

Principles for a digital future:

Lessons learned from public sector ICT projects



 AUDIT SCOTLAND

Prepared by Audit Scotland
May 2017

Audit Scotland

Audit Scotland is a statutory body set up in April 2000 under the Public Finance and Accountability (Scotland) Act 2000. We help the Auditor General for Scotland and the Accounts Commission check that organisations spending public money use it properly, efficiently and effectively.

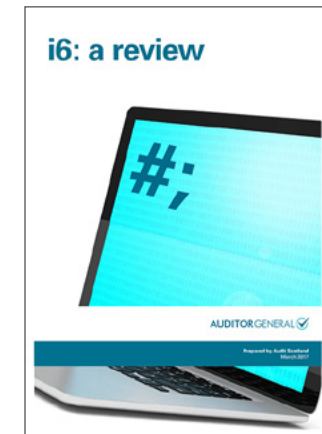
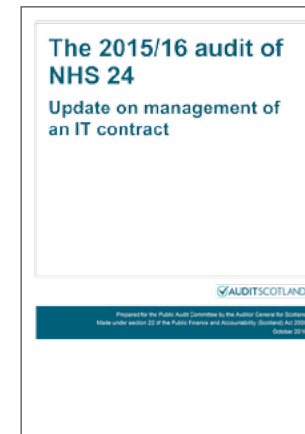
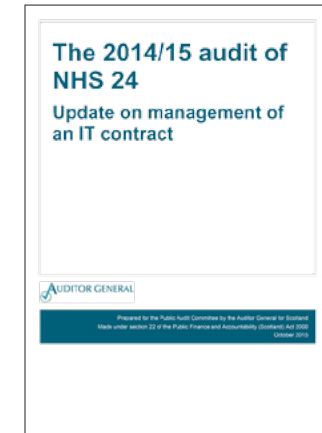
Introduction

With the advances in digital technologies, and as more and more public sector organisations look to digital to transform the way they deliver services, it has never been more important for these organisations to do it right.

Managed effectively, information and communication technology (ICT) and digital programmes can transform public services and make a real and positive difference to people's lives. However, the difficulties in managing such programmes are well documented and remain a complex challenge for Scottish public sector bodies.

In common with other audit organisations, we have reported on the difficulties public sector ICT projects and programmes have encountered. These are by no means unique to Scotland's public sector: consistently, the same issues are reported by organisations worldwide. In short, we can point to a set of common issues and themes at the heart of failing ICT projects and programmes.

This document summarises the issues we have identified in our previous reports, bringing together all the common themes into one place. We also point to other examples from around the world. Rather than provide a checklist of actions, we have organised these themes into a set of core principles. All public sector organisations should consider these, both before embarking on digital programmes or projects and throughout the project lifecycle.



Background

It is clear from experience around the world that some ICT and digital projects do not go well. Ten years ago, the National Audit Office (NAO) published a [report on the common causes of failure of public sector ICT projects](#). The digital world has moved on significantly since then and yet the following set of principles in our summary do not look very different from what the NAO set out.

In the past five years, the Scottish public sector has spent around £4 billion on ICT, with over £856 million spent on procuring ICT in 2015/16 alone.¹

Digital technology offers huge potential for improving and transforming public services. Services are now designed to be digital:


- organisations are moving from paper-based to digital processes
- data is used and shared to help decision-making and service delivery
- citizens' expectations of digital services are increasing.

For this reason, the principles in this document are relevant to everyone working in public services, not just those working in ICT departments.

Note: 1. ICT spend analysis is based on the Scottish Procurement Information Hub's vCode classification. This dataset does not include any internal spend on ICT services and equipment or employee costs.

Source: Scottish Procurement Information Hub (Spikes Cavell), extracted April 2017.

This summary does not aim to provide all the answers, or provide a different story to previous lessons-learned summaries. It aims to pull together the main findings from our series of recent reports on ICT project failures in Scotland, and to signpost Scottish public bodies to the learning points of others. We supplement the principles with case studies and examples to highlight our messages.

The principles cannot be considered in isolation. All interact to create the right environment for a successful project. A key factor underpinning each principle is having the right skills and experience on the project at the right time. Look out for our skills check icon , which highlights this throughout the document.

With digital technology becoming such a core part of public services, we are focusing our future audit work on how well the public sector is using it to improve and transform public services.

