Strategy and Roadmaps

High Level

October 2022

Version 1.6

Our Strategy and Roadmaps

Our approach to the development of our strategy and roadmaps is through continual research, consultation, input, review and most importantly feedback.

Therefore this living document only shares a point in time and will change through natural development, constraints, evolving technology, trends and opportunities.

Governance

Developed by IMT with support from Gartner

Approved by Director of IMT

NCC Digital Strategy and Roadmap

for the 2020s
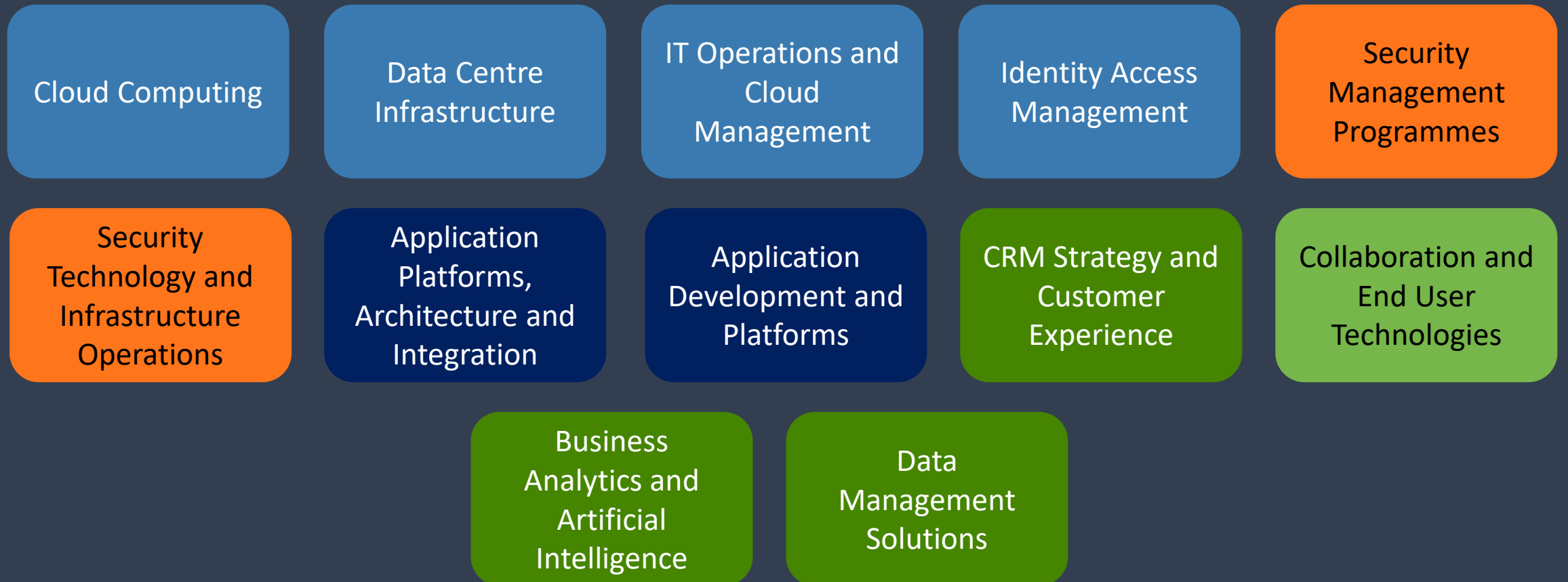
Developed by
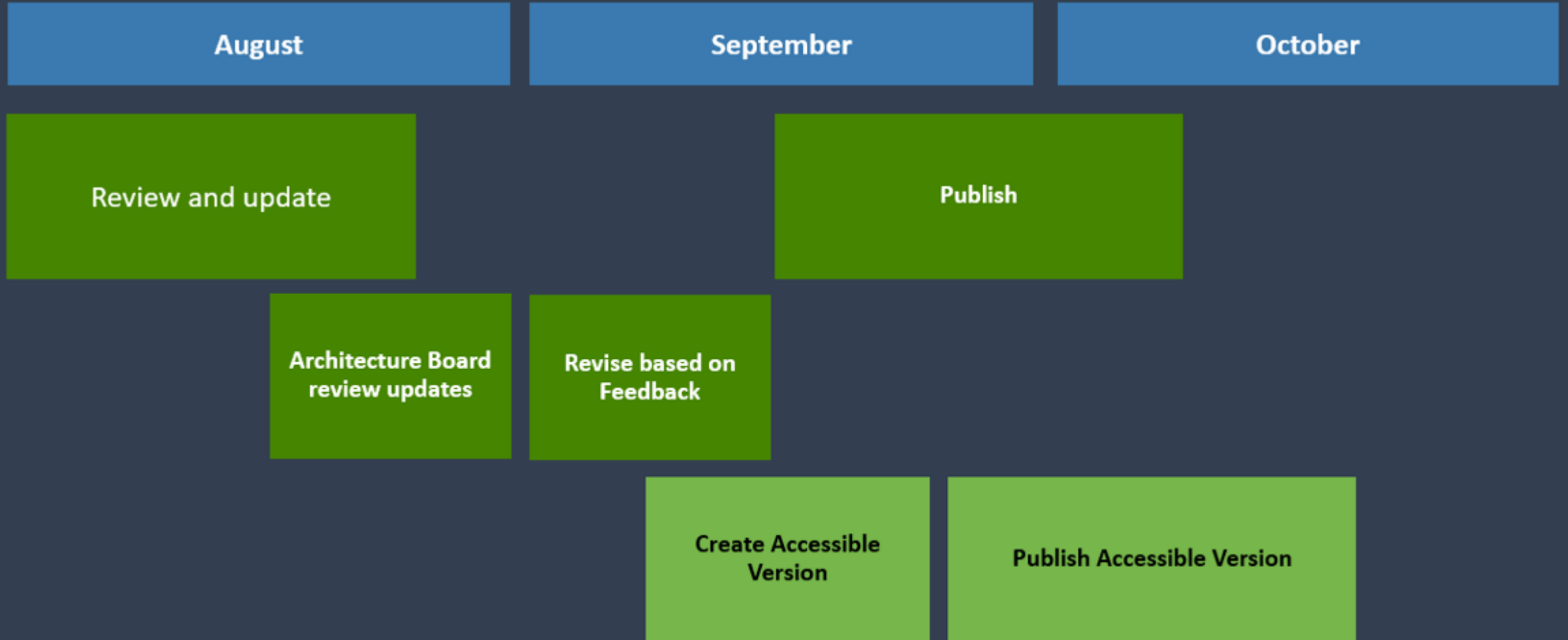Strategy & Transformation

Approved by Cabinet and Full Council
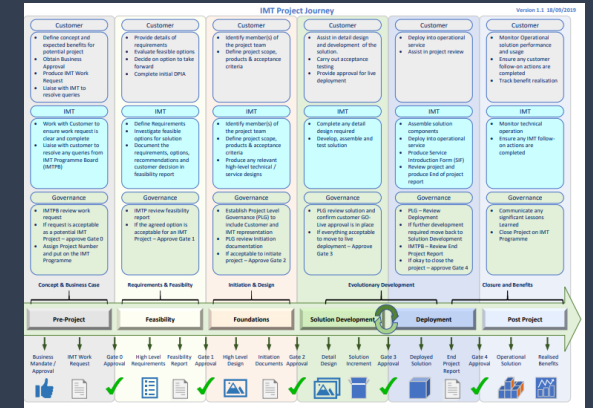
Delivery governance
via Customer Projects

Strategy and Roadmap Alignment

The county council has defined its Strategy and Roadmaps to align with the following industry best practice areas.

Cloud Computing	Data Centre Infrastructure	IT Operations and Cloud Management	Identity Access Management	Security Management Programmes
Security Technology and Infrastructure Operations	Application Platforms, Architecture and Integration	Application Development and Platforms	CRM Strategy and Customer Experience	Collaboration and End User Technologies
	Business Analytics and Artificial Intelligence	Data Management Solutions		

Technology Roadmaps Revision 2022 – Text Description

This slide describes the Technology Roadmaps Revision 2022 from the preceding roadmap slide, in text.

Review and update in August 2022, followed by Publish in September and October 2022
Architecture Board review updates in August 2022, followed by Revise based on Feedback in September 2022
Create Accessible Version in September 2022, followed by Publish Accessible Version in September and October 2022

Strategic Actions

- We have invested significantly in Microsoft tools and fully exploiting this technology stack is our preference

- We will seek to deploy technologies which enable effective interoperability with our public sector partners

- We will migrate to cloud delivered software and services as soon as the balance of cost, performance, security and functionality is favourable. Business agility enabled by use of cloud is also a driver

- Oracle will be the authoritive source for all people records it manages

Strategic Actions (cont.)

- The Network function will be reviewed & adapted to support flexible working, increased efficiency, responsiveness & cyber security

- We will continue to implement all relevant National Cyber Security Centre Guidance to keep the authority and its data safe

- We have a strong preference for UK datacentres for compliance

Cloud Computing

Cloud computing is the delivery of computing services – software, servers, storage, databases, networking, analytics and intelligence over the Internet ("**the cloud**") which provides flexible resources, economies of scale and high resilience

Cloud Strategy

We will deliver systems and services from the cloud to take advantage of flexibility, resilience and security but also the latest technologies with new features and services that are updated frequently.

Cloud solutions will be considered first in preference to on-premise solutions.

- We will use applications that are Software-as-a-Service to reduce management overhead and improve resilience. PaaS solutions may be considered as an alternative if no suitable SaaS service exists.

- We will migrate our on-premise storage and compute to global cloud services

- We have invested significantly in Microsoft products Azure will be our partner of choice for cloud services

- We will consider other significant global cloud service providers including Amazon Web Services, Google Cloud Platform and Oracle Cloud Services.

Cloud Roadmap

	2022	2023	2024	2025	2026
New & Updated Applications	Software-as-a-Service			Increasing	
	Platform-as-a-Service			Increasing	
	On premise		Decreasing		Decommissioning
Compute	On premise Decreasing				
	Microsoft Azure		Global cloud vendor(s) MS Azure, Amazon, Google, Oracle		
Storage	On premise Decreasing				

Cloud Roadmap – Text Description

This slide describes the Cloud Roadmap from the preceding roadmap slide, in text.

Section 1, New & Updated Applications
Software as a Service, Increasing, from 2022 to 2026
Platform-as-a-Service , Increasing, from 2022 to 2026
On premise Decreasing, from 2022 to 2025, followed by decommissioning in 2026

Section 2, Compute and Storage
On premise Decreasing, from 2022 to mid 2025
Microsoft Azure, from 2022 to end of 2023, followed by Global cloud vendors, Microsoft Azure, Amazon, Google, Oracle, from 2024 to 2026

Cloud Strategy Core Principles

1. New systems **MUST** be Software-as-a-Service where an option exists

2. Where systems are upgraded or replaced the cloud option will be our preferred choice

3. All cloud based systems must be available via the internet (Public cloud)

4. Information must be kept secure at all times, encrypted in transit and at rest. Information must be stored in the UK unless otherwise approved by Information Governance.

5. All services must be purchased as resilient services

Data Centre Infrastructure

Data Centre Infrastructure is the foundation Infrastructure that provides the connectivity, storage and compute that connects our buildings to support our on-premise systems and services.

- County Wide Digital Connectivity

- Modern Network Strategy

- Internet Connectivity Strategy

- Storage and Compute Strategy

County Wide Digital Connectivity

Our strategy is to make Norfolk the best connected rural county in the UK

We will deliver improved digital connectivity through five key programmes Better Broadband, Local Full Fibre Network, Project Gigabit, improved Mobile coverage and the ground breaking Norfolk & Suffolk Innovation Network.

Better Broadband	Local Full Fibre Network (Complete)	Project Gigabit	Improved Mobile Coverage	Norfolk and Suffolk Innovation Network

County Wide Digital Connectivity – Text Description

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Better Broadband
Local Full Fibre Network (Complete)
Project Gigabit
Improved Mobile Coverage
Norfolk and Suffolk Innovation Network

Broadband

We continue to deliver on **Fixed line broadband** to provide Norfolk residents and businesses with access to Superfast and now Ultra fast broadband, through Fibre to the Cabinet (FTTC) and Fibre to the Premises (FTTP).

