Digital Technology Strategy

"A secure, resilient and cloud ready approach"

2022 – 2025

carmarthenshire.gov.wales

Cyngor **Sir Gâr**
Carmarthenshire
County Council

Foreword from the Deputy Leader of the Council

This Digital Technology Strategy recognises that flexible, agile, and integrated technology can only be delivered to the Council and its Residents if we adopt the same leading-edge models of some of the most forward thinking and efficient companies across the globe.

The importance of digital connectivity is increasing as it becomes more critical to the modern day lives of residents, businesses and the delivery of Council services. This importance has been further highlighted by the pandemic and as we recover and restart, access to fast, reliable internet connectivity is no longer a luxury; it is a necessity for residents, local businesses and the delivery of public services.

This important document outlines how Carmarthenshire County Council will underpin and deliver the components necessary to achieve digital transformation.

Cllr. Mair Stephens
Deputy Leader

Foreword from the Chief Executive of the Council

Welcome to the revised Carmarthenshire County Council Digital Technology Strategy 2022-2025. This builds on our previous strategy as we continue our ambitious approach to transform the way we deliver our services to the residents of Carmarthenshire.

The Covid-19 pandemic demonstrated the significant importance of a robust, resilient digital infrastructure and the projects delivered to date ensured we were well placed to handle the challenges of 'home working' for all office-based staff and the delivery of online learning for schools. We continue to face some tough challenges ahead with the Pandemic and against a backdrop of on-going austerity and it is essential we maximise the use of the very latest digital innovations to ensure Council services are financially sustainable into the future.

An enhanced digital infrastructure that takes advantage of the latest technologies and takes every opportunity to address the net-zero carbon aspirations of this Authority by 2030 is critical. It will provide the foundations allowing us to work with partners from across the Region to deliver more effective, efficient services and transform the local economy ensuring it can compete on the global stage.

Wendy Walters
Chief Executive

Our vision for Carmarthenshire

"A Digitally enabled Carmarthenshire"

To achieve this bold vision, we will:

- Build a flexible, hybrid and robust technology infrastructure to underpin the agile workforce, building on lessons learned from the Pandemic.
- Adopt safe, flexible, and citizen centric digital platforms at the heart of our technology.
- Make use of the latest collaborative technologies to underpin the new 'Better Ways of Working' environment for Staff and Elected Members.
- Adopt strong cyber resilience technologies to ensure services to staff and citizens are safe and secure.
- Plan, test and review Disaster Recovery technologies to ensure the Authority's data and systems are robust and resilient.
- Strengthen our critical on-premises infrastructure to ensure it can meet the needs of the workforce and provide services to our citizens.
- Exploit cloud technology and systems where feasible to help departments deliver their services.
- Adapt a unified Communications policy, providing technology to fit service telephony and communication needs.

- Review and evaluate the latest desktop and smartphone technologies, providing a choice of pertinent technologies for all needs.

- Seek to collect, interrogate, and extract value from data to facilitate organisational strategy, decision-making and service delivery.

- Make digital connectivity and bandwidth the foundation of our technology stack, for the organisation, elected members, citizens, and businesses.

- Facilitate and underpin collaboration locally, regionally and nationally by providing the infrastructure required at public sector hubs through the deployment of suitable technologies.

- Value, recognise and invest in the people and skills required to achieve the aims of this Strategy.

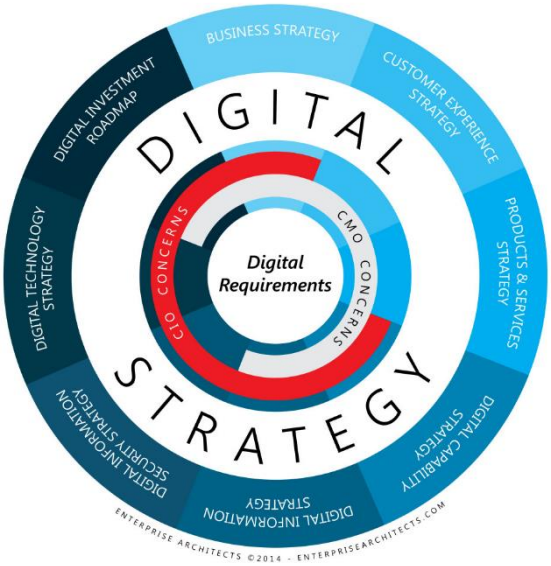
What is a Digital Technology Strategy?

