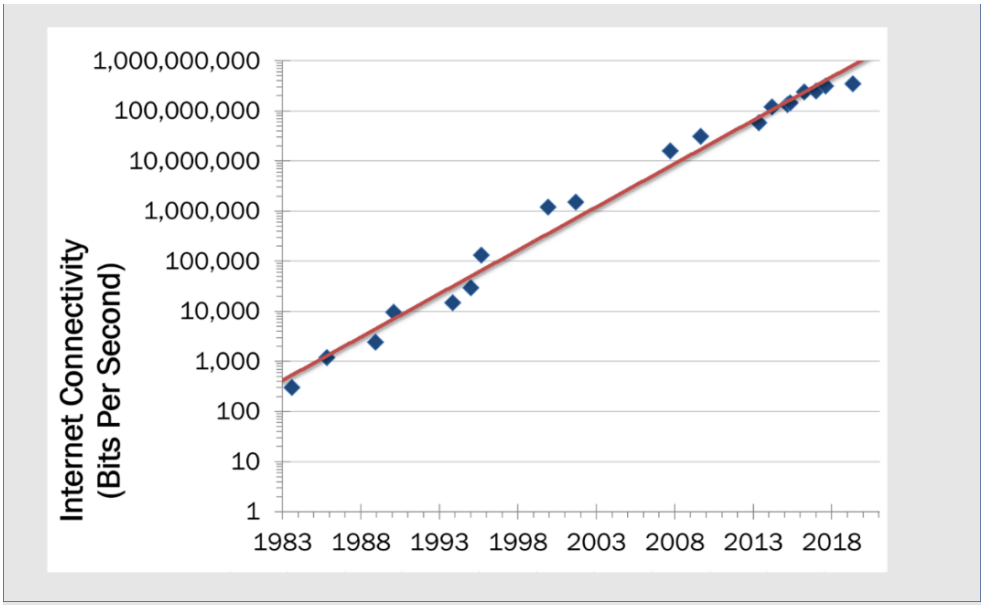


The Growth in Computing Power: Moore's Law[32]

Obsolescence: Thus, computer hardware inevitably has built-in obsolescence, because today's 'state of the art' electronics will soon be replaced by something better, hence equipment is rarely built to last – there is no point in doing so. This means that constant investment, by organisations and individuals, is required to stay up-to-date. Software has similarly short life-cycles. We cannot simply decide to stand still, because as suppliers cease to support older hardware and software, they become vulnerable to cyber-attack, and incapable of repair when they fail.

Internet Speeds: The demand for internet bandwidth is also growing exponentially[33], which is a reflection of the digital revolution in action. The graph below shows the growth. Many important trends in technology, and indeed developments in society, flow from these two trends: the growth in microchip power and the demand for ever-better connectivity.

[32] https://en.wikipedia.org/wiki/Moore%27s_law
[33] https://www.nngroup.com/articles/law-of-bandwidth/



Nielsen's Law of Internet Bandwidth

Automation: Councils around the country are increasingly using Robotic Process Automation software, which replicates the simple, repetitive, computer-based activities that form much of our everyday work. Looking to the future, advances in artificial intelligence, machine vision, etc. will impact both manufacturing and service industries significantly. Around half of all lower-skilled work may be automated over the next decade[34]. The effects for Shropshire could be profound: the previous Corporate Plan[35] pointed out the high levels of employment in lower-skilled jobs within the county. This reinforces the need for investment in education and training, already a part of the council's economic strategy[36].

Connectivity: In Shropshire 98% of premises can get high-speed broadband, but uptake is only around 70% (although many will be relying on mobile broadband via their smartphones). Clearly, efforts should continue to enable the remaining 2% of premises to access broadband, while helping those not yet accessing the internet to do so. This is a key enabler of the digital revolution, vital to the future prosperity and health of the county. Meanwhile, gigabit broadband is planned for rollout across the UK in the coming years.

