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United Kingdom Lead Paper
Why IT Projects Fail**

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Executive Summary

Government is becoming more and more dependent on the use of information technology (IT). Rapid technological development (for example, web based technology) provides opportunities to revolutionise the way in which Government deals with citizens and businesses and to make savings in the cost of delivering services. But heavy reliance on IT can also result in unacceptable levels of disruption if the introduction of a system is delayed or does not work as intended.

The UK Government has been computerising since the 1950s, but the way in which IT has been procured has changed significantly, particularly over the last two decades. Despite these changes, failures in delivery of IT projects continue to arise. These problems are not unique to Government, but when public sectors projects are not delivered on time, citizens lose out as both taxpayers are customers because additional expenditure is required to rectify problems and the achievement of anticipated benefits is deferred.

This paper draws out lessons from more than 25 cases in the United Kingdom in the 1990s where the implementation of IT systems has resulted in delay, confusion, inconvenience to the citizen, and in many cases, poor value for money for the taxpayer. It identifies the main causes of project failures, their impact, project and risk management issues and how lessons can be learnt.

The main way in which delivery of Government IT projects can be improved is through:

- Ensuring that projects are set in the context of delivering business change and are viewed as business projects, not IT projects, through the development of business development skills;
- Breaking large projects into smaller more manageable components;
- Active and visible leadership from the top, with responsibilities and accountabilities clearly stated;
- Improving project management skills, with the relative difficulty of projects assessed against the abilities of project managers, and improving the understanding of managing risk;
- Identifying core skills necessary and providing rapid ways of developing and acquiring what is missing;
- Improving relationships with suppliers so that both have a shared and mutual understanding of requirements and risks;

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- Ensuring that intended benefits are realised by including formal processes to track progress on realisation;
- Spreading knowledge, best practice and experience to ensure that new projects have the benefit of experience as they go ahead.

Issues for SAI Country Papers

In preparing country papers, SAI are asked to address the issues set out in section 5.

Why IT Projects Fail

Introduction

- 1.1 Citizens have many relationships with Government. In the United Kingdom, for example, citizens are taxpayers, benefit recipients, patients in hospital, travellers in or out of the country, or contributors to the state pension scheme. Successfully implemented, information technology (IT) enables Government to respond to the needs and expectations of citizens in these areas, and allows citizens to fulfil their obligations to the state quickly and effectively. For this to happen, however, Government departments must have the IT systems in place and working. However, for more than two decades, implementing IT systems successfully has proved difficult for a number of them.

- 1.2 The importance of the timely delivery of IT projects, and the effects delays in implementation can have, were clearly demonstrated in the UK in 1999 with long queues for passports, and many thousands of pensioners and benefit recipients not receiving their full entitlement. These are not isolated examples. This paper draws out lessons from more than 25 cases in the United Kingdom from the 1990s where the implementation of IT systems has resulted in delay, confusion and inconvenience to the citizen and, in many cases, poor value for money to the taxpayer.

Information technology offers many opportunities but also presents significant risks

- 1.3 In recent years, there have been rapid and continuous technological developments in IT in terms of performance, reliability, data storage capacity and applicability. Computer systems are now far more powerful and flexible than ever before, and important changes occur with increasing frequency. We have seen, for example, rapid advances in telecommunications, the use of web-based technology, and the beginnings of electronic commerce.

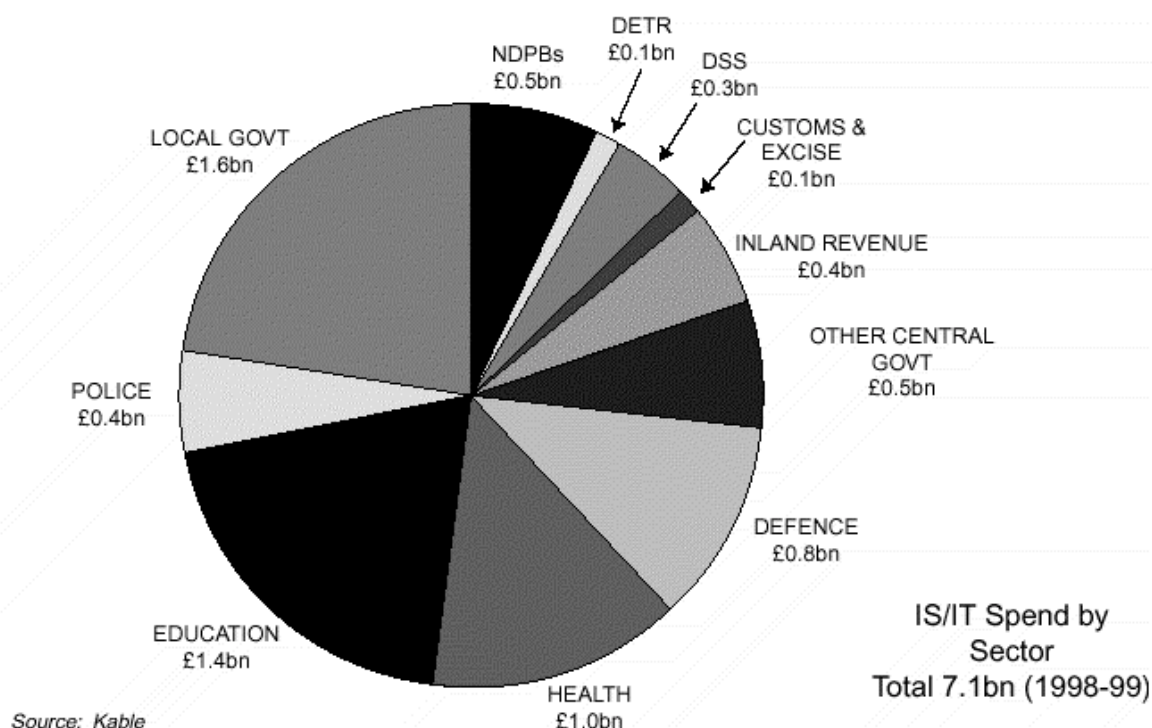
- 1.4 These innovations provide many opportunities to revolutionise the ways in which all types of organisations carry out their business. For Government in particular, there is the potential for communicating better with the citizen, making savings in the cost of delivering services, reducing unacceptably high levels of fraud, and managing more effectively a wide variety of

valuable assets. However, at the same time, heavy reliance on IT can also result in unacceptable levels of disruption to the public when the introduction of a system is not thoroughly planned, leading to satisfactory implementation being delayed, or not working as intended.

The ways in which the UK Government has procured IT has changed significantly over the last two decades

1.5 The UK Government spends large sums on IT each year. Overall expenditure in the public sector in 1998-99 on IT hardware and software, maintenance and other services was in the region of £7 billion. A large proportion is spent in the defence, health and education sectors, with central government departments of Social Security, the Inland Revenue and HM Customs and Excise also spending significant sums.

Figure 1: Expenditure on IT procurement, maintenance and services 1998-99



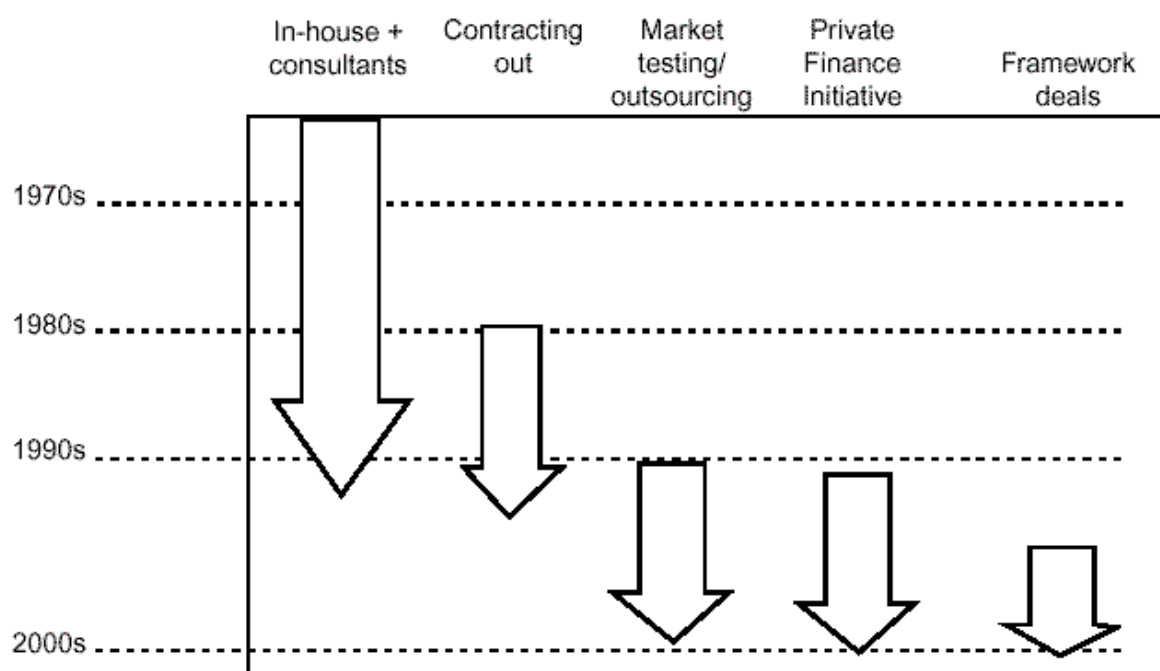
1.6 The UK Government has been computerising since the 1950s. Initially, IT was applied to routine and repetitive administrative tasks, or complex calculations. Often projects were large,

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ambitious and inflexible, and taken forward with limited user involvement. In the 1970s and early 1980s, some projects were undertaken in-house, others by consultants. Many more involved a mix of public and private sector specialists. Staff shortages and excessive staff turnover presented difficulties, whilst the management of consultants was also a cause for concern. By the late 1980s, there was greater recognition of the need for overall strategies for investment in IT, and the need to place relationships with suppliers on a more commercial footing. Figure 2 shows the changes in procurement methods over the last thirty years.

1.7 In late 1980s and early 1990s in the UK, initiatives to put government functions on a more commercial basis, and to competitively test them against the commercial market resulted in larger IT contracts between Government and suppliers, often with IT development contracted out, rather than consultants brought in to assist on projects. A number of departmental IT divisions became executive agencies, separate from their parent department, required to recover the costs of all their work from clients, and later, one such agency was privatised. In a further example, the work previously undertaken by the Information Technology Office of the Inland Revenue was outsourced, and provided for a 10-year 'strategic partnership' for computer services. Shortly after, the Department of Social Security's Information Technology Services Agency outsourced their service delivery operations and awarded contracts to three major companies.

Figure 2: Procurement methods for Government IT



- 1.8 From 1992 the Private Finance Initiative in the UK has promoted the procurement of major projects as packages in which the private sector designs, builds, finances and operates the project, possibly for many years. This is in contrast with traditional procurement in which the public sector provides all the finance and, typically, takes much of the development risk. A number of deals have involved the implementation of IT provision, including a new National Insurance Recording System.
- 1.9 A recent approach has been the development of framework deals, in which departments work closely with suppliers. Contracts are phased and let on a modular basis so that competition can apply at subsequent stages, and other suppliers can be brought in as appropriate. The Department of Social Security's ACCORD programme, announced in 1998, is an example, where the Department have established a close, long-running relationship with a single preferred service provider to design, develop, implement and operate their IT strategy. At the same time, they announced that they intend to work with three service providers for the provision of a wide range of IT services in the future.

