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MINISTRY OF DEFENCE

The Defence Information Infrastructure

This report has been prepared under Section 6 of the National Audit Act 1983 for presentation to the House of Commons in accordance with Section 9 of the Act.

Tim Burr
Comptroller and Auditor General
National Audit Office

1 July 2008

The National Audit Office study team consisted of:

Karen Jackson, Tim Phillips, Paul Dodimead, Bridget Jackson and Mohbubul Choudhury, under the direction of Mark Andrews

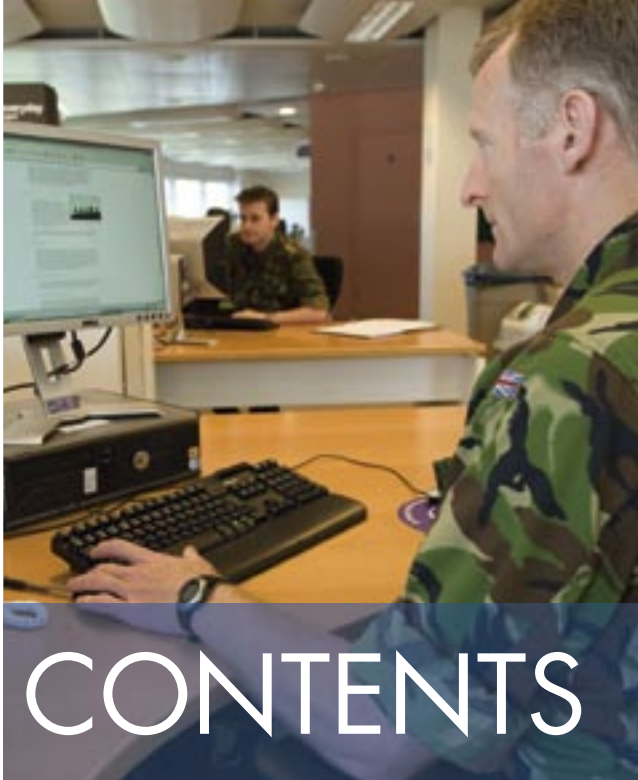This report can be found on the National Audit Office web site at www.nao.org.uk

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SUMMARY

1　The Ministry of Defence (the Department) requires secure, high-quality information technology both for the success of operations and to conduct its day-to-day business. As in many other organisations, the Department developed numerous systems to meet specific needs over many years. In 2000, the Department began to develop plans to replace these diverse systems with a single information infrastructure to enable better communication, to promote more efficient ways of working, and to obtain better value for money. In March 2005, the Department let a contract with ATLAS, a consortium with EDS as the prime contractor, for the installation and management of a new infrastructure over 10 years. The Defence Information Infrastructure Programme (referred to in this report as DII) will, when delivered in full, incorporate 150,000 terminals for 300,000 users at over 2,000 defence sites, including on ships and deployed operations. The parts of the Programme which the Department has on contract, including payments to ATLAS, are estimated to cost £4.9 billion.

2　In addition to its scale, the DII Programme is highly complex. It must meet challenging security requirements and needs to function in operational theatres and on ships. As well as installing hardware and software at sites, the Programme requires a network of data centres to store Departmental information and two large call centres to provide service management to users of DII and many legacy systems. During implementation, DII has also undertaken to maintain the quality of service provided to users of legacy systems. The Programme is being implemented during a time of major change in the Department, including mergers of various Departmental organisations and the associated movement of personnel between sites. **Figure 1** gives a summary of the DII Programme.
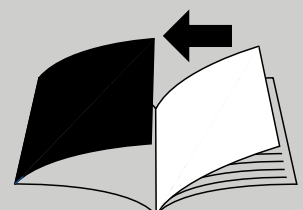
Figure 1 overleaf

1 The Defence Information Infrastructure

Vision:

A single information infrastructure

- for the **three Services** and the central **Ministry of Defence**;

- to **facilitate joint working** between users **on a common platform**;

- to **enable** 12 key **defence change programmes** including:

  - change programmes requiring personnel to use new software applications, such as the Joint Personnel Administration application, a human resources and pay system for the three Services; and

  - change programmes involving the re-location of large numbers of personnel, such as Project Hyperion to merge the two bodies which run the Army to form a single headquarters.

The defence change programmes are essential for the Department to deliver its Gershon efficiency targets.

Requirement:

DII Scaling The programme will deliver

- approximately **150,000 terminals**;

- for approximately **300,000 users** who will be office-based, mobile or deployed on operations; and

- to over **2,000 sites worldwide** including operational theatres and Royal Navy vessels.

Security The programme will deliver a **system** capable of **operating at all security levels**, which will be fully accredited.

Applications The DII system will allow access to approximately **1,000 applications**.

Other Benefits The system will allow **joint working on a common platform** across the whole Department, which will facilitate more collaboration and easier communication.

Delivery Partner:

DII **is contracted to** the **ATLAS** Corporation, a consortium comprising:

- EDS (the prime contractor)

- Fujitsu

- EADS

- General Dynamics

- Logica CMG

ATLAS was formed specifically to bid for and deliver the DII contract

In the consortium Fujitsu shadows the capability of EDS. EADS, General Dynamics and Logica CMG shadow each other.

Source: National Audit Office analysis

Commercial Structure:

The Department let a 10 year contract from 21 March 2005 for DII.

The **key contracted deliverables** are:

- the **implementation** of the **DII infrastructure**;

- **software for** the **DII** system providing a common functionality for all users, with inbuilt security features, to be released in two phases:

  - Software Release 1 providing basic functionality such as office administration tools for occasional users, common data storage and basic messaging; and

  - Software Release 2 providing the remaining functionality including an electronic document record management system, high grade messaging and remote access for homes users, both at Restricted and Secret levels.

- **applications** that are compatible to be **accessed via DII**;

- a system that can be **deployed in operational theatres**;

- a single **managed service** for users with **a single point of contact** for all queries, which will be measured through Key Performance Indicators; and

- the **management** of the Department's principal **legacy systems** until they are replaced by DII.

The contract includes mechanisms to manage change in implementation requirements, in recognition that the Department and the three Services are undergoing considerable structural and operational change which will impact on the Programme.