5G Mobile Data: Giving higher data speeds and lower latency than 4G, 5G will roll out over the next few years, but will supplement rather than replace 4G, with coverage limited to denser population areas. There are opportunities to use 5G for mixed-reality user experiences, smart cities, autonomous vehicles, drone deliveries, and more.

The Internet of Things: This refers to the growing use of simple electronic devices, mostly sensors, that transmit their data using internet technology to bigger machines that process it. IoT use worldwide is predicted to grow rapidly, with today's 9 billion devices

[34] https://www.forbes.com/sites/forbestechcouncil/2021/02/23/11-jobs-that-may-be-automated-in-the-next-decade/?sh=30570d57972c
[35] https://shropshire.gov.uk/media/12344/corporate-plan-2019-20-to-2021-22.pdf
[36] https://shropshire.gov.uk/media/6087/economic-growth-strategy-for-shropshire-2017-2021.pdf

potentially growing to 1 trillion by 2030[37]. Uses include wearables, health monitoring, traffic monitoring, fleet management, agriculture, environmental monitoring, smart grid & energy saving, water supply, maintenance management, visitor experience and more. Eventually this will all be taken for granted, but connectivity for IoT devices will be vital for Shropshire-wide benefits to accrue. Given Shropshire's highly rural nature, IoT connectivity is not a given. Technologies are however now emerging to provide it in remote areas, where broadband and 4G/5G will not achieve 100% coverage.

Artificial Intelligence (AI): The UK Government has created an Office for AI[38], and a National AI Strategy[39]. AI-based self-learning systems will have increasing impact in the future. For instance, smart speakers, which use AI, are popular in the UK where 52% of households now own one[40]. Their ease of use suits the less-technically-skilled and the elderly[41], and they could also be helpful in assistive technology, an application being explored by some local authorities[42].

Telephony: The current public telephone system (the PSTN) will be taken out of service in December 2025[43], being replaced by IP (internet) technology. This has not yet been widely publicised. In the words of Ofcom[44]:

> *"Some final migrations may need to be compulsory….customers, particularly those who are elderly….may need additional support during the change*."

Some services also require a landline to work during power-cuts: fire alarms, lift phones, etc. Unlike the PSTN, IP does not do this, hence special arrangements will be required.

Cloud: Large-scale commercial data centres now sell services to replace on-premise data centres. Many applications are now being delivered as Software as a Service (SaaS), which means that the consuming organisation is freed of most of the burdens of software ownership. Whilst a move away from data centres to the cloud is well under way, many councils use specialist applications not yet available as SaaS, and so in-house data centres (steadily shrinking), or the use of Infrastructure-as-a-Service (renting cloud servers but managing the software yourself) will represent the medium-term future.

Biometrics: This technology will become mainstream, replacing traditional passwords on computers, but extending into domestic life as it has with fingerprint recognition (and now, facial recognition) on smartphones.

Other emerging technologies will impact beyond the timescale of this strategy, including blockchain (allowing secure, distributed contracting and transacting), virtual reality (with potential in training, visitor economy, equipment maintenance, entertainment and gaming, and planning visualisation), and quantum computing[45] (the next frontier in IT, bringing massive increases in computing power - but probably 10 years out)

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[37] https://www.pluralsight.com/blog/career/tech-in-2025
[38] https://www.gov.uk/government/organisations/office-for-artificial-intelligence
[39] https://www.gov.uk/government/publications/national-ai-strategy
[40] https://www.digitaltveurope.com/2021/06/08/voice-assistants-in-more-than-half-of-uk-homes/
[41] http://www.activageproject.eu/blog/2020/01/03/Smart-Speakers-can-they-make-life-of-the-elderly-easier/
[42] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7832831/
[43] https://www.ofcom.org.uk/news-centre/2021/upgrading-landlines-to-digital-technology
[44] https://www.ofcom.org.uk/__data/assets/pdf_file/0032/137966/future-fixed-telephone-services.pdf
[45] https://www.sciencealert.com/quantum-computers