Making the most of it is a key part of the UK's modernising government proposals

- 1.10 The UK Government has placed IT at the centre of its programme of renewal and reform of public services. In particular, IT is seen as one of the main means by which the customer-focus of the public sector can be developed. In 1999 'Modernising Government', a Paper presented by the Government to Parliament, stated that

'Information technology is revolutionising our lives, including the way we work, the way we communicate and the way we learn. The information age offers huge scope for organising government activities in new, innovative and better ways and for making life easier for the public by providing public services in integrated, imaginative and more convenient forms like the single gateways, the Internet and digital TV.'

- 1.11 The Paper argues that government has not kept sufficient pace with broader developments in IT. In addition, the very decentralised approach to IT procurement taken by the UK

government has meant it has not maximised the benefits of technology as a whole. As a result, government departments and other bodies delivering services have incompatible systems that are not integrated.

1.12 One of the UK Government's five commitments in the Paper is to introduce information age government, which would 'use the new technology to meet the needs of citizens and business, and not trail behind technological developments'. In particular, it wishes to:

- make it easier for businesses and individuals to deal with government.
- enable government to offer services and information through new media.
- improve communications between different parts of government.
- give staff better access to information to help them deal more efficiently and more helpfully with the public.
- make it easier for different parts of government to work in partnership, for example, central and local government.
- help government to become a learning organisation by improving access to, and organisation of, information.

1.13 The Paper set out ambitious targets, stating that 25 per cent of dealings with Government should be capable of being done by the public electronically by 2002, with 100 per cent to be achieved by 2008. The Government has identified the activities it intends that citizens should be able to undertake in this way. In April 2000, the UK Government published a corporate IT strategic framework to provide greater convergence and co-ordination across the public sector. It also brought forward electronic service delivery targets. All services to citizens and business are now planned to be available by 2005.

Improving the delivery of Government IT projects

1.14 Government is not the only one to experience problem cases. There are many projects in the private sector that experience similar problems, but usually without the publicity attracted by public sector cases. But when public sector projects are not delivered on time, fail to meet specifications, or require significant changes, citizens lose out both as taxpayers and customers, as additional expenditure is incurred to rectify problems, and the achievement of anticipated benefits, including improved services, is deferred.

1.15 This paper draws on examples of IT project failures in central government the UK in the 1990s to identify:

- The impact of project failures;
- The main causes;
- Project and risk management issues; and
- How lessons can be learnt from this experience.

1.16 Fuller details of the individual cases are contained in Annex A.

Impact of project failures

2.1 The shortcomings in implementing IT projects can be widespread and have many impacts.

Using the examples at Annex A, this brief section classifies impacts under six headings to provide a flavour of the outcome of IT project failures:

Impact on the citizen

- Impact on pensioners and benefit recipients (Annex A, No 2)
- Impact on those seeking travel documents (Annex A, No 1)
- Delays in providing compensation under government schemes (Annex A, No 7)
- Adverse effect on hospital care (Annex A, No 15)

Impact on the use of public funds

- Funds wasted when projects have been abandoned (Annex A, No 4)
- Delays or deficiencies leading to compensation being paid out (Annex A, No 2)
- Costs of maintaining old systems longer than expected (Annex A, No 18)
- Write off of overpayments (Annex A, No 8)
- Increased levels of error (Annex A, No 10)
- Inefficient working arrangements for staff (Annex A, No 6)
- Reduction in anticipated savings (Annex A, No 11)

Impact on ability to manage

- Reliability of information systems (Annex A, No 25)
- Limitations on the flexibility of systems (Annex A, No 14)
- Systems not centralised (Annex A, No 23)
- Lack of an effective IT strategy (Annex A, No 5)
- Difficulty in accessing information (Annex A, No 20)

Impact on financial management

- Ability to produce accounts (annex A, No 25)
- Reliability of payments and recording (Annex A, No 2)
- Need to produce data by other means/rely on other less reliable means of working (Annex A, No 10)

Impact on business development

- De-scoping of service (Annex A, No 11)
- Disruption of service to other organisations (Annex A, No 11)
- Limiting ability to simplify practices (Annex A, No 13)
- Build up of work backlogs (Annex A, No 3)
- Delays and disruption of business processes (Annex A, No 1)
- Absence of automated services (Annex A, No 13)

Impact on achievement of anticipated benefits

- Delays in achieving benefits of new system (Annex A, No 1)
- Failure to receive service anticipated (Annex A, No 3)
- Increase in expected life span of existing systems (Annex A, No 1)

Main causes of failures

3.1 This section draws from the examples at Annex A to examine why IT projects fail under four main headings, and highlights the key lessons under each heading.

The inception and design of IT Projects

Analysing and understanding the full implications of the introduction of new IT systems for businesses and customers

3.2 Major IT systems cannot be introduced in isolation from wider changes to the business, and so it is essential that the implications of implementing a new IT system are analysed thoroughly. Failure to manage change is likely to lead to IT systems that do not meet business requirements, to delays in the implementation of key operations, or will mean that business users are unable or unwilling to obtain the most from the system.

Key lessons

3.3 The first stage of considering any new project is a full analysis and understanding of the implications of the introduction of new IT systems for their business and customers, so that it is a business project, not an IT project. In particular, it is important that:

- the introduction of new systems is seen to be based on a clear business need;
- those sponsoring the project have considered fully the implications of any other changes that may coincide with the introduction of a new IT system; and
- project plans are based on ensuring that the identified business benefits are delivered by a high quality team with clearly defined roles and responsibilities.

National Insurance Recording System (Annex A No 2)

In this example, the Departments concerned did not fully appreciate the potential impact of delays on their business and customers. At one stage, the system was not fully operational, there were large backlogs of items waiting to be input to the system, and thousands of short term and long term benefits being paid on an interim or emergency basis, and payments to personal pension holders continuing to be delayed.

The 1992 and 1998 Information Management and Technology Strategies of the National Health Service (NHS) Executive (Annex A No 5)

The NHS Executive's 1992 and 1998 strategies did not have overall business cases which would have been useful in demonstrating the value to NHS bodies of participating in all the projects and would have complied more closely with good practice. In the case of the 1998 Strategy, although there was external review, individual project business cases on the components of the strategy, and

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the links between individual elements were managed through a framework, this approach suffered from the weakness of not demonstrating the interdependencies of the Strategy's individual elements.

Departments must consider carefully the scale and complexity of projects to assess whether they are achievable

3.4 The scale and complexity of projects is a major influence on success or failure. It is essential consider carefully whether projects are too ambitious to undertake in one go. This is particularly important if a project is to have an impact on the business operations of other parties, or where there is reliance placed on the parallel development of related IT undertaken by other parties. The number of project failures could be dramatically reduced by making use of a 'step by step' progression of relatively small projects (perhaps taking six months or less), with each successive one being considered in the light of the outcome of the earlier ones. The advantage of such a structured approach is that it helps to reduce the complexity of planning, monitoring and control.

Key lessons

3.5 The scale and complexity of projects must be considered to ensure they are achievable. In particular, whether:

- the proposed timetable for a project is realistic;
- IT initiatives should be broken down into manageable projects, with each successive one being considered in the light of the outcome of the earlier ones;
- an incremental, as opposed to "big bang", approach to IT projects should be adopted, with regular milestones, each delivering an auditable business benefit. If there is no feasible alternative to the "big bang" approach, the timetable for implementation must be realistic;
- their overriding priority is to deliver the project to time, to cost, or to a particular quality specification;
- enough high level review points have been built in to the project to ensure that it is not allowed to continue if changing circumstances mean that the business benefit is no longer going to be achieved cost effectively; and
- senior management are sufficiently aware of the importance of halting a project that has been overtaken by events, rather than continuing to spend money.

Hospital Information Support Systems Initiative (Annex A No 15)

The NHS Executive selected the three pilot projects under this Initiative within the very short period of two months. Subsequently, each of the projects suffered problems and delays. These delays may have stemmed, at least in part, from the Executive's failure to prepare the hospitals to run their projects, and they might have obtained better value for money had they taken more time to ensure hospitals were fully prepared.

National Insurance Recording System (Annex A No 2)

The Contributions Agency delayed the decision that the replacement of the existing system would be carried out using a Private Finance Initiative (PFI) approach. This meant that the timescale allowed for the PFI completion was very short. It also meant that the winning bidder had only twenty-two months to deliver this large and complex system on which important new pensions arrangements depended. This proved to be inadequate.

In addition, the contract with the winning bidder, Andersen Consulting, was to develop the system in one stage. By January 1996, it became clear that Andersen Consulting had realised the system size and scope were bigger and more complex than originally thought and had therefore concluded that delivery in accordance with the contract timetable was not the best approach. The company believed a phased approach would bring less development risk to themselves and less business risk to the Agency. The original contract was amended to provide for the replacement system to be phased in between February 1997 and April 1998.

Ministry of Defence Trawlerman project (Annex A No 4)

In this example, the Ministry of Defence failed to recognise the complexity of the project at the outset and that this was a key factor in the eventual decision to abandon the project and write off some £40 million. It appeared that the project had been over-ambitious and the Department relied too much on what the industry had told them it could deliver.

Delays in implementing projects place them at risk of being overtaken by technological change

3.6 In a number of cases technological developments have rendered projects obsolete even before they are in place. This has resulted in public funds being wasted on systems that cannot be used, and has led to delays in obtaining the benefits of computerised administration. The pace of change in recent years and the likelihood that this will continue, means that this is a significant risk. Falling behind limits the ability of government to respond appropriately to the expectations of customers, and may have an impact on the delivery of policy commitments.

Key lessons

3.7 Delays in implementing projects place them at risk of being overtaken by technological change. In particular:

- it is vital that project plans are sufficiently flexible to allow for the insertion of technological advances where relevant; and

- there are considerable benefits in introducing systems in phases.

The Crown Prosecution Service case tracking system (Annex A No 14)

The Crown Prosecution Service's new case tracking computer system was originally planned to be implemented by 1993-94, but by September 1997 had been implemented in only just over half of its branches. Delays were experienced in implementation as a result of legislative and organisational changes, and technological advances. The system was modified to address weaknesses and make it more user- friendly. However, in 1997 the Service decided not to roll the system out any further as it did not have the capability or flexibility to meet its future needs. A new system is to be procured through a Private Finance Initiative project.

Ministry of Defence: Project Trawlerman (Annex A No 4)

Site acceptance testing of the Trawlerman system was finally completed in November 1993, more than two years later than originally planned. By May 1995 the system was ready to be used operationally, but general developments in IT, as well as health and safety legislation meant that the system could not meet the developing needs of the Defence Intelligence Staff. The original specification had not required that the system be capable of being linked to other systems, but by 1995 this requirement was viewed as essential.

The Benefit Payment Card (Annex A No 11)

The project to develop a Benefit Payment Card suffered considerable delays and setbacks, and a major review was commissioned to decide the best route forward. In May 1999 the Department of Trade and Industry announced a revised agreement with the suppliers to remove the magnetic strip payment card from the project. Given the delays experienced, it was now an outdated concept, with clearing banks already moving away from the magnetic strip in favour of smart cards.

The project specification must take into account the business needs of the organisation and the requirements of users

3.8 Projects are conceived and grow from identified business needs. However, what seems to be a clear objective at the beginning can easily become blurred and confused as events progress. In the end the product which is delivered might not be what was expected and this may result in significant wasted investment. The end users must be identified before the project commences so that their needs are taken fully into account during design. A system may deliver broadly what was desired, but not in a user-friendly way. Frustration at slow response times, for example, can result in staff not using the system as planned or even maintaining parallel clerical systems.