The Digital Technology Strategy sets out the Authority's technology priorities and aspirations over the next 3 years. Its purpose is to identify the key technologies and initiatives that will facilitate and underpin the vision and delivery of the organisations overarching Digital Transformation Strategy. The audience for this Strategy is the leadership of the organisation, elected members our customers and staff.

The Authority will make use of appropriate emerging and existing technologies to facilitate and underpin service transformation, improvement, and efficiencies.

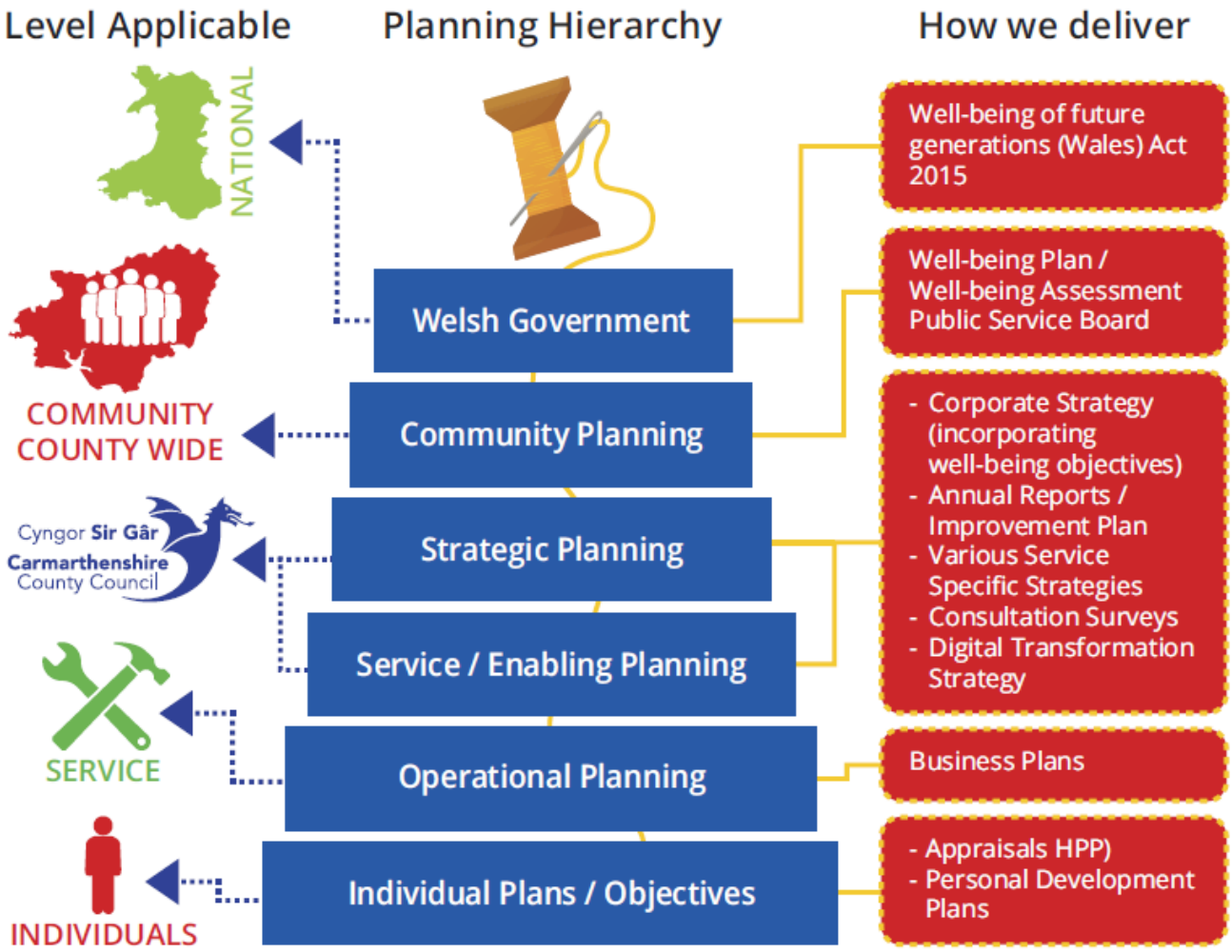
This Digital Technology Strategy recognises that flexible, agile and integrated technology can only be delivered to the Council and its Residents if we adopt the same leading-edge models of some of the most forward thinking and efficient companies across the globe.