The contract was structured to minimise the risk to the Department of poor contractor performance:

Contractor shadowing

The consortium is structured so that there can be no single point of failure – each contractor in the consortium is shadowed by a competitor with equivalent capability that would be able to step-in to deliver the programme requirements in the event of a catastrophic performance failure or contractor withdrawal.

Incremental approach

The programme is divided into increments which are separately contracted for. This allows the Department to drive contractor performance at key times and could be used to put future increments out to external competition in the event of a catastrophic performance failure by the consortium.

The programme was originally split into three increments but has been sub-divided further into a total of seven increments.

Payment on Performance

Payment for DII is made through charges for DII terminals and user accounts so that the contractor recoups the majority of its investment through performance-based payments. Charges are set at different rates for different user types. Different charges apply for Software Release 1, a flat rate, and Software Release 2, which has banded charges based on the volume of users and terminals.

Programme Costs:

The **forecast programme cost at contract let was £5,854 million**. The full cost of the programme could not be estimated until further assessment work was completed to define the scope of the requirements for the Deployed and Top Secret capabilities.

The **current forecast cost** for the DII programme and programmes on which it is dependent, such as the provision of wide area support services, is £7,093 million, including an amount set-aside to manage future risks. This is the forecast cash cost, including the costs of Departmental resources to manage the programme. It does not include additional accounting costs to the Department such as for depreciation.

State of Infrastructure being replaced:

Systems DII is replacing approximately 300 legacy systems across the three Services and the main Department, ranging from highly specialised systems with few users to systems providing standard office administrative tools, such as CHOTS and NavyStar. Many of the legacy systems are not compatible with each other and some do not have inbuilt security features. A number of the systems were very old, did not provide the required range of functionality to users, had become difficult and costly to maintain and upgrade and did not deliver the capability required by the current defence change programmes.

Applications Before DII, the Department had many different versions of common applications, because IT was not delivered centrally. The DII Programme rationalised the number of applications used in the Department, reducing the number of applications from over 6,000 to around 1,000 before letting the contract.

Physical Estate The defence estate in which DII is being installed is highly variable, ranging from the newly refurbished Headquarters in London to small, poorly maintained Territorial Army facilities.

DII(Convergent) The Department had to develop a short-term system solution while it was devising the requirement for the DII Programme to replace some existing systems. The system, DII(Convergent), was designed and maintained by Fujitsu. It has been installed in a number of locations, including the Department's Main Building in London which was completely refurbished between 2000 and 2004.

From 2003 to date, the Department has approved expenditure of £426 million to develop and support 25,000 DII (Convergent) terminals.

When it was installed, DII(Convergent) was the most functionally rich system that the Department had, allowing collaborative working and electronic document and record management. Many of the requirements of DII(Convergent) are similar to DII, although the system architecture has not been copied.

	Increments on contract		
Original Increment Structure	Increment 1	Increment 2	
Current Increment Structure	Increment 1	Increment 2a	Increment 2b
Increment Scope	Fixed DII infrastructure, including on Royal Navy vessels, to replace legacy systems with DII at Restricted and Secret levels.	Fixed DII infrastructure to replace legacy systems with DII at Restricted and Secret levels.	Deployable systems and services
	The provision of a managed service for DII and legacy systems.	The provision of a managed service for DII and legacy systems.	
Contract award date	21 March 2005	29 December 2006	27 September 2007
Number of terminals including DII(C) (18,500)	72,000 (69,200 after the Medium Term Work Strands) (62,800 excluding maritime rollout)	44,000	3,332 terminals. 1,608 to be deployed
Number of users	201,500 (195,100 after the Medium Term Work Strands)	57,500	Undefined
Number of sites	680 locations, including Royal Navy vessels	660 locations	78 different Headquarters plus Royal Navy vessels

NOTE

For a guide to all increments, including those not yet on contract, see Appendix 3.

Preparation

3   Inevitably after many years of fragmented information technology, the DII Programme has become a key enabler of many other major business change application programmes. To keep risks manageable the Department decided in 2001 that the DII Programme would deliver only infrastructure and core software, while new applications would be delivered through separate programmes. Between 2005 and 2007, the business change programme which most urgently required assistance from DII and which had the biggest impact on how the Programme was structured was the Joint Personnel Administration Programme, which planned to automate and improve Armed Forces personnel pay and benefits processes and introduce self-service capabilities.

4   The Department did considerable work to understand the required scope of the DII Programme and to understand and mitigate inherent and anticipated risks. It sought to learn from other large computer programmes, including the United States Navy Marine Corps Intranet Programme, which has a similar purpose to DII and is also being delivered by EDS. In part on the basis of lessons learned on the United States programme, the DII Programme team decided to take control of existing systems before letting the contract, improving their knowledge of what was to be replaced and allowing them to decide the best order in which to install DII. It also reduced substantially the number of applications that would need to run on DII. However, in a situation where the Department had limited knowledge of the condition of its estate, the Programme did not do enough work to understand the physical environment into which the new infrastructure would be installed, and consequently made too optimistic an evaluation of the physical condition of many defence sites.

5   The Department devised a robust commercial structure for the DII contract. The structure includes contractor shadowing and an incremental approach to awarding work to ATLAS to manage the risks of the Programme and incentivise the contractor. Payment for performance means that, with limited exceptions, the Department only pays the contractor when terminals have been installed and are working. To better support system management during the implementation of DII, legacy systems are transferred to ATLAS with the contract increment in which they will be replaced. The Department also created sound governance and decision-making structures which have endured since the start of implementation.

Implementation

6   Following extended negotiations to ensure a better deal, the Department and ATLAS signed the DII contract three months later than intended. To meet the timetable for the Joint Personnel Administration Programme, the Department decided not to change the schedule. Though this delay meant the loss of a three-month start-up phase, ATLAS believed that it would be able to find premises and staff and start to deliver in the compressed time period.

7   During 2005 and 2006, the Programme delivered a number of important enhancements to the Department's information technology. This included the transfer of a number of legacy systems and the staff that managed them to ATLAS, and the establishment of two top-level data centres to store Departmental information. Most significantly, users of legacy systems which were now being managed by ATLAS benefited from many improvements, which made their systems more reliable. From November 2005, when the Single Point of Contact call centre was opened, users of legacy systems have also been able to call a single telephone number to solve any problem they have with their computer system.

