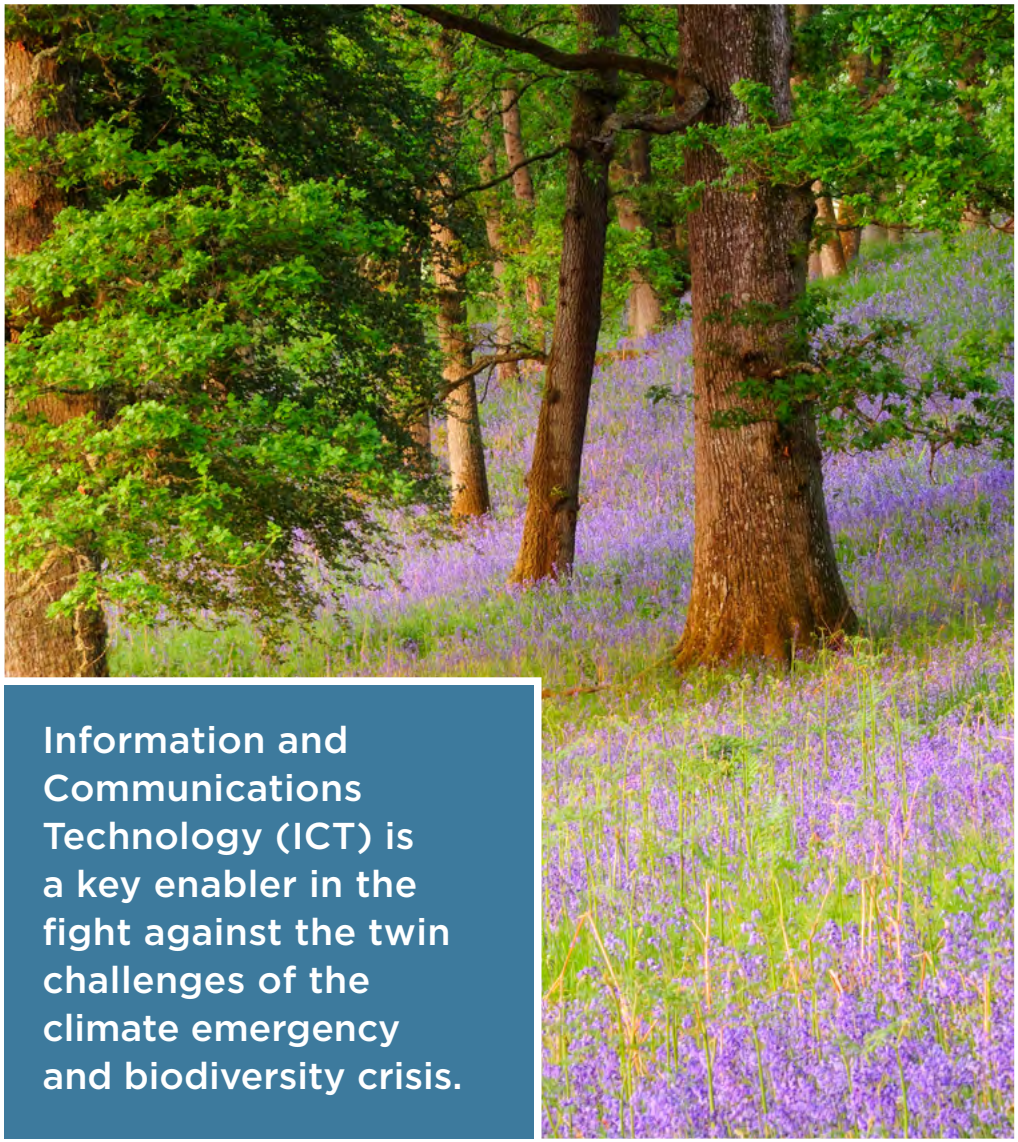
NatureScot ICT Strategy 2025-2028

NatureScot
NàdarAlba
Scotland's Nature Agency
Buidheann Nàdair na h-Alba

Contents

Vision

1. Information and Communications Technology (ICT) is a key enabler in the fight against the twin challenges of the climate emergency and biodiversity crisis. NatureScot's digital solutions will be flexible, scalable, resilient and cyber-secure and will enable innovation and greater efficiencies as we strive to deliver a nature rich future for all.