Links

 Case study

 Quotes

 Skills check

 PDF download

 Web link

 Internal navigation



- ▶ Clearly define the need and benefits
 - ▶ Understand and appreciate the likely complexity
 - ▶ Identify people with the right skills and experience
 - ▶ Break the project down into manageable stages
 - ▶ Be aware of optimism bias
 - ▶ Consider the procurement options early
-
- ▶ Ensure governance is active and dynamic
 - ▶ Integrate risk management
 - ▶ Use an appropriate project management methodology
 - ▶ Be an intelligent client
 - ▶ Develop appropriate independent assurance arrangements
 - ▶ Ensure honest and accurate project monitoring
 - ▶ Build in appropriate quality assurance processes
-
- ▶ Identify all users and understand their needs
 - ▶ Sustain engagement with users
 - ▶ Help people make change happen
 - ▶ Prioritise knowledge transfer
-
- ▶ Ensure senior leadership show drive and commitment
 - ▶ Clarify and define lines of accountability
 - ▶ Maintain stability and develop succession planning
 - ▶ Recognise the role of culture and tone at the top
-
- ▶ Work within a central assurance framework
 - ▶ Recognise that strategic oversight adds value



Comprehensive planning setting out what you want to achieve and how you will do it

Clearly define the need and benefits

History shows us that most problems that occur have their origins in the set-up of the project. It is fundamental at the start to understand the need and clearly define the benefits that you want. This requires significant user engagement which is explored as a principle of its own in the [users section](#). In assessing the business need, be guided by what the people who will use it want to achieve, rather than by technology. It is important not to develop policy and ideas in isolation from the rest of the business. Digital experts need to be involved at the start so that policies and ideas are practical and will work in reality, and can be easily designed and developed into any system.

Set out the need and the benefits clearly in a business case and agree them. Benefits should be monitored and assessed throughout the project.

‘Universal Credit was a huge change from the benefits system it sought to replace. But despite the scale of the change, there was under investment in policy design and planning. There was a failure to ‘sweat out’ what the end state would look like, or to engage with users early enough on issues like the move to monthly payments. A deep understanding of the people a policy is supposed to affect is a vital starting point for policy change.’

Universal Credit: from disaster to recovery? , Institute for Government, UK, 2016.

‘A “lack of dialogue” between policy designers and the people who implement policies seriously increased the risk of failure, leading to “designs that are based on unrealistic predictions about how people will behave”...Digital and policy specialists need to work together, not in relay...People with a good understanding of technology can generate policy ideas that may not have been otherwise apparent.’

Making a success of digital government , Institute for Government, UK, 2016.

Understand and appreciate the likely complexity

Public sector organisations are rarely set up in simple ways, and teams must be careful not to underestimate the complexity of the policy or idea. To help appreciate the size of the task ahead, it is essential to invest time to fully understand: the current business processes, the need for change and what is needed to make change happen. It is important that organisations also help suppliers to understand the business processes and environment.

Looking at how other organisations have undertaken similar projects can be a useful starting point. Reusing or adapting existing software may be an option but organisations must understand how much time and effort it can take to adapt a product.

The i6 programme was complex and highly ambitious. The supplier and Police Scotland originally believed that most of the i6 system could be based on an existing IT system that the supplier had delivered elsewhere. This proved incorrect; during development it became apparent that the supplier would need to develop significantly more than had been originally anticipated.

i6: a review , Audit Scotland, March 2017.

Our reports on the CAP Futures programme identified that the programme had underestimated the complexity of the policy and the system required.

‘The original business case did not fully recognise the size and scale of the task or articulate the level of uncertainty.’

Common Agricultural Policy Futures programme: an update , Audit Scotland, May 2016.





Comprehensive planning setting out what you want to achieve and how you will do it

Identify people with the right skills and experience

Central to planning is the need to have the right people involved when developing the idea. We have often found that public sector organisations undertaking an ICT project rarely have the right skills and experience already within the organisation. This is not just about the technical digital skills, but also skills needed for:

- programme and project management and leadership
- negotiating and managing contracts
- capturing user experience
- business analysis.

It is critical that there are appropriate skills and experience at a senior level within the organisation. We comment more on this in the [leadership section](#).

Having the right skills at the right time throughout a project is central to its success. It may sound obvious but it's hard to know what skills and experience you need for a project if you've never done one before. It is crucial that an organisation identifies the skills and experience gaps and assesses how best to fill them. Talking to other organisations and seeking advice is essential, as is planning for recruitment and time lags. Getting the right leadership for significant projects will often help to bring experience and knowledge of what is required.

'A key factor in the failure to deliver the programmes as intended was the public sector bodies' lack of specialist skills and experience.'

[Managing ICT contracts: an audit of three public sector programmes](#) , Audit Scotland, August 2012.

'Public servants lack project, program and portfolio management skills and experience. "Learning on the job" is ok in many circumstances, but not when you are responsible for managing complex projects – it is essential to have the right skills and experience.'

'Public servants typically don't have enough commercial experience and consequently they often fail when it comes to probity and contract management. Get people with the right skills and experience to manage commercial relationships.'

[Common Causes for Failure in Major ICT-enabled Programs and Projects](#) , Government of South Australia, 2012.

In 2014, a Scottish Government survey identified the top four digital skills gaps and shortages:

Skills gap (internal)	Skills shortages (external)
Business intelligence	Software development and programming
Data analysis and analytics	Network, system, design and development
Information security	Information security
Contract and supplier management	Project management

Source: Scotland's Digital Future: Delivery of Public Services: Skills Gap Survey and Analysis

[Managing ICT contracts in central government: an update](#) , Audit Scotland, June 2015.