8   Throughout 2005 and early 2006, however, problems emerged with two key elements of the Programme: the rollout of new computer hardware to sites, and the creation of the software. These problems caused major delays to the rollout of the first stage of the DII Programme. The Department contracted to have 62,800 DII terminals in place at permanent defence sites by the end of July 2007. At the end of April 2008, only 29,000 had been delivered. There have been significant delays to the commencement of the installation of terminals on Royal Navy ships and submarines. Currently, the end date for the installation of Increment 1 of DII is running 18 months late against the estimated latest completion date at contract signature.

9   The DII Programme assumed that the rollout of infrastructure and terminals would be more straightforward than transpired and that it would proceed at an identical pace at all sites, irrespective of their size, complexity and the condition of the environment and supporting services. The Department accepted ATLAS' proposal to use a Fixed Rollout Methodology, understanding that it would minimise the project management required, and thereby prove to be cost-effective and capable of meeting the Programme's challenging deadlines. This methodology proved to be inappropriate and unresponsive in many cases to the circumstances of the Department. Resulting delays, in particular because of work to improve the condition of many defence sites and the level of organisational change, have meant that legacy systems have had to run for longer, in some cases requiring additional maintenance. The realisation of some benefits, particularly those associated with improved ways of working, will take place later than initially envisaged.

10   The DII Programme took some time to understand and address the root causes of these problems. During this period, however, the Programme sought to ensure that the rollout schedule adopted did not prevent the introduction of the Joint Personnel Administration application. The Programme did so through rescheduling the DII rollout and through expenditure of some £12 million to install additional terminals on legacy systems. This protected the Joint Personnel Administration Programme's ability to realise gross benefits of £972 million from 2005-06 to 2014-15. The Department intends to re-use much of the additional hardware when it later replaces these systems with DII. The Joint Personnel Administration application is now running in all three Services – the Army, Royal Navy and the Royal Air Force – and is reporting that it is on track to achieve significant financial savings. The Department has monitored closely the impact of changes on the delivery of benefits and, to a significant extent, has protected benefits it enables in other programmes.

11   At the end of 2006, the Department and ATLAS agreed to replace the Fixed Rollout Methodology with a Decision Point Process, which is more responsive to the variable condition of defence sites and requires more active project management. From early 2007, the new methodology led to a considerable increase in the number of terminals delivered each month: on average 3,000 terminals were installed monthly in the last five months of 2007.

12   As well as hardware, DII requires core software, including tools to run, monitor and protect the system, and software to enable office automation, web-browsing and other standard activities needed by all or most users. The Department's requirement for core software has remained largely unchanged since the contract was let, but the Programme has been unable to deliver this to the schedule anticipated at contract award. It took longer than anticipated for the Programme to translate that contracted requirement into the detailed requirements needed for design and development and it has been unable to deliver the software to the schedule anticipated at contract award. The original plan was for all of the core software to be delivered in two releases by June 2006. Following difficulties, Release 1 was split into a Restricted capability, most of which has been delivered, and a Secret capability, which has not been delivered yet. None of Release 2 has been delivered yet. The Programme's inefficient processes for software design, issues with the designs themselves and changes in the Department's detailed requirements for core software have been the main causes of delay.

13   The Department and ATLAS have taken considerable time to understand the underlying problems with the design of core software. After previous attempts to improve the situation had limited impact, the DII Programme believes that changes implemented in early 2008 will be effective. If additional core software is not delivered soon, the rollout of DII terminals to sites that already have access to electronic document and record management services through legacy systems will not be able to proceed as the DII Programme has undertaken to maintain, as a minimum, users' existing levels of functionality. This includes the Department's Main Building and the headquarters of the Royal Navy and the Royal Air Force.

14   As a result of problems with preparation at some sites and difficulties with the delivery of network infrastructure and core software, the rate of installation of terminals slowed considerably in early 2008, with only 6,700 out of 21,000 terminals delivered between January and April. Despite the challenges in early 2008, from April month on month roll-out performance has improved. Similar progress also needs to be made with the delivery of software and the Department has this work in hand. If there continue to be problems with the development of core software, they will have a significant impact on rollout schedules.

15   In addressing the specific problems that have affected the implementation of DII, the Department and ATLAS have exploited their partnering approach. Robust governance structures have been strengthened further and key personnel have remained in place for much longer than normal to see the Programme through difficulties. At the highest levels within the Department and ATLAS' constituent companies, senior management have been well engaged in the DII Programme. The Department's and EDS' senior management have done much to instil a partnering ethos throughout their organisations and the relationship between the Department's Senior Responsible Owner and the ATLAS Senior Responsible Industry Executive is a strength of the Programme.

The Deployed IT system

16   In September 2007, the Department awarded a further increment of the DII Programme to ATLAS, to deliver a computer system that can be used by the Armed Forces to handle Secret material when on operations. By the end of 2010, the system will comprise some 1,500 deployable terminals, supported by a similar number operating in the United Kingdom. It is planned to cost £385 million between 2008 and 2015, and is currently running to schedule, with the first unit due to receive equipment at the beginning of 2009. Part of the original scope of Increment 1, to put DII terminals on the Department's ships and submarines, is now being managed in one project with the deployed terminals.

17   Before giving ATLAS responsibility for developing the deployed system, the Department and the consortium conducted substantial work to understand and mitigate risks. The Department is now carrying out similar work, using a technical demonstrator, to understand better the nature of its requirement for a Top Secret system. At short notice, ATLAS also helped the Department by developing and installing two interim computer systems, known as OVERTASK, for command and control, and J1J4 Interim Operating System, an administrative and logistics system, to assist in operations in Afghanistan. These have been a success and are already delivering operational benefit to the front line.

Service Management

18   The number of users of the new system has increased rapidly to 82,000 since the middle of 2007, requiring the DII Programme to focus increasingly on service delivery. The Key Performance Indicators through which the performance of the DII system is measured are of a high quality. Crucially, the Department has not tried to be exhaustive, but has focused on a manageable number of indicators, which will give a good overall picture of how ATLAS is performing.

19   To date the system has generally been available when it should be and a recent customer satisfaction survey was encouraging. Where ATLAS measures performance indicators, its performance has been good, although since December 2007 it has found it more difficult to meet some targets as more users gain access to the DII system. Since March 2007, the Department has started to adjust payments to the contractor to reflect under-performance against those Key Performance Indicators currently being measured. These indicators are mostly being met, but the Department has decided not to abate payments made to ATLAS fully for under-performance. ATLAS is not yet measuring the full range of Key Performance Indicators as stated in the contract. Users who require changes to be made to their system or who have complex problems have a more negative experience of the quality of ATLAS' service, but the Programme continues to take action to address these issues.