Information and Communications Technology (ICT) is a key enabler in the fight against the twin challenges of the climate emergency and biodiversity crisis.

Introduction

Purpose

2. The NatureScot ICT Strategy provides direction and strategic priorities for how our Information and Communications Technology and infrastructure will be shaped to support the delivery of our Corporate Plan. This ICT Strategy is a 'living' document that will be kept up to date to reflect the changing environment in which we operate and to ensure continued alignment with the wider Scottish public sector digital programme.

Scope

3. The full range of NatureScot's underlying information and communications technology and infrastructure is covered by this Strategy.

4. Our ICT Strategy is not stand-alone. Rather, it sets out the technology focus as part of a wider portfolio covering organisational development, information management, data strategy, and net zero & cyber security. Together these strategies will underpin NatureScot's digital transformation.

Consultation and Review

5. This strategy has been developed in consultation with NatureScot's extended leadership team and incorporates further contributions from the Trade Unions.

6. Our strategic approach will be reviewed on an annual basis to ensure that it remains aligned to NatureScot's corporate requirements and to the wider objectives around public sector reform and the fast evolving Digital Scotland service manual.

7. This strategy will help to guide annual work programmes including the Information Technology Implementation Programme (ITIP), the Digital Development Programme and the Cloud GIS Transformation Programme.

Key Principles

8. Our key principles help us achieve our strategic ICT ambitions.

Efficiency

9. We will:
   - reduce licence costs by using core open-source technologies where appropriate
   - avoid customising applications to meet non-essential requirements
   - procure our services and systems though government frameworks
   - place high emphasis on value for money

Collaboration

10. We will:
   - pursue a collaborative approach to working with partners
   - adhere to the principle of ‘share, before buy, before build’

Alignment

11. We will:
   - ensure NatureScot technology remains aligned to that of the wider public sector
   - continuously review our technology choices to ensure alignment with best practice and Government service standards/ systems design principles

Design

12. We will:
   - follow Digital Scotland Service Standards
   - apply a Cloud First approach for digital public services