Broadband Projects
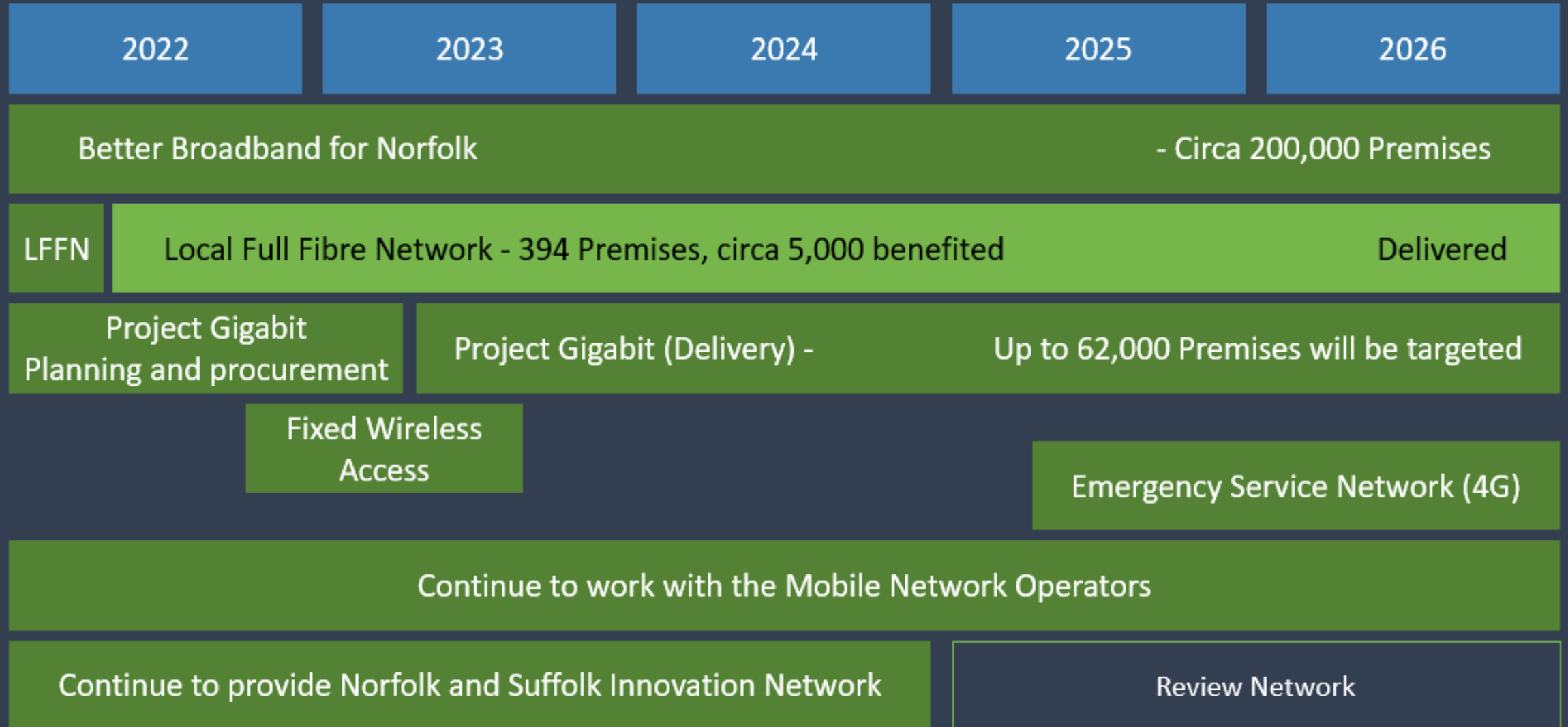
Two key projects are underway:

- Better Broadband for Norfolk (BBfN)

- Project Gigabit

A key project was completed in 2022, and is now being exploited by commercial providers to install FTTP in rural Norfolk

- Local Full Fibre Network (LFFN)

An additional project is due to launch Q3 2022 Fixed Wireless Access (FWA)

Digital Connectivity – Roadmap Text Description

This slide describes the **Digital Connectivity Roadmap** from the preceding roadmap slide, in text.

Better Broadband for Norfolk Circa 200,000 Premises, from 2022 to 2026

LFFN, for first half of 2022, followed by Local Full Fibre Network - 394 Premises, circa 5,000 benefited, Delivered, from start of quarter 3 in 2022 to end of 2026

Project Gigabit Planning and procurement, from start of 2022 to end of quarter 1 in 2023, followed by Project Gigabit (Delivery), Up to 62,000 Premises will be targeted, from start of quarter 2 in 2023 to end of 2026

Fixed Wireless Access, from start of quarter 4 in 2022 to end of quarter 3 in 2023

Emergency Service Network (4G), from start of quarter 2 in 2025 to end of 2026

Continue to work with the Mobile Network Operators, from 2022 to 2026

Continue to provide Norfolk and Suffolk Innovation Network, from 2022 to 2024, followed by Review Network from 2025 to 2026

Better Broadband for Norfolk

We have increased Superfast broadband (> 24Mbps) coverage from 42% in 2012 to over 96%, covering around 200,000 premises.

We are now delivering Ultrafast broadband (Up to 1Gbps) to some of the hardest to reach premises in Norfolk approximately 9000 properties will benefit.

Work is scheduled to be completed by 31st December 2023

Local Full Fibre Network (LFFN)

LFFN was successfully completed in March 2022 delivering gigabit capable broadband service to 394 public buildings across rural Norfolk and to approximately 2,200 nearby premises.

In addition, a further 2,500 homes to date have benefitted from commercial operators exploiting the infrastructure installed under LFFN, by installing full fibre broadband deeper into poorly served communities

Around 5,000 premises have so far benefited from LFFN. The infrastructure installed promotes future commercial deployments and ultrafast broadband growth into rural villages and towns, and will continue to be used for the deployment of gigabit capable broadband over the coming years.

Project Gigabit

Project Gigabit was announced in March 2021 one of the first phases of the Governments £5Bn broadband infrastructure project will target Norfolk's hardest to reach properties that would otherwise not be commercially viable.

- The public review phase is complete. The procurement phase is due to launch August 2022, with contract award due by March 2023.

- Infrastructure delivery phase due to commence late 2023, with a deployment phase lasting up to 5 years.

- Circa 86,000 premises are expected to be targeted. *Note: estimated figures provided, final numbers will be determined during the procurement phase.

Fixed Wireless Access (FWA)

The small to medium sized procurement is due to launch in September 2022 and aims to deploy FWA into poorly served rural communities.

FWA will seek to deploy wireless based internet into public buildings, such as schools and village halls, that can then be exploited by commercial operators to boost broadband coverage into the local communities. We expect the first locations to be live by Winter 2022.

Mobile

We recognise that Mobile Telecommunications is important infrastructure for the region and therefore is a key area of focus.

NCC has completed two independent surveys to help determine the level and quality of mobile coverage of each mobile network operator across Norfolk. One in 2018 and a follow up in 2020. The results of the surveys have been made available to the mobile operators and members of the public.

Mobile Strategy

We will continue to work closely with Mobile UK, EE, Vodafone, Telefonica, Three, MBNL, CTIL and the Shared Rural Network Programme to <u>facilitate</u> improvements in coverage & speed.

The national Emergency Services Network provided by EE's 4G network will continue to be delivered, requiring a minimum of 87% 4G coverage on roads across the country, with an estimated road coverage of 96%

We also continue to work with the Shared Rural Network (SRN) to promote mobile improvements across Norfolk

Internet of Things

Internet of Things (IOT) is the concept of connecting a device (any device) with a sensor to the Internet to collect data to monitor, manage, control or report. This includes everything from kettles, light bulbs, pollution monitors and flood warning sensors to almost anything else you can think of.

To support we are implementing the largest free to use public sector LoRaWAN network in the UK called the "Norfolk & Suffolk Innovation Network" as part of our ambition to make Norfolk the best connected rural County.
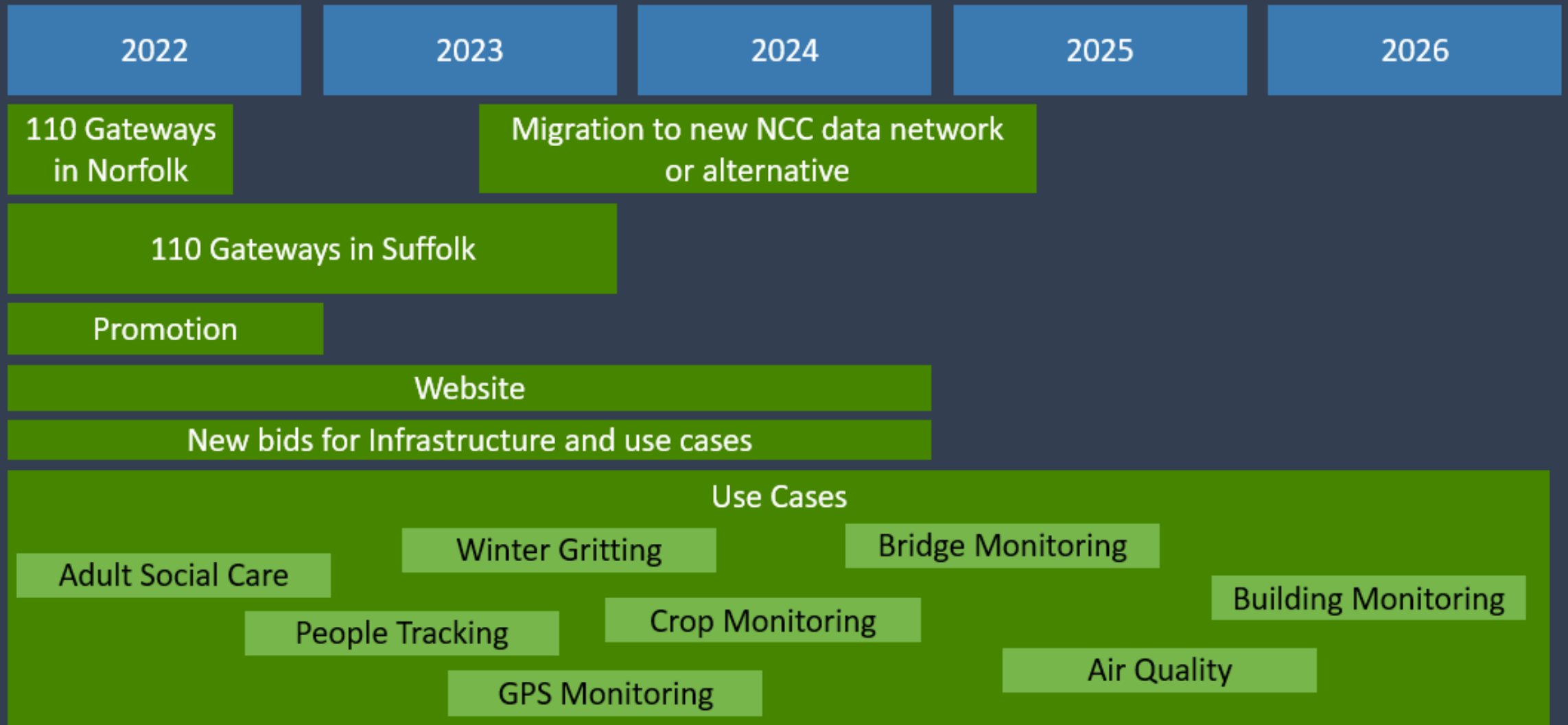
IOT Strategy

We will deliver and maintain the largest free to use LoRaWAN network in the UK to encourage economic development and improve digital skills in the region.

- We will implement 110 external gateways in Norfolk to provide ubiquitous coverage for businesses, the Public Sector, education and private individuals

- We will trial and pilot IOT solutions to demonstrate how it can be used to monitor, manage and report

- We will actively promote adoption of the network

- We will prototype public sector IOT solutions and share our learning

Norfolk and Suffolk Innovation Network roadmap – Text Description

This slide describes the **Norfolk and Suffolk Innovation** from the preceding roadmap slide, in text.

110 Gateways in Norfolk, in 2022, followed by Migration to new NCC data network or alternative, from start of quarter 3 in 2023 to end of quarter 1 in 2025

110 Gateways in Suffolk from 2022 to 2023

Promotion, for all of 2022

Website, from start of 2022 to end of 2024

New bids for Infrastructure and use cases, from start of 2022 to end of 2024

Use cases include Winter Gritting, Bridge Monitoring, Adult Social Care, Building Monitoring, People Tracking, Crop Monitoring, Air Quality, and GPS Monitoring

IOT Principles

1. We will provide **free** use of the Norfolk & Suffolk Innovation network for the public sector, businesses and private individuals

2. Where possible the data will be transported securely over the NCC data network

3. We will implement solutions ensuring data is kept safe

4. We will leverage the LoRaWAN network to improve digital skills in the region and encourage innovation within the region

5. Where appropriate we will make data we collect public so local business can learn and exploit public data sets

6. We will work with local companies to develop prototypes

Modern Network Strategy

- We will implement a "Never Trust, Always Verify" approach to keep the Council secure through Zero Trust (aka Secure Access Secure Edge)

- We will review the network service sourcing arrangements to improve flexibility and reduce cost

- We will pro-actively reduce the number of network locations to reduce the cost of the service

- We will simplify and reduce the complexity of the network to make it easier to manage

- We will reduce network cost, implementing a direct internet access service model

- We will architect network services to make it easier to work more closely and share with other agencies

Modern Network Roadmap – Text Description

This slide describes the **Modern Network Roadmap** from the preceding roadmap slide, in text.

Local Area Network – Huawei Equipment – In-House, from start of 2022 to end of 2026

Zero Trust using Cisco Umbrella & VPN Dual Tunnel, from start of 2022 to end of quarter 2 in 2025

Wide Area Network - Capita MPLS, 21 Nodes, 214 Sites and 229 others, from start of 2022 to end of quarter 1 in 2024, followed by Future Network, Reduced size Network, Direct Internet Access Circuits, Zero Trust and Cloud Services from start of quarter 2 in 2024 to end of 2026

Security – Capita Denial of Service, from start of 2022 to end of quarter 1 in 2024, followed by Future Network, Reduced size Network, Direct Internet Access Circuits, Zero Trust and Cloud Services from start of quarter 2 in 2024 to end of 2026

Firewalls - Capita, from start of 2022 to end of quarter 1 in 2024, followed by Future Network, Reduced size Network, Direct Internet Access Circuits, Zero Trust and Cloud Services from start of quarter 2 in 2024 to end of 2026

Filtering - Capita, from start of 2022 to end of quarter 1 in 2024, followed by Future Network, Reduced size Network, Direct Internet Access Circuits, Zero Trust and Cloud Services from start of quarter 2 in 2024 to end of 2026

Resilient Internet Gateways – Capita – 3GB, from start of 2022 to end of quarter 1 in 2024, followed by Future Network, Reduced size Network, Direct Internet Access Circuits, Zero Trust and Cloud Services from start of quarter 2 in 2024 to end of 2026

External Domain Name Service, from start of 2022 to end of quarter 1 in 2024, followed by Future Network, Reduced size Network, Direct Internet Access Circuits, Zero Trust and Cloud Services from start of quarter 2 in 2024 to end of 2026

Modern Network Strategy Principles

1. We will implement Zero Trust, including tools and services that provide a best of breed security posture

2. We will implement a Direct Internet Access WAN model

3. Services **MUST** be managed "in-House" where an option exists

4. We will implement tools to monitor & report on performance to ensure the best User Experience

Internet Connectivity

Internet Connectivity is key to the operation of our business to enable remote working and provider access to cloud based online services.