Key lessons

3.9 The project specification must take into account the business needs of the organisation and the requirements of users. In particular:

- business cases must be based on an analysis of requirements and priorities that have taken account of the reasonable needs and preferences of system users;
- desirable, but not essential, features should be kept out of the specifications, which must be focused on delivering the core business benefits; and
- the benefits of using the new system must be sold to staff.

Northern Ireland Vehicle System Replacement Project (Annex A No 16)

In this example, only a high level user requirement was requested as the replacement system was intended to convert the existing system, along with fixes of known faults and enhancements to meet changing needs. Over time, amendments to the user requirement were needed to correct misunderstandings, and these changes were cited as part of the reason for increasing cost estimates. An external review recommended the preparation of a consolidated user specification covering the various change requests made during the lifetime of the project. This was designed to eliminate the confusion that had beset the project from the outset because of the approach of not carrying out a redesign based on users' business needs. The project board was advised in 1995 that additional work to complete the project would delay it further and increase the costs. Eventually the project was abandoned in 1996 and £3.7 million written off.

Ministry of Defence: Disposal by sale of defence surplus equipment and stores (Annex A No 20)

The Department installed a new computer system in April 1991 to aid efficiency, but the costs of the system rose substantially and nearly three years later it was not functioning properly. One problem with installation of the computer system had been a lack of appreciation of the user requirements. There had been an internal 'disconnect' between the users and the Department's computer organisation, and as a result, what was implemented had been inadequate.

Hospital Information Support Systems Initiative (Annex A No 15)

The NHS Executive reported that a key factor in the success of a project at the Greenwich Health Authority was the involvement of a senior clinician as project director.

Managing Projects

Senior management has a crucial role to play in championing the successful development of IT systems

3.10 Decisions about IT are now crucial to the development and success of the business of public bodies, and cannot be treated in isolation from other aspects of their work. Failure to deliver an IT system can have a profound effect on an organisation's ability to provide services to its customers. In addition, many IT systems require significant resources. Key decisions on IT systems are, therefore, business decisions, not technical ones and should involve senior management. There is also considerable evidence that board level ownership of projects is a critical success factor.

Key lessons

3.11 Senior management in all public bodies have a crucial role to play in championing the successful development of IT systems. In particular, it is essential that senior staff:

- recognise the opportunities that information technology can give them to improve their administration and provide other business benefits;
- create an environment within their organisation in which project management can succeed, for example, by supporting the development of high quality project management skills and experience;
- ensure that there is clarity about the aims and objectives of major projects, and there are clear criteria against which the success of a project can be judged;
- insist on having regular feedback on the progress of projects and do not have information on progress filtered out;
- use trusted sources of advice on the benefits that technology can bring;
- where they are not IT specialists, are provided with appropriate training so that they have sufficient awareness of risk management and evaluation; and
- are accountable for ensuring that specific anticipated benefits from IT projects are achieved.

Council for the Central Laboratory of the Research Councils financial accounting system (Annex A No 8)

Greater understanding of project management principles would have avoided some of the problems

associated with the introduction of the financial accounting system at the Council for the Central Laboratory of the Research Councils. The Council treated the introduction of a new system as an off the shelf purchase rather than a project, and did not apply good project management principles to what they acknowledged was a business critical process. The Council did not effectively grip the management of the project until over a year after the project implementation date and there was also a failure to ensure clear reporting lines to senior management consistent with their responsibilities. Scrutiny of the project was compromised because the Council's Audit Committee was presented with insufficient and over-optimistic information on the problems being encountered.

The development of high quality project management skills within Government is essential

3.12 The management and oversight of IT projects by skilled project managers is essential for ensuring that projects are delivered to time and budget. Project managers must have a thorough grounding in the principles and practices of project management, as well as relevant experience, but this is not enough by itself. Successful implementation of IT systems calls for imagination and well-conceived risk management, as well as sound project management methodologies.

Key lessons

3.13 The development of high quality project management skills within Government is essential.

In particular:

- the professional status and standing of project management within Government as a whole needs to be developed and enhanced;
- work should be undertaken to ensure that the principles of good project management are understood and followed throughout Government;
- Government must find ways of rewarding project managers for their part in delivering IT projects successfully, and so retaining them to provide continuity and experience for future projects; and
- project managers must be encouraged to draw risks to the attention of senior management in order to alert them to problems. They must be encouraged to undertake active management of changes to project contracts, costs, benefits, risks, timescales, technology and organisation, and not simply adhere to original project plans or project management methodologies.

The Department of Employment – The Field System (Annex A No 19)

In 1988, the Department of Employment's decided new integrated computer system (The Field System) but experienced problems in developing and implementing it. By spring 1993, when they ceased supporting the System, and Training and Enterprise Councils became responsible for their own information technology requirements, the Department had spent £48 million on it. The Department did not manage the project effectively and entrusted responsibility to staff who did not possess the necessary background and experience, and underestimated the amount of skilled input needed.

The Hospital Information Support Systems Initiative (Annex A No 15)

Delays in the progress of many of the projects examined under this initiative were put down to poor project management and could have been more successful if the NHS Executive had implemented their monitoring earlier. In addition, some of the project management problems seen in the case of the Wessex Regional Health Authority's Information Systems Plan (Annex A, No 21) had been repeated in certain projects under this Initiative.

The Northern Ireland Vehicle System Replacement Project (Annex A No 16)

In this example, project management had been a significant problem, which must have contributed to the slippage and cost overruns. The project management structure, whereby Driver Vehicle Licensing Agency acted as an interface between the Driver Vehicle Licensing Department in Northern Ireland and the contractor, was cumbersome and inefficient. In addition, project managers had to adapt to the changing nature of the relationship with the contractor from in-house supplier, to executive agency, to external commercial supplier. Problems were exacerbated by the lack of continuity of key project staff.

It is vital that risks are managed and contingency plans drawn up in case projects are not implemented as planned

3.14 As well as wasting enormous sums of public money, failures in IT can have disabling impacts on public services and on citizens. These have included the failure to pay social security benefits to vulnerable people and major delays in issuing people their passports. In addition to positive planning and managing projects, contingency plans must be in place to ensure adequate levels of service in the event of project failures.

Key lessons

3.15 Risks must be managed and contingency plans in place in case projects are not implemented as planned. In particular:

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- decisions on projects, both prior to inception and during development, should be soundly based on a rigorous assessment of costs and benefits, and a realistic assessment of risks;
- major IT projects call for competent risk managers, who quantify and prioritise risks on an on-going basis throughout the life of the project, and raises issues at an appropriate level;
- there should be a risk management framework for projects, within which people are empowered to make decisions as the costs, benefits and risks change during the project's life; and
- risk assessments should be carried out throughout the project, in particular, to assess whether the business case continues to be viable in the light of actual costs incurred and changing business requirements.

West Midlands Regional Health Authority Electronic Trading System (Annex A No 22)

Development of the electronic trading system began in May 1990. The project was not viable because information contained in the business plan was speculative and unrealistic. Proper market research was not carried out and suppliers were not consulted. Estimates of supplier take up were significantly overstated. Potential customers were not consulted and the royalty projections were unrealistic.

NHS Executive: The Purchase of Read Codes and the Management of the NHS Centre for Coding and Classification (Annex A No 9)

Total expenditure on the Read Codes to March 1998 was some £32 million and implementation would cost many times more. The NHS Executive did not prepare a full business case to assess the benefits and risks of different options to justify investment in the clinical terms projects.

The passport delays of Summer 1999 (Annex A No 1)

Although many of the risks associated with implementation had been identified by the Passport Agency at the planning stage, the risks and the response required had not all been realistically assessed, and when things began to go wrong the Agency's plans proved insufficient. Whilst the Agency took action to make up for lost production in Liverpool and Newport, it was not able to make up for the increase in applications. The Agency was too reliant on using routine solutions, such as staff and managers working longer and longer hours, to cope.

- risks that cannot be transferred to the supplier must be identified. In particular, the wider business risks that might mature if they do not have a fully operational system on the date required;

National Insurance Recording System (Annex A No 2)

The Contributions Agency identified the risks associated with the project. The main risks that the suppliers were prepared to take on were the risks of:

- developing a system and not being paid until it worked;
- of possible claims for compensation in the event of slippage or service failure;
- of a service credit system which put at risk some of their revenue if they did not meet certain defined performance targets; and
- that when the provision of the system was re-tendered, the existing supplier would not receive a transfer payment if a new supplier won the competition and chose not to use the incumbent supplier's system.

However, the Agency accepted that, although they had transferred the financial risk of non-delivery, they would always retain the business risk.

- There must be contingency plans to cover the risk that the system is not implemented successfully on time and as specified.

Foreign and Commonwealth Office Accounting System (Annex A No 25)

In 1989 the Office started parallel running of a new accounting system which had been delayed by supplier problems. In February 1990, before the problems could be resolved, the old system failed irreparably without backup, forcing the Office to run the new system live. The new system did not operate satisfactorily and the department were unable to complete their accounts to the agreed audit and publication timetables.

Intervention Board Executive Agency (Annex A No 12)

In introducing their new integrated accounting system in 1996 the Intervention Board decided not to undertake parallel running because of the cost, and on the basis of technical advice that it would not work. They sought to minimise the risks of not parallel running by extensive user testing, but this did not identify the problems that arose after implementation. The Board did have a fall back position when they went live, but on reflection they felt that they should have maintained it for longer than five days. In the event, the new system did not work and the Board failed to produce proper accounts for Parliament.

Council for the Central Laboratory of the Research Councils financial accounting system (Annex A No 8)

A new integrated accounting system was due to be introduced on 1 April 1997 for full operation by June 1997. The Council ceased to operate their old system on 31 March 1997, but did not follow the normally accepted practice of running the two system in parallel, as this would have incurred costs of up to £2.5 million. The Council encountered problems with the operation of the new system, which together with delays and errors in the migration of data from the previous system, contributed to a number of problems, including difficulties with the preparation and audit of the Council's 1997-98 accounts.

Relationships with suppliers

Relations between the customer and the supplier will have a crucial effect on the success of the project

3.16 The relationship with the supplier is vital, and it is highly desirable that the relationship is developed so that a shared the `business vision' is created. Suppliers must fully understand the details of the requirement when they bid, and that they pass the understanding on to the team delivering the system.

Key lessons

3.17 Relations with the supplier will have a crucial effect on the success of the project. In particular:

- The customer government departments should maintain a close relationship with suppliers, but avoid undue reliance on them, and maintain overall ownership of progress to achieving the intended benefits;
- All parties must have a clear understanding of their roles and responsibilities, and a shared understanding of key terms and deadlines; and
- where suppliers sub-contract work arising from PFI contracts, the customer departments should satisfy themselves that the prime supplier's arrangements for managing the sub-contracts are consistent with the requirement of the main contract.

Ministry of Defence: Project Trawlerman (Annex A No 4)

In 1996 the Ministry of Defence abandoned Project Trawlerman without it ever being used, resulting in a loss of £40 million. The Department recognised that they had relied to too great an extent on assurances provided by the contractor that the system could be delivered, and had had insufficient involvement with them when the project ran into difficulties.

National Insurance Recording System (Annex A No 2)

There did not appear to be a shared understanding between the Contributions Agency and Andersen Consulting of what was meant by `delivery of Release 1c'. This release converted much of the old system's processing to the new system for over 5,000 Contributions Agency staff. The essentials for this release had to be in place by April 1998 so that employees could send their annual returns and employees' records to be updated. They also did not appear to have a shared understanding of each other's responsibilities under the PFI contract.