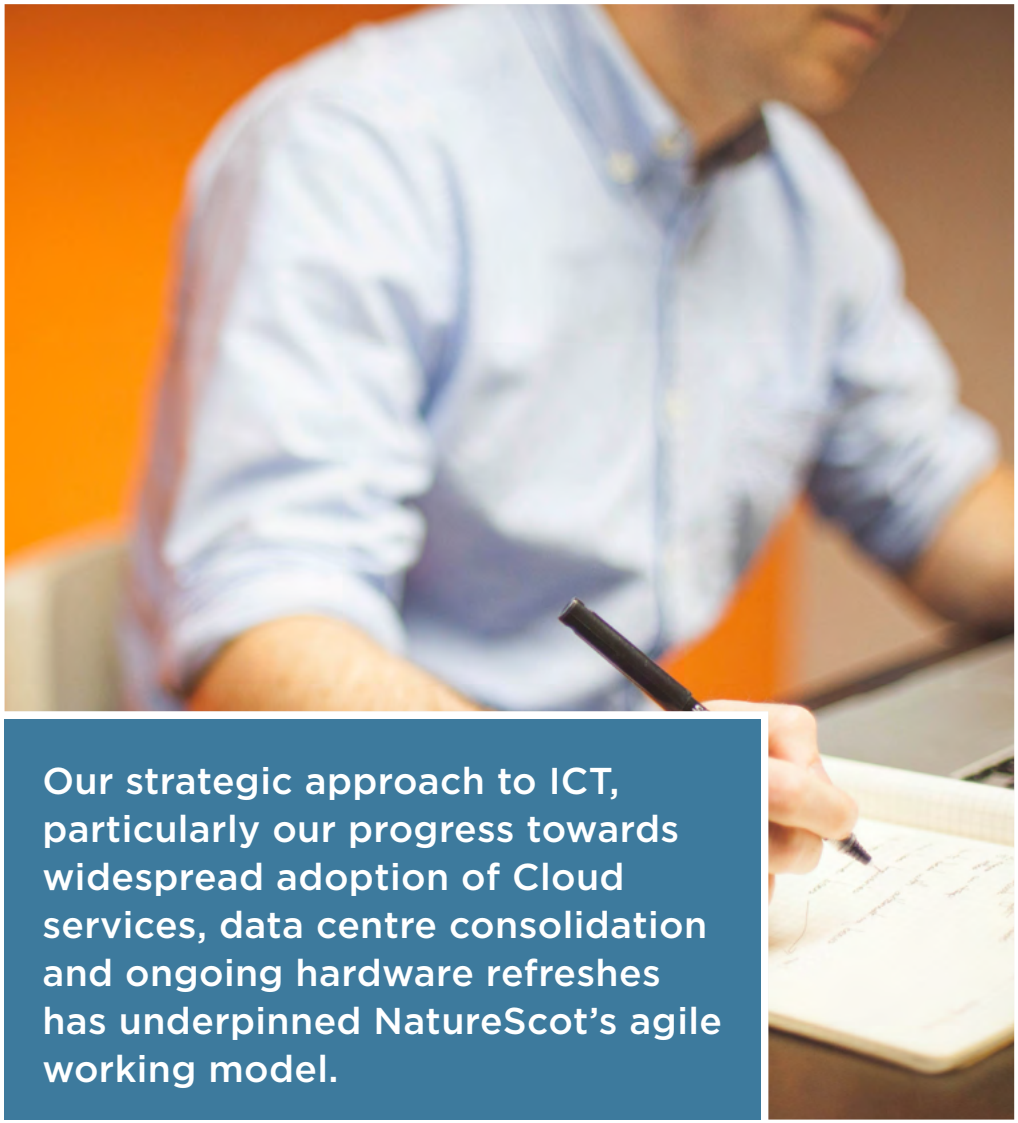
Resilience

13. We will:
   - strive to eliminate single points of failure
   - prioritise cyber-security and the elimination of technology sprawl
   - maximise flexibility and resilience though Service Oriented Architecture (SOA)
   - support our expert and highly skilled ICT workforce through training and development.

Our key principles help us achieve our strategic ICT ambitions.

Key Themes

14. Our strategy is focused around four key themes:
    - **Consolidation** - Addressing technical debt
    - **Connected Technology** – Technology and network fit for the future
    - **Collaboration** - Shared platforms and components
    - **Culture** - Skills & training, resilience & security, and green ICT.



Our strategic approach to ICT, particularly our progress towards widespread adoption of Cloud services, data centre consolidation and ongoing hardware refreshes has underpinned NatureScot's agile working model.

Objectives

15. Our objectives over the term of this strategy are:

Consolidation - addressing technical debt.

16. Our strategic approach to ICT infrastructure transformation, particularly our progress towards widespread adoption of Cloud services, previous work on data centre consolidation and ongoing hardware maintenance & refresh projects have underpinned the agile working model that benefits NatureScot. Our approach has enabled our organisation to operate flexibly across the full range of corporate functions. Nowhere was this more apparent than during the covid pandemic where NatureScot's strategic investment in ICT meant that, even as offices were forced to close, key business services continued to function.

17. However, transformation at pace and our ambition for innovation, coupled with the challenge of delivering business as usual during the height of the pandemic, has incurred costs. Consequently, there is now a pressing need to address technical debt in several key areas of our ICT systems and infrastructure.

18. NatureScot has legacy systems that are becoming increasingly difficult to support. Repeated strategic application reviews (SARs) have highlighted a need to:
    - Rationalise, reduce and consolidate the cost and number of software applications
    - Focus valuable internal developer resource on line-of-business systems
    - Avoid developing unnecessary bespoke applications
    - Pursue packages/shared platforms and components for common business services
    - Accommodate greater flexibility for mobile working within applications
    - Avoid customising software to meet non-essential needs.