Costs

20   The Department estimates that it will cost £4.9 billion to deliver those increments of the DII Programme which are currently on contract. This estimate includes payments to ATLAS, retained costs and contingency for the mitigation of risks, totalling £4.5 billion. The estimate also includes some £300 million for Departmental staff and programme management costs, and around £100 million for some legacy system costs. The total cost to the Department to deliver this work, including programmes on which DII depends which cost £1.2 billion, is £6.1 billion. The direct forecast costs of the Programme have increased by £182 million, some three per cent, since the Department let the contract for Increment 1 in March 2005. Cost changes of a further £179 million have occurred to the programmes on which DII is dependent, but these changes are not due to DII and most have not increased the overall cost to the Department. Payments of £959 million have been made to ATLAS up to 31 March 2008 for the implementation of DII, acquisition of assets and management of legacy systems.

21   Following necessary work to clarify better its requirements for deployed and Top Secret systems and the installation of DII terminals at defence sites not yet on contract, the Department currently estimates that it will have to spend £984 million to deliver the remaining parts of the Programme that are not yet on contract. So, if all planned increments of DII were to go on contract, the current estimated cost of realising DII, including the cost of related programmes, will be some £7.1 billion. This estimate also includes the cost of additional capabilities for the deployed environment which were not in the original scope of DII. In its recent planning round, the Department allocated funding and set efficiency targets, which together will enable it to fund around 140,000 of the planned 150,000 terminals. However, it is yet to place on contract work to complete the rollout of 30,000 to 40,000 terminals to permanent defence sites. The Department is exploring further changes to its approach, which would allow it to close the remaining gap in the number of terminals it can afford.

Overall Value for Money

22   As with other major IT programmes, DII is intrinsically complex and challenging. In this case, the Programme's size and demanding requirements for security and deployment to theatres of military operations are particularly exacting. It is also challenging to manage in terms of the complex interconnection with other business change programmes and the level of churn in the Department's business, and has had to be introduced into a diverse, and in places poor quality, estate.

23   The Department had a sound rationale and convincing business case for the Programme in terms of the improved military operational effectiveness, and more effective and efficient running of the business, particularly through the business change programmes DII supports. This continues to be true. The Department calculated that to provide the same improvements without placing a service contract with the private sector would have cost more. The Programme reports that it has already achieved or enabled benefits to date of £916 million, including £640 million of costs it has avoided by placing the contract.

24   The Programme's implementation difficulties have led to key elements of it running 18 months late. This delay has, in turn, led to postponement of the achievement of some benefits, particularly the savings associated with switching off legacy systems and the longer term benefits from improved ways of working. The Department has, however, to a large extent, protected its financial position. The direct forecast costs of the Programme have increased by £182 million, some three per cent. It has adhered to the principle of payment on delivery, when delays have been due to the contractor. It has taken concerted action to protect benefits, particularly the enabled benefits of other programmes, and to get the Programme back on track. Nonetheless, key elements are running late and the delays have led to continuing expenditure on less capable legacy systems, albeit largely offset by paying for fewer DII terminals to date. There have been efforts to remedy the problems identified, but without improvement in the rate of rollout of terminals and the completion of software development to meet the latest timelines, significant risks remain to the timely delivery of the Programme.

Key Recommendations

Our key conclusions and recommendations are below. More detailed conclusions and recommendations can be found at Appendix 1.

Preparation

a   The Department and ATLAS gained a good understanding of the legacy systems that DII would replace, but did not do enough to understand the physical condition of the environment into which the DII system would be installed. This lack of emphasis along with an inappropriate rollout methodology, was a major cause of delay. **In planning any major business change programme, the Department should pay greater attention to any land and buildings aspects. It should secure the necessary support from Defence Estates and a good knowledge of the contractual obligations of third-party contractors, local councils' planning departments and heritage bodies.**

b   The decision that the contractor would receive the majority of the payment for their work only when terminals had been installed was sensible and has protected the Department from paying for services before they have been delivered, when delays have occurred because of contractor error. When delays in installing terminals occurred in the first year, the Department rescheduled payments of some £11 million for other deliverables. A larger proportion of payments is being made against work delivered in Increment 2b also, to reflect the greater capital outlay required to build a deployable version of DII. For the increments not yet on contract, there will be less time over which the consortium can be paid for delivering the service. **In negotiating future increments, the Department should, where appropriate, adhere to its existing principle of paying for the DII service only when terminals have been installed and are in use.**

c   The Programme did not conduct a formal pilot because it believed that the implementation of DII at permanent defence sites would be relatively straightforward. The Programme's use of a demonstrator to reduce risks on the deployable part of the DII system has been effective. **The Department should run risk mitigation and piloting phases for the remaining increments similar to that on the deployed element in advance of each increment that is still to be let, irrespective of how straightforward the requirement seems initially.**

Implementation

d   There have been persistent weaknesses in the design and accreditation of core software functionality, which contributed to earlier delays to the DII Programme and poses the risk of delaying further the remaining implementation. There is a risk that the Programme's recently implemented recommendations of its review of the delivery of software may not be enough to address performance problems. **If large elements of Release 1 and Release 2a software remain undelivered, the Department should oblige ATLAS to bring in additional expertise to deliver the software solution.**

e   As the rollout moves to sites with more capable legacy systems, it may become difficult to transfer users to DII, given the Department's understandable decision not to move such users until DII is at least as capable as their legacy systems. The Department has only been prepared to accept claims from ATLAS for lost revenue caused by problems with the rollout methodology and the physical estate where it was culpable. **If the rollout of hardware should be stalled in future because core software is not available, the Department should maintain the same principle in settling claims from ATLAS.**

f   During the first two years of the Programme, payments for legacy systems did not reduce as quickly as the Department had hoped, even allowing for the slower rate at which DII was being installed, since rollout schedules have not been designed to optimise legacy closure. The Programme is now seeking to terminate payments for legacy systems more quickly through improved processes and spend-to-save measures. **The DII Programme should design any subsequent rollout schedule to achieve closure of legacy systems commensurate with the rollout of DII terminals but without compromising the delivery of other benefits.**