Immigration and Nationality Directorate Casework Programme (Annex A No 3)

Siemens, the department's supplier, had decided to complete the programme of software development without their main sub-contractor, who had been mainly responsible for the IT development. These difficulties, which on the face of it are entirely a matter between Siemens and their sub-contractor, in practice operated to the disadvantage of the Directorate. The Directorate, in managing their own risk, should have taken a close interest in their supplier's plan for sub-contracting, and should have satisfied themselves that the prime supplier's arrangements for managing the sub-contracts are consistent with the requirements of the main contract.

Contracts between departments and suppliers must be clearly set out

3.18 The increasing use of complex external contracts for the delivery of major public sector IT projects and the supply of strategic IT services has highlighted the need for a high degree of professionalism in the development and management of IT contracts. It is essential that public sector bodies get the right contracts in place, and ensure that they employ the right people to manage them. With large sums of public money at stake, any lack of clarity, or debatable interpretation in a contract can lead to expensive misunderstandings that might have to be resolved in the courts.

Key lessons

3.19 Contracts between departments and suppliers must be set out clearly. In particular:

- it is essential that the roles and responsibilities of all parties are fully defined;
- there should be an ongoing process of contract management during the life of the project to allow for the almost inevitable change requirements. The aim should be to manage, rather than police, project contracts;
- the business implications of late delivery must be reflected in contractual incentives; and
- in highly complex deals, it may well be unavoidable that some matters cannot be settled in detail at the time that the contract is signed, but is undesirable for contracts to leave key issues to be decided later.

National Insurance Recording System (Annex A No 2b)

There was evidence that the two key parties to the contract, the Contributions Agency and Andersen Consulting, did not appear to have developed a shared understanding of what delivery meant, and about each other's roles in implementation. Under the rescheduled contract, the new system was due to go live in time to cope with the impact of the new legislation in April 1998. Yet Andersen Consulting appear to have been under the impression that implementation might take place over a period of six to nine months after acceptance of part of the system in July 1998. This resulted in a lack of a co-ordinated and coherent implementation plan and weaknesses in contingency planning.

Immigration and Nationality Directorate Casework Programme (Annex A No 3)

In highly complex deals, it can be unavoidable that some matters cannot be settled in detail at the time that the contract is signed. Where these are secondary matters, and where the department have adequate protection against possible abuse by the supplier of the advantageous position they are in, there need not be any great risk to value for money. But when, as in this case, the detailed mechanism for remunerating the supplier depends on post-contract agreement, there could be large risks to the value for money of the deal. The Directorate took steps to protect themselves from these risks, but it is preferable for suppliers' remuneration to be settled under competitive pressure.

Post- Implementation Issues

The success of project must be reviewed as soon as possible so that lessons can be fed back into consideration of later projects

3.20 It is essential that organisations learn lesson from the projects undertaken. A post-implementation review is designed to establish the extent to which they have secured the business benefits anticipated. The review may encompass whether the project has met its business objectives, user expectations and technical requirements. It can sometimes be seen as an unnecessary cost, but in view of the importance of not repeating past mistakes, resources are well spent in this way.

Key lessons

3.21 Organisations should seek to review the success of projects as soon as possible so that lessons can be fed back into consideration of later projects. In particular:

- reviews should seek to understand the reasons for cost overruns and slippage in the delivery timetable, as well as the way in which changes to requirements were considered and authorised;
- they should monitor the achievement of the anticipated benefits, which were part of the basis on which the project was originally approved. Where these have not been achieved, the reasons should be fully investigated; and
- reviews should be undertaken in a constructive and open manner with the aim of improving future project performance.

The Hospital Information Support Systems Initiative (Annex A No 15)

Although there was a need to learn lessons in good time to inform the development of integrated systems by other NHS hospitals, the NHS Executive waited four years before developing a mechanism for evaluating the success of the projects, although some less formal evaluations had

take place earlier.

The 1992 and 1998 Information Management & Technology Strategies of the NHS Executive (Annex A No 9)

Also in this example, the NHS Executive did not evaluate the implementation of the NHS Number and NHS-Wide Networking projects, which were part of the same strategies as covered above.

The Home Office: Handgun Surrender and Compensation System (Annex A No 6)

Problems with the implementation of the computer system contributed to delays in processing claims but the Home Office's Efficiency and Consultancy Unit had postponed their post-implementation review.

Sufficient time and resources should be spent on ensuring that staff know how to use the IT system

3.22 The implementation of an IT system is not an end in itself. It is important that sufficient attention is paid to ensuring that staff are able to use it, and that the likely impact of its introduction on their productivity has been fully considered at the planning stage. Without this it is unlikely that the anticipated business benefits will be realised. Training of staff can take up considerable resources, often a significant proportion of the overall cost of the project. Training must address the needs of users, and of those operating and maintaining the system.

Key lessons

3.23 Sufficient time and resources should be spent on ensuring that staff know how to use the IT system. And proper consideration should be given to the possible effect the new system may have on productivity in the period following implementation. In particular:

- a realistic assessment of the impact of the introduction of the new IT system on the productivity and effectiveness of staff should be made and taken into account when planning;
- implementation of new IT systems must be accompanied by the provision of training appropriate to the required organisational change to deliver the business benefit; and
- organisations must recognise that training may take time and staff may respond to different types of instruction.

Inland Revenue : Corporation Tax Pay and File (Annex A No 17)

The Inland Revenue introduced a new computer system to support new procedures for assessing and collecting Corporation Tax known as Pay and File. This was implemented to time and budget, but the Department considered that the training for the new system had not gone as well as they had hoped. They misjudged the speed and facility with which some inspectors would take to

computer training, and had relied too much on distance learning, and not enough on tutor-led training. They acknowledged that it had taken some time to develop the right blend of training. Lessons learnt on this occasion were applied to the introduction of Income Tax Self-Assessment.

Intervention Board Executive Agency : Integrated Accounts project (Annex A No 12)

In this example, the Intervention Board introduced a major new accounting system without providing proper desk instructions and without ensuring that its staff were properly trained. This contributed to the under performance of the system.

The passport delays of Summer 1999 (Annex A No 1)

Due to time pressures, the Passport Agency's test programme for its new passport processing system did not extend to thorough testing of the system's impact on productivity. During the factory acceptance tests in July 1998, the Agency became aware that the examination stage of passport processing was taking much longer under the new system. They did not have time prior to going live to conduct further tests on productivity. Subsequently, output at the Agency's Liverpool office did not pick up as quickly as expected. In part, this was due to a loss of productivity at the examination stage due to examiners' lack of familiarity with the system, and the additional key-strokes and on-screen operations to be completed. Output at Liverpool and Newport continued to fall short of expectations for some time, and it took nearer six months than six weeks to attain previous levels of output in the two offices, with a significant impact on the Agency's ability to meet demand for passports during that period.

It is essential that public sector bodies learn from past mistakes and consider how they can co-ordinate better their considerable resources to ensure better value for money from IT development

3.24 The White Paper on Modernising Government highlighted the view that in the past Government has taken a very decentralised approach to IT procurement that has not maximised the benefits of technology for government as a whole. The White Paper stated that the Government is developing a corporate IT strategy to encourage greater convergence and co-ordination across the public sector. There may be considerable benefits to the value for money achieved from the development of IT systems by departments working more closely together.

Key lessons

3.25 It is essential that public sector bodies learn from past mistakes and consider how they can co-ordinate better their considerable resources to ensure better value for money in the future from IT projects. In particular:

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- there may be a need for increased central co-ordination and monitoring of the way in which public sector bodies implement IT projects, and the promulgation of more explicit standards against which departmental performance can be measured and benchmarked;
- Government as a whole may wish to co-ordinate better the way in which it takes forward major IT projects, making better use of its purchasing power, and prioritising the projects it would like to see implemented, to avoid contributing to an overheating of the market where relatively limited skills are available;
- there may be scope for encouragement of the development of greater professionalism in project management across Government; and
- where projects cross departmental and other organisational boundaries, and, possibly, costs lie in one body and benefits in another, an appropriate senior level 'board' should be formed for the project to champion it and drive it through.

Summary of suggestions for improving the delivery of Government IT projects

4.1 This section summarises key lessons drawn out earlier to make suggestion for improving the delivery of Government IT projects.

Inception and design of projects

Business change

4.2 A key factor is that delivery of IT projects must be set in the context of delivering business change. Many projects have failed because delivery of IT systems has been seen as an end in itself rather than part of a wider process to meet overall business objectives.

4.3 Business development skills need to be strengthened to support the management of business change projects and to enable informed decisions both before the initiation an a project and throughout its life. Managing business change requires the production and maintenance of a business case for total change, not just the introduction of a new IT system.

Modular and Incremental development

4.4 Large and ambitious projects carry a high risk of failing to meet all or some of their goals. Breaking projects into smaller more manageable components can reduce this risk.

Managing projects

Leadership and Responsibility

4.5 Effective business change programmes and projects require active and visible leadership form the top. Some projects have suffered because of a lack of active ownership. Overall responsibility should be vested in a single, responsible and visible individual who is provided with information sharing mechanisms and practical guidance on the nature of the role and the tasks involved.

Project management

4.6 Failure to recognise the need for specific project management skills results in ineffective management and has been a contributing factor in the failure of some projects. Formal project

management methodologies should be more widely adopted, key staff on major projects should undertake appropriate project management training and mentoring should be available.

- 4.7 The relative difficulty of projects must be assessed against the abilities of project managers and abilities could be supplemented by managers from the private sector.

Risk management

- 4.8 An appreciation of business risk management at all levels in an organisation helps to ensure that the impact of a project is fully understood and monitored throughout its life. To ensure it is effective, there must be procedures in place for upward reporting to the appropriate level.

Relationships with suppliers

Procurement and supplier relationships

- 4.9 Increased dependence on IT to deliver business objectives raises the importance of effective IT procurement. Mechanisms that encourage more mature co-operation between client and supplier can have a significant impact on project success. Scrutiny of supplier plans throughout the procurement process is important in ensuring that objectives are delivered, and action must be taken by suppliers to help improve performance. Actively managing market intelligence can help improve procurement decisions.

People and Skills

- 4.10 Both purchasers and suppliers need to enhance skills in procurement and management of IT at a time when global demand for these skills is escalating and widespread skills shortages are predicted. A key requirement is to identify and measure the core skills necessary and provide rapid ways of developing and acquiring what is missing.

Learning Lessons

- 4.10 Many projects have been carried out without an awareness of what is happening or has already happened, elsewhere. Peer review systems can spread knowledge and ensure that new initiatives have the benefits of experience as they go ahead. Mechanisms are needed to ensure that best practice and good advice are readily available and easy to use.

Realising benefits

4.11 Projects can only be regarded as successful if the intended benefits are realised and there are weaknesses in the systems used for ensuring that benefits are delivered and tracked. Projects should include formal processes to determine the benefits of projects and review progress on realising them.