Comprehensive planning setting out what you want to achieve and how you will do it

Break the project down into manageable stages

The business case should set out the minimum that the project needs to achieve, and its priorities. This can then guide decisions about what needs to be done and by when. Organisations don't need to try and do everything in one large programme. Breaking up larger projects into a series of smaller stages may be appropriate.

There are many examples of projects that have failed in a big-bang implementation. That is where the whole project was due to become operational on one day, usually a critical or legislative deadline. Teams must consider the implementation approach and appropriately stage the project and go live.


We explore project management methodologies in the [governance section](#).

'Government ICT projects are often too ambitious and too complex because of the combination of political, organisational and technical factors. A project that is too complex lacks balance between the ambitions and the available human, financial and time resources...The motto is: start small and proceed in small steps.'

[Lessons Learned from Government ICT Projects Part A](#) , Dutch Court of Audit, Holland, 2007.



A report by the National Advisory Group on Health Information Technology in England recognised that, while there is urgency to digitise, there is also risk in going too quickly. It recommends a staged approach to transforming how services are delivered, prioritising organisations that are ready to digitise. Those that are not yet ready, that is, those lacking the staff, the training or the culture to digitise effectively should be given time and support to build capacity before starting. 'It is better to get digitisation right than do it quickly.'

[Making IT work: harnessing the power of health information technology to improve care in England](#) , National Advisory Group on Health Information Technology in England, Wachter, 2016.

In 2009, NHS 24 began a programme to improve patient experience by modernising its core telephone and online technology. Following continued delays in implementation, the system had to be withdrawn shortly after launch in 2015 as it did not meet patient safety performance measures. The Board took a fundamental look at what needed to be addressed in order to fully implement the new system. Originally, implementation was attempted on a national basis. A revised, three-stage, implementation approach was agreed by the board. This meant that Planned Care services (that represent a low percentage of calls) would be rolled out first, followed by Unscheduled Care services in a single NHS Board and then full national roll-out. This approach would allow NHS 24 to thoroughly test the new system in real conditions and establish greater confidence in the system prior to national roll-out.

[The 2015/16 audit of NHS 24: Update on management of an IT contract](#) , Audit Scotland, 2016.



Comprehensive planning setting out what you want to achieve and how you will do it

Be aware of optimism bias

Optimism bias is a key concept at the planning stage. Essentially this is about building appropriate contingency into plans, timescales and costs to compensate for in-built but often unrealistic optimism. This ranges from the very specific requirement to amend costs within the business case to build in optimism bias, to the need to constantly challenge assumptions and estimates.

The political environment of the public sector adds another dimension that needs to be considered. Legislative and ministerial commitments can reduce flexibility in timeframes.

'Optimism bias is such a common cause of failure in both public and private projects that it seems quite remarkable that it needs restating. But it does – endlessly.'

Universal Credit: from disaster to recovery? , Institute for Government, UK, 2016.

'Organisations have a tendency to be over optimistic about timeframes; to overestimate the benefits to be delivered and to underestimate the costs and complexity of implementation.'

Investing Smarter in Public Sector ICT: Turning Principles into Practice , Victorian Auditor-General's Office, Australia, 2008.

'The political context contributed to misplaced optimism throughout the i6 programme.'

i6: a review , Audit Scotland, March 2017.



Consider the procurement options early

There are different procurement options available and organisations should consider which is most appropriate as they develop the need and idea. The procurement route must be consistent with how the project is to be managed and how the service is to be delivered.

Entering a procurement process with less than complete knowledge of what you are trying to achieve could lead to an organisation being tied into a system or service that can't ever meet those needs. Having the right skills to translate user and business needs into technical requirements, and to understand and challenge the supplier's solutions and ways of working is important.

It is important to develop a relationship with the supplier that is trusting but promotes constructive challenge.

The programme, i6, to modernise Police Scotland's IT system followed good practice in terms of planning and procurement. For example, to fulfil its role as an intelligent client, Police Scotland addressed in-house skills gaps by bringing in external legal and technical advisers, and experts in contract and supplier management.

Despite this, and 18 months of pre-award discussion, there was a fundamental disagreement between Police Scotland and Accenture about interpreting the contract and the scope of the programme. This led to a rapid loss of trust which never fully recovered and recurring disputes about the project's scope.

Even though the programme ultimately failed, the investment in specialist procurement skills helped manage the contract and secure a settlement agreement with the supplier.

i6: a review , Audit Scotland, March 2017.





Active governance providing appropriate control and oversight

Ensure governance is active and dynamic

An active and well thought-through governance framework, that is, the procedures and controls in place to guide a project and to support effective decision-making, can really add value to a project. It provides the appropriate control and oversight at all levels of the project.

Governance should be active, that is, play a continuing and key role throughout the project. But it should also be dynamic, flexing to meet changing needs of the project and adapting to changing risk profiles. Governance boards also need to find the right balance between supporting the project team, but also scrutinising and constructively challenging management and significant decisions.


Organisations need to think about the skills of people within the governance structure, and whether additional skills and experience would help scrutinise the project more effectively.