Service Management

g   The Key Performance Indicators through which the quality of the DII system is to be measured are of good quality, though ATLAS cannot yet measure all of them. **The Department should exercise its right under the contract to abate payments to ATLAS for non-measurement of Key Performance Indicators and introduce revised measures where a robust assessment can be made. The Department should also fully abate payments to ATLAS for poor performance against those Key Performance Indicators that are being measured. It should also maintain an accurate list of abatements it has foregone when indicators are not measured and use this information in future commercial negotiations.**

Costs

h   The Department's Programme team has kept detailed records of additional costs it has incurred as a result of delays caused by ATLAS, but not for all costs incurred by other Departmental programmes as a result of delays to DII. **The Department should maintain and use detailed records to achieve the best possible settlement in outstanding commercial negotiations including, where appropriate, additional costs caused to other programmes.**

The inception of the Defence Information Infrastructure Programme

1.1 The Ministry of Defence (the Department) requires secure, high-quality information technology as an essential element for the success of operations and to conduct its day-to-day business. In 2000, the Department began to develop plans to replace many diverse systems with a single infrastructure to enable better communication, to promote more efficient ways of working and to obtain better value for money. In March 2005, the Department let a contract to the ATLAS consortium for the installation and management of a new infrastructure over 10 years. This is known as the Defence Information Infrastructure Programme (referred to in this report as DII). This report examines the progress that the Department has made in implementing DII since contract let including the rollout of terminals to defence sites, the development of core software, the accessibility of applications and the service management of DII and legacy systems. We have not examined the tendering and procurement process in detail. Appendix 2 provides further details of the study scope and methodology used.

1.2 Though clearly ambitious, the DII Programme was well-conceived, with work done before the contract was signed to understand the scope of the Programme and to understand and mitigate some of the inherent risks. Figure 1 gives a summary of the DII Programme and Appendix 3 sets out the scope of the DII Programme.

Vision for the Programme

1.3 The Department started from a clear vision for a single information infrastructure. This vision is complemented by the Defence Information Strategy, which has remained the same since 2000 and which was first endorsed by the Defence Management Board in September 2001.

The Defence Information Strategy

'The right information, at the right place, at the right time in the right form, being used by people who are fully trained and equipped with information competences, within a battlespace or business process that has been optimised to exploit fully the potential of information to improve its efficiency and effectiveness, and conditioned by appropriate criteria of affordability, confidentiality, integrity and availability.'

1.4 There are currently around 300 legacy systems, which are being replaced with DII. These vary greatly in terms of size and functionality: some systems were developed to perform highly specialised, discrete tasks and have very few users; others provide more general services, including office automation, to large numbers of staff. Appendix 4 gives details of the Department's principal legacy systems. It was a central requirement of the new system that it should enable joint working on a common platform across the whole Department. It also needs to be secure and to handle classified material up to Top Secret.

1.5 At an early stage in its planning, the Department decided that the new single information infrastructure would be delivered by a single contract with the private sector, which would encompass both the installation of the new system, its maintenance and user support. It planned that economies of scale would make the new system cheaper to run when compared to the cost of delivering similar capability in-house and with the totality of existing legacy systems. When it signed the contract for the first increment in March 2005, the Department's aspiration was that it would be able to implement the requirement by December 2008.

1.6 In April 2003, the Department invited bids from the private sector. Four consortia initially expressed an interest. The contract was signed with the successful bidder, ATLAS, a consortium with EDS as the prime contractor, in March 2005. During the time spent developing the DII Programme, it was necessary to replace some of the old computer systems. The Department let a contract for a temporary system, DII (Convergent), which would be replaced by DII in due course, as described in more detail in **Box 1**. Fujitsu Services Ltd delivered the temporary system and is now a key partner in ATLAS.

Benefits of the Programme and Preparatory Work

1.7 As well as the direct improvements described above, the DII Programme was also required to permit the benefits of a great number of other business changes within the Department. Indeed, it would be hard for the Department to make any defence-wide changes to the way that it conducts its business without the successful installation of DII. Most of the change programmes fall into two categories:

■ Business changes which require personnel to use new computer software applications.

■ Business changes which require many personnel to move sites and, therefore, need new IT infrastructure to be installed.

The main programmes are illustrated in **Figure 2**, and a more comprehensive description is given in Appendix 4.