We will adopt the Sustainable Development Principles of the Well Being Future Generations Act in our design and implementation of new digital technologies to assist us in delivering the Future Generations Well Being Objectives.



How plans are made - The Planning Cascade

"The Wedding Cake & Golden Thread"



The Digital Technology Strategy will ensure several of the expected outcomes identified within the revised council's Corporate Strategy (April 2021) can be achieved which in turn will underpin the delivery of our Well-being Objectives. Action plans will be developed to deliver the key projects identified and these will be monitored via Performance Management Systems and reported annually. All projects will be designed and delivered in-line with the 5 Ways of Working.

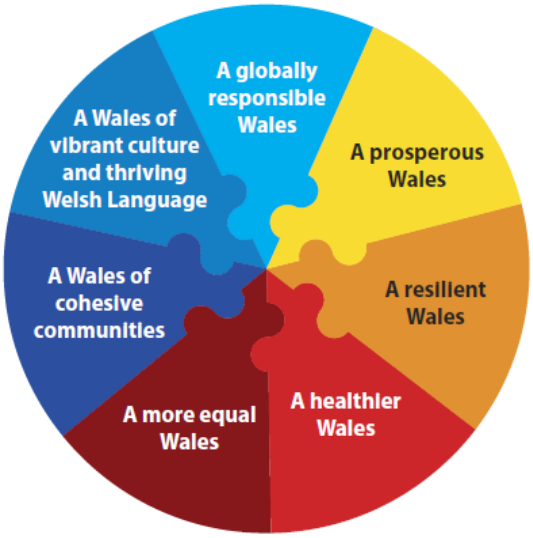
Well-being of Future Generations Act (Wales) 2015:

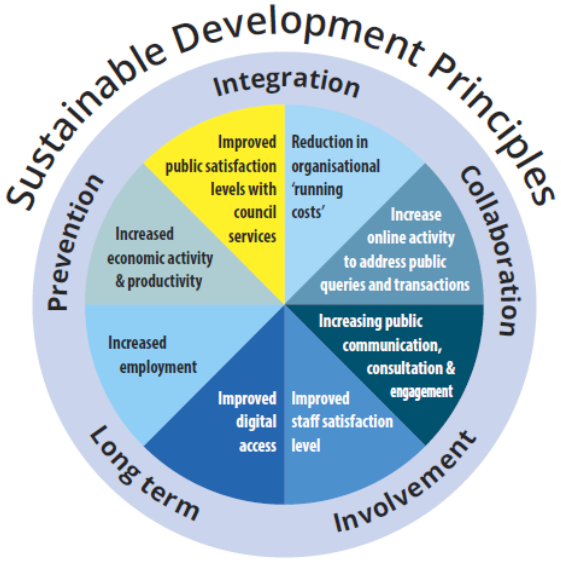
The general purpose of the Act, is to ensure that the governance arrangements of public bodies for improving the well-being of Wales, take the needs of future generations into account. The Act is designed to improve the economic, social, environmental, and cultural well-being of Wales, in accordance with sustainable development principles. The law states that:

(a) We must carry out sustainable development, improving the economic, social, environmental, and cultural well-being of Wales. The sustainable development principle is: ***'... the public body must act in a manner which seeks to ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs.'***

(b) We must demonstrate use of the 5 ways of working: Long term, integrated, involving, collaborative and preventative.