A review of ICT projects in New Zealand found it was vital to have the right mix of skills and experience at the governance level to hold the project team accountable. This should include considering appropriately skilled people from other public sector agencies and external advisors.

[Top 10 Lessons Learned from ICT-enabled Projects and Programmes](#) , New Zealand Government, 2014.



'An "active governance" approach which requires committee members to be informed; to have relevant experience and expertise; to be prepared to challenge project managers and to closely investigate selected aspects of a project, is considered essential.'

[Management of ICT Projects by Government Agencies](#) , Public Accounts Committee, Legislative Assembly of the Northern Territory, Australia, 2014.




Integrate risk management

Managing risk is a core part of governance and should be integrated throughout the whole project. The team needs to be clear about where the key risks are across the project and the risk level that the team, governance boards and sponsors can tolerate. This will not be uniform across the project, and risk management processes need to be sophisticated enough to ensure decision-making responds to changing risk. Decisions should be based on assessments of the potential impact of risks on different components of the project.

'A common observation arising from our work is that departments are often overly optimistic in their assessment of the risk to projects and programmes, and the effectiveness of the mitigating actions they take to address risk. Management also tends to consider project risk in isolation, without considering how risks in one project can affect other business priorities.'

[Managing risks in government](#) , National Audit Office, UK, 2011.

'Because [ICT projects] are often large projects with a strong public profile the potential for failure poses a significant risk to the government's reputation. ...organisations need to develop a higher level of risk management maturity and to pay more attention to managing and mitigating risks throughout a project's life.'

[Management of ICT Projects by Government Agencies](#) , Public Accounts Committee, Legislative Assembly of the Northern Territory, Australia, 2014.





Active governance providing appropriate control and oversight

Use an appropriate project management methodology

History shows that projects using a variety of project management methodologies get into difficulties. Organisations need to carefully consider which project management methodology will best suit:

- the nature of the project
- the needs and timing of the launch of the project
- the profile and likelihood of risks, and importantly
- the skills and experience at all levels of the organisation in different methodologies.

It is important to adapt governance frameworks according to the methodology being used, giving consideration to the speed of delivery, control, and decision-making.

If using a new methodology, the organisation should consider how best to provide the project with the appropriate level of skills. This includes ensuring that people at all levels of the governance framework understand the methodology being used. For example, knowing and understanding what information they will need to effectively scrutinise delivery.

'The adoption of a formal project methodology is an important starting point. However, project management discipline needs to be applied firmly and consistently to maintain control.'

[Top 10 Lessons Learned from ICT-enabled Projects and Programmes](#) , New Zealand Government, 2014.



Registers of Scotland (RoS) tried using an Agile methodology for its Land Registration Act 2012 implementation programme but recognised it didn't have the right skills and experience in place. To ensure its Agile approach was successful for future projects it took the following actions:

- Internal staff and contractors took part in an ongoing Agile training programme which aimed at producing a number of accredited practitioners.
- The executive management team received introductory Agile training. This helped them understand the process and the information they needed to oversee the project.
- RoS recruited an Agile coach to help make this approach an integral part of its organisational culture so that it can be used for future projects.

[Managing ICT contracts in central government: an update](#) , Audit Scotland, June 2015.

RoS is now using Agile delivery for its major Business Transformation Programme. It has established Agile delivery, supported by investment and training, as its preferred route to maintain quality, customer focus and flexibility. RoS has continued to provide Agile training to all levels of the organisation, with around 150 staff now trained in Agile and six in Agile coaching.



Active governance providing appropriate control and oversight

Be an intelligent client

Public sector organisations do not have a good track record of supplier and contract management. Organisations need to have appropriate skills to act as an intelligent client, to challenge the supplier and fully understand the progress and risk level.

'The main attributes of being an intelligent client include having:

- organisational capacity in technical, commercial and programme management skills
- appropriate governance and controls in place
- skills in scenario planning and options appraisal
- an understanding of how proposed solutions can meet the demands of the business
- arrangements to share learning and experiences across and outside the organisation.'

[Managing ICT contracts: an audit of three public sector programmes](#) ,
Audit Scotland, August 2012.

In its report, the NAO found that forming constructive, open relationships with suppliers was a key factor in successful projects. These projects typically had shared governance arrangements, joint teams and established an open environment in which client and supplier were comfortable challenging each other.

[Delivering successful IT-enabled business change](#) , National Audit Office, UK, 2006.

Develop appropriate independent assurance arrangements

Independent assurance, such as gateway reviews, can provide vital challenge and support for key decision and progress points across the project life. This helps provide assurance on the delivery of a project.

Being independent means it can raise, with leadership, concerns that those within the project either don't recognise or feel they don't have the back-up to voice.

To work well, independent assurance should be planned in advance. Assurance from different sources such as technical assurance, internal audit, and internal approvals should be co-ordinated. This avoids overlap and undue burden on the project team. Leadership need to appreciate the value of independent assurance and ensure that recommendations are acted on. The role of governance boards is to make sure that assurance is happening and the team is responding to the points raised.