Issues for country papers

5.1 In preparing country papers, SAIs are asked to consider the following issues:

- Is your experience of government IT project failures similar to that of the UK?
 - Have there been changes in procurement methods, and have these resulted in improved success rates?
 - Do these arise despite extensive guidance on project and risk management methodologies and best practice?
 - Has a centralised approach to IT procurement improved the success rate of IT projects?
 - Are there any other main causes of failure?
- Does your country have examples of government IT project successes, and what are the main characteristics that have contributed to this success?
- How does your country share experiences (both good and bad) across departments and ensure that all learn from the experience of others?
 - Have your audit reports resulted in a better awareness and understanding of the issues and problems in audited bodies? How have you achieved this?
- Does your SAI review such projects as IT projects, or do you review overall business programmes, where IT is only one component (the UK takes the latter approach)?
 - If the former, does your country have a standard audit programme for review of IT projects?
 - If the latter, does a more structured approach to the IT element help identify reasons for success or failure?
 - What issues do you find the most difficult to audit, and why?
 - Does your SAI have “best practice” guidance to offer in this area?

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- The UK has a very decentralised approach to government procurement, which has resulted in incompatible systems that are not well suited to supporting e-government. Has a centralised approach to procurement resulted in a better baseline from which to offer electronic service delivery?
- What action has your country taken to improve the success rate of government IT projects, and how is this success (to be) measured?

Annex A: Case Studies

	Project	Problems experienced	Impact of problems	Lessons
1	<p><u>The United Kingdom Passport Agency</u></p> <p>In 1997 the Passport Agency let contracts to the private sector to undertake some of its activities and to introduce a new computer system. The objective was to improve the efficiency of the passport issuing process and improve the security of the United Kingdom passport. The Agency had planned to roll-out the new processing system to all its offices within a tight timetable before the busy season, but this was postponed following difficulties at the first two offices. In the spring and summer of 1999 there were serious delays in processing passport applications by the United Kingdom Passport Agency, partly as a result of problems with the implementation of new IT driven passport issuing arrangements in the Liverpool and Newport passport offices.</p>	<ul style="list-style-type: none"> Although the specification for the new computer system broadly mirrored the processes and functions of the existing system, it did incorporate more sophisticated software and technology. Agency staff found the system more complex to use and it took some time for output to return to previous levels. Most elements of the system development had been completed successfully prior to launch, but project delays meant that the productivity of the new system was not thoroughly tested by the Agency prior to going live. The Agency's roll out timetable was short and allowed little room for manoeuvre should problems arise. The second office went live despite the first office failing to meet the criterion of output for continuing the roll-out. When the Agency took its decision to halt roll out it had no contingency plan. Despite considerable effort, at no point during early 1999 did the Agency process sufficient output to catch up on the rising backlog. 	<ul style="list-style-type: none"> From early 1999 the Passport Agency encountered increasing difficulties meeting demand for passports. The unit cost of producing a passport in 1999-2000 is was estimated to be £15.50, compared to the Agency's £12 target. Processing times reached 50 days in July 1999. The problems received widespread publicity and caused much anxiety for members of the public. The Agency's telephone service became overloaded, and members of the public had to visit and queue at one of Agency's offices. The Agency employed additional staff, and optimised the efficiency of its examination processes, consistent with the need to maintain the integrity and security of its issuing procedures. Only the introduction of emergency measures enabled the Agency to reduce its backlog. 	<ul style="list-style-type: none"> Organisations must examine carefully the full implications of the introduction of changes to IT systems, including the impact of any policy changes that may affect demand for services. It is essential that bodies draw up contingency plans to cover the risk that the system will not be delivered on time. Such plans should include an assessment of potential compensation payments to customers.

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	Project	Problems experienced	Impact of problems	Lessons
2	<p><u>The National Insurance Recording System (NIRS)</u></p> <p>NIRS supports the work of the Contributions Agency by maintaining details on over 65 million National Insurance accounts. The system impacts on almost every adult in the country as it maintains details of contributions paid and reflects their entitlement to contributory benefits. In May 1995 the Agency awarded a contract under the Private Finance Initiative to Andersen Consulting to develop a new system – NIRS2 – by February 1997.</p>	<ul style="list-style-type: none"> The contract was to replace NIRS in one go, but by January 1996, it became clear that Andersen Consulting had realised the system size and scope were bigger and more complex than originally thought. They had therefore concluded that delivery of NIRS2 in accordance with the contract timetable was not the best approach. The company believed a phased approach would bring less development risk to themselves and less business risk to the Agency. Following a full evaluation, the Agency accepted a proposal to vary the timetable. In 1998 and 1999 there were serious delays and problems with the delivery of the replacement National Insurance Fund Recording System during the extended transition and pilot period. There were weaknesses in contingency planning to minimise the impact on the customers and business of the Agency; and inadequate compensation arrangements should Andersen be unable to deliver. The Contributions Agency delayed the decision that the replacement of NIRS1 would be carried out using a PFI approach. This delay meant that the timescale allowed for the PFI completion was very short. It also meant that the winning bidder had only 22 months to deliver this large and complex system on which important new pensions arrangements depended. This proved to be inadequate. 	<ul style="list-style-type: none"> Delays in implementing NIRS2 in full have led to the calculation of thousands of short term and long term benefits on an interim or emergency basis, and that payments to personal pension holders continue to be delayed. By January 1999, for example, it was estimated that potentially some 172,000 pensioners could be being underpaid in respect of their SERPS by between £0.01 to £100 a week. In December 1998 there were more than 1 million amendments to the records of the self-employed requiring input to the Contributions Agency National Insurance Recording System (NIRS2). The Department was also unable to register some individuals to pay Class 2 self-employed contributions either by the Direct Debit or quarterly payment method as a consequence of the delays in introducing the NIRS2 on-line facilities. Compensation has been paid out to both personal pension providers and benefit recipients. The Contributions Agency's failure to make timely rebate payments to personal pension providers had led to a loss of investment income to customers of personal pension schemes. The 	<ul style="list-style-type: none"> Organisations should ensure that they understand fully the potential impact of delay on their business and customers. The Agency were not able to transfer the business risk of not having the system of having in operation when required. It is essential that bodies draw up contingency plans to cover the risk that the system will not be delivered on time. Such plans should include an assessment of potential compensation payments to customers. It is essential that there are clearly defined roles and responsibilities for the parties to the contract. When a PFI contract purports to have transferred the risk of late or non-delivery to the contractor, organisations should ensure that the business implications of late delivery are reflected in contractual penalties. Inadequate levels of compensation have the effect of transferring risk back to the

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	Project	Problems experienced	Impact of problems	Lessons
		<ul style="list-style-type: none"> The situation became progressively worse. A large backlog of items relating to benefit awards and age related rebates waiting to be input into the system could take years to clear. In 1999 there were over 1,500 unresolved system problems, many of which were crucial to full implementation. 	<p>Agency agreed to compensate these schemes, and through them those receiving personal and occupational pensions, by an estimated £38 million.</p> <ul style="list-style-type: none"> On 1 February 1999 the Secretary of State for Social Security announced that those receiving Retirement Pension, Widows Benefit or Incapacity Benefit who would not qualify for compensation under the existing rules, and who had experienced unreasonable delays, would receive a flat-rate compensation payment of £10. 	<p>public sector.</p>
3	<p><u>The Immigration and Nationality Directorate Casework Programme</u></p> <p>The Immigration and Nationality Directorate of the Home Office operate immigration controls at ports and process applications from people who have already entered the United Kingdom who wish to apply for citizenship, seek asylum, or extend their stay. The number and complexity of the cases, combined with limitations in the Directorate's business systems, had led to large backlogs in cases. In April 1996 the Directorate let a contract for a privately financed business change initiative which depended heavily on new IT. The contract is part of an integrated strategy to achieve a fairer, faster and firmer approach to immigration control.</p>	<ul style="list-style-type: none"> The Casework Programme should have been fully implemented by October 1998. However modernisation of working practices has had to proceed in the absence of the new IT system which was delivered a year later than expected. A major factor in the delay of the project was that the contractor, Siemens, had not ensured that the design of the new IT would be consistent with the organisational design and shape of the Directorate emerging from the business process re-engineering exercise. The original proposal to use existing software packages as the basis of the solution was abandoned and Siemens decided to develop a bespoke system -- a large IT development task -- within the same timescale. In July 1998 Siemens decided to complete the programme 	<ul style="list-style-type: none"> As a result of the delay in full implementation of the Casework Programme, including the IT element, there was severe disruption to the Directorate's services for many months, and a large increase in the backlog of cases. In late 1999 There are backlogs of 76,000 asylum cases and 100,000 nationality cases. There was considerable anxiety and hardship caused to thousands of applicants due to the failure to resolve their cases. The Casework Programme delays and the uncertainty over the timing of the roll out of the Programme made it difficult for the Directorate to budget 	<ul style="list-style-type: none"> Bodies should consider whether programmes of this kind might be too ambitious to be attempted in one go. It is crucial that bodies think through properly the structure of their deals. Organisations should always take a close interest in arrangements with sub-contractors, and that the terms under which sub-contractors are employed should align the incentives and penalties placed on all service providers to ensure the project objectives are achieved.

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	Project	Problems experienced	Impact of problems	Lessons
		without their main sub-contractor, who had been mainly responsible for the development of the new IT.	for casework expenditure in the short-term, and to take decisions on staffing levels.	
4	<p><u>Ministry of Defence: Project Trawlerman</u></p> <p>In the mid-1980s, the Defence Intelligence Staff required a computer system to handle large quantities of classified information. A £32 million firm price contract was awarded in July 1988. The planned date for site acceptance testing was October 1991. The project was abandoned in November 1996.</p>	<ul style="list-style-type: none"> • By 1991 it had become clear that the programme was well behind schedule, and in April 1992 the contractor entered a claim for additional costs. Following negotiations with the contractor, the Department agreed to amend the completion date to 31 January 1993. • Site acceptance testing of the Trawlerman system was finally completed in November 1993, more than two years later than originally planned. • The Department did not accept the system until 1995, and by then it could not meet the developing needs of the Defence Intelligence Staff. The original specification had not included a requirement for the system to be able to link to other computer systems, but by 1995 this was viewed as essential. The limitations of the system also meant that users could not view on screen several files at once, or merge and edit easily the information contained in separate computerised documents. In addition, the word processing facility included as part of the system was incompatible with others in use in the Department. • Following a review, the Department concluded 	<ul style="list-style-type: none"> • The Department wrote off costs of £41million, and acquired a replacement system in 1997 at a cost of £6 million. 	<ul style="list-style-type: none"> • It is essential that organisations recognise the complexity of the IT required at the outset. • There are considerable risks in relying too much on assurances provided by contractors that the system can be delivered, and not having sufficient involvement with them when a project runs into difficulties. • There are benefits in introducing systems in phases and designing them to be sufficiently flexible to allow for technological advances. • Delays in implementing projects place them at risk of being overtaken by technological developments.