(c) We must work towards achieving all the 7 national well-being goals in the Act. Together they provide a shared vision for public bodies to work towards.





Wales was the first country to implement a Well-being of Future Generations Act, which provides a shared vision for all public bodies in Wales to work towards. As a public body subject to the Act, we are required to set and publish Well-being Objectives that maximise our Contribution to the Well-being Goals. We have incorporated these Well-being Objectives into the council's Corporate Strategy.

Digital Technology Strategy – Overarching Principles

The compelling drivers of this strategy are to adopt a **SECURE, RESILIENT AND CLOUD READY** approach towards our future infrastructure and technologies. These factors will underpin all other principals within this Strategy.

To achieve the ambitions laid out in this strategy we will adhere to the following overarching principles:

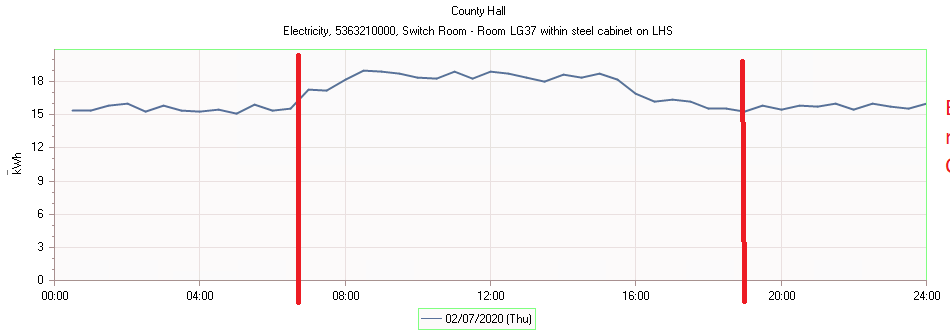
CYBER SECURITY Securing our infrastructure and systems has always been important, however since the pandemic and the move to remote working there has been a 935% increase in double-extortion ransomware attacks and a 600% increase in cyber-crime in general. It is therefore key that we are pro-active and equipped to deal with emerging threats, in terms of underlying infrastructure required to secure our systems and also staff awareness and training, cyber incident exercises and procedures.	
DISASTER RECOVERY Disaster Recovery will serve as a key priority; we will ensure we have a robust and resilient infrastructure at the heart of everything we do. We will plan, test and document resilience between our two data centres in Carmarthen and Ammanford on an annual basis.	
CHANGE MANAGEMENT We will strive to implement all changes in a methodical and controlled manner. We will consult and communicate frequently with all relevant stakeholders and follow our agreed change control procedure.	
RESEARCH, RATIONALISE AND CONSOLIDATE We will take advantage of potential benefits and efficiencies through the active investigation, pursuit, and adoption of new and emerging technologies. Where there is potential to add significant value, we will pursue that technology. We host an array of applications running on various technologies, with some being outdated and unsupported. We will look to	

upgrade aging technologies to ensure they are secure and resilient and explore cloud options for systems that are resource intensive and organisationally restrictive to maintain. We will seek to evaluate and replace at every opportunity.	
COLLABORATE Where there are opportunities to underpin and add value through collaboration, we will do so, locally, regionally, nationally, across the public and private sector.	
NET ZERO CARBON AUTHORITY We have a significant role to play in both further reducing our own greenhouse gas emissions and providing the leadership to encourage residents, businesses, and other organisations to take action to cut their own carbon footprint. We will ensure that all solutions in the strategy aim to align with the councils Net Zero Carbon by 2030 pledge.	