In our [Managing ICT contracts](#) report, we found evidence that the findings of independent assurance reviews were not always acted on. For example, the Crown Office and Procurator Fiscal Service had a total of three health checks on its ICT programme. Later reviews highlighted that recommendations from previous reviews had not been implemented, and that implementing them on time might have made it easier to identify the issues that ultimately led to the programme terminating.

[Managing ICT contracts: an audit of three public sector programmes](#) ,
Audit Scotland, August 2012.



Active governance providing appropriate control and oversight

Ensure honest and accurate project monitoring

Monitoring project progress and providing the right information to the right level of the governance framework is crucial to recognising problems and reacting quickly. This means identifying key indicators of progress and reporting consistently and honestly to everyone involved in governance. All levels of governance need to recognise the risks of over-exaggerating problems, or diluting problems, and ensure that mechanisms are in place to ensure accurate reporting to account for any bias. This includes reporting from any suppliers.

Clear and accurate reporting about difficulties can help support bold decisions about the future direction.

'ICT projects are never killed off, they are only ever re-scoped. Processes should be put in place to review all projects, and under-performers should be closed.'

[Common Causes for Failure in Major ICT-enabled Programs and Projects](#) , Government of South Australia, 2012.



Revenue Scotland used criteria and associated indicators to assess its readiness to collect and manage two new taxes from 1 April 2015. It ensured all products within its Tax Administration Programme, including its IT implementation project, were aligned against these criteria. It monitored progress weekly, using a traffic light system to indicate the level of risk to the planned delivery. Items assessed as amber or red were escalated to the necessary governance level to ensure action was taken to bring them back on track.

[Managing ICT contracts in central government: an update](#) , Audit Scotland, 2015.



Build in appropriate quality assurance processes

An important part of quality assurance is understanding what is 'good enough' to be accepted by the business and user, and how you will test this. A clear, strong and effective testing strategy, and a managed approach to launching or releasing the new system, process or service is central to this. There are many examples of systems not operating effectively because the end user was not familiar with how it would work in practice. There are also examples of systems going into operation and failing because they were not properly tested during the user acceptance or system integration testing stages (UAT and SIT), or test results were not properly challenged.

In its review of local ICT projects, the Victorian Auditor-General stressed the importance of thoroughly testing a new software or system before it goes live. When testing is compromised, often in the rush to meet deadlines, software may be released before it is fit for purpose. This may mean temporary fixes are required to compensate for the software's deficiencies. A go-live decision should only happen after extensive testing to ensure that either all scope items have been fully met or that clear post-implementation plans exist, including time frames for achieving them.

[Digital Dashboard: Status Review of ICT Projects and Initiatives – Phase 2](#) , Victorian Auditor-General's Office, Australia, 2016.



'Too many errors were identified during the last phase of software testing which has put pressure on meeting deadlines. The software did not function as needed and it took additional time to fix the error.'

[Common Agricultural Policy Futures Programme: an update](#) , Audit Scotland, May 2016.






Putting users at the heart of the project

Identify all users and understand their needs

Organisations need to identify everyone, both internal and external, who will use or be affected by a proposed system or service. They should involve these stakeholders in the project right from the start. This allows the organisation to fully understand what is required and how people need and expect the system, process, or service to operate in practice. Even for internal users it is essential to understand how they need the system or process to work, otherwise it will become a source of frustration.

‘Digitising effectively is not simply about the technology, it is mostly about the people.’

‘IT systems must be designed with the input of end-users, employing basic principles of user-centred design. Poorly designed and implemented systems can create opportunities for errors, and can result in frustrated healthcare professionals and patients.’

[Making IT work: harnessing the power of health information technology to improve care in England](#) , National Advisory Group on Health Information Technology in England, Wachter, 2016.



Sustain engagement with users

This is not just about involving users in testing the proposed solution. It is about getting them involved in designing the whole process from the start. Involving them from the start, and throughout the process, will help get their buy-in and commitment to the solution, meaning it is more likely to achieve desired outcomes. Users’ and business needs may change over time. Processes need to be in place to allow changes to be made easily but ensuring appropriate checks and controls exist.

Revenue Scotland drew on experience when developing the new Additional Dwelling Supplement (ADS) module for its IT system. It recognised the importance of working closely with all stakeholders:

- It worked closely with its IT provider to adapt its system for ADS.
- People who use the IT system took part in testing to check not only that the new module worked well but also that the changes did not affect other parts of the IT system.
- It held roadshows, webinars and produced guidance to ensure that stakeholders, such as solicitors, were aware and prepared for the tax change.

[Managing new financial powers: an update](#) , Audit Scotland, March 2017.





Putting users at the heart of the project

Help people make change happen

Very often digital and ICT projects are undertaken to deliver a change. The technology alone will not deliver this change. There needs to be a programme of work with the people who will use or be affected by the system, to get them ready for the change. This includes leaving enough time for training sessions before they have to use the technology, good communication throughout the project, and appropriate support once the system or service is live.