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	Project	Problems experienced	Impact of problems	Lessons
		<p>that the system was obsolete, and in November 1996 abandoned the project without it ever being used.</p>		
5	<p><u>The 1992 and 1998 Information Management & Technology Strategies of the NHS Executive</u></p> <p>The NHS uses IT in order to provide appropriate care for patients. In 1992 the NHS Management Executive launched a package of projects, programmes and aspirations to ensure that IT and information were managed as significant resources. The projects ranged from an Intranet to reviews of activities of General Practitioners. In 1998, the Executive launched a package of new and existing projects and service aspirations. Key aims of this package are sharing information about patients between doctors and other health professionals in Primary Care Groups, NHS Trusts and Health Authorities, and providing information about healthcare to both health professionals and public.</p>	<ul style="list-style-type: none"> • In its 1992 Strategy, the NHS Executive communicated effectively a useful vision and set of principles for the development of NHS information management and technology. • However, the design of the 1992 strategy was unsatisfactory and its impact was undermined by certain shortcomings in implementation. A lack of overall objectives in the 1992 Strategy contributed to a lack of direction in its implementation. • While the Executive set objectives for individual projects, their business cases were not always complete in terms of specific, measurable and time related objectives, financial analysis and proposals for monitoring and evaluation. • The Executive did not consider how all the projects related to each other, and overall the Strategy lacked coherence. • The 1998 Strategy represented an improvement in design, although its objectives and targets should have been more specific and measurable if they are to be useful in monitoring expenditure and achievements. As with the 1992 Strategy, there was no overall business 	<ul style="list-style-type: none"> • The lack of clear and coherent objectives in the 1992 strategy led to a lack of coherence between projects and programmes. • There was slow progress in implementation of the projects. • The impact of the projects and programmes in the 1992 strategy has been reduced or limited by poor project design, communication problems and, in particular, inadequate co-ordination with each other. They have not been fully evaluated. 	<ul style="list-style-type: none"> • In preparing a strategy it is important to have clear objectives and milestones. • Care should be taken when preparing business cases for individual components of the Strategy to ensure that interdependencies are taken into account and fully integrated, to avoid problems such as the double counting of benefits. • It is important that there is clarity as to how projects fit together which is understood by those implementing the projects. • There should be clear plans for the evaluation of the Strategy.

Why IT Projects Fail

	Project	Problems experienced	Impact of problems	Lessons
		case, and there should have been clearer plans for evaluation of the Strategy.		
6	<p><u>Home Office – Handgun Surrender and Compensation</u></p> <p>In 1997 the Home Office needed a computer system tailored to meet the specific and complex requirements of the processing of claims for compensation after the surrender of handguns. Planning of the new system started in March 1997, with the aim of having it fully operational by the anticipated commencement of the large-calibre handgun surrender period, then thought to be June 1997.</p>	<ul style="list-style-type: none"> • The system had to be introduced very quickly. • A prototype version of the system was delivered to the Home Office in early June 1997, by which time the Government had decided on a start date of 1 July for large-calibre surrender. • A number of problems were identified during the system's testing stage, but because of the tight timescale, the system was put into operation while faults were still occurring. • Throughout the first month, processing productivity was significantly hampered by numerous and unpredictable system failures, such that staff confidence in it fell and the contractors were asked to provide amended software. • The system was not finally signed off as fully satisfactory until December 1997. Problems continued as the system struggled to cope with the additional users brought in to speed up the processing of claims. 	<ul style="list-style-type: none"> • Processing productivity was hampered. • Arising from initial concerns as to the reliability of the computer system, and as a safeguard against internal fraud, the Home Office instituted a final manual check of payments, which had slowed processing further. 	<ul style="list-style-type: none"> • There are significant risks to successful implementation in introducing a system within a very tight timescale. • Post implementation review

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	Project	Problems experienced	Impact of problems	Lessons
7	<p><u>Ministry of Agriculture Fisheries and Food: Arable Area Payments Scheme</u></p> <p>Under European Union requirements, introduced in late 1992, the Ministry of Agriculture was required to implement an arable area scheme from early 1993 and an Integrated Administration and Control System for it and other schemes over the following three years.</p>	<ul style="list-style-type: none"> • The Ministry adopted a phased approach but had to implement the basic system very quickly. • Software was developed and updated on an annual basis, but released during the year in several stages to reflect when particular functions are likely to be required by users. This significantly affected the manner in which claims were processed. If the software requirements had been available at the outset, many claims could have processed in one go, rather than in three or four stages. • Subsequently, problems with the central computer led to delays in the validation of claims against the Integrated Administration and Control System database to check for duplicate claims, and restrictions on the number of claims that regional offices could send electronically at any one time for validation. In 1996 staff in regional offices had to re-submit each claim for local validation approximately four times on average and for central validation approximately 3.5 times on average. • There appeared to be a significant number of occasions when the system had been either partly or completely unavailable to users. 	<ul style="list-style-type: none"> • The validation difficulties caused further interruptions in the processing of individual claims in 1996 as staff had to wait at least a day for each central validation request to be processed before they could investigate claims that were rejected. • The absence of a database based on a geographical information system, the need to process each claim in a number of stages, and the increasing demands placed on the system by complex checks and periods of peak demands, lead to inefficiencies • The annual costs of the systems have escalated due to the difficulty of developing and maintaining the programming software 	<ul style="list-style-type: none"> • Introducing systems in a phased approach to provide flexibility and meet urgent requirements can lead to problems in processing and frustration for staff carrying out complex tasks.

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	Project	Problems experienced	Impact of problems	Lessons
8	<p><u>Council for the Central Laboratory of the Research Councils (CCLRC) – Integrated accounting system</u></p> <p>The CCLRC decided to replace their old and outdated cash-based accounting system with an integrated accruals based system to record all financial transactions, produce their accounts and provide meaningful internal management information.</p>	<ul style="list-style-type: none"> The integrated accounting system was due to be introduced on 1 April 1997 for full operation by June 1997. The Council ceased to operate their old system on 31 March 1997, but did not follow the normally accepted practice of running the two systems in parallel. CCLRC estimated this would have incurred costs of up to £2.5 million in 1997-98, although a more reasonable estimate was between £0.75 million and £1 million. The Council encountered problems with the operation of the new system, together with delays and errors in the migration of data from the previous system, The project management structure failed to comply with best practice, particularly in terms of ensuring clarity of roles, responsibilities and accountabilities. There had also been a failure to ensure clear reporting lines to senior management consistent with their responsibilities. The project team was not equipped to manage a situation where the contractor progressively withdrew before the project was completed and demonstrated a lack of effective control over the contractor. Scrutiny of the project was compromised because the Audit Committee was presented with insufficient and over-optimistic information on the problems being 	<ul style="list-style-type: none"> The system was still not fully operational in early 1999, two years after the planned implementation date and costs had overrun by 84%. The original contract value was £544,000, but the Council estimated that they incurred further, unanticipated, direct costs of some £458,000 on additional hardware, training, legal and audit fees and temporary staff. Inadequate controls over manual payments made to ease the backlog in payment processing on the new system led to nearly 500 overpayments to staff and suppliers, totalling some £270,000, most of which were subsequently recovered. A fixed asset module did not account correctly for the Council's large capital asset base, forcing them to resort to a spreadsheet register to support their 1997-98 accounts. The Council were also unable to reconcile their general ledger to their bank statements. There was an original difference of some £1m, which was eventually reduced to £48,000, which was written off at the end of the year. 	<ul style="list-style-type: none"> There are very significant risks in not introducing back-up procedures, such as the continuation of the outgoing system for a limited period. Full consideration of the risks and a realistic analysis of the case for parallel running must be undertaken. It is not acceptable for the body concerned to rely on the contractor to manage the project. Organisations must recognise that introduction of a bespoke financial and management accounting system to a demanding timetable is a business critical operation, requiring good project management skills. If an organisation has reservations about the technical viability of a proposal, they should seek expert advice before proceeding. Sponsor bodies should be notified directly of significant problems impacting on their IT

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	Project	Problems experienced	Impact of problems	Lessons
		encountered.	<ul style="list-style-type: none"> The new Chief Executive had taken prompt action to address the problems he had inherited and various parties to the contract were continuing to work together to ensure the system became fully operational in 1999-2000. 	systems.
9	<p><u>The Purchase of the Read Codes and the Management of the NHS Centre for Coding and Classification</u></p> <p>In March 1990 the NHS Executive purchased the copyright to a clinical coding system from Dr Read – the Read Codes – for £1.25m, and in April 1990 they established the NHS Centre of Coding and Classification to develop the codes for use across the NHS. The system is designed to enable clinicians and other data users to record the details of clinical care on a computerised record, share and exchange computerised clinical information and retrieve and analyse clinical information held in clinical information systems.</p>	<ul style="list-style-type: none"> The NHS Executive did not prepare a full business case, including a cost benefit analysis or investment appraisal, to assess the benefits and risks of different options to justify investment in the clinical terms projects. In addition, the Executive had set the objectives for the project in 1992, but did not set out criteria for measuring whether the key objective had been achieved until July 1994. The NHS Executive belatedly agreed to a full evaluation of the Read Codes before implementation. 	<ul style="list-style-type: none"> By March 1998 the Executive had spent £32 million, and it would cost much more to implement the project in full. Eight years after the Codes were purchased and three years after the clinical terms projects ended, Version 3 of the Codes was being tested and used in only 12 NHS hospital sites. The version for use in hospitals required continuous development, and would only function effectively with the appropriate clinical systems in place. Provided this was achieved it would take five years to implement, because implementation was linked to wider developments in information technology. . 	<ul style="list-style-type: none"> Sound project appraisal must include a rigorous assessment of costs and benefits, and a realistic assessment of any risks. These should be contained in a properly structured business case. If organisations are to secure the confidence of users in such projects and overcome any scepticism about new ideas and technology, independent evaluations should be a core requirement of any major development project. It is important that organisations do not feel locked into using projects because they have already spent a lot of money on them.
10	<p><u>Benefits Agency: Jobseeker's Allowance</u></p> <p>When the Benefits Agency introduced the Jobseeker's Allowance in October 1996, there were a number of difficulties with the new</p>	<ul style="list-style-type: none"> The system experienced a number of teething problems. For example, the interface with other benefits failed to work properly in the first months of operation. 	<ul style="list-style-type: none"> The computer problems led to the initial high number of clerical cases- 25,000 – with a greater risk of error in the awards processed. 	<ul style="list-style-type: none"> Introduction of new systems may have an adverse effect on performance in the initial stages following

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	Project	Problems experienced	Impact of problems	Lessons
	computer system.		<ul style="list-style-type: none"> • High levels of error on Jobseeker's Allowance contributed to the Comptroller and Auditor General qualifying his opinion on this account. • There were also mistakes because 79,000 staff had to be trained over a long period. Implementing the new benefit was a huge challenge involving staff in two Agencies across two Departments. • Around a third of the estimated value of error in the account (£46 million) was explained by errors in awards calculated manually, which had been necessary as a result of computer problems. 	implementation.
11	<p><u>Benefits Agency/Post Office Counters Limited : Benefit Payment Card</u></p> <p>In 1996 the Benefits Agency, in partnership with Post Office Counters Ltd and a private sector supplier (ICL Pathway), began the initial phase of implementing benefit payment by payment card at post offices, with a view to full implementation within the next few years. This was a Private Finance Initiative project aimed at delivering a fraud free method of paying benefits, developing a system that met recognised accountancy practices, enabled the Post Office Counters Ltd to improve competitiveness and increase efficiency through automation, and provided an improved</p>	<ul style="list-style-type: none"> • Trials of the card started at the end of 1996 and were extended to 205 post offices. • The project suffered considerable delays and setbacks, and a major review was commissioned to decide the way forward. • In May 1999, the Department of Trade and Industry announced a revised agreement with ICL to remove the magnetic strip payment card from the project. Given the delays, this was now an outdated concept, with clearing banks already moving towards the use of smart cards. • Building on banking technology, POCL and DSS/BA plan to introduce the new 	<ul style="list-style-type: none"> • The problems have resulted in delays to the implementation of one of the Benefits Agency's major projects to tackle fraud. • Estimated fraud savings from the automation of benefit payments at post offices, if the project had been completed on schedule, would have been about £190 million a year (including Order Book Control Service savings that would gradually have been superseded by Payment Card savings during roll out). 	<ul style="list-style-type: none"> • Delays in implementing projects place them at risk of being overtaken by technological developments.