Net Carbon Zero by 2030

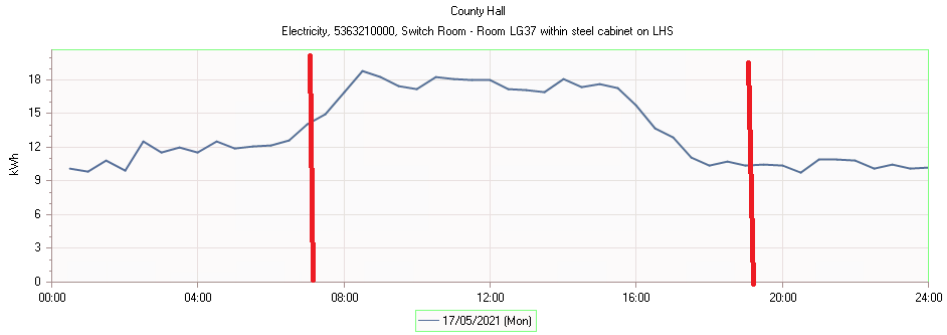
With the ever-increasing reliance on ICT systems, achieving carbon neutrality will be a challenging aspect of this strategy. We will look to migrate systems to cloud services where possible, taking advantage of the advances partners such as Microsoft are making in achieving offsetting carbon emissions. We will strive to ensure that the most energy efficient technologies are used within the Council ICT Infrastructure wherever possible and continue to assess the cooling requirements of our two on-premises data centres in Carmarthen Street and Ammanford. Over the past years, we have reduced our carbon footprint by migrating our data centre from County Hall to Ty Parcyrhun, which has allowed us to replace core infrastructure with new modern technologies that are more energy efficient, whilst reducing the cooling requirements (air con) of our data centres.

The graphs below show the reduction in energy used at County Hall data centre by 1/3rd (5kWh) since we decommissioned the infrastructure housed there:



Baseload before removal of server C. 15 kWh

Baseload prior to data centre migration to Ty Parcyrhun – 15kWh



Post removal of BT Link

C. 10kWh

Baseload following migration and decommissioning of redundant infrastructure – 10kWh

Further efficiencies in County Hall will be achieved over the next year by fully decommissioning the associated infrastructure (Air Conditioning, UPS, Generator, Alarm Systems). We will continue to exploit the Microsoft Office 365 suite of applications over the next 3 years, taking advantage of the aggressive plans Microsoft have produced to become carbon neutral by 2030.

In January, Microsoft's CEO Satya Nadella, President Brad Smith, and Chief Financial Officer Amy Hood launched a bold new environmental sustainability initiative focusing on carbon, water, waste and biodiversity. We began this work by announcing one of the most ambitious carbon commitments put forward by any company: Microsoft will be carbon negative by 2030 and remove from the environment more carbon than we have emitted since our founding by 2050. We outlined a detailed plan to get there and committed to providing updates on our progress. We have been working hard to turn our commitments into action and, today, we are announcing seven important new steps on our path to be carbon negative by 2030 (Microsoft, 2020)

Carmarthenshire's Digital Estate

ICT Services supports a vast estate of infrastructure, end user accounts and devices. Over the past 3 years with a focus on agile working and the effects of the pandemic there has been a huge shift towards remote working which is reflected in the number of laptop and mobile devices in the figures below. We have also seen an increase in corporate staff with IT accounts, an increase of 1250 users, the majority of which are frontline workers.

Communications (Voice and Data)

Corporate Buildings: 137
Core Network Circuits: 156
Broadband Circuits: 134
Wireless Access Points: 2,752 (469 Corporate, 2283 Schools)
Increase of 721 access points since 2018.
Core Routers: 160
Data Switches: 410
Telephony Systems: 2
15 systems rationalised since 2018.