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BOX 1

The DII (Convergent) System

While it was conducting work to understand its requirements, the Department had to continue maintaining and, where necessary, upgrading its existing computer systems. In a small number of cases, an urgent need developed to replace existing systems. For instance, the Department's Main Building in London was entirely refurbished between 2000 and 2004. A short-term solution was devised to install a new computer system in 2003, which was considerably more capable than the old systems, but which would be replaced in due course by DII. Designed and maintained by Fujitsu Services Ltd, this system was consequently called DII(Convergent).
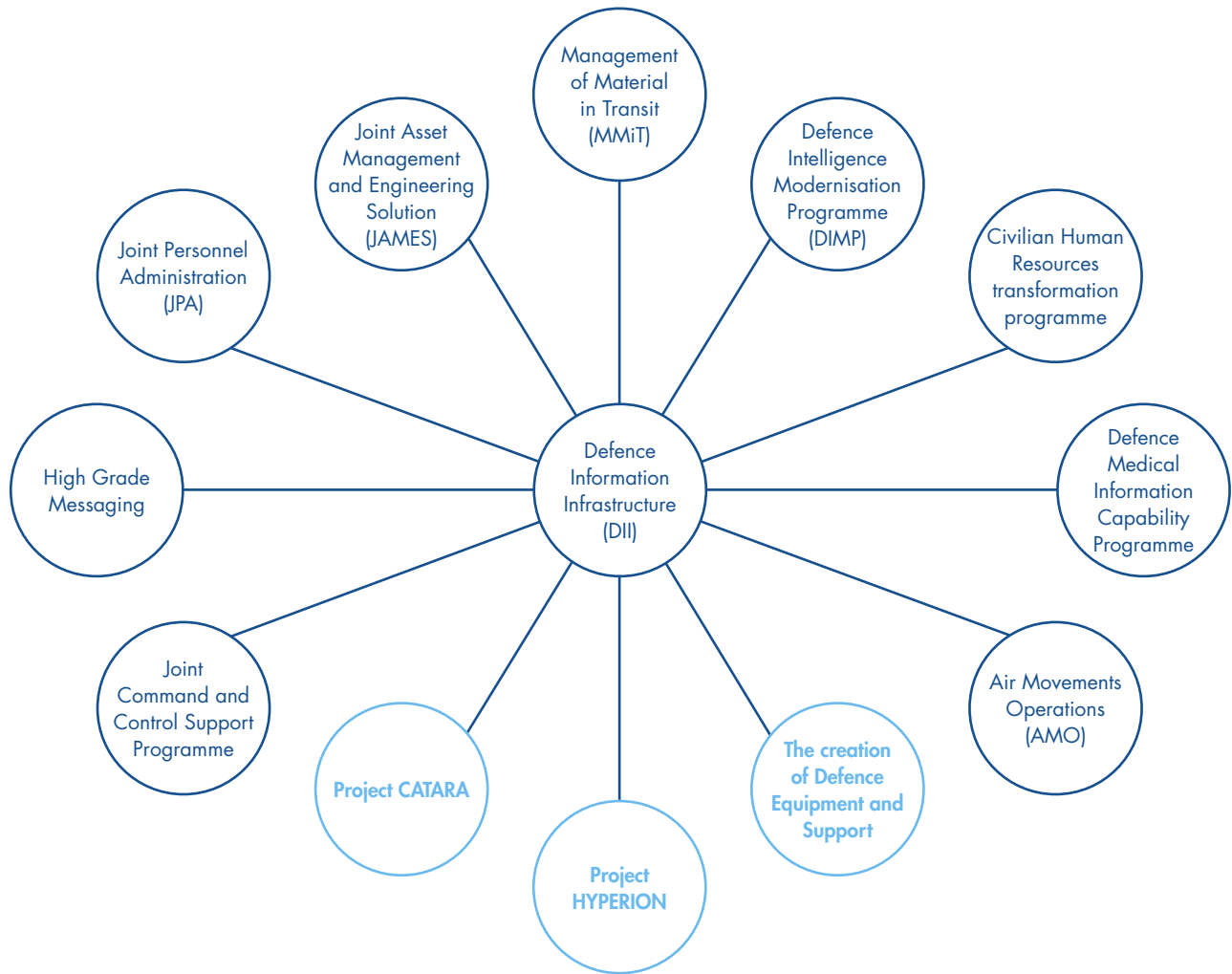
From 2003 to date, the Department has approved expenditure of £426 million to develop and support 25,000 DII(Convergent) terminals. When it was installed, DII(Convergent) was the most functionally rich system the Department had had to that point, allowing collaborative working and electronic document and record management.

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1.8 To keep risks manageable, the Department decided in 2001 that the DII Programme would deliver only infrastructure and core software, while new applications would be delivered through separate programmes. However, many of the business changes that the DII Programme is to enable are being implemented at the same time that the new infrastructure is being installed, making the job of installing it more complex. The business change programme whose timetable was most closely aligned with the early years of DII was the Joint Personnel Administration Programme which was due to be fully implemented by November 2006. It is a particularly important programme, impacting on all uniformed personnel and delivering a sizeable proportion of the Department's efficiency savings agreed with the Treasury following the Gershon Review. The initial stages of the DII Programme were therefore designed to ensure that every site which would use the Joint Personnel Administration application had a computer system that could access it, by aligning DII's milestones with the targets for the Joint Personnel Administration application. Certain assurances were given to the managers of other programmes as to the timeframe in which their needs would be met.

1.9 The DII Programme has continued to adapt its plans to accommodate more recent business changes, some of which had not even been conceived of when the DII contract was signed. For instance, the decision to merge the Defence Procurement Agency and Defence Logistics Organisation to form Defence Equipment and Support has had a major impact on the order in which DII was to be implemented, but the merger was only decided in July 2006. Although it can be accommodated within the DII contract, this level of major change was not expected and causes difficulties in scheduling and programming.

1.10 From the outset, the Department has maintained detailed models of the financial benefits that should flow from each business change programme. These models allow the DII Programme to see relatively easily the impact of any alteration in implementation plans on overall benefits, rather than just on any individual business change programme. The Department also plans to assess the extent to which it is achieving the softer benefits of DII, such as better ways of working, more collaboration and easier communication, though these are hard to measure. It has created a database of the skill levels of staff using legacy systems, known as an Information Maturity Model, and intends to use it as a baseline to measure improvements following the introduction of DII against targets agreed with the eight Top Level Budget areas in the Department.

2 Major business change programmes that are reliant on DII.

Management of Material in Transit (MMiT)

Joint Asset Management and Engineering Solution (JAMES)

Defence Intelligence Modernisation Programme (DIMP)

Joint Personnel Administration (JPA)

Civilian Human Resources transformation programme

High Grade Messaging

Defence Information Infrastructure (DII)

Defence Medical Information Capability Programme

Joint Command and Control Support Programme

Air Movements Operations (AMO)

Project CATARA

Project HYPERION

The creation of Defence Equipment and Support

○ Business change programmes that require DII to platform their software applications with the exception of the three projects highlighted below

○ Business rationalisation requiring new IT infrastructure

Source: National Audit Office analysis of Departmental data

1.11 As well as understanding the business benefits that it wanted the new infrastructure to enable, the Department also spent considerable time and resources making other beneficial preparations before letting the DII contract.

■ **Learning from similar programmes.** The Department consulted widely with other Government departments and the United States Department of Defense to apply lessons learned on other complex IT programmes. It benefited particularly from insights shared by the United States Navy Marine Corps Intranet Programme (NMCI), which has a similar purpose to DII and is also being delivered by EDS. Since the contract was let over seven years ago, NMCI has delivered some 350,000 terminals, which support the work of some 650,000 users. Challenges faced by NMCI during the early years of its implementation led the Department to make a number of decisions. These included:

■ giving the Programme team authority to decide on the order in which defence sites would migrate to DII, rather than leaving it to individual sites to decide;

■ creating a full inventory of applications supported on legacy systems before letting the contract, as described below; and

■ identifying a manageable number of Performance Indicators through which quality of service is measured.