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	Project	Problems experienced	Impact of problems	Lessons
	level of service to customers. The project had an original target date for national roll out starting in April 1999, subject to successful completion of trials.	arrangements in 2003, with computerisation of the Post Office network by the end of 2001.		
12	<p><u>Intervention Board Executive Agency: Integrated Accounts project</u></p> <p>The Intervention Board implemented a new integrated accounting system in May 1996. This followed previous Committee of Public Accounts concerns about the Board's management and accounting systems in 1990.</p>	<ul style="list-style-type: none"> • In implementing all three phases of its new integrated accounting system, the Board experienced delays and significant cost overruns. • The final phase was implemented in a single step without parallel running as the Board judged that it was not technically feasible to do so without significant costs. In addition, there was only a limited fallback facility to enable the Board to revert to its old system in the event of problems. The Board said that it was on the best advice then available that they did not adopt parallel running. • An off-the-shelf software product developed faults soon after implementation. • The Board encountered a number of problems including under-performance of the system which led to discrepancies between the accounts modules; non-closure of accounting periods which led to incorrect postings; software problems which resulted in postings to incorrect accounting periods and codes; unreliable accounting reports which were produced as a result of mispostings and the incorrect linking of account codes; and cash received which could not be matches to invoices issued. 	<ul style="list-style-type: none"> • There were substantial cost over-runs as a result of extra consultancy time arising from the delays. The outturn was roughly double the estimated cost. • Because of the problems encountered in the implementation of the system, the Board were unable to complete essential reconciliations between certain account balances recorded in the general ledger and subsidiary accounting records at the year end. • In the absence of reconciliations, the Comptroller and Auditor General was not able to obtain all the information and explanations considered necessary, and therefore qualified his opinion on the accounts for 1996-97. In addition, the implementation of the project cost roughly twice the estimated cost. 	<ul style="list-style-type: none"> • There are significant risks in failing to undertake parallel running or having insufficient backup. A fallback position should be maintained for a sufficiently long time to establish that the new system is working satisfactorily. • The introduction of a major new accounting system must be accompanied by provision of proper desk instructions and training for staff.

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	Project	Problems experienced	Impact of problems	Lessons
13	<p><u>Department of Social Security: Measures to Combat Housing Benefit Fraud</u></p> <p>In 1997-98 the effective delivery of Housing Benefit still depended on the exchange of over 22 million pieces of paper between local authorities and the BA. In 1993-94 the Department of Social Security piloted the use of remote access terminals which gave local authorities direct access to the Income Support computer system.</p>	<ul style="list-style-type: none"> • The introduction of terminals improved liaison and provided local authorities with instant access to information, but only a few terminals had been installed at the time of our hearing. • More than four years since first piloting these terminals, further piloting commenced with the aim of making terminals available nationally from April 1998. • In May 1998 the Department offered terminals to all 409 local authorities and over 350 applied for them to be installed. The Department plan to install them by the end of April 1999. • The Department were determined to address the difficulty in exchanging information between the Benefits Agency and local authorities by a series of measures. Within the context of a new project they are considering an information technology strategy for Housing Benefit. 	<ul style="list-style-type: none"> • The effective delivery of Housing Benefit has remained dependent on the exchange of millions of pieces of paper. • Opportunities for sharing information have been missed. 	<ul style="list-style-type: none"> • Delays in the introduction of IT systems can have an adverse impact on the development of business.
14	<p><u>Crown Prosecution Service</u></p> <p>In 1989 the Crown Prosecution Service said that a new case tracking computer system, which was planned to replace a variety of outdated systems, would be its top information technology priority and would be implemented by 1993-94. The new system was</p>	<ul style="list-style-type: none"> • By the end of 1997, the system had been implemented in just over half of CPS branches, and a substantial amount of performance information still had to be produced manually. • The slippage was caused partly by management effort being directed towards other priorities such as the introduction of 	<ul style="list-style-type: none"> • The delays in implementing a comprehensive case tracking system to the planned timescale hampered the efficient and effective operation of the Crown Prosecution Service. • The original specification was overtaken by changes in working practices and new technology and, 	<ul style="list-style-type: none"> • Long delays in implementation can lead to projects being overtaken by technological developments. • The CPS must set key milestones for the new project and a clear timetable for delivering the system to all

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	Project	Problems experienced	Impact of problems	Lessons
	intended to improve efficiency by capturing and manipulating information on cases more efficiently and by generating management and performance information.	teamworking and the need to reschedule implementation to take account of changes in the organisation of CPS.	<p>mainly as a result of these, in 1997 the system was expected to cost £15.9 million, twice as much as the original estimate.</p> <ul style="list-style-type: none"> In 1997 the CPS ceased implementation of the project on the grounds that the technology was outdated. A PFI contract for a new system is now expected to be finalised in autumn 2000, with implementation to all CPS branches then expected to take two years. 	<p>local staff.</p> <ul style="list-style-type: none"> Sufficient flexibility needs to be built into the new system to allow for the development of data exchange and communication links with other criminal justice agencies and for future changes in criminal justice legislation.
15	<p><u>The Hospital Information Support Systems Initiative</u></p> <p>By the late 1980s, many acute hospitals had developed their own computer systems. They were not linked together and as a result the recording of information was slow and inefficient. The NHS Executive launched the Hospital Information Support Systems Initiative (HISS) in 1988 to explore the costs and issues involved in implementing integrated systems in NHS hospitals in England. The Comptroller and Auditor General examined 6 of the sixteen projects funded under the Initiative.</p>	<ul style="list-style-type: none"> In 1996 there was a gap between the Executive's plans and achievements in implementing integrated systems, and Executive needed convince those trusts not already involved of the value of the systems. The Executive went ahead with one project despite high costs and the significant risks involved. The fact that two major suppliers did not believe it was feasible did not act as a warning. The NHS Executive selected the three pilot projects under the Initiative within the very short period of two months. Subsequently, each of the projects suffered problems and delays. These delays may have stemmed, at least in 	<ul style="list-style-type: none"> All six projects examined by the National Audit Office had experienced delays, and likely to have had an adverse effect on the quality of care those hospitals could provide. 	<ul style="list-style-type: none"> It is essential that organisations learn from the lessons of previous projects. The commitment of users such as clinicians is crucial to the success of such projects. All users need to be involved in the development of these systems. There are considerable dangers in trying to implement projects too quickly and not preparing sites properly. Projects should not proceed without first establishing that there are sound business cases

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	Project	Problems experienced	Impact of problems	Lessons
		<p>part, from the Executive's failure to prepare the hospitals to run their projects, and that they might have obtained better value for money had they taken more time to ensure hospitals were fully prepared. The Executive argued that in view of the innovative and complex nature of these projects all reasonable steps had been taken to manage them effectively.</p> <ul style="list-style-type: none"> The projects proceeded without sound business cases being established. Although the aim was to learn lessons to inform the development of integrated systems in other hospitals, development of formal evaluation mechanisms was only started four years after the start of the initiative. The Executive considered that full business cases for early pilot sites, as defined by today's standards were not realistic given the decision to invest in order to understand the issues. 		<p>for doing so, and without undertaking full investment appraisals and risk analyses.</p> <ul style="list-style-type: none"> The need to consider evaluation mechanisms at an early stage is integral to all initiatives of this kind.
16	<p><u>Northern Ireland Vehicle System Replacement Project</u></p> <p>In the early 1990s the Driver and Vehicle Licensing Agency (DVLA) decided to replace the Northern Ireland vehicle system at a cost of £3.93 million, for implementation by March 1994. In 1997 the Comptroller and Auditor General reported on the write off of £3.7 million of fruitless expenditure incurred on the project.</p>	<ul style="list-style-type: none"> Work began in October 1992 on a project definition document to develop a detailed system definition. The contractor, DVOIT, requested only a high-level user requirement as the replacement system was intended to be a conversion of the existing system plus fixes of existing faults. Over time, amendments to the user requirement were needed to correct misunderstandings, and changes were cited as reasons for increasing costs. 	<ul style="list-style-type: none"> In March 1996 the project was abandoned, and fruitless expenditure totalling some £3.7 million written off. In November 1995 CCTA reported costs totalling £3.5 million had been incurred on the project to November 1995. The completion date had slipped from March 1994 to November 1996, and total project costs were forecast to exceed by 71 per cent (£2.78 million) the original business case approved by 	<ul style="list-style-type: none"> Business cases must be based on a clear understanding of user requirements and identify clearly and realistically the cost of individual components of the project. Contracts should, wherever possible, be awarded on a fixed price basis and should not be open-ended. This transfers risk to the supplier

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		<ul style="list-style-type: none"> • In 1993 DVOIT increased their cost estimate for development staff time from £2.3million to £3.4 million, citing changing user specifications and previous mis-estimates as reasons. The project cost rose and DVLA repeatedly sought details of costs incurred to date from DVOIT. Information was not forthcoming, partly because the DVOIT project manager was changed three times. • In December 1993, the contractor, DVOIT, was sold to EDS. In February 1994, EDS informed the project board that the additional work required to complete the project would put back the implementation date from March 1994 to January 1995. They also revised the estimate of the total project cost to £5.95 million. • Following a meeting with EDS in February 1995, the project board asked the Central Computer and Telecommunications Agency (CCTA) to review the EDS proposal and cost estimates. CCTA identified project management as a significant problem. It was cumbersome and inefficient. In addition, project managers had to adapt to the changing nature of the relationship with the contractor from in-house supplier, to executive agency, to external commercial supplier. Lack of continuity of key project staff was also a problem. 	Treasury.	<p>and would prevent cost overruns.</p> <ul style="list-style-type: none"> • It is essential that there are clearly defined roles and responsibilities for the parties to the contract.

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17	<p><u>Inland Revenue - Pay and File</u></p> <p>In October 1993 the Department introduced new procedures for assessing and collecting corporation tax known as Pay and File. These required companies to pay over corporation tax based on their own calculation of liability, and to file the tax return on fixed dates. The new arrangements were designed to streamline the administration of tax by reducing the need for estimated requirements and consequent appeals. The Department introduced a new computer system to support Pay and File.</p>	<ul style="list-style-type: none"> • The new computer system to support Pay and File had been introduced to time and budget. • The system was described by the Department as perhaps the most complex they had so far introduced. • The Department advised that in the early days there were teething troubles and in the availability of the system to staff was in the low nineties, as against 99% they had hoped to achieve. This improved subsequently and reached 100% at times. • The training for the new system did not go as well as they had hoped. The Department considered that they misjudged the speed and facility with which some inspectors would take to computer training, and had relied too much on distance learning, and not enough on tutor-led training. • In retrospect, they acknowledged that it had taken some time to develop the right blend of training. Lessons learnt here had been applied to the introduction of Income Tax Self-Assessment. 	<ul style="list-style-type: none"> • The availability of the system was less than expected for a while after introduction. 	<ul style="list-style-type: none"> • It is important to keep an expert team in being some time after the system becomes operational so that any teething problems can be put right as quickly as possible. • Careful consideration needs to be given to the type of training available to staff using new systems.