19. Whilst good progress has been made in some of these respects, further work to address the issue of unsupportable/ brittle legacy systems is needed to ensure we do not replace on-prem application sprawl with a plethora of Software and Platform as a Service (SaaS & PaaS) solutions in their place.

20. As more workloads are shifted to Public Cloud and SaaS, the on-prem location of our corporate database may no longer be most appropriate.

Moving the database to public-cloud hosting could be more flexible, more cost effective, provide more opportunity for collaboration and data sharing and better enable future innovation.

Obj1: We will work with NatureScot's Digital Programme Office to address technical debt by identifying and prioritising end of life bespoke and on-prem applications and planning for their replacement, migration or decommissioning.

Obj2: We will commission a review of our enterprise architecture to analyse the current ICT estate and ensure it remains properly aligned to and can meet NatureScot digital transformation objectives.

21. NatureScot's journey of virtualisation, consolidation and Cloud migration has spanned several previous IT strategies. We have made excellent progress in addressing all priority areas of Cloud migration by moving to a range of providers of software, platform and Infrastructure as a Service (SaaS, PaaS & IaaS).

Obj3: We will future proof our Geographic Information Systems technologies and maximise their value to the business through delivery of the Cloud GIS Transformation Programme.

22. More recently, Scottish Government has made available a public sector cloud platform designed for Scottish public sector organisations. This offers:

    - a pay-as-you-go service
    - identity and access management
    - a service in line with Scottish Government and industry standards
    - alignment with a range of security standards and bodies
    - cost management features.

Obj4: We will review our Amazon Web Service (AWS) portfolio and assess the benefits of migrating this to the Scottish Government public sector Cloud platform.

Connected Technology – technology and network fit for the future.

23. Our technology and network connect the NatureScot workforce to each other, to our customers, to other agencies and to our delivery partners. This network and technology provide the means to access the business-critical systems and tools that underpin day-to-day operations across our entire organisation.

24. Over recent years, NatureScot's flexible 'any time/ any place' ICT has facilitated the transformation of working practices, enabling modern agile and hybrid working, regardless of location, be that a NatureScot office, a shared hub, or a home-working base.

25. Nevertheless, work is still required to bring all office locations up to a point where hybrid working works effectively, everywhere, for everyone and always to ensure a truly equitable experience.

26. The consolidation of the two NatureScot data centres (Edinburgh and Inverness) in 2023/24 was a major change to our core network topology. Following this we have an ongoing opportunity to further reshape the Wide Area Network (WAN) to ensure continued fitness for purpose in an increasingly Cloud-centric ICT infrastructure.

27. Key to this will be the migration of old SWAN circuits and broadband lines under a single SWAN2 contract. This change will result in every office having a single 'wires only' internet connection, that utilises the most appropriate technology, provided by BT under the SWAN2 government framework. Local offices will be connected to GGH via site-to-site VPN and this redesign will also include StarLink satellite connections to address the issues that have previously sometimes affected the NatureScot sites without effective land-based connectivity.

Obj5: We will improve office connectivity through migration from SWAN1 to SWAN2 and through the implementation of a standardised local office network infrastructure.

28. In addition to the immediate benefit of reducing network operating costs, standardisation of existing connections under SWAN2 will deliver the flexibility needed to meet the emerging geographic requirements of the NatureScot estates strategy (alignment to the single Scottish estates strategy; office portfolio rightsizing; and a move to working from hubs owned by other bodies/ partner organisations).

29. As well as making further Network improvements, we will continue to ensure that all NatureScot employees are equipped with effective user technology and that end-user devices are securely and effectively managed and supported.

30. Currently, end-user technologies are procured under government frameworks which meet the vast majority of our corporate requirements. Whilst hardware choices will continue to evolve in line with business need, we foresee no fundamental shift from the existing approach to device selection, procurement, and deployment over the duration of this strategy.