Internet Connectivity Strategy

- We will ensure access to the internet from county hall and the Data Centre's by a minimum of two main internet connections from different providers delivered through diverse infrastructure.

- Internet connectivity services will be resilient and be managed in-house

- We will maintain a third internet circuit for disaster recovery

Internet Connectivity Roadmap

	2022	2023	2024	2025	2026

Main Internet connection	Capita 3GB Shared			
Backup Internet Connection	Capita 3GB Shared			

New Main Internet connection		3GB (min) Dedicated (Primary ISP)		Installed on 10Gb bearer. Bandwidth monitored and increased as necessary over the contract life
New Backup Internet connection		3GB (min) Dedicated (Alternate ISP)		
Disaster Recovery Connection (Tertiary)	Resilient 1GB Dedicated			

Internet Connectivity Roadmap – Text Description

This slide describes the **Internet Connectivity Roadmap** from the preceding roadmap slide, in text.

Main Internet connection Capita 3GB Shared, from start of 2022 to end of quarter 1 in 2024

Backup Internet Connection Capita 3GB Shared, from start of 2022 to end of quarter 1 in 2024

New Main Internet connection 3GB (min) Dedicated (Primary ISP) from start of 2023 to end of 2024, followed by, Installed on 10Gb bearer. Bandwidth monitored and increased as necessary over the contract life, from start of 2025 to end of 2026

New Backup Internet connection 3GB (min) Dedicated (Alternate ISP) from start of 2023 to end of 2024, followed by, Installed on 10Gb bearer. Bandwidth monitored and increased as necessary over the contract life, from start of 2025 to end of 2026

Disaster Recovery Connection (Tertiary) Resilient 1GB Dedicated, from start of 2022 to end of 2026

Internet Connectivity Principles

1. All internet connections **MUST** be managed by the IMT team

2. All internet connections will have DDoS protection to protect the authority from Denial of Service attacks

3. We will procure and implement performance tools to monitor and report on performance to ensure a good user experience

4. We will monitor internet usage.

5. All internet connections will be secured with suitable firewalls, intrusion protection and filtering.

6. All internet connections will be capable of flexing up and down as demand dictates.

Storage and Compute

Compute is the computing hardware that runs our Windows based operating systems and our on premise applications.

Storage is the storage hardware connected to the computing hardware that provides digital data storage for our applications, databases and unstructured data.

Storage and Compute Strategy

- We will reduce our on premise compute and storage requirements by moving applications to Software-as-a-Service

- Where SaaS is not viable we will increase flexibility by moving our compute and storage to Global cloud providers in a Platform-as-a-Service design

- We will implement data retention policies to reduce our storage requirements

- We will implement tools to monitor & report on performance and cost to ensure the best User Experience
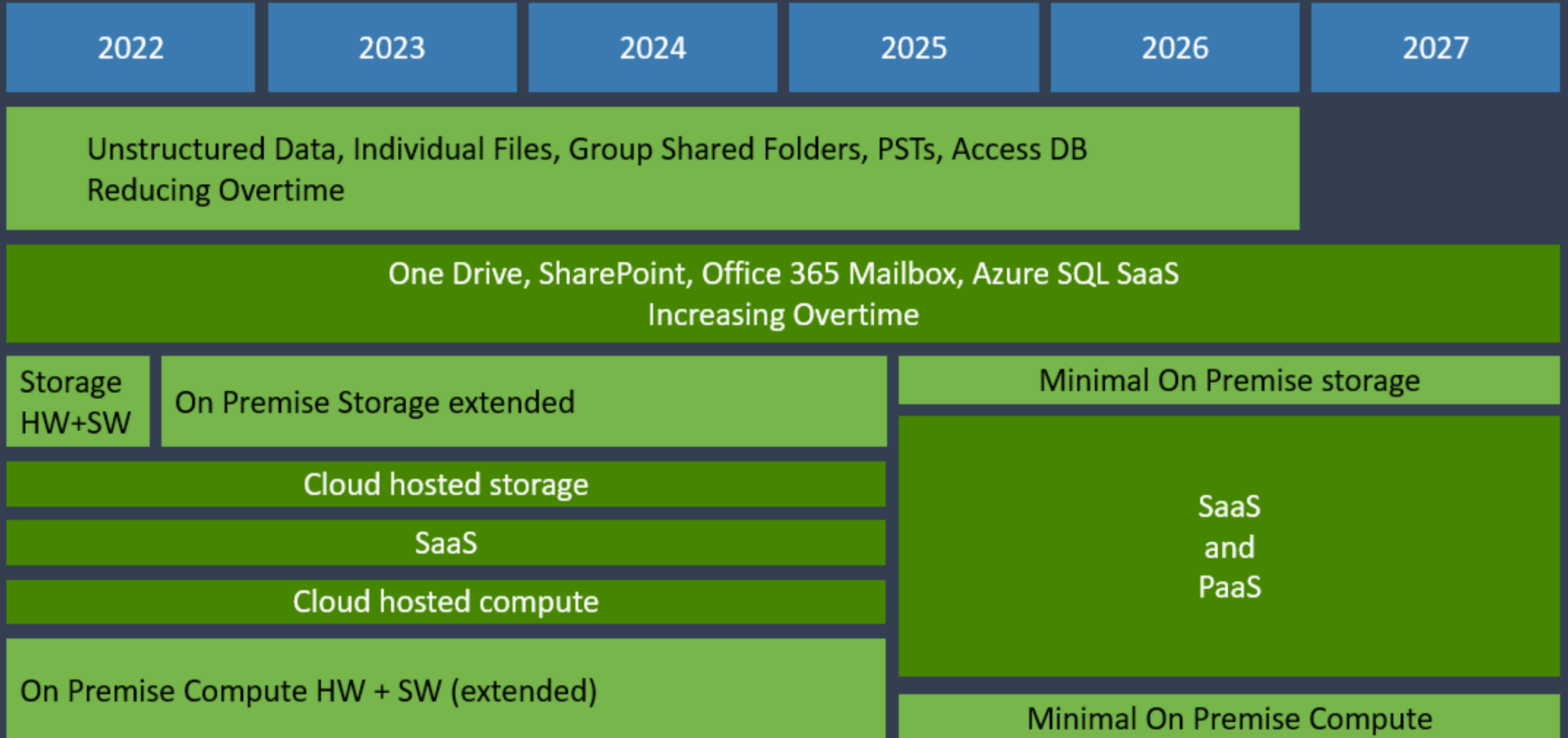
Storage and Compute Roadmap – Text Description

This slide describes the **Storage and Compute Roadmap** from the preceding roadmap slide, in text.

Unstructured Data, Individual Files, Group Shared Folders, PSTs, Access DB, reducing over time, from start of 2022 to end of 2026

One Drive, SharePoint, Office 365 Mailbox, Azure SQL Software as a Service, Increasing Overtime, from start of 2022 to end of 2026

Storage Hardware and software, from start of 2022 to end of quarter 2 in 2022, followed by On Premise Storage extended, from start of quarter 3 in 2022 to end of quarter 2 in 2025, followed by Minimal On Premise storage from start of quarter 3 in 2025 to end of 2027

Cloud hosted storage, from start of 2022 to end of quarter 2 in 2025, followed by "Software as a Service and Platform as a Service" from start of quarter 3 in 2025 to end of 2027

Software as a Service, from start of 2022 to end of quarter 2 in 2025, followed by "Software as a Service and Platform as a Service" from start of quarter 3 in 2025 to end of 2027

Cloud hosted compute, from start of 2022 to end of quarter 2 in 2025, followed by "Software as a Service and Platform as a Service" from start of quarter 3 in 2025 to end of 2027

On Premise Compute Hardware and software (extended), from start of 2022 to end of quarter 2 in 2025, then Minimal On Premise Compute from start of quarter 3 in 2025 to end of 2027

Storage and Compute Principles

1. All new systems to be considered as Software-as-a-Service (SaaS)
2. System **upgrades** will trigger consideration to migrate to SaaS
3. We will delete all unneeded data based on the retention policy
4. We will Prohibit the use of PST files and Access Databases
5. We will Change all Personal Files and Shared Folders to Read Only
6. We will Migrate all unstructured Shared Folders to SharePoint
7. We will Migrate all Personal Files from File Shares to One Drive

IT Operations and Cloud Management

Information Technology Operations also known as IT Service management (ITSM) are the activities that are performed by an organisation to design, plan, deliver, operate and control information technology services

- IT Service Management Strategy

IT Service Management Strategy

- We will work with our ITSM provider to exploit the full set of tools available

- We will explore new functionality as soon as possible

- We will automate everything we can to enhance the customer experience

- We will proactively seek out new developments in the market that could improve the service to our customers

IT Service Management (Assyst) Roadmap

2022	2023	2024	2025	2026	2027

ITSM Procurement	Implementation	Transformation	ITSM

Azure AD Integration

Automation of Existing Service Request

Chatbot

Bot Learning

MS Teams Connector

Assyst Customer Engagement (ACE) Self-Service Mobile

End of Current Contract
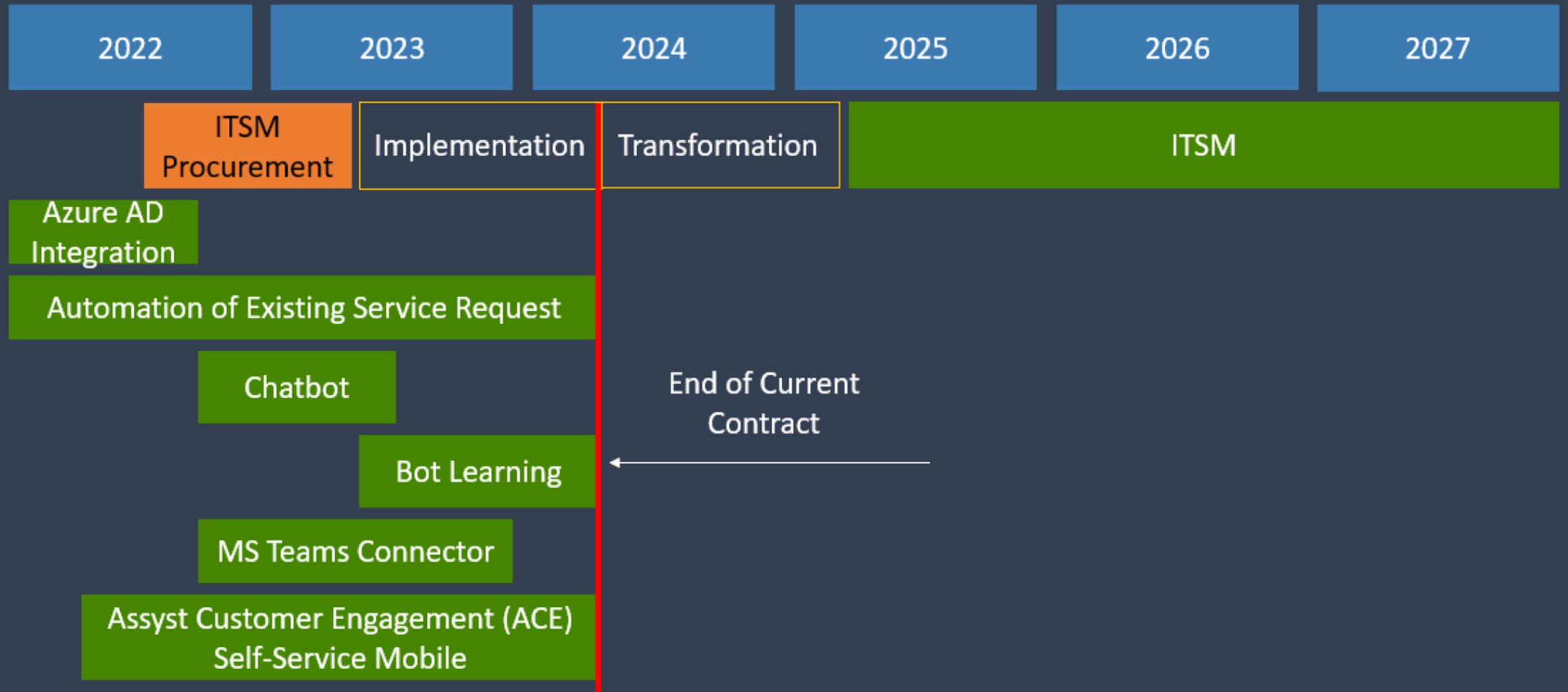
IT Service Management (Assyst) Roadmap – Text Description

This slide describes the **IT Service Management (Assyst) Roadmap** from the preceding roadmap slide, in text.

Throughout the roadmap entries, a red vertical line indicates end of current contract for Assyst at the end of quarter 1 in 2024

ITSM Procurement, from start of quarter 3 in 2022 to end of quarter 2 in 2023, followed by Implementation from start of quarter 3 in 2023 to end of quarter 1 in 2024, followed by Transformation from start of quarter 2 in 2024 to end of quarter 1 in 2025, followed by ITSM from start of quarter 2 in 2025 to end of 2026
Azure AD Integration, from start of 2022 to end of 2022
Automation of Existing Service Request, from start of 2022 to end of quarter 1 in 2024
Chatbot, from start of quarter 4 in 2022 to end of quarter 2 in 2023
Bot Learning, from start of quarter 2 in 2023 to end of quarter 1 in 2024
MS Teams Connector, from start of quarter 4 in 2022 to end of 2023
Assyst Customer Engagement (ACE) Self-Service Mobile, from start of 2022 to end of quarter 1 in 2024

IT Service Management Principles

1. We will adopt new ITSM functionality as soon as possible
2. Self-Service will focus around user self-service rather than a portal for user support
3. We will improve our knowledge base for all services
4. Every process will be considered for Automation

Identity and Access Management

IAM - Identity and access management is about defining and managing the roles and access privileges of individual users whilst keeping systems and services secure

Identity and Access Management Strategy

We have selected a set of Microsoft and Oracle technologies as the strategic tools to manage identities. We will use:

- Microsoft Power Automate
- Microsoft Task Scheduler
- Microsoft PowerShell scripts
- Oracle IDCS

Our authentication method of choice for new and updated cloud services is Azure AD for identity and single sign on where possible.