To learn from the failed launch of their new IT system, NHS 24 undertook a series of reviews. These found that not enough was done to involve users at the planning and testing stages. Incorrect design assumptions meant that there were problems integrating the new system with existing ones in individual NHS boards, and with operational processes and workflow. Additionally, weaknesses in training and familiarisation meant operational staff did not have enough confidence and experience with the new system.

[The 2015/16 audit of NHS 24: Update on management of an IT contract](#) , Audit Scotland, October 2016.

Registers of Scotland created an Innovation Centre in July 2016, providing a safe environment for users to test ideas, improve business processes, and optimise software before rolling it out into the business. A core team is supported by around 150 volunteers from all levels of the organisation, with up to 40 people working in the centre at any one time.

The centre helps get buy-in from system users before business roll-out. It helps inform the roll-out process, ensuring business readiness and supporting organisational change.

Source: Audit Scotland, May 2017.



Prioritise knowledge transfer

Organisations must plan for the end of the project and the transition into business as usual. Usually the people involved in the project are not the ones who then work with the system or service once it has been delivered. Organisations must prioritise knowledge exchange from those who have a detailed working knowledge of the system to those who are going to use and maintain it. Clearly documenting the system will help. This is particularly important when external contractors are involved. Knowledge transfer takes time and should not be left until the end of the project as, invariably, time runs out.

'We found evidence of ICT programmes where the majority of staff were on short-term contracts across all levels of the programme... Bodies need to put knowledge transfer plans in place from the outset to ensure this expertise is shared with permanent members of the team and is not lost. This applies at all levels of the organisation, whether a software developer or digital director.'

[Managing ICT contracts in central government: an update](#) , Audit Scotland, June 2015.



▶ Principles

▶ Planning

▶ Governance

▶ Users

Leadership

▶ Strategic oversight



Clear leadership that sets the tone and culture and provides accountability


Ensure senior leadership show drive and commitment

Many reports on failures of ICT projects include commentary on the impact of weak leadership, or a high turnover of senior officers, and a lack of commitment. These issues can have a serious impact on the project.

Senior leadership (such as the executive management team, senior responsible owner (SRO) and project sponsor) need to demonstrate drive to keep the project moving forward. As digital is so important to the future delivery of services, all senior leaders across the organisation should show a clear commitment to the project.

As highlighted in the [planning section](#), successful projects need leaders with the appropriate skills and experience to effectively deliver change.

'Recent research suggests that senior level engagement may actually be the most important factor in ICT-enabled projects as it contributes to success both directly and through its mediation of other critical success factors such as project methodologies and management, stakeholder and change management, planning, and project staff.'

[Management of ICT Projects by Government Agencies](#) , Public Accounts Committee, Legislative Assembly of the Northern Territory, Australia, 2014.



The NAO reported that it is critically important for those in leadership positions to have the skills and expertise, and the time to lead the project. This is particularly important for projects with significant uncertainty, such as welfare reform. The early years of the Universal Credit system were hampered by a lack of leadership, in part due to a high turnover of SROs, and this created a lack of oversight.

[Welfare reform – lessons learned](#) , National Audit Office, UK, 2015.



Clarify and define lines of accountability

Projects need clear lines of accountability. Where roles and responsibilities of senior leadership are unclear this leads to miscommunication and issues falling through cracks. It is important that everyone is clear who is responsible for making decisions. For example, what types of decision leadership or governance boards will be expected to make, and knowing when issues will be escalated, and to whom.

'From the outset...define who is responsible for getting the project done and who is ultimately accountable for the success (or failure) of a project. Distinctions should be made between accountable and responsible parties, and between the governance and management of a program or project.'

[Common Causes for Failure in Major ICT-enabled Programs and Projects](#) , Government of South Australia, 2012.



▶ Principles

▶ Planning

▶ Governance

▶ Users

Leadership

▶ Strategic oversight



Clear leadership that sets the tone and culture and provides accountability


Maintain stability and develop succession planning

Many lessons-learned reports have highlighted the impact of a revolving door of senior officers on projects. Projects need stable leadership. Upheaval adds time, changes focus, and changes the culture of the project. Succession planning to replace lost skills should be a key element when planning projects. While changes can't always be prevented or predicted, ensuring adequate planning, knowledge transfer, and sound leadership at all levels can help ease the impact.

Recognise the role of culture and tone at the top

Many reports highlight the detrimental impact of a negative culture, but many projects continue to underestimate the role culture plays in a successful project. A critical element of success in any project is people. Ensuring a collaborative and positive culture is in place will help maximise the contribution of all the team. Culture is hard to create and change, but leadership has an essential role in setting the tone for the team and leading by example.

Projects should also be aware of the different cultures that can exist between different teams in the same organisation. For example, the policy, front-line, and digital teams can all work to different values and behaviours.



The Common Agricultural Policy (CAP) Futures Programme (Scotland) and Delivery Programme (England) were established to deliver new ICT systems to comply with CAP reform and improve the CAP payments process for farmers and landowners. Both programmes experienced difficulties.