Obj6: We will continue a rolling programme of laptop and enterprise smartphone refresh, with a focus on further improvements to end-user device management policies.

31. Virtual (Cloud hosted) desktops, sometimes referred to as 'Desktop as a Service', offer an increasingly more secure and flexible way means of supporting agile/ hybrid working at scale. Virtual desktop technology is well aligned with our Zero Trust architecture objectives, (Obj12 below) and offers the benefit of being able to securely support systems access from shared end-user devices. This could help us to address the challenge of partnership working using devices belonging to other organisations engaged with NatureScot on joint projects.

Obj7: We will evaluate Windows Virtual Desktop/ Desktop as a Service as we further progress NatureScot's Cloud migration.

Collaboration - shared platforms and components.

32. NatureScot has long recognised the benefits to the public purse that can be achieved through ICT collaboration. We have a proven track record of successes that can be traced back through a journey of colocations, shared services, collaborative procurement, and shared business systems (most notably Enterprise Resource Planning, ERP).

33. Most recently, the digital transformation of NatureScot services (e.g. Digital Licensing Service) has benefited considerably from the deployment of common .gov components and through close adherence to the Scottish approach to service design.

34. Looking forward, we will continue with this approach by identifying further opportunities to partner and collaborate with our counterparts across the Scottish public sector.

Obj8: We will follow Digital Scotland service standards, by using and contributing to shared digital practices, processes, components, standards, patterns and platforms.

Obj9: We will actively pursue opportunities to share services through the Environment Public Service Reform (EPSR), including the possible harmonisation of ERP under the proposed Scottish Government Fusion shared service.

Culture - skills & training, resilience/ security, and green ICT.

35. Previous strategies have identified the vital importance of our IT culture: the need for ongoing skills development to keep pace with continued change, especially in Cloud computing, digital innovation and cyber-security; the importance of talent management together with the necessity of increasing business resilience through a reduction in single points of failure; and the shift towards green thinking that is required to ensure that future NatureScot digital services are designed to be both user and planet-centric.

36. Over recent years we have made great strides in many of these areas, especially when it comes to the development of a strong talent IT talent pipeline which has been achieved though engagement with learning providers (e.g. CodeClan, now under CodeBase) and the establishment of a highly successful ICT infrastructure apprenticeship.

37. This strategy period will see a continuation of our proven approach to skills development, with further focus on:

- Cloud architecture
- Service-level management
- Commercial contracts
- Cyber-security
- Digital innovation
- Green/ planet-centric ICT.

Obj10: We will promote a healthy learning culture, ensuring that employees across the breadth of NatureScot are supported as they strive to develop and grow their digital skills.

39. Progress towards the disaggregation of our ICT estate, the migration of key business systems to the Cloud and the implementation of a Zero Trust model has seen a significant reduction in the risks associated with single points of failure and has done much to increase NatureScot's overall business resilience.

40. Nevertheless, as is the case across the entire public sector, the threat of cyber-attack against our staff, systems and ICT infrastructure is very real and remains constant. Our cyber posture therefore remains one of caution.

Obj11: We will ensure that end-user devices, ICT systems, software and infrastructure is patched and kept up to date.

Obj12: We will follow National Cyber Security Centre Cloud security guidance on how to choose, configure and utilise Cloud services securely.

Obj13: We will continue to design our ICT architecture according to Zero Trust Principles.

Digital transformation is increasingly promoted as a vital part of the solution to the climate emergency and a key step on the road to net zero.

41. NatureScot has solid green credentials, having long been a proponent of Scottish public sector green ICT strategy, under which we made excellent progress on the journey through ICT infrastructure virtualisation, consolidation, data centre rationalisation to Cloud migration.

42. Although the steps we have taken to date demonstrate clear best practice, fully aligned to wider government strategy, what we have effectively achieved so far has been the offshoring of much of the carbon cost of our power and data centre cooling requirement.

43. Our next steps will include reviewing digital service uptime requirements with the objective of designing better, greener and more sustainable services that can more easily be spun up to enable transactions when the bulk of our service users demand them, rather than running systems 24hrs a day, 7 days per week.