Identity and Access Management Roadmap

2022	2023	2024	2025	2026	2027

Active Directory

ADFS

Azure Active Directory Services (Support Legacy apps)

Azure Active Directory

Sailpoint 8.x | **Microsoft Technologies + Oracle IDCS**

Oracle (on premise) | **Oracle Fusion (SaaS)**
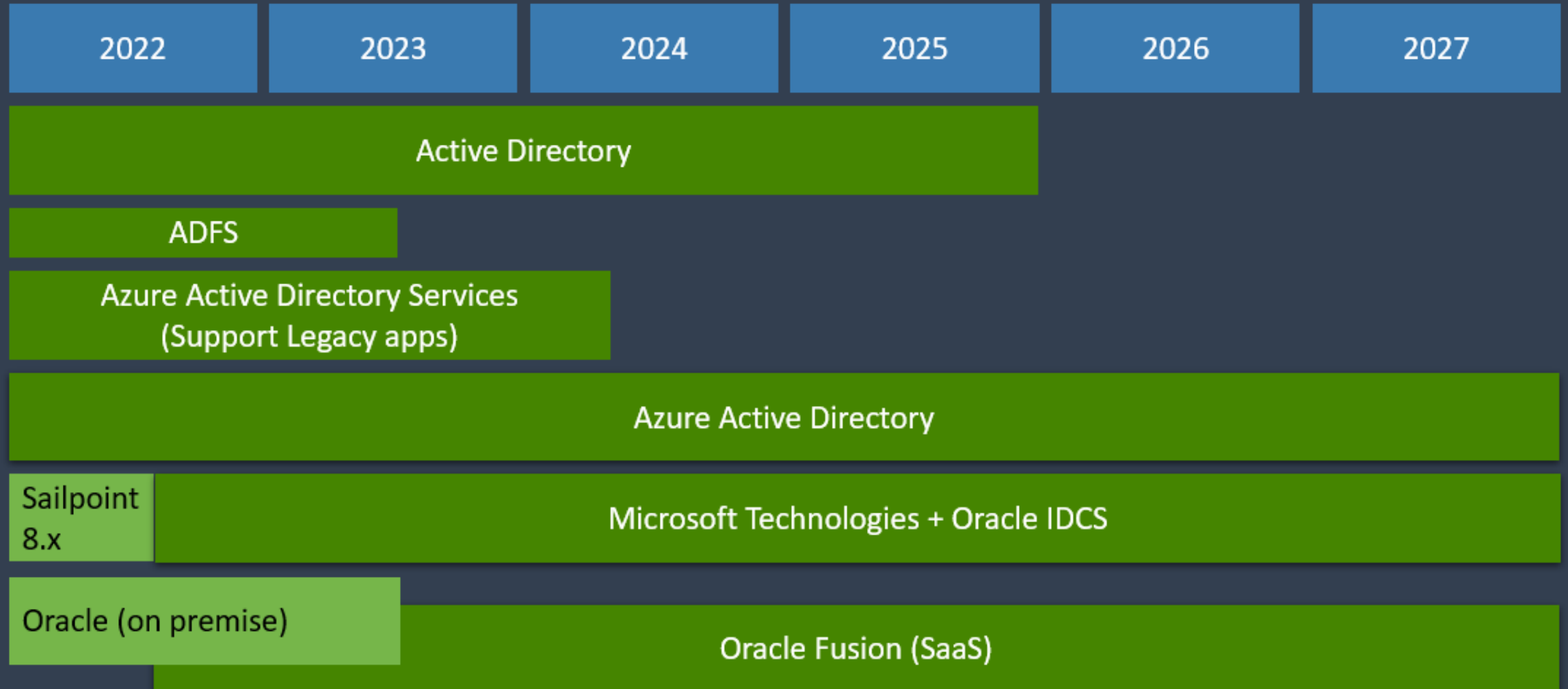
Identity and Access Management Roadmap – Text Description

This slide describes the **Identity and Access Management Roadmap** from the preceding roadmap slide, in text.

Active Directory, from start of 2022 to end of 2025

ADFS, from start of 2022 to end of quarter 2 in 2023

Azure Active Directory Services (Support Legacy apps), from start of 2022 to end of quarter 1 in 2024

Azure Active Directory, from start of 2022 to end of 2027

Sailpoint 8.x, from start of 2022 to end of quarter 2 in 2022, then Microsoft Technologies and Oracle IDCS, from quarter 3 in 2022 to end of 2027

Oracle (on premise), from start of 2022 to end of quarter 2 in 2023, then overlapping, Oracle Fusion Software as a Service, from quarter 2 in 2022 to end of 2027

Identity and Access Management Principles

1. myOracle will be the authoritative source for all employee attributes **it manages**

2. Azure Active Directory will be the central user repository for all employee identities

3. All authentication integrations **must** be SAML 2.0 compliant

4. All partner organisations will use Microsoft B2B to access NCC data resources

5. All citizens/customers will use Microsoft B2C to access NCC data resources

6. All myOracle external users will use Oracle IDCS to access their Oracle data

Security Management Programmes

Security Management Programmes deliver effective policies, procedures and processes to ensure and maintain the confidentiality, integrity & availability of the authority's information systems / services.

- Minimise risk

- Protect the organisation's information assets

- Securely deliver our services

- Maintain the organisation's reputation

- Provide citizens and partner organisations with trust and confidence

They **MUST** minimise risk of compromise and also facilitate an effective recovery in the event of an incident.

Security Management Strategy

We will regularly review the organisation's security policies, process and procedures to ensure:

- Our information assets are always protected
- That they conform to industry best practice guidance
- They meet or exceed regulatory and legislative requirements
- Deliver user friendly, effective services in a secure by design state
- Effective recovery from any incident
- Promote a culture of risk awareness and management as a core principle throughout the organisation
- We monitor and manage the effectiveness through key performance indicators
- We will invest in appropriate software, skills and services in order to protect our data and our services

Security Management Roadmap

2022	2023	2024	2025	2026

Review procurement prompts (2023)

Review procurement prompts (2024)

Review procurement prompts (2025)

Review procurement prompts (2026)

Develop and implement technical security risk assessment

Implement LGA developed cyber eLearning

Develop Security Operations Centre capabilities

Maintain PSN Code of Connection and DSP Toolkit

Move to new assessment framework, maintain DSP Toolkit

Security Management Roadmap – Text Description

This slide describes the **Security Management Roadmap** from the preceding roadmap slide, in text.

Review procurement prompts, every year from 2023 onwards

Develop and implement technical security risk assessment, through all of 2023

Implement LGA developed cyber eLearning, from start of 2023 to end of 2025

Develop Security Operations Centre capabilities, from start of 2022 to end of 2026

Maintain PSN Code of Connection and DSP Toolkit, from start of 2022 to end of 2023, followed by Move to new assessment framework, maintain DSP Toolkit, from start of 2024 to end of 2026

Security Management Principles

1. The organisation's systems and services **MUST** be kept secure at all times.

2. At point of procurement, new systems and services **MUST** be secure by design and this **MUST** be maintained throughout its lifecycle.

3. All access to the organisation's systems and services **MUST** be controlled and auditable.

4. Policies, procedures and processes **MUST** be designed to minimise the organisation's attack surface, simplify the user experience and increase the organisation's cyber maturity and resilience.

5. Policies, procedures and processes **MUST** support the effective delivery of the organisation's services to its citizens and partner organisations.

6. We **MUST** maintain and regularly test the organisation's incident response capability.

Security Accreditations

Public Services Network (PSN) Certificate until 2023

Move to new assessment framework as PSN services migrate to Internet

Maintain NHS DSP Toolkit

PCI-DSS

Emergency Services Network compliance

Emerging UK Government agreed assessment framework

PCI DSS

Payment Card Industry Data Security Standard regulations apply when then authority stores or processes credit card information and is owned for the Authority by Finance & Exchequer Services

- Our policy previously was **avoidance**, the authority will not store or process any credit card details over its infrastructure.

- The use of cash is reducing and more Electronic Point of Sale terminals are being used.

- Failure to comply with PCI:DSS could cause the Authority to be fined monthly by the bank, and ultimately could lead to the Authority being banned from taking any credit cards transactions.

PCI DSS Strategy

- NCC infrastructure that is involved in storing or transmitting credit card information is "in-scope" of PCI:DSS

- Techniques including handing off telephone and website credit card transactions to 3rd parties (e.g.; Pay360) are used to avoid credit card details traversing the Authority's infrastructure

- Dedicated network infrastructure will be used to allow EPOS terminals to reach the internet while minimising contact with NCC infrastructure

- The Authority will apply for PCI:DSS Level 3 (<1m transactions per year) with the P2PE

Security Technology, Infrastructure and Operations Strategy

- We will move towards an identity centric security model, using principles such as zero-trust.

- We will automate the detection and remediation of threats to reduce our time-to-remediate, including implementing SaaS/PaaS solutions, SIEM, SOAR and vulnerability assessments

- We will take advantage of technologies already available to us first through exploitation of agreements such as M365 E5/Azure AD P2

- We will continue to train and develop our teams in cyber skills

- We take advantage of opportunities provided by third parties and partners to improve our capabilities and security posture (such as NCSC, SOCITM, Gartner, WARPS, PSN services)

Security Technology & Infrastructure Roadmap

Redacted, Internal use only

| 2022 | 2023 | 2024 | 2025 | 2026 |

The information on this slide is confidential within the Authority and has been redacted for publication.

Security Operations Roadmap

Redacted, Internal use only

| 2022 | 2023 | 2024 | 2025 | 2026 |

The information on this slide is confidential within the Authority and has been redacted for publication.

Security Operations Roadmap Text Description

This slide describes the **Security Operations Roadmap** from the preceding two roadmap slides, in text.

This slide is redacted for security reasons.
End of text on this slide.

Security Technology, Infrastructure and Operations Principles

1. We implement usable security, so that users are empowered to make secure decisions

2. We build and use technology which is secure by design, and remains secure throughout it's intended lifetime

3. We establish layered controls and processes to detect, prioritise and remediate cyber risks to the organisation, users, systems and data

4. We store and manage security audit data to monitor and evidence cyber related incidents

5. We implement in a timely manner any remediations/recommendations resulting from a detected vulnerabilities

6. We fully exploit the security capabilities of systems and security technologies available to us

Key Applications Roadmap

2022	2023	2024	. 2025	2026

Finance & Commercial

Oracle (on premise)	Oracle Fusion (SaaS)

SiteCore (PaaS)

Assyst (SaaS)

Intend

Capita Pay360

ESRI

Key Applications Roadmap (cont.)

	2022	2023	2024	2025	2026
Adults	Social Care system – LAS Liquid Logic (SaaS)				
	Cygnum				
Children Services	Synergy				
	Google Workspace				
	Social Care system – LCS Liquid Logic (SaaS)				

Key Applications Roadmap (cont..)

	2022	2023	2024	2025	2026
Community and Environmental Services	Mayrise		Alloy		
	TERMS (Inhouse)				
	Dynamics CRM (PaaS)				
	Firewatch				
	Civica Spydus - Libraries (SaaS)				
	Civica CX – Trading standards				
	MasterGov (inhouse)				
	Norfolk Vulnerability Hub (NVH) & Norfolk Outbreak Management (NOMs)				

Key Applications Roadmap (cont...)

	2022	2023	2024	2025	2026
Governance	Spitfire (SaaS) - nplaw		Civica		
Strategy & Transformation	PowerBi (Saas)				

Key Applications Roadmap - Text Description

This slide describes the Key Applications Roadmap from the preceding four roadmap slides, in text.

Section 1, Finance & Commercial
Oracle on premise, until end of 2022, followed by Oracle Fusion Software as a Service from quarter 4 2022 to end of 2026
SiteCore Platform as a Service, from start of 2022 until middle of 2024
Assyst Software as a Service, from start of 2022 until quarter 1 in 2023
Intend, from start of 2022 to end of 2026
Capita Pay360, from start of 2022 to end of 2026
ESRI, from start of 2022 to end of 2026

Section 2, Adults Social Services
Social Care system L A S Liquid Logic, from start of 2022 to end of 2026
Cygnum, from start of 2022 to end of 2026

Section 3, Children's Services
Synergy, from start of 2022 to end of 2026
Google Workspace, from start of 2022 to end of 2026
Social Care system – L C S Liquid Logic, from start of 2022 to end of 2026

Section 4, Community and Environmental Services
Mayrise, from start of 2022 to end of 2023, followed by Alloy, from start of 2024 to end of 2026
Terms (in house), from start of 2022 to end of 2026
Dynamics CRM Platform as a Service, from start of 2022 to end of 2026
Firewatch, from start of 2022 to end of 2026
Civica Spydus Libraries, from start of 2022 to mid 2025
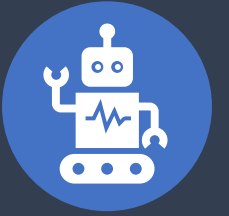Master Gov (in house), from start of 2022 to end of 2025
Norfolk Vulnerability Hub and Norfolk Outbreak Management, from start of 2022 to end of 2024

Section 5, Governance
N p law Spitfire, from start of 2022 to end of 2023, followed by Civica from start of 2024 to end of 2026