■ **Understanding legacy systems.** In readiness for letting the contract, the DII Programme team took control of the Department's old computer systems and their funding. The Department was then better able to negotiate with the private sector in an intelligent and informed way during the bidding phase.

■ **Understanding software applications.** The DII Programme analysed all of the software applications that were running on the legacy systems, which will reduce from 6,000 running on legacy systems to 1,000 on DII by the end of the Programme. The NMCI programme faced difficulties, in part because of the large number of applications – over 100,000 – which had to be accessed through it; many of which were not even known about when the contract was signed.

■ **Understanding required service levels.** The Department devoted substantial effort to defining the type of managed service that it wanted to receive once the new infrastructure had been installed. There were 16 Key Performance Indicators which the contractor would have to meet consistently in order to receive full payment for the service. The Department has kept the number of indicators at a manageable level, learning lessons from other programmes, such as the NMCI contract, where the large number of indicators meant that measurement was burdensome.

■ **Understanding the defence environment.** The Department and bidders conducted work to examine the environment into which DII would be installed in advance of signing the contract. This focused on the location of existing terminals and associated hardware and not the physical condition of the estate. As described in Part 2, early in the implementation phase of the DII Programme, it emerged that the true condition of the defence estate was worse and more variable than had been discovered in preparatory work.

Commercial Structure

1.12 The Department devised a robust commercial structure for the DII contract. The structure includes contractor shadowing, incremental acquisition and payment on performance to manage the risks of the Programme and drive contractor performance. To better support system management during the implementation of DII, legacy systems are transferred to the contractor with the increment in which they will be replaced.

■ **Contractor Shadowing.** The Department sought to protect against potential contractor failure or withdrawal from the contract by requiring each contractor in the consortium to be shadowed by a competitor with equivalent capability that would be able to step in to deliver the Programme requirements if required. At the time of contract negotiations for DII during 2003 and 2004, the generic risk of contractor failure was a pertinent issue following a number of high-profile corporate failures. However, including competitors within the same consortium can generate issues for cooperative working.

- **Incremental Approach.** The Department has adopted an incremental approach to DII which it has refined as the Programme has progressed (see Appendix 3). Each increment is separately contracted for, under a contract variation, when the consortium has demonstrated that it is successfully delivering the increments already on contract. The Department has used the incremental approach to drive contractor performance when the decision to let additional increments was being assessed, as described in **Box 2**, and to better manage the risks of the more complex aspects of the Programme. The Department's intention is for the same contractor to deliver all increments in the Programme.

- **Payment on Performance.** The contract is structured so that ATLAS recoups the majority of its investment in the Programme through performance-based payments. Payment for DII is made through charges for DII terminals and for user accounts. Different rates of charge apply to different user types based on the volume of their usage, security requirements, location and the level of support they require. The charges are split between a flat payment for the provision of basic core functionality (known as Release 1), and a sliding scale of banded charges when the full functionality is provided (known as Release 2). There is also a service charge for the hosting of applications and other services from the DII catalogue.

- **Transfer of Legacy Systems.** The DII Programme team and ATLAS manage the majority of the Department's legacy systems. Legacy systems, the principal examples of which are shown in Appendix 4, are transferred to ATLAS approximately four months after the contract is awarded for the increment in

which they will be replaced. This gap is to allow detailed planning and to ensure there is appropriate consultation with Trades Unions prior to the transfer of support staff under Transfer of Undertakings (Protection of Employment) (TUPE) provisions. Some legacy systems, such as NavyAdmin and NavyNet, are split across all increments due to their size and complexity, and to best support the delivery of benefits. Where systems have been outsourced, the original contractor continues to manage the system but is paid by ATLAS rather than directly by the Department. For performing this service, ATLAS receives a five per cent corporate overhead fee. A number of legacy systems transferred to ATLAS with Increments 1 and 2a are delivered by partners in the ATLAS consortium. The contract includes key migration milestone dates for the migration to DII of all users with access to the legacy system, in accordance with the scope of the migration sequence for Increment 1. These milestones have not been met due to delays in the implementation of DII which has resulted in legacy systems running on for longer than was originally planned, as described in more detail in Part 2.

Funding and Risk Management

1.13 Prior to contract letting for each increment, the Department amalgamates all funding for IT infrastructure and related services into a single budget, managed by the DII Programme. This simplifies the financial management of the Programme and allows the Department to let a single contract for the implementation and service management of DII and legacy systems. It also enables the Department to understand better the true cost of running some of its legacy systems, which is in some cases higher than had been budgeted.

1.14 At contract letting, the Programme forecast that it would cost £5,854 million to deliver and support a system capable of handling Restricted and Secret material at all permanent defence sites, worldwide, as shown in Figure 16 in Part 2. The Programme identified that the full cost of the deployed and Top Secret capabilities could not be estimated until further assessment work had been completed to define the scope of these requirements and reduce the risks of implementation. The forecast cost included a provision of £528 million, which the Programme estimated as the maximum cost of identified risks if they materialised. This is not usual practice for the Department and recognises the significant inherent risks to the delivery of the Programme. Programme funding of £6,285 million was identified at contract letting, which provided additional flexibility for the Programme to manage changes to implementation, cost and scope increases, and changes to funding.

BOX 2

The Department's use of the incremental approach to drive performance

Increment 2a

The decision on whether to award this increment to ATLAS was, in part, based on their performance against 20 milestones, which were set by the Department. At a time when the Programme was experiencing considerable difficulties, ATLAS managed to meet 17 of them and almost to meet a further two.

Increment 2b

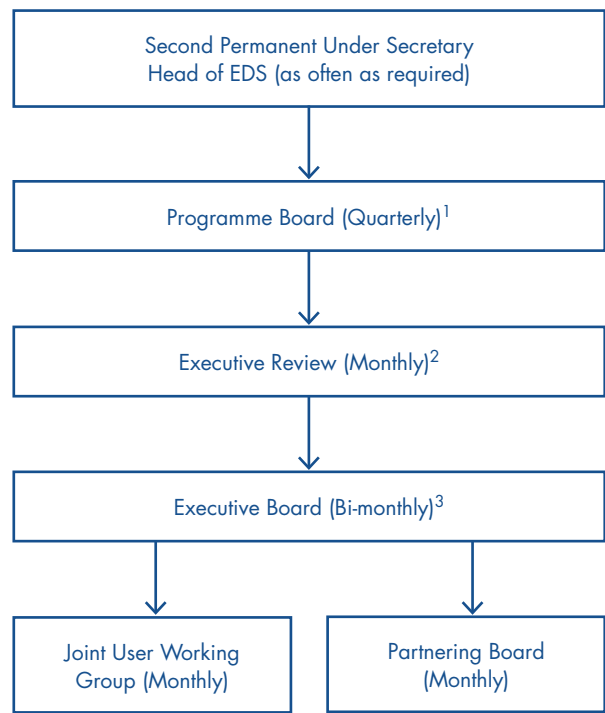In July 2007, before awarding this increment to ATLAS, the Department's Investment Approvals Board laid down a further series of milestones that it wanted the Programme to reach. These included a target to install over 10,000 DII terminals and to deliver software capable of handling material classified as Secret by the end of August. These milestones were met and the increment was awarded to ATLAS in September 2007.