End Users

Corporate Staff: 4,750 (Including 81 Councillors and co-opted members)
Increase of 1250 staff since 2018.
Partners Accounts (NHS / Housing etc.): 500
Schools Staff: 3,600
Schools Pupils: 27,000

Corporate Devices

Laptops: 2753
Increase of 973 laptops since 2018.
PCs: 381
Decrease of 1535 PCs since 2018.
Tablets: 545 (445 iPads, 100 Android)
Smart Phones: 2518 (438 iPhone, 2080 Android)
Increase of 2072 since 2018.
Desk Phones: 2800
Softphones: 546
Standard Mobiles: 354

School Devices

Windows: 3243 (1255 Primary, 1988 Secondary)
Chromebooks: 6267 (4513 Primary, 150 Secondary)
Mac: 217 (67 Primary, 150 Secondary)
Tablets: 1897 (280 Primary, 1617 Secondary)

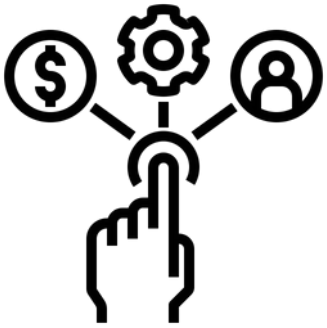
Data Centre Infrastructure

Data Centres: 2
Corporate Servers: 350 (334 Virtual, 26 Physical)
Decrease of 71 virtual and 34 physical servers since 2018.
Schools Servers: 75 (334 Virtual, 26 Physical)
Decrease of 20 virtual and 71 physical servers *since 2018.*
Total Volume of Storage: 412TB
Increase of 162TB from 2018.
Tapes required to support 3 months of backup: 130 (2 copies)
Decrease of 1670 tapes from 2018 (Retention reduced from 12 months to 3 months)

Resources Required

The Authority is investing a significant number of resources in ensuring we have a robust and resilient infrastructure to underpin citizen service delivery across the County. In addition to ICT Services ongoing revenue budget, we will also invest the following over the next 3 years:

- £315k to upgrade and replace virtual server and storage environments.
- £190k to upgrade ICT disaster recovery infrastructure.
- £110k to enhance the county network infrastructure.
- £100k to replace aging UNIX hardware.
- £180k to invest in Cyber Security provisions to meet ever increasing and evolving threats.



People & Skills

We will invest £112K over the next 3 years in retaining and upskilling ICT staff, providing them with the ability to take this ambitious adoption of future technology forward.

Challenges

The traditional model of maintaining our infrastructure via cyclic capital spends will become less prevalent over the coming years. The transition to more Cloud based "As a Service" ICT models will require a shift to increased revenue spend. ICT Services will work closely with Senior Managers and Finance colleagues on a case-by-case basis to ensure sound business cases are developed to address this transition, and that best value is achieved for the organisation.

A Secure, Resilient and Cloud ready approach

"Digital change has accelerated in recent years and now offers us a range of new tools for solving old or novel problems. In essence, digital offers the potential to make our experience of the world better: enhancing people's lives, strengthening the delivery of public services and the work of government, as well as helping businesses to adapt to the future." – WG Digital Strategy for Wales 2021

"We are critically dependent on the Internet. However, it is inherently insecure and there will always be attempts to exploit weaknesses to launch cyber-attacks. This threat cannot be eliminated completely, but the risk can be greatly reduced to a level that allows society to continue to prosper, and benefit from the huge opportunities that digital technology brings" - National Cyber Security Strategy 2016-21

"The option now available to organisations such as ourselves is to move our systems into the Cloud. Whilst clearly there are transition costs involved in moving any ICT infrastructure, the lower costs of Cloud based services mean that savings will be realised in a fairly short term after the move." - Welsh Government ICT Strategy 2018-21

What it means?

- Greater investment in technologies to prevent cyber based attacks on Council information and data systems which could be extremely costly and render the Authority unable to undertake vital functions. We will continually evaluate the market and engage with vendors to ensure we are deploying the latest in cyber defence in all areas of our Infrastructure.

- Comprehensive testing of our Disaster Recovery procedures to ensure we can restore systems and services effectively and rapidly in line with service needs in the event of a major disaster effecting either of our core Data Centres in Carmarthen or Ammanford.

  We will design, plan, test and evaluate our DR functions and capabilities across both data centres to ensure we have robust recovery plans in place.

- The rapid deployment of cloud-based solutions for the provision of key ICT systems such as payroll and ResourceLink should the offer provide significant scope for efficiencies, cost savings and productivity.