Section 6, Strategy and Transformation
Power B I, from start of 2022 to end of 2026
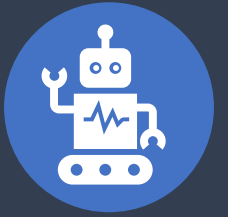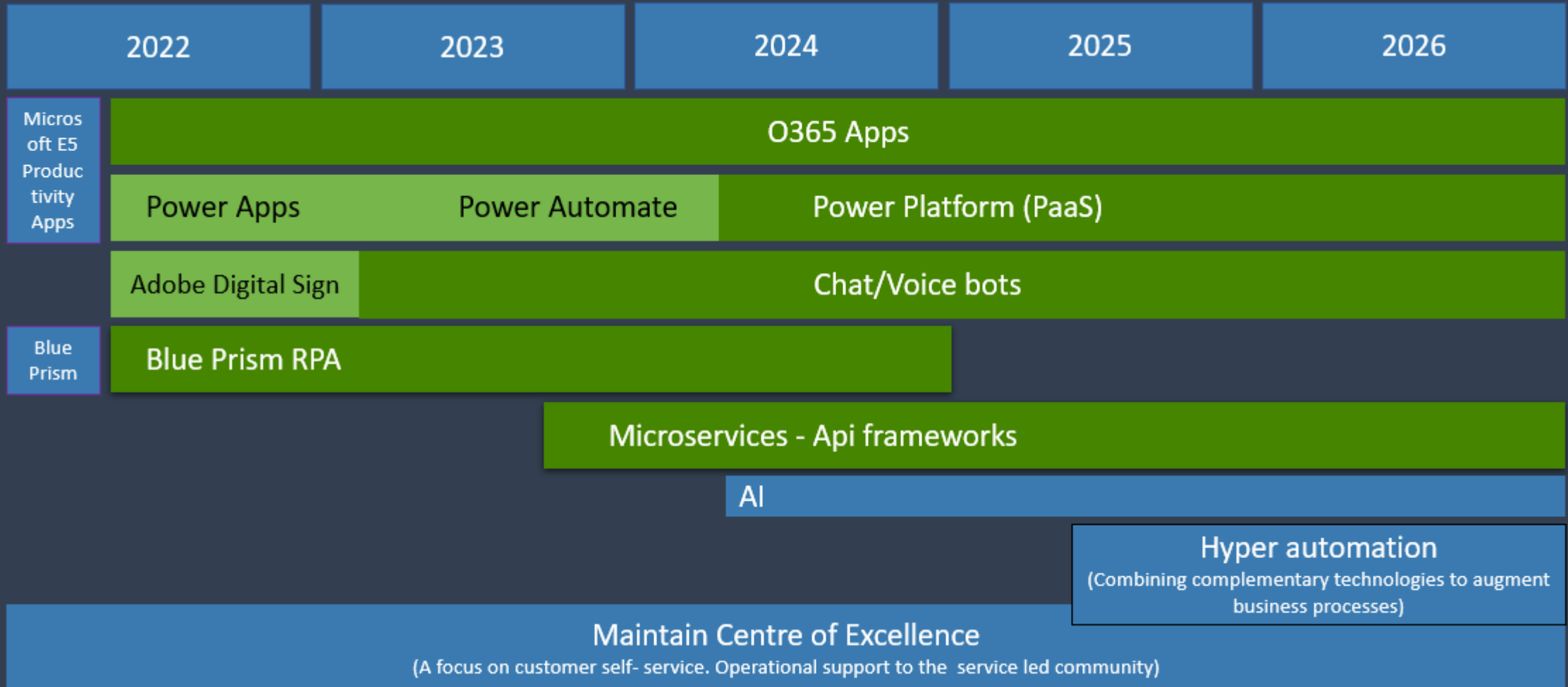
Automation Strategy

Our aim is to utilise new and emerging technologies to empower the business users to streamline business operations, increase efficiency, improve productivity and lower cost.

The automation strategy aims to deliver technology that can:

- Optimise operational efficiency

- Accelerate business processes

- Reduce Costs & Cost Avoidance

- Improve quality

Automation Roadmap

2022	2023	2024	2025	2026

Micros oft E5 Produc tivity Apps	O365 Apps			
	Power Apps	Power Automate	Power Platform (PaaS)	
	Adobe Digital Sign	Chat/Voice bots		
Blue Prism	Blue Prism RPA			
		Microservices - Api frameworks		
		AI		
				Hyper automation (Combining complementary technologies to augment business processes)

Maintain Centre of Excellence
(A focus on customer self- service. Operational support to the service led community)

Automation Roadmap - Text Description

This slide describes the Automation Roadmap from the preceding roadmap slide, in text.

Microsoft E5 productivity apps, Office 365 Apps, from 2022 to 2026

Microsoft E5 productivity apps, Power Apps and Power Automate, from 2022 to 2026, and Power Platform from mid 2024 to 2026

Adobe Digital Sign, from start of 2022 to quarter 1 2023, then Chat and Voice Bots from quarter 1 2023 to 2026

Blue Prism RPA, from start of 2022 to end of 2024

Microservices API frameworks, from mid 2023 to end of 2026

A.I., from mid 2024 to end of 2026

Hyper Automation, Combining complementary technologies to augment business processes, from mid 2025 to end of 2026

Maintain Centre of Excellence, A focus on customer self- service. Operational support to the service led community. From start of 2022 to end of 2026
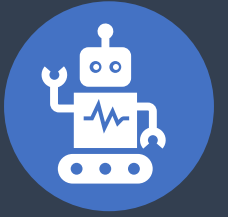
Automation Principles

**Keep it simple –
Automate only the
appropriate process
or parts of
processes**

**All automations will
have a business
owner/customer and
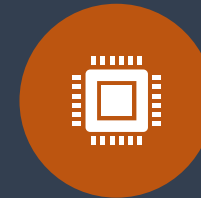add value**

**Outcomes should be
measured &
demonstrable**

**Track and report
automation success
and failure for future
opportunities**

**All automations will
have a back up and
follow business
continuity policies**

**Use the most
appropriate
technology to solve
business problems**

**Leverage when we
can, only create as
new if necessary**

**Build components
that can be reused
and shared**

Agile Software Development and Dev Ops

Agile Software Development is about breaking deliverables into manageable tasks, it advocates good prioritisation, adaptive planning, evolutionary development, early delivery, continual improvement, and it encourages a flexible response to change.

DevOps is set of practices that combines software development and IT operations. It aims to shorten the systems development life cycle and provide continuous delivery with high software quality. DevOps is an extension of agile built around the practices that are not in agile's focus. When used together, both practices improve software development and lead to better products.

Agile Software Development Architecture Roadmap - Text Description
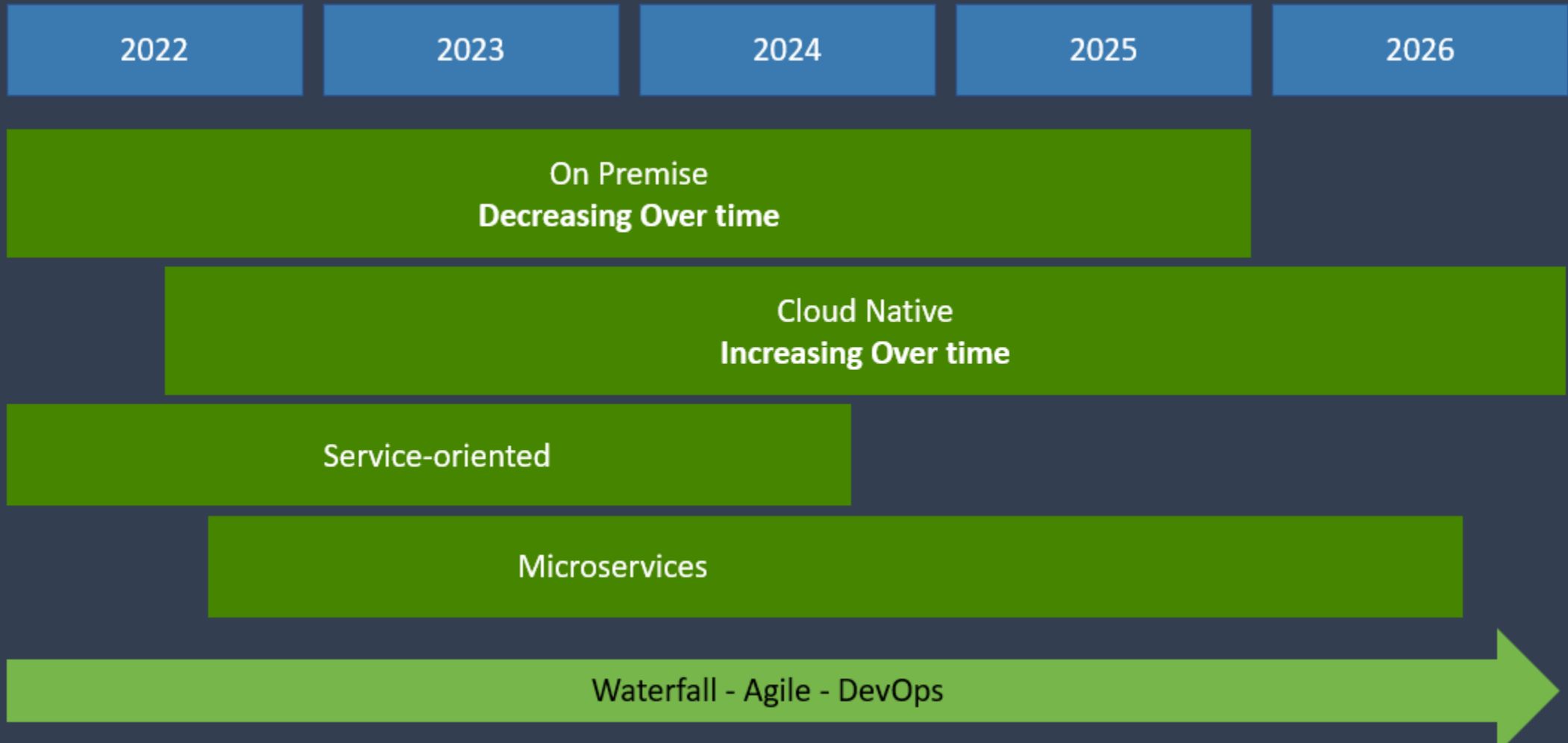
This slide describes the Agile Software Development Architecture Roadmap from the preceding roadmap slide, in text.

On Premise, from start of 2022 to end of 2025, decreasing over time
Cloud Native, from middle of start of 2022 to end of 2026, increasing over time
Service-Oriented, from start of 2022 to end of quarter 3 in 2024
Microservices, from middle of 2022 to middle of 2026
Waterfall, Agile and Devops, from start of 2022 to end of 2026 and ongoing

Agile Principles

Deliver working software quickly and build on it

Customer collaboration over contract negotiation

Responding to change over following a plan

Automate everything

Cross functional teams. The business and developers work together
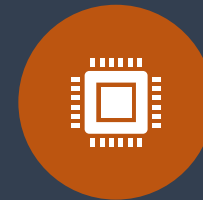
Continuous improvement and delivery

"We, not I"

Proactive monitoring and continuous learning

Transparency & routine retrospectives

Web Applications Modernisation Strategy

Our aim is to modernise our current Web applications and services and to use the most appropriate technology and architecture to deliver secure, reliable and optimised solutions .

The modernisation strategy aims to deliver solutions that:

- Cloud native

- Secure

- Automation focused

- Supported by modern data and architecture

Web Applications Architecture Roadmap - Text Description
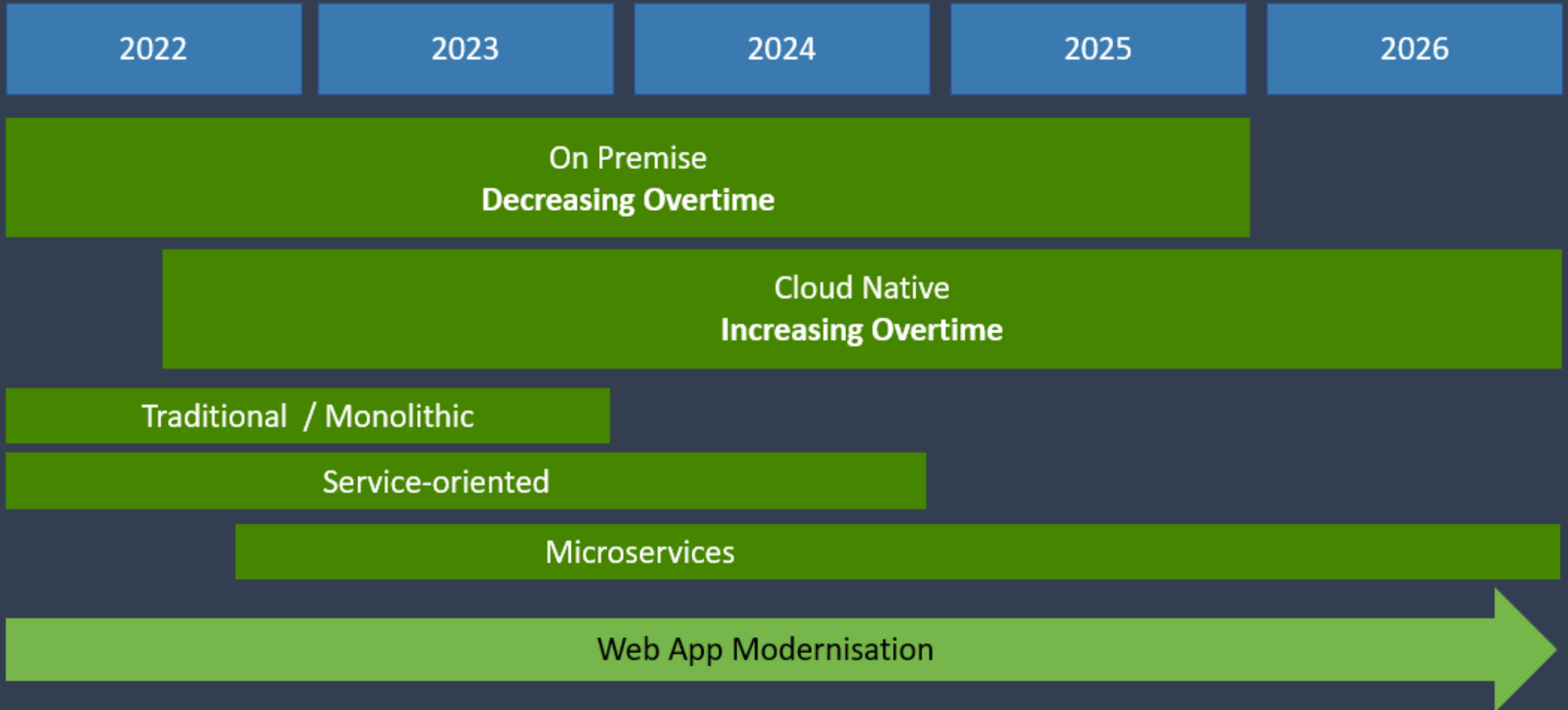
This slide describes the Web Applications Architecture Roadmap from the preceding roadmap slide, in text.