In England, the failure of a verification system led to the withdrawal of the new online system and the use of paper-based applications instead. A report by the NAO into how the programme was managed found numerous changes in leadership contributed to the difficulties that led to the system failing. The programme had four SROs in one year. Each SRO had their own management style and priorities. These repeated changes to governance arrangements disrupted the programme and caused uncertainty and confusion for staff.

[Early review of the Common Agricultural Policy Delivery Programme](#) , National Audit Office, UK, 2015.

In Scotland, the new system had significant difficulties, which meant that payments to farmers were delayed. Loans had to be provided while claims were processed. Significant tensions between the programme team and the ICT delivery team added to programme delays. These two groups did not operate as one team and management failed to adequately address the seriousness of the problem. There was a lack of trust and this created a blame culture. This hindered efforts to resolve quality issues as there was no consensus on the underlying causes, contributing to delays.

[Common Agricultural Policy Futures Programme: an update](#) , Audit Scotland, May 2016.



Individual projects set in a central framework of strategic oversight and assurance

Work within a central assurance framework

In response to public sector ICT project failures, some governments have introduced a central framework of strategic oversight and assurance. This places an additional level of oversight and assurance on riskier projects, to help ensure that they deliver the intended benefits. Importantly, the framework does not dilute the accountability lines on the project.

Strategic oversight helps to identify and prioritise the risks and challenges that the project needs to deal with to succeed. It can also provide senior leadership across the organisation with an additional level of confidence at key points that the project is ready to proceed to the next stage.

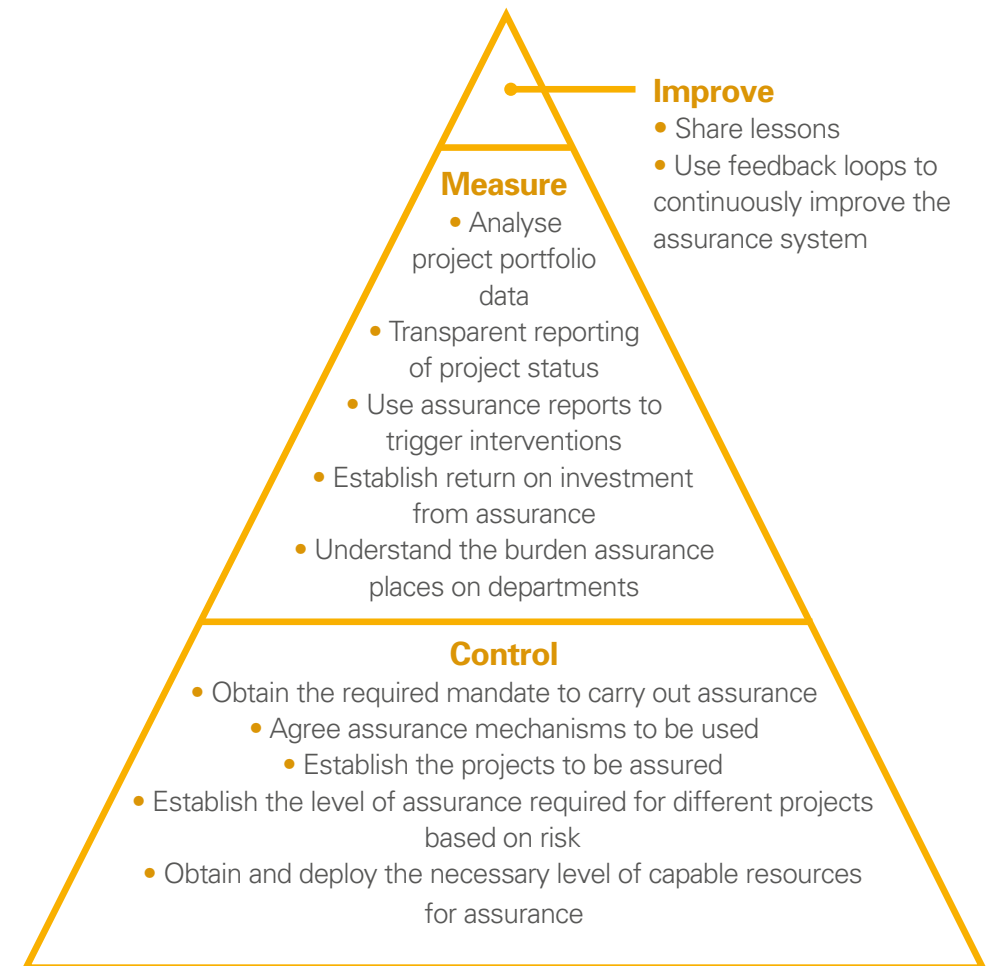
The big challenge for any central strategic assurance framework is to have access to people with the right level of skills and experience to be able to independently assess the project's risks and challenges.

'Assurance provides information to those who finance, sponsor, govern and manage a project. It informs decisions that can reduce project failure, promote conditions for success and increase the chance of delivering the required outcome cost-effectively. Assurance helps ensure the disciplines around delivering projects are followed and highlights where they have not been.'

[Assurance for major projects](#) , National Audit Office, UK, 2012.



The NAO developed a basic maturity model for an effective central assurance system



Source: [Assurance for major projects](#) , National Audit Office, UK, 2012.