Management and Governance

1.15 We conducted a detailed review of the management and governance structures of the DII Programme. The results, summarised below and in Part 2, were positive and can be seen in greater detail at Appendix 5. They illustrate how relationships and engagement have remained strong even in the face of difficulties.

- After letting the contract, the Department kept the team of people which had been responsible for determining the requirement and conducting the negotiations for DII in post for much longer than usual and tied key individuals in both the Department and ATLAS to their posts for a two-year period from contract signature. ATLAS also kept staff from the bidding stage to ensure knowledge was not lost.

- Both the Integrated Project Team and the Senior Responsible Owner have well-resourced teams of staff, which currently stand at 570, to monitor and assist with the delivery of the Programme. The Department will ultimately keep around 400 staff to retain oversight of service delivery and to manage ongoing change.

- Robust governance structures were created at the outset of the Programme containing members drawn from both the Department and the contractor, where appropriate. A summary of the key boards can be seen in **Figure 3**. The DII Programme has secured the engagement of senior management, both within the Department and in the constituent parts of the ATLAS consortium. For instance, the Second Permanent Under Secretary of the Department and the Chief Executive of EDS regularly discuss areas of difficulty in order to make progress.

- The Programme has attempted to inculcate this partnering approach into staff at all levels of both the Department and the contractor.

- The DII Programme has included all important internal stakeholders, such as representatives of the three Services and the Department's other Top Level Budget areas, in the governance structure. The internal expert on using information technology on deployments, the Director of Equipment Capability for Command, Control and Information Infrastructure, is a full member of the relevant boards to ensure the successful delivery of the part of DII that will be used in operational theatres. He is the formal sponsor of the Programme and, therefore, owns the User Requirements Document.

3   The high-level governance structure of DII

Second Permanent Under Secretary
Head of EDS (as often as required)

↓

Programme Board (Quarterly)[1]

↓

Executive Review (Monthly)[2]

↓

Executive Board (Bi-monthly)[3]

↓ ↓

Joint User Working Group (Monthly)   Partnering Board (Monthly)

Source: National Audit Office analysis of Departmental data

NOTES

1   The Programme Board meets more frequently than quarterly when necessary.

2   The Executive Review was established in September 2007 to strengthen oversight by those directly involved in Programme delivery. This is comprised of Directors-General, Majors-General and other '2-star' equivalent staff.

3   This board meets more frequently, if required. This is comprised of Directors, Brigadiers and other '1-star' equivalent staff.

PART TWO

Implementing the Defence Information Infrastructure Programme

2.1 Because of extended negotiations to ensure a better deal, the Department and ATLAS signed the DII contract three months late, on 21 March 2005. Work to implement DII then began immediately. The delivery of a number of important milestones during 2005 coincided with the development of significant problems with the Programme's main streams of work: the rollout of computer hardware to defence sites, and the creation of software functionality. These problems caused major delays to the DII Programme and it took the Department and the contractor some time to solve them. In the meantime, concerted management attention protected some important benefits of the Programme. Since mid-2007, the rollout of hardware has accelerated but problems with the creation of software functionality persist. The Programme is currently running some 18 months late. The most recent schedules will not be met without further improvement and may need to be revised further.

The Start of the Contract

2.2 From October 2003 onwards, the DII Programme planned to get approval and funding from the Department in October 2004 to sign a contract with the preferred bidder in December 2004. Negotiations took longer than expected and the Department did not approve the Programme until 1 March 2005, with the contract being let later in March 2005. The Programme schedule was not revised to reflect the delay, resulting in the loss of the three-month start-up period.

2.3 The Department decided not to change the Programme schedule because of the timetables of other dependent business change programmes, and because ATLAS agreed that it would be able to set up and start to deliver within the compressed time period.

2.4 In the first six months of the Programme, the Department and ATLAS worked to ensure that key milestones were delivered on time. Legacy computer systems were transferred to ATLAS on time, allowing the consortium to start making improvements to the way they were managed. ATLAS has generally been able to meet the contracted service levels for these systems and, to date, the Programme reports that around 100 separate enhancements have been made. Only two months later than planned, in November 2005, the Single Point of Contact call centre was opened, which is accessible to users of both legacy systems and DII. It has simplified and made more effective the way in which users access help to solve their problems.

2.5 The rollout of DII was due to commence in early 2006, which meant that preparations also had to begin almost immediately after the contract was let. Sites had to be prepared to receive new hardware and software had to be designed. The Programme experienced difficulties in these areas in 2005. The lack of a start-up period meant that, with the exception of the processes governing the transfer of legacy systems, there was little opportunity to agree fully ways of working between the Department and consortium members, or to pilot implementation processes. The Department also had less time to prepare sites for the arrival of ATLAS. It took until August 2005, only five months before the first DII terminals were to be installed, for ATLAS' main site to be fully staffed with 800 trained personnel with security clearance.

Hardware Rollout: Delays

2.6   The DII Programme assumed that the rollout of infrastructure and terminals would be relatively straightforward and would proceed at an identical pace at all sites, irrespective of size, complexity and the condition of the environment and supporting services. The Programme adopted a Fixed Rollout Methodology, which ATLAS had used on other Government contracts and which was intended to allow a large number of terminals to be installed quickly and with very little active project management being required at individual sites. The methodology assumed that the Department would be able to complete certain preparatory works before implementation teams arrived at sites. In many cases, this methodology proved to be inappropriate and unresponsive to the Department's needs.