On Premise, from start of 2022 to end of 2025, decreasing over time

Cloud Native, from mid 2022 to end of 2026, increasing over time

Traditional / Monolithic, from start of 2022 to end of 2023

Service-Oriented, from start of 2022 to end of 2024

Microservices, from start of 2022 to end of 2026

Web App Modernisation, from start of 2022 to end of 2026 and ongoing

Web Applications Modernisation Principles

Focus on customer value

Provide services not assets

Modernise data to support the applications

Simplify architecture

Adopt Agile/DevOps
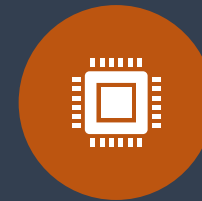
Continuous improvement and delivery

Design for delivery at pace

Cloud 1st where appropriate

Eliminate redundant apps and features

CRM and Customer Experience

The CRM and Customer Experience platforms are the subject of a current procurement. This roadmap will be updated in the next version of the High Level Strategy and Roadmaps document.

Microsoft Dynamics and Power Platform

2022	2023	2024	2025	2026

Strategic Business Requirements

Planning | **Implementation Projects**

Platform and Service

Customer Contacts Solution

Online Sales Platform
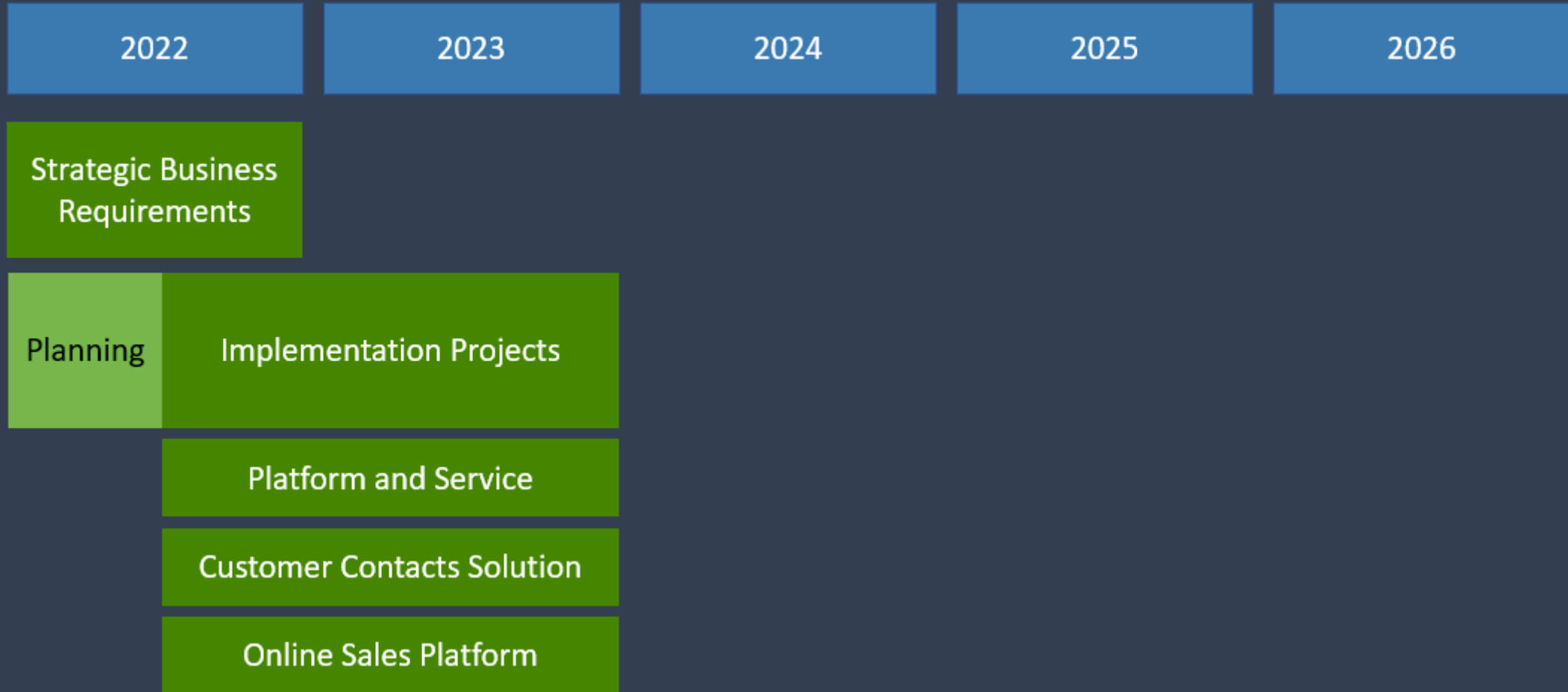
Microsoft Dynamics and Power Platform - Text Description

This slide describes the Microsoft Dynamics and Power Platform Roadmap from the preceding roadmap slide, in text.

Strategic Business Requirements, from start of 2022 to end of 2022
Planning, from start of 2022 to end of quarter 2 in 2022, followed by Implementation Projects, from start of quarter 3 in 2022 to end of 2023
Platform and Service, from start of quarter 3 in 2022 to end of 2023
Customer Contacts Solution, from start of quarter 3 in 2022 to end of 2023
Online Sales Platform, from start of quarter 3 in 2022 to end of 2023

Collaboration and End-User Technologies

Collaboration and End-User Technologies include the following strategies

- End User Technologies
- Telephony Strategy
- Collaboration Tools

End-User Technology Strategy

- To provide a mix of role-appropriate laptop devices, software and Bring Your Own devices to support the operation of the council

- We ensure these are relevant to changes in NCC business requirements, the changing technologies and markets

- Devices are managed to ensure they are kept up to date, stable, secure and cost-effective throughout their lifecycle

- We will continue to use Microsoft Office as our productivity toolset

- We have invested significantly in Microsoft products so these will be our first choice when selecting software

End-user Technologies Roadmap

2022	2023	2024	2025	2026
Y4 Device Refresh (HP to Lenovo)		Device Refresh Restarts Y1	Device Refresh Y2	Device Refresh Y3

Windows 10 Enterprise Evergreen | Windows 11 Enterprise Evergreen

Windows 365

Office 365 Enterprise Evergreen

Microsoft Defender Endpoint (Advanced Threat Protection)

Autopilot Zero Touch Modern Device Management

Windows Hello

Security – continue to follow NCSC & Microsoft best practice and stay compliant with PSN / CE+

End-user Technologies Roadmap - Text Description

This slide describes the End-user Technologies Roadmap from the preceding roadmap slide, in text.

Year 4 Lenovo refresh (HP to Lenovo), from start of 2022 to end of 2022, followed by a gap from start of 2023 to quarter 4 2023, followed by Device Refresh restarting year 1, from quarter 4 2023 to end of 2024, followed by Device Refresh Year 2, from start of 2025 to end of 2025, followed by Device Refresh Year 3, from start of 2026 to end of 2026

Windows 10 Enterprise Evergreen, from start of 2022 to end of 2023, followed by Windows 11 Enterprise Evergreen, from start of 2024 to end of 2026

Windows 365, from quarter 3 in 2023 to end of 2026

Microsoft Defender for Endpoint (Advanced Threat Protection), from start of 2022 to end of 2026

Autopilot Zero Touch Modern Device Management, from start of 2023 to end of 2026

Windows Hello, from start of 2023 to end of 2026

Security, continue to follow NCSC & Microsoft best practice and stay compliant with PSN / CE+, from start of 2022 to end of 2026

End-User Technology Principles

1. Windows laptops (aligned to our Refresh Programme)
2. Bring Your Own device (BYOD) to enhance flexibility for staff
3. Android Enterprise Zero Touch phones and tablets
4. Full desktop implementation of Microsoft Office 365
5. Devices will be Patched up to date following our patching Strategy
6. We will always use supported versions of software and hardware
7. Evergreen software models preferred
8. Follow industry best practice (e.g. Zero Touch and security)

Mobile Technologies Roadmap

2022	2023	2024	2025	2026

Microsoft Intune

Android Enterprise Zero Touch

Bring Your Own Device (BYOD) for Employee-Owned Android & Apple Devices

Retire Android Versions 7, 8 & 9	BYOD for Windows 10	BYOE (Bring Your Own Everything)

Security – continue to follow NCSC, Google, Apple & Microsoft best practice and stay compliant with PSN / CE+

Mobile Technologies Roadmap - Text Description

This slide describes the Mobile Technologies Roadmap from the preceding roadmap slide, in text.

Microsoft Intune, from start of 2022 to end of 2026

Android Enterprise Zero Touch, from start of 2022 to end of 2026

Bring Your Own Device for employee owned Android and Apple devices, from start of 2022 to end of 2026

Retire Android versions 7, 8 and 9, from start of 2022 to end of 2022, followed by Bring Your Own Device for Windows 10, from start of 2023 to end of 2023, followed by Bring Your Own Everything, from start of 2024 to end of 2026

Security – continue to follow NCSC, Google, Apple & Microsoft best practice and stay compliant with PSN / CE+, from start of 2022 to end of 2026

Telephony Strategy

- Microsoft Teams is our main telephone system and will remain so for the foreseeable future.

- Contact Centre software will be reviewed 2022/2023

- We will continue to use SIP trunks for telephony connectivity

- We will move to contact centre Cloud based services at the right time

- We will retire PSTN lines (UK PSTN network will switch off in 2025)

Telephony

2022	2023	2024	2025	2026

Microsoft Teams — 8234 Users

Contact Centre as a Service Avaya from Capita | **New Service from Capita** | **New Service third party or Teams** — 303 Users

Session Initiation Protocol Trunks from Capita | **New Session Initiation Protocol Trunks** — 190 Lines

Mobile Network Operator Vodafone from Capita | **Re-procure Mobile phone service** — 6440 SIMS

Mobile Device Management Microsoft Intune — 2506 Users

Mobile Network Operator EE (for Emergency Services Network) — 100 SIMS

Bring Your Own Device Microsoft Intune — 1339 Users

Telephony - Text Description

This slide describes the Telephony Roadmap from the preceding roadmap slide, in text.

Microsoft Teams 8234 users, from start of 2022 to end of 2026

Contact Centre as a Service for 303 users, from start of 2022 to middle of 2023, then following, a new service from Capita from middle of 2023 to middle of 2024, then following, a new service either third party or Teams from mid 2024 to end of 2026.

Session Initiation Protocol Trunks from Capita 190 lines, from start of 2022 to mid 2024, then following New Session Initiation Protocol Trunks, from mid 2024 to end of 2026

Mobile Network Operator Vodafone from Capita for 6440 SIMS, from start of 2022 to mid 2024, then following, reprocure mobile phone service, from mid 2024 to end of 2026

Mobile Device Management for 2506 users, from start of 2022 to end of 2026

Mobile Network Operator EE for 100 SIMS (for emergency services network) from mid 2022 to end of 2026

Bring Your Own Device for 1339 users, from start of 2022 to end of 2026

Telephony Principles

1. We will increase our use of Bring Your Own Device by pro-actively promoting the use

2. We will reduce the number of mobile phones and mobile connections in use across the Authority

3. We move corporate mobile phones to Microsoft Intune managed BYOD devices

Emergency Services Network (ESN)

ESN is a national project to replace the Airwave Tetra based Radio system currently used by Ambulance, Fire and Police with a 4G based system

EE have been awarded the contract to provide the phone network, with a requirement to provide 96% coverage on Major roads and 87% coverage on Minor roads, although this is expected to equate to 99% on major roads and 96% on minor roads

ESN Users have priority over other users on the EE Network, so in the event of a major incident ESN users coverage is maintained while other EE users will loose signal

In area's with poor signal, infill masts dedicated to ESN have been constructed, currently 1 in Norfolk with 2 on the border with Suffolk

950 EE masts are being constructed across the country with 19,000 being upgraded to support ESN

Motorola have been awarded the contract to provide the voice system and handsets that operate over EE's network

Collaboration Strategy

- We will work with partners to align technology so we can more easily work together

- We will use and promote the use of Microsoft M365 suite of products for collaboration
    - Microsoft Teams
    - Microsoft Sharepoint
    - Teams Channels

- This will be supported by the use of Bring Your Own Device to increase flexibility and options for staff

Collaboration Roadmap

2022	2023	2024	2025	2026

Microsoft Teams 8234

Zoom (Third Party interaction by exception)

Microsoft SharePoint	Microsoft SharePoint
Microsoft Teams Channels	Microsoft Teams Channels
BYOD	BYOD

Collaboration Roadmap - Text Description

This slide describes the Collaboration Roadmap from the preceding roadmap slide, in text.

Microsoft Teams 8234 users, from start of 2022 to end of 2026
Zoom (third party interaction by exception), from start of 2022 to end of 2026
Microsoft SharePoint, from start of 2022 to end of 2026
Microsoft Teams Channels, from start of 2022 to end of 2026
Bring your own device, from start of 2022 to end of 2026

Collaboration with Partners

Local Authorities

| Norwich City Council | South Norfolk | Kings Lynn West Norfolk | Great Yarmouth | Broadland | North Norfolk | Breckland |

Health

| NSFT | NCH&C | QE Hospital | James Paget Hospital | NNUH | CCGs |

Other Partners

| East Coast Control Room Consortium | SocITM | Gartner | Schools & Academies | Norfolk & Suffolk Police | LA's outside Norfolk |

Collaboration Toolsets

| Email | Teams | PowerBI Reports | GRID | SharePoint |

Collaboration with Partners - Text Description

This slide describes the Collaboration with Partners Roadmap from the preceding roadmap slide, in text.