▶ Principles

▶ Planning

▶ Governance

▶ Users

▶ Leadership

Strategic oversight



Individual projects set in a central framework of strategic oversight and assurance

Recognise that strategic oversight adds value

Effective oversight and assurance arrangements add value by helping to deliver successful projects. They can support learning and improvement. Having a central framework of strategic oversight and assurance can create the conditions in which people share lessons and experiences both across an organisation and with other public sector bodies. Learning from previous projects should be a key part of the planning for every new project.


As this document shows, a wealth of information exists on lessons learned from ICT projects across the world. There is no shortage of intelligence to share around public bodies and to encourage discussions about successes and difficulties. Our list of further reading details the documents we have used; these, in turn, have further reading lists.

'One of the most important lessons to be learned from these projects is the absolute necessity of having a coherent framework to govern and oversee ICT-enabled projects and to provide mechanisms for guidance, support and improvement. This is essential for large complex multi-agency projects but is also important for smaller projects.'


[Management of ICT Projects by Government Agencies](#), Public Accounts Committee, Legislative Assembly of the Northern Territory, Australia, 2014.

[▶ Principles](#)[▶ Planning](#)[▶ Governance](#)[▶ Users](#)[▶ Leadership](#)[▶ Strategic oversight](#)


Our reports

[Managing ICT contracts: an audit of three public sector programmes](#) ,
Audit Scotland, August 2012.

[Managing ICT contracts in central government: an update](#) , Audit
Scotland, June 2015.

[The 2014/15 audit of NHS 24: Update on management of an IT contract](#) ,
Audit Scotland, October 2015.

[Common Agricultural Policy Futures Programme: an update](#) ,
Audit Scotland, May 2016.

[The 2015/16 audit of NHS 24: Update on management of an IT contract](#) ,
Audit Scotland, October 2016.


[Managing new financial powers: an update](#) , Audit Scotland, March 2017.

Useful references

[Scottish Government Digital Directorate](#) .

[Scottish Public Sector Digital First Service Standards](#) .

[Scottish Government ICT Assurance Framework](#) .

[Scottish Government Programme and Project Management Centre of Expertise \(PPM-CoE\)](#) .

[Scottish Local Government Innovation Exchange](#) .

[Scottish Local Government Digital Office](#) .

[UK Government Digital Service \(GDS\)](#) .

[▶ Principles](#)[▶ Planning](#)[▶ Governance](#)[▶ Users](#)[▶ Leadership](#)[▶ Strategic oversight](#)

Further reading

[Delivering successful IT-enabled business change](#), National Audit Office, UK, 2006.

[Universal Credit: from disaster to recovery?](#), Institute for Government, UK, 2016.

[Making a success of digital government](#), Institute for Government, UK, 2016.

[Common Causes for Failure in Major ICT-enabled Programs and Projects](#), Government of South Australia, 2012.

[Making IT work: harnessing the power of health information technology to improve care in England](#), National Advisory Group on Health Information Technology in England, Wachter, 2016.

[Lessons Learned from Government ICT Projects Part A](#), Dutch Court of Audit, Holland, 2007.

[Investing Smarter in Public Sector ICT: Turning Principles into Practice](#), Victorian Auditor-General's Office, Australia, 2008.

[Top 10 Lessons Learned from ICT-enabled Projects and Programmes](#), New Zealand Government, 2014.

[Managing risks in government](#), National Audit Office, UK, 2011.

[Management of ICT Projects by Government Agencies](#), Public Accounts Committee, Legislative Assembly of the Northern Territory, Australia, 2014.

[Digital Dashboard: Status Review of ICT Projects and Initiatives – Phase 2](#), Victorian Auditor-General's Office, Australia, 2016.

[Welfare reform – lessons learned](#), National Audit Office, UK, 2015.

[Early review of the Common Agricultural Policy Delivery Programme](#), National Audit Office, UK, 2015.

[Assurance for major projects](#), National Audit Office, UK, 2012.

[Results of the development of the state's information systems](#), Report of the National Audit Office, Estonia, 2010.

[eGovernment Benchmark 2016: A turning point for eGovernment development in Europe?](#), European Commission, 2016.

[Key lessons from Scottish Government independent assurance reviews](#), Scottish Government, 2015.


[Large Information Technology Projects](#), Report of the Auditor General of Canada, 2006.

[Digital transformation in government](#), National Audit Office, UK, 2017.

Principles for a digital future:

Lessons learned from public sector ICT projects

This report is available in PDF and RTF formats,
along with a podcast summary at:
www.audit-scotland.gov.uk 

If you require this publication in an alternative
format and/or language, please contact us to
discuss your needs: 0131 625 1500
or info@audit-scotland.gov.uk 

For the latest news, reports
and updates, follow us on:



Audit Scotland, 4th Floor, 102 West Port, Edinburgh EH3 9DN
T: 0131 625 1500 E: info@audit-scotland.gov.uk 
www.audit-scotland.gov.uk 

ISBN 978 1 911494 21 8