Why is it important?

- The organisation's data is an extremely valuable asset. Just as we store our finances in a secure vault at a bank, we need to ensure our data is store in the most secure, resilient, and safe infrastructure as possible.

- We have invested heavily over the previous 3 years in updating our aging data centres to the latest technologies, designing resilience in at every stage. It is vital that we now test in the event of a disaster to ensure services and systems can be bought back as efficiently as possible.

- Cloud allows greater flexibility and rapid deployment of new services in a more efficient, sustainable and scalable manner.

- It will facilitate increased collaboration and provide a means for improved sharing of data and systems.

- It will allow staff to work from the best possible locations from several various platforms as required, in a safe and secure manner.

How will we achieve a secure, resilient and cloud ready approach?

- In every future technology refresh or adoption, we will consider the cloud option, unless there are significant and compelling reasons to deviate.

- We will create, evaluate and scrutinise business cases for all significant cloud migrations to ensure best value for the organisation.

Resilient Data and Voice Network (1 of 3)

What it means?

- Our local and wide area networks, internet feeds, telephony and unified communications systems underpin communication across the organisation and with partners.

- Our already significant and sophisticated network provides the ability to communicate, collaborate and share data, systems and services.

Why is it important?

- Data and voice network connectivity and internet access are critical in delivering 21st century citizen services.

- The demand on our bandwidth and internet connectivity channels from corporate services, schools and partners has grown rapidly. We fully expect this demand to increase in the coming years.

- Our network is the foundation of everything we do in terms of technology. Without it departmental, schools and partner systems and services simply would not function.

- We already have both central and departmental systems and services in the Cloud. Our network is the vehicle that allows us to access those, now and in the future.

How will we achieve resilient data and voice networks?

- Dynamically develop and advance our already complex and sophisticated network technology to ensure our network capabilities continue to be fit for purpose.

- Virtualize and consolidate our voice systems to provide enhanced functionality, increased resilience and significant cost efficiencies.

- Enhance our connectivity to all Wales Public Sector network (PSBA), exploit its full potential as a foundation for collaboration, and utilize shared Cloud services across Wales via that medium.

- Provide truly resilient internet connectivity for corporate, schools and partners.

Key Projects	Key Outcomes	2022	2023	2024	2025
Implement Cyber Security Recommendations	Continue to act upon cyber security recommendations from in-house scans and from trusted partners in order to secure our on-premises and cloud infrastructure.				
PSBA Network Redesign	Work with PSBA to optimise our network for better performance and resiliency.				
Internal Network Redesign	Alongside the PSBA redesign we will be improving our internal network resiliency, key outcomes being resilient internet and internal network connections for all users/devices.				

Modern Digital Workplace (2 of 3)

What it means?

- Empowering our workforce to be as efficient and effective as possible in the right place, at the right time based on the needs of citizen service delivery.

- Facilitating a truly Modern Digital Workplace through the efficient and appropriate deployment of laptops, tablets, smartphones, productivity tools and technologies.

- Underpin any changes made to the way staff work as part of the 'Better Ways of Working'

Why is it important?

- The workplace has and continues to evolve rapidly in terms of the tools and technologies users utilise daily.

- To ensure continuous improvement in workplace productivity we must evolve and keep pace.

- The technology most used in our offices, classrooms, meetings etc. can and should facilitate the aims and objectives of teams, divisions, departments and ultimately the organisation.

How will we achieve a modern digital workplace?

- Transform our workforce's ability to be productive and to collaborate as individuals, teams and departments through the adoption of Cloud based secure productive environments.

- By ensuring our end-user devices are upgraded and updated in terms of hardware and software, providing users with the latest features and functionality.

- Deploying technologies that facilitate a truly agile approach to work, allowing users to connect, communicate and access resources from the most appropriate location in relation to their customers and services.

- By allowing users to securely utilize their own companion devices (tablets & Smartphones) for work through the provision of a voluntary "Bring Your Own Device" scheme.