Local Authorities, including
Norwich City Council, South Norfolk District Council, Kinds Lynn West Norfolk Borough Council, Broadland District Council, North Norfolk District Council and Breckland District Council

Health, including
Norfolk and Suffolk Foundation NHS Trust, Norfolk Community Health and care NHS Trust, Queen Elizabeth Hospital, James Paget Hospital, Norfolk and Norwich University Hospital and the Clinical Commissioning Groups

Other partners, including
East Coast Control Room Consortium, the Society of IT Managers, Gartner, Schools and Academies, Norfolk and Suffolk Police, Local Authorities outside Norfolk

Collaboration Toolkits, including
Email, Teams, Power B I Reports, GRID and SharePoint

Collaboration Principles

1. Microsoft Teams should be used for all voice, video and instant messaging

2. Microsoft Teams Channels and Microsoft Sharepoint will be used for sharing and collaborating on documents

3. We will work with partners to align technology so we can more easily work together

Data Analytics and Artificial Intelligence Strategy

Our Data Analytics and AI strategy is to exploit Cloud analytics provided by NCC strategic suppliers. This will provide access to modern and secure analytical and AI tools to NCC meet reporting and analytics aims and objectives.

- We will steer NCC Analysts to use analytical and AI tools in Microsoft Azure, Oracle Cloud and ESRI ArcGIS Online.

- We will facilitate access and guidance for analysts to enable 'best practice' use of these tools to meet business requirements and exploit NCC investment in cloud technology and cloud hosted curated data.

- We will progressively reduce support for and decommission on-premise analytical tools with the aim to be fully cloud based by end of 2024.

- We will monitor and report on Cloud usage and costs to enable NCC to understand and manage demand, cost and value and meet carbon reduction targets.

- We will ensure that significant changes to analytical tools are reported to the appropriate Governance groups.

Data Analytics and Artificial Intelligence Roadmap

2022	2023	2024	2025	2026

Power BI Server (on-premise)

Power BI Service (Cloud)

ArcGIS 10.8 | **ArcGIS Pro (Cloud)**

Azure Databricks

Azure Machine Learning

Azure Artificial Intelligence Services

Azure Cognitive Services
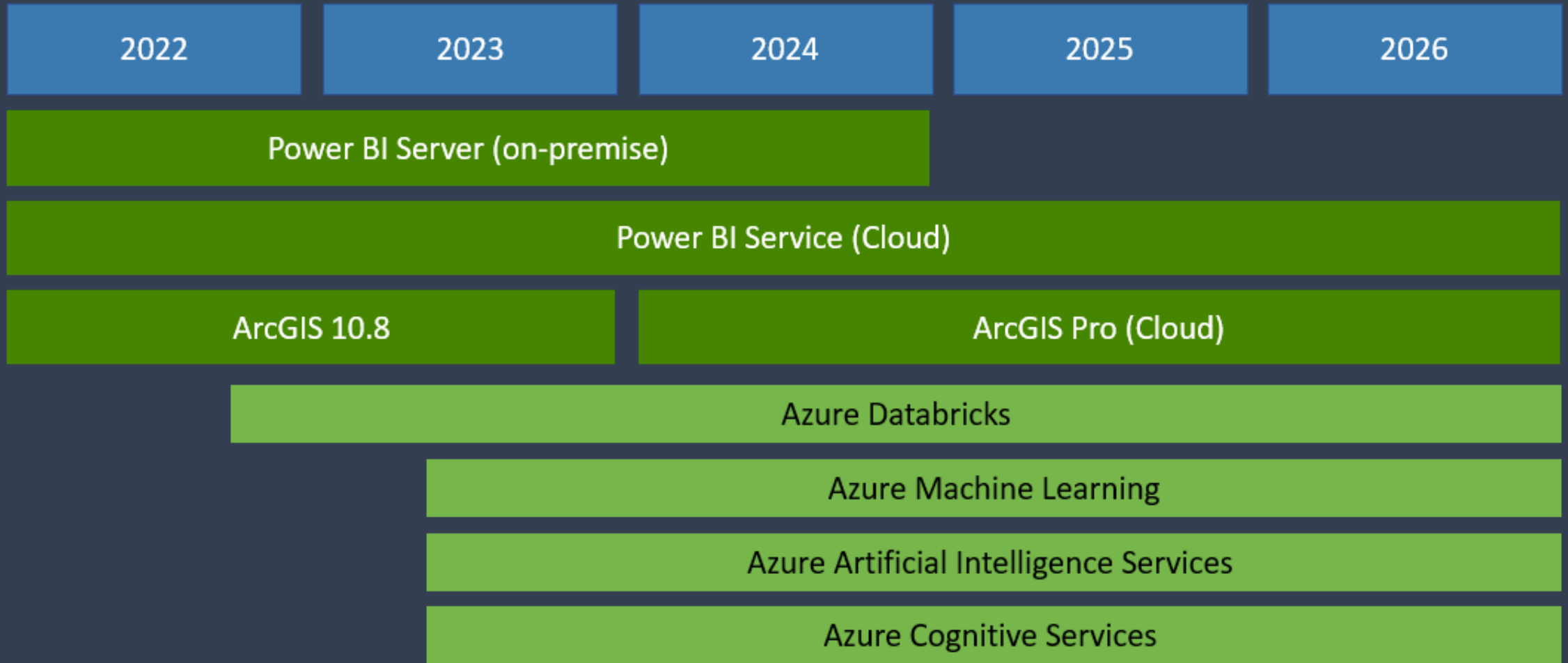
Data Analytics and Artificial Intelligence Roadmap - Text Description

This slide describes the Data Analytics and Artificial Intelligence Roadmapfrom the preceding roadmap slide, in text.

Power BI Server (on-premise), from start of 2022 to the end of 2024

Power BI Service (Cloud), from start of 2022 to the end of 2026

ArcGIS 10.8 from start of 2022 to end of 2023 and then ArcGIS Pro (Cloud) follows from start of 2024 to end of 2026

Azure Databricks, from quarter 4 in 2022 to end of 2026

Azure Machine Learning, from quarter 2 in 2023 to end of 2026

Azure Artificial Intelligence Services, from quarter 2 in 2023 to end of 2026

Azure Cognitive Services, from quarter 2 in 2023 to end of 2026

Data Analytics and Artificial Intelligence Principles

1. Standardised scalable analytics architecture
2. Providing correct analytical interfaces for users to consume data
3. Focus on the use of curated shared datasets (data reusability)
   I.   Improve consistency and reduce data redundancy
   II.   Reduce administration overhead
4. Centralised data repository, with dedicated partitions and zones for individual analytical teams
5. Agility to deliver multiple end-user analytics products and services

Data Analytics and Artificial Intelligence Model

Federated Data Analytics Implementation Model

Analytics Tool 1   Analytics Tool 2   DSML Tool 1

Enterprise Data Warehouse   Data Lake   Data Virtualization

LDW
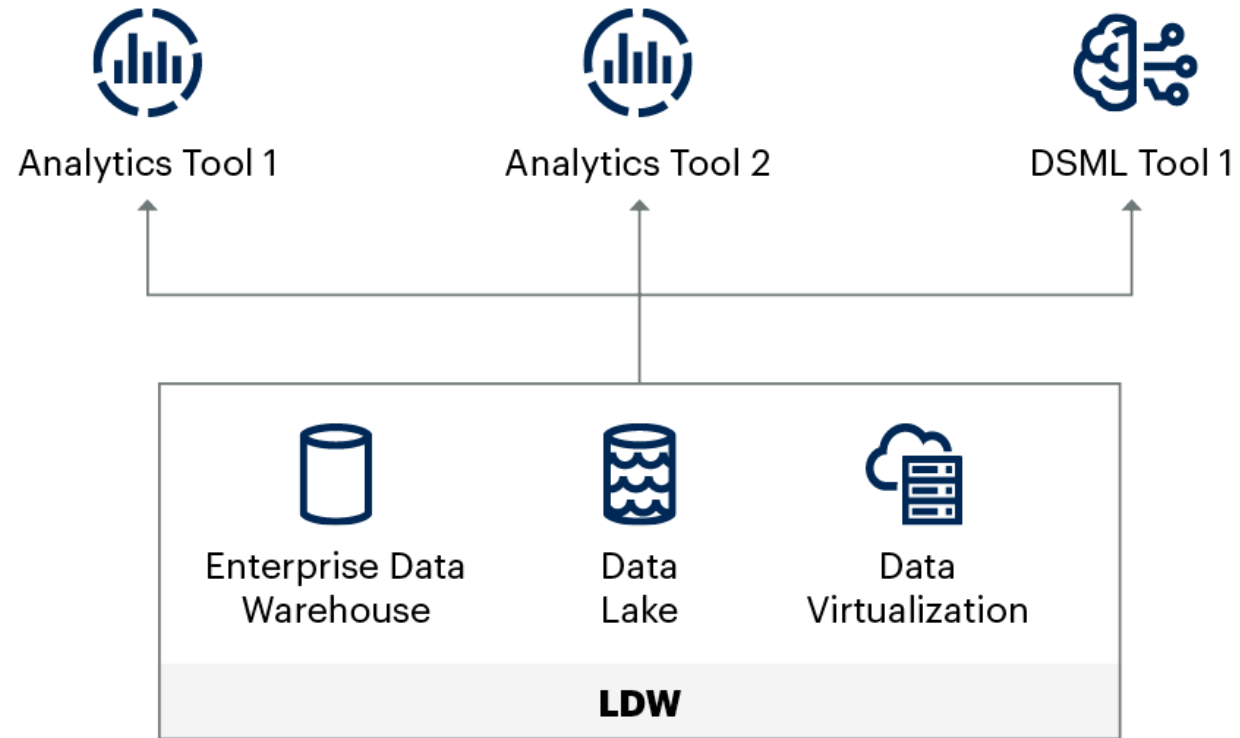
Source: Gartner

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Data Analytics and Artificial Intelligence (cont.)

Guiding Principles and Technical Prerequisites for a Federated Data and Analytics Architecture

Guiding Principle		Technical Prerequisite
Governance and Security Framework		Data and Analytics Governance Plan
Centralized Data Repository		Logical Data Warehouse
Real-Time Analysis		Real-Time Analytics Support
Trusted Data Source		Common Data Definitions
Effective Visual Storytelling		Self-Service Data Visualization

Source: Gartner

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Gartner.

Data Analytics and Artificial Intelligence self-service

Implement Controls in Power BI to Support Self-Service Analytics

Low Control/High Agility ←——————————————→ High Control/Low Agility

Data Science Exploration	Knowledge Management and Information Sharing	Enterprise Reporting
Personal Reporting	Project Reporting Team or Group Reporting	Departmental Reporting Business Unit Dashboards, KPIs, etc.
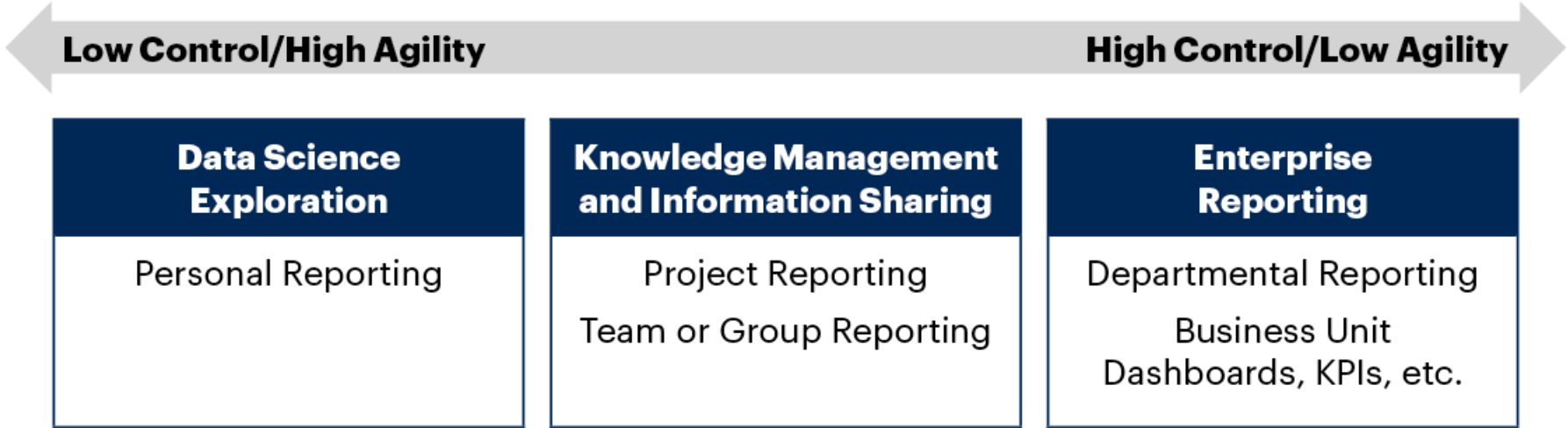
Source: Gartner

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Gartner.

Data Management Solutions

Data Management solutions are needed to create a modern data infrastructure that will enable the exploitation of NCC data assets and to join it with data from other organisations where that adds value.

An effective data infrastructure will provide accurate, consistent insights to support operational and strategic decision making and achieve business goals.

Data Management Strategy

Our Data Management strategy is to migrate our data & analytics platform(s) to global cloud providers to take advantage of the flexibility, resilience and security enabling the authority to take advantage of the latest technologies.

- We will ensure governance of key data assets for compliance and optimal usage
- We will invest in the digital skills required to extract maximum value from data assets through the use of the latest reporting and analytical tools
- We will integrate with partners such as NHS, Public Health England, Local Councils, Central Government and the Police to increase interoperability.
- We will identify, capture and integrate new data to ensure Norfolk is a 'smart county' benefiting vulnerable citizens, environmental improvements, highways and transportation efficiency enhancements and public health.