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	Project	Problems experienced	Impact of problems	Lessons
18	<p><u>Department for Education and Employment – Teachers’ Superannuation scheme</u></p> <p>Teachers in both the state and independent sectors can belong to the Teachers Superannuation Scheme, administered by the Teachers’ Pension Agency, an Executive Agency of the Department for Education and Employment. In 1991 the Department decided to invest in a major new computer system for the scheme.</p>	<ul style="list-style-type: none"> The Government Actuary reviews the scheme every five years and makes recommendations on contribution rates. The Department had expected that the new IT system would enable them to provide the information required straight from the new database. However, the system had failed and became the subject of litigation. The Agency had had to go back to the original database and apply interrogation programmes to it. However, these had not been ready and had needed upgrading. 	<ul style="list-style-type: none"> The review by the Government Actuary covering the period to 1991, was delayed principally by difficulties experienced by the Department and Agency in providing him with information. The Agency changed their procedure to collect information on a year by year basis so that at the time of the next review they would not have to go through five year’s information from scratch. 	
19	<p><u>Department of Education and Employment: Computer systems for training and enterprise councils</u></p> <p>In 1988 the Department of Employment decided to introduce an integrated computer system – the Field System – into their regional and area offices responsible for delivering training and enterprise programmes. Later that year the Government created Training and Enterprise Councils (TECs). The Department decided to press on with implementation in order to meet the IT needs of TECs when they started in 1990.</p>	<ul style="list-style-type: none"> The Department adjusted the design of the Field System to meet the core needs of TECs, and they expected TECs to use the system well into the 1990s. The Department experienced significant problems in developing and implementing the system, which in the view of many TECs, did not adequately meet their needs. Following a review of TECs information technology needs, the Department ceased to provide information technology systems and services directly to TECs, who assumed this responsibility from April 1993. The Department argued that the system was never intended to meet all TECs’ needs and it was designed to enable them to develop their own systems as their operating requirements 	<ul style="list-style-type: none"> The Department spent £48 million on the Field System but most TECs considered that it had not enhanced their performance. The Department disagreed, believing that the system considerably enhanced TECs’ performance. It provided them with their core accounting and management support systems, without which, for example, their ability to handle money from the Department would have been weakened. The Department argued that the system was delivered within budget and substantially to time, and that planned savings had been secured and most of the expected benefits secured. 	<ul style="list-style-type: none"> Full involvement of prospective users is essential if projects are to meet fully user needs. Systematic risk analysis is essential before embarking on a high risk project. Project management staff must have the necessary background and experience. Departments should not engage consultants in a haphazard manner.

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	Project	Problems experienced	Impact of problems	Lessons
		<p>became clearer.</p> <ul style="list-style-type: none"> The cost of the redesigned system was estimated in the business case as £71 million. By 1993 the Department had spent £48 million, of which about £19 million was on hardware. 		
20	<p><u>Ministry of Defence: Disposal by Sale of Defence Surplus Equipment and Stores</u></p> <p>In April 1991 the Department installed a new system to aid the efficiency of the Sales Directorate.</p>	<ul style="list-style-type: none"> The costs of the system rose substantially and nearly three years later it was not functioning properly. Problems experienced included hardware lock-ups, a lack of proper trunking and cabling, inadequate training and insufficient professional support. One problem with installation of the computer system had been a lack of appreciation of the Directorate's requirements. There was an internal 'disconnect' between the Directorate and the Department's computer organisation; they had not got it right between them, so what had been implemented had been inadequate. The Department accepted that there were substantial problems associated with the implementation and that they had underestimated the scale of the task. 	<ul style="list-style-type: none"> As a result the Directorate did not have an adequate computerised information system, and were relying on a largely manual database, which hindered the timely extraction of information for management purposes. The Department acknowledged that this was not a large, complex system, but it was absolutely essential to the provision of adequate management information on the disposals operation. The cost of the project overran by 43%. 	<ul style="list-style-type: none"> Organisations must ensure that their computer requirements are clearly understood. Clear definition of requirements is a basic tenet of good practice and there should be good co-ordination between IT experts and users. Bodies must assess carefully the size of the task and ensure that they have an adequate system of project management.

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	Project	Problems experienced	Impact of problems	Lessons
21	<p><u>Wessex Regional Health Authority – Regional Information Systems Plan</u></p> <p>In 1984 the Authority launched their regional information systems plan. This was intended to provide computer systems which would optimise the use of information to improve clinical and other health services. In April 1990 the plan was abandoned with at least £43 million having been spent.</p>	<ul style="list-style-type: none"> • In July 1992 the appointed auditor reported on serious failures in the management of the project. • These included a failure to control the activities of consultants upon whom the region was heavily reliant. • There were serious failings in contract, financial and management controls, such as the awarding of a contract following a tendering process which did not enable meaningful comparisons to be made. • There were serious conflicts of interest at a senior level within the authority. • Given the ambitious nature of the project and the risks that money would be wasted if it did not succeed, appropriate targets and penalty provisions would have encouraged the company to work for its success and secure a measure of protection for the taxpayer. • These represented a serious failure on the part of the Regional Health Authority to secure accountability from the then Regional General Manager and failure on the part of the NHS Management Executive to act with sufficient urgency. 	<ul style="list-style-type: none"> • After expenditure of some £43 million over a period of six years, the project was abandoned in April 1990 without any significant benefit having accrued to the region. • The NHS Management Executive considered £20 million was wasted between 1984 and 1990. 	<ul style="list-style-type: none"> • Bodies should avoid undue reliance on consultants.

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	Project	Problems experienced	Impact of problems	Lessons
22	<p><u>West Midlands Regional Health Authority</u></p> <p>Our predecessors reported that in April 1990 the Regional Supplies Division of the West Midlands Regional Health Authority entered into an arrangement with a major computing firm to carry out preparatory work for the development of an electronic trading system. The business case anticipated development costs over the first five years of £5.3 million, offset by royalties paid by the contractor, estimated at £3.9 million.</p>	<ul style="list-style-type: none"> • Development started in May 1990 and continued until January 1992, when work was halted, following the setting up of the National Health Service Supplies Authority. By January 1992 the contractor had billed the Regional Health Authority for £7.3 million. • The contractor produced a working system in line with the Authority's changing requirements, and that it was in partial use at four sites until December 1992, when the Authority decided not to proceed with the development. • The project was not viable because information contained in the business plan was speculative and unrealistic. • Proper market research was not carried out and suppliers were not consulted. Estimates of supplier take up were significantly overstated. Potential customers were not consulted and the royalty projections were unrealistic. 	<ul style="list-style-type: none"> • Losses made here were part of the waste of least £10 million as a result of serious shortcomings in the management, control and accountability within the Health Authority. 	<ul style="list-style-type: none"> • Business plans must be realistic and soundly prepared.
23	<p><u>Northern Ireland Education and Library Boards Information Strategy</u></p> <p>In 1984 the Department of Education for Northern Ireland began to develop a common IT strategy for administrative functions within the five Education and Library Boards. Expenditure on development and</p>	<ul style="list-style-type: none"> • In the absence of any expertise in IT on the strategy Steering Group, they were wholly dependent on consultants. The Group decided not to seek CCTA's services but rely on consultants' own methodology for procurement. • Because the Group did not adequately specify 	<ul style="list-style-type: none"> • The strategy, that between April 1985 and March 1991 cost more than £15 million, was poor value for money. 	<ul style="list-style-type: none"> • Care should be taken to specify user requirements in as much detail as possible. • Purchasers should avoid being too dependent on consultants. • There must be a clear

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	Project	Problems experienced	Impact of problems	Lessons
	implementation costs £15 million by 1991.	<p>the Board's requirements for three priority financial systems, the supplier had not provided hardware sizing calculations or an undertaking that its proposed hardware solution would satisfy the Board's needs. The Steering Group had not challenged the supplier's proposals, and the computers purchased were not capable of meeting the Board's needs.</p> <ul style="list-style-type: none"> • The supplier was not able to provide a fully integrated system and offered separate payroll and software packages which were to be linked to allow for the transfer of data. The linking of the two packages proved to be a critical and persistent problem. • There were deficiencies in the project management methodology, including the absence of detailed cost monitoring. • Only a limited number of project management evaluations were undertaken and they were not regarded as adequate. 		<p>statement of objectives and the establishment of effective project management at the start of any project or programme.</p> <ul style="list-style-type: none"> • There must a clear statement of what has actually been achieved against objectives at the end of the project. • Evaluations of projects are very important in enabling lessons to be learned for the management and development of future projects.
24	<p><u>Ministry of Defence : Support Information Technology</u></p> <p>The Ministry of Defence use IT for management and administration, and for planning and conducting military operations. The National Audit Office examined their performance in delivering IT systems and improving the planning and management of information technology.</p>	<ul style="list-style-type: none"> • The complexities involved in implementing IT in a large organisation such as the Ministry of Defence are large, but the cost of the learning process was unacceptably high. • There were a number of problems with the LANDSCAPE project. It suffered from successive delays due to changing user requirements, the contractor's achievement on the software was imperfect and the hardware was unsuitable for the project. 	<ul style="list-style-type: none"> • All nine systems examined had suffered delays varying from five months to two years, postponing the achievement of predicted benefits. • Of four systems subjected to post implementation review, only one had achieved all intended financial and operational benefits. • The LANDSCAPE project had 	<ul style="list-style-type: none"> • Clear definitions of user requirements were important before going ahead with projects. • The Department recognised the need to break projects down into shorter tranches and apply strict control over requirement changes during development.

Why IT Projects Fail

	Project	Problems experienced	Impact of problems	Lessons
		<ul style="list-style-type: none"> Fundamental misjudgements were made on the SEMA project which led to a nine-fold increase in the development effort required. User involvement in IT had been insufficient to ensure the systems were capable of meeting business needs. The 1988 IT strategy identified project management weaknesses as a factor in the failure to fully realise the benefits of investment in IT. 	<p>resulted in a loss of some £6 million.</p> <ul style="list-style-type: none"> In the mid-1980s the Department recognised the need for co-ordinated planning and in 1988 approved a strategy for support IT. 	<ul style="list-style-type: none"> Post-implementation reviews are crucial in ensuring that expected benefits have been achieved and in identifying lessons for the future.
25	<p><u>Foreign and Commonwealth Office – Appropriation Accounts</u></p> <p>The Foreign and Commonwealth Office implemented a new computerised accounting system.</p>	<ul style="list-style-type: none"> In 1987 the Foreign and Commonwealth Office decided to replace its computerised payment and accounts system. The Department employed consultants to study the Department's book-keeping system and define future requirements. In 1988 they made a firm recommendation for a package, which the department accepted. The Department aimed to start parallel running from autumn 1988. As their IT staff did not have the time and Finance Department did not have the experience, the Department asked the consultants to undertake the testing. The software could not be delivered to time and the company ran into financial difficulties. Eventually they delivered the final part of the software but went into liquidation and could not deal with problems arising. 	<ul style="list-style-type: none"> Because of difficulties in implementing a new computerised accounting system, the Foreign and Commonwealth Office were unable to produce their four Appropriation Accounts for 1989-90 to the agreed audit and publication timetables. The accounts were signed by the statutory date, but the Department had been unable to balance their books across the combined accounting records produced by the new computerised system. Expenditure on the new system to the end of September 1990 amounted to some £937,000, two-thirds more than the original estimate. The cost overrun was due almost entirely to the extra cost of consultants' fees arising from problems experienced during the 	<ul style="list-style-type: none"> It is essential that bodies draw up contingency plans to cover the risk that the system will not be delivered on time.

Why IT Projects Fail

	Project	Problems experienced	Impact of problems	Lessons
		<ul style="list-style-type: none">• The Department began parallel running in November 1989 but identified discrepancies in the accounting data. Shortly afterwards the old computer broke down and could not be repaired. The Finance Department had no option but to run the new system even though it had not been fully tested and was known to have fault.• Problems persisted including hardware difficulties and technical problems. By May 1990 it was apparent that the discrepancies could not be resolved. Staff were drafted in to undertake a major reconciliation.	extended implementation period.	