- Enhance and transform traditional workplace practices through the deployment of innovative concepts and technologies such as the Internet of Things and Robotic Process Automation.

Key Projects	Key Outcomes	2022	2023	2024	2025
Council File Plan migration to Sharepoint	Migration of our local data repository to facilitate improved access to files and data, improved retention and governance functionality, decommissioning our on-premises data stores.				
Citirx Sharefile to Sharepoint Migration	Migration of our "Sharefile" environment which allows sharing of large files with external users to a dedicated Sharepoint site for improved collaboration.				
OneDrive Known Folder Move (Local Data Migration)	In addition to already migrating user homes, this work enables all user's local data to be backed up to the cloud, allowing them to collaborate and access their data from any corporate device.				
Unified Comms – rollout of Softphone technology	Improved communication and productivity for users previously tied to physical phones in the office or needing to use their mobile phone to take calls – removes the need for a physical phone and allows calls to be taken in any location from a corporate laptop or mobile.				
Konica Guest Printing	Configuration of a guest print environment to allow partner organisations to print in shared office locations.				
Carehome Wi-Fi Rollout	Upgrading all Carehomes and sheltered schemes to superfast fibre, configuring WiFi infrastructure in all locations to the specifications required.				
Microsoft Autopilot Device Provisioning	Allow remote deployment of laptop devices direct to customers, a smoother build process for ICT services staff and the ability for ICT Helpdesk staff to remotely wipe devices for users without a physical visit required.				
Service Delivery Improvement Plan	Transform Service Delivery and ICT helpdesk to adapt to the new ways of working. Improve self-help and remote support for customers and offer IT drop in visits when required.				
Microsoft Remote Desktop Services	Migration from Citrix to Remote Desktop Services in order to provide internal users with connectivity to bandwidth intensive applications and external users with secure remote access with MFA.				

Secure and Resilient Data Centres (3 of 3)

What it means?

- Ensuring our data, systems and services are hosted in the most efficient and appropriate location.

- Ensuring our data, systems and services are built and managed on the most efficient and appropriate platforms.

Why is it important?

- Our Data Centres are the core of our business, housing our infrastructure, data, and applications. Without them, ICT simply would not function.

- The contents of our data centres are of extremely high organisational value in terms of physical assets, data, annual spend, organisational performance and service delivery.

How will we achieve secure and resilient data centres?

- We will act responsibly, plan and be realistic in terms of systems that could potentially be migrated to the cloud.

- We will seek to upgrade our on-premises environment, platform and software to ensure we provide the greatest resilience possible to the Authorities services serving staff, members and citizens.

- We will consolidate servers, data and applications, improving overall performance through the adoption of the latest high-speed storage, making best use of technology and preparing us for cloud migration.

- We will seek efficiencies and compliance with GDPR and improve collaboration by migrating the Council's file system to SharePoint Online.

- We will decommission all outdated systems and services, replacing them with existing and new technologies that are more efficient and effective for both users and ICT Services.

Key Projects	Key Outcomes	2022	2023	2024	2025
Expansion and evolution of Cyber Security capabilities	A more resilient and secure digital environment, increased testing and exercises will result in an improved response to a cyber security breach.				
Internal firewall replacement	Improved performance and security, ability to offer automated internet connectivity failover in the event of an outage.				
Review and update IT security policies and cyber security incident plan.	Review all existing policies to ensure they are up to date and meaningful, continue to improve our cyber security incident plan to improve our response in the event of an incident.				
Replacement of Barracuda SMTP appliance	Replace aging mail server infrastructure and migrate to cloud in order to offer a more resilient service for sending mail to customers.				
Test and document disaster recovery capabilities	Continue to improve upon existing disaster recovery plans, carrying out a series of annual tests including data centre power downs, simulated loss of internet connectivity, loss of "gold" systems.				
Multi Factor Authentication	Implementation of Multi Factor Authentication for all users with access to our Microsoft 365 environment in order to improve security and reduce the risk of unauthorised access to data.				