Data Management Strategy Elements

These are the key elements of our data management strategy that are needed to meet our ambitions described in the NCC Digital Strategy:

| Governance | Master Data | Big Data Technologies and Architecture | Data Integration | IoT Information Layer | Database Architecture |

People and Organisation

Data Management Strategy Elements - Text Description

This slide describes the Data Management Strategy Elements from the preceding roadmap slide, in text.

These are the key elements of our data management strategy that are needed to meet our ambitions described in the NCC Digital Strategy:

Governance

Master Data

Big Data Technologies and Architecture

Data Integration

IoT Information Layer

Database Architecture

The concept of People and Organisation spans all of the above

Data Management Roadmap

Short term 3 to 6 months | **Medium term 6 to 24 months** | **Long term 2 to 5 years**

Data governance start-up

Modern database architecture

Cloud data integration technologies

Skills gap analysis, training & recruitment

Cloud data platform services

IoT Information Layer start-up

Effective enterprise data governance

Master data management

Big data technologies & architecture

Data integration with NCC systems & partners

Enterprise data discovery

Data Management Roadmap - Text Description

This slide describes the Data Management Roadmap from the preceding roadmap slide, in text.

Short Term 3 to 6 months includes
Data governance start-up
Modern database architecture
Cloud data integration technologies
Skills gap analysis, training and recruitment

Medium term 6 to 24 months includes
Master data management
Big data technologies & architecture
Cloud data platform services
IoT Information Layer start-up

Long term 2 to 5 years includes
Effective enterprise data governance
Data integration with NCC systems & partners
Enterprise data discovery

Data Management Roadmap (cont.)

2022	2023	2024	2025	2026

GRID on-premise → GRID in Cloud (Microsoft Azure Modern Data Platform) →

NCC Data – Line of business systems - Liquid Logic, HR & Finance, CRM, Highways

Partner Data – NHS, Environment Agency, Public Health England (PHE), Local Councils, Police

IOT Data – assisted living, road sensors, air quality

3rd party data – Office for National Statistics (ONS), Ordnance Survey

Improving Data Governance →

Improving Data Management skills →
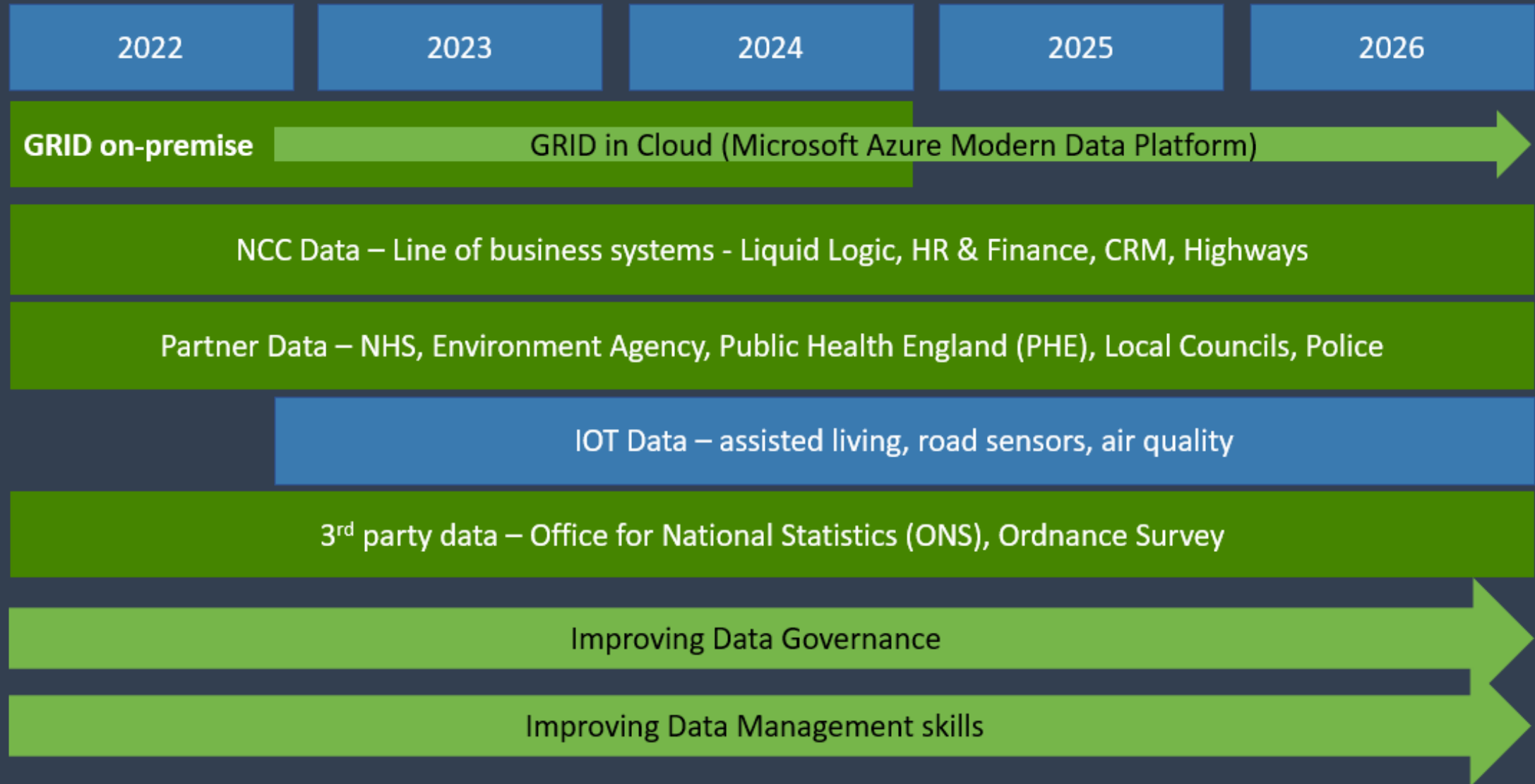
Data Management Roadmap (continued) - Text Description

This slide describes the Data Management Roadmap (continued) from the preceding roadmap slide, in text.

GRID on-premise, from start of 2022 to end of 2024 with GRID in cloud starting 2023 and ongoing past 2026

NCC Data Line of business systems Liquid Logic, HR & Finance, CRM and Highways, starting 2022 and ending 2026

Partner Data, NHS, Environment Agency, Public Health England (PHE), Local Councils and Police, starting 2022 and ending 2026
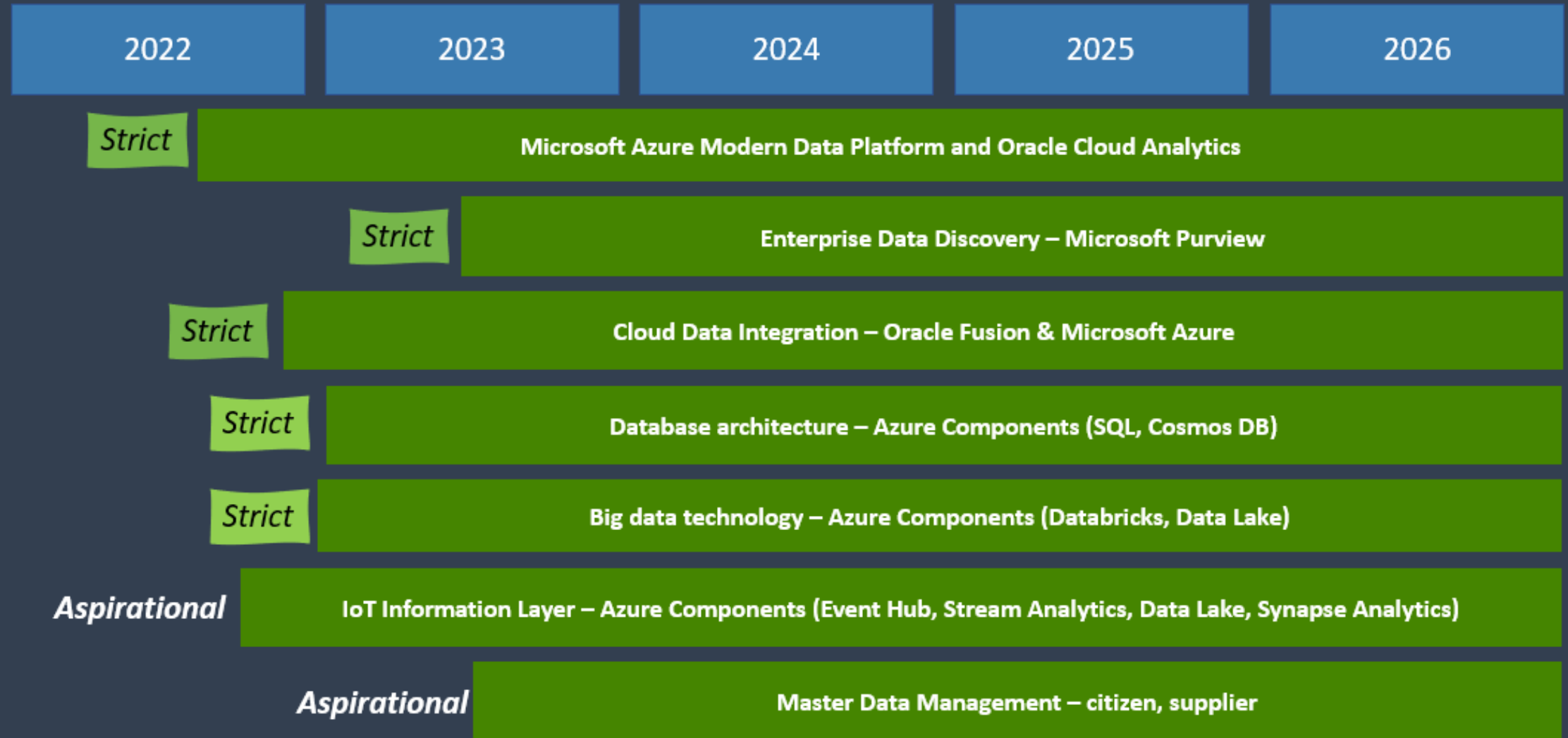
IOT Data, assisted living, road sensors and air quality, from start of 2023 to end of 2026

3rd party data, Office for National Statistics and Ordnance Survey, from start of 2022 to end of 2026

Improving Data Governance, from start of 2022 and ongoing past 2026

Improving Data Management Skills , from start of 2022 and ongoing past 2026

Data Management Roadmap (Technology)

2022	2023	2024	2025	2026

Strict — Microsoft Azure Modern Data Platform and Oracle Cloud Analytics

Strict — Enterprise Data Discovery – Microsoft Purview

Strict — Cloud Data Integration – Oracle Fusion & Microsoft Azure

Strict — Database architecture – Azure Components (SQL, Cosmos DB)

Strict — Big data technology – Azure Components (Databricks, Data Lake)

Aspirational — IoT Information Layer – Azure Components (Event Hub, Stream Analytics, Data Lake, Synapse Analytics)

Aspirational — Master Data Management – citizen, supplier

Data Management Roadmap (Technology) - Text Description

This slide describes the Data Management Roadmap (Technology) from the preceding roadmap slide, in text.

Strict. Microsoft Azure Modern Data Platform and Oracle Cloud Analytics, from mid 2022 to end of 2026
Strict. Enterprise Data Discovery – Microsoft Purview, from mid 2023 to end of 2026
Strict. Cloud Data Integration – Oracle Fusion & Microsoft Azure, from start of 2023 to end of 2026
Strict. Database architecture – Azure Components (SQL, Cosmos DB), from start of 2023 to end of 2026
Strict. Big data technology – Azure Components (Databricks, Data Lake), from start of 2023 to end of 2026
Aspirational. IoT Information Layer – Azure Components (Event Hub, Stream Analytics, Data Lake, Synapse Analytics), from mid 2022 to end of 2026
Aspirational. Master Data Management – citizen and supplier, from start of 2023 to end of 2026

Data Management Principles

1. Data is recognised and managed as an asset
2. Data that is created / stored in systems commissioned by NCC is owned by NCC, and suppliers must be contracted to provide full access rights
3. Centrally curated data will be stored in GRID / Azure Data Platform
4. GRID/Azure Data Platform will be the authoritative source of truth for integrated reporting and analytics

Data Management Principles (cont.)

5. Data will have clearly defined accountability
6. Data will comply to agreed data standards where they exist
7. Data access MUST conform to corporate data access and security standards
8. Data management processes will be automated where possible to reduce manual handling errors

Data Management Roadmap (Governance)

2022	2023	2024	2025	2026

Enterprise Data Governance action plan agreed and implemented covering access, roles and standards

Data Management Roadmap (Governance) - Text Description

This slide describes the Data Management Roadmap (Governance) from the preceding roadmap slide, in text.

Enterprise Data Governance action plan agreed and implemented covering access, roles and standards, starting quarter 4 in 2022, ending at the end of 2024

Key ICT Contracts

2022	2023	2024	2025	2026

Data and Voice Networking - Capita

Compute Hardware and Storage

Mobile Network Operator **Vodafone** - Capita

Managed Print Service - Canon

ITSM – Axios Assyst

Blue Prism

Additional Information

Tenders, contracts and procurement - Norfolk County Council
Contracts and grants register - Norfolk County Council

Key ICT Contracts roadmap - Text Description

This slide describes the Key ICT Contracts from the preceding roadmap slide, in text.

Data and Voice Networking Capita, from start of 2022 to first quarter 2024

Compute Hardware and Storage, from start of 2022 to mid 2024

Mobile Network Operator Vodafone Capita, from start of 2022 to first quarter 2022

Managed print service Canon, from start of 2022 to end of 2022

ITSM Axios Assyst, from start of 2022 to end of 2022

Blue Prism, from start of 2022 to mid 2025

Additional Information

Tenders, contracts and procurement - Norfolk County Council

Contracts and grants register - Norfolk County Council

Reference Material

All the references are Hyperlinks:

NCSC Connected Places Guidance

One Government Cloud Strategy (OGCS)

Transforming for a Digital Future Roadmap for Digital and Data

SOCITM

Gartner