Obj14: We will ensure that sustainable software engineering techniques form the foundation of future NatureScot digital services.

Obj15: We will promote decarbonisation of NatureScot digital services with a presumption against 24/7 uptime by default.

Governance and Accountability

44. The NatureScot Technology and Digital Services Activity reports directly to the Director of Business Services and Transformation and is accountable to the NatureScot Senior Leadership Team.

45. ICT resources are bid for in the same way as all other projects. They require approval by the Strategic Resource Manager, overseen by the Transformation & Resourcing Sponsor Group (TRSG) which provides strategic direction and prioritisation of organisational transformation & resources in support of delivery of the Corporate Plan.

46. Delivery of ICT infrastructure projects is through the Information Technology Implementation Programme (ITIP), overseen by a dedicated Programme Board.

47. All other approved business-led projects with a Technology and Digital Services component will be project managed by relevant business managers with support and representation from Technology and Digital Services provided as appropriate.

Measuring Impact

48. When successful, our strategy will deliver the following:

Consolidation:

- a reduction in technical debt through the elimination of end-of-life applications.
- an enterprise architecture review that sets out how our ICT estate can be better aligned with NatureScot digital transformation objectives.
- future proof GIS technologies that meet the ambition of the NatureScot Cloud GIS Transformation Programme.
- an assessment of the benefits of migrating to the Public Sector Cloud Platform.

Connected Technology:

- access for all staff to modern, cyber-secure, up-to-date, end user devices.
- a network provisioned through a standardised architecture, underpinned by SWAN2 and benefiting from reduced operating costs.
- an agreed approach to the implementation of virtual/ Cloud hosted desktops (DaaS).

Collaboration:

- applications that follow the Scottish approach to service design and which benefit from the use of shared platforms and components.
- a timeline for joining Scottish Government's proposed Fusion shared service.

Culture:

- greater digital confidence across the organisation.
- an ICT architecture managed according to Zero Trust Principles.
- compliance with the requirements of Cyber Essentials and National Cyber Security Centre Cloud security guidance.
- digital services that are developed with greater understanding of their carbon costs.

Summary

49. Climate and nature work together as one ecological system and both are in crisis. This ICT Strategy sets out a vision for modern, efficient, information communications technology and infrastructure that has both the flexibility and agility to meet NatureScot's requirements as they evolve in our fight against this climate emergency and biodiversity crisis.

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ANNEX I – Summary of Objectives

Item	Objective
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Obj3	We will future proof our Geographic Information Systems technologies and maximise their value to the business through delivery of the Cloud GIS Transformation Programme.
Obj4	We will review our Amazon Web Service (AWS) portfolio and assess the benefits of migrating this to the Scottish Government public sector Cloud platform.
Obj5	We will improve office connectivity through migration from SWAN1 to SWAN2 and through the implementation of a standardised local office network infrastructure.
Obj6	We will continue a rolling programme of laptop and enterprise smartphone refresh, with a focus on further improvements to end-user device management policies.
Obj7	We will evaluate Windows Virtual Desktop/ Desktop as a Service as we further progress NatureScot's Cloud migration.
Obj8	We will follow Digital Scotland service standards, by using and contributing to shared digital practices, processes, components, standards, patterns and platforms.
Obj9	We will actively pursue opportunities to share services through the Environment Scottish Public Sector Reform (ESPR), including the possible harmonisation of ERP under the proposed Scottish Government Fusion shared service.
Obj10	We will promote a healthy learning culture, ensuring that employees are supported as they strive to develop and grow their ICT and Digital skills.
Obj11	We will ensure that end-user devices, ICT systems, software and infrastructure is patched and kept up to date.
Obj12	We will follow National Cyber Security Centre Cloud security guidance on how to choose, configure and utilise Cloud services securely.
Obj13	We will continue to design our ICT architecture according to Zero Trust Principles.
Obj14	We will ensure that sustainable software engineering techniques form the foundation of future NatureScot digital services.
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February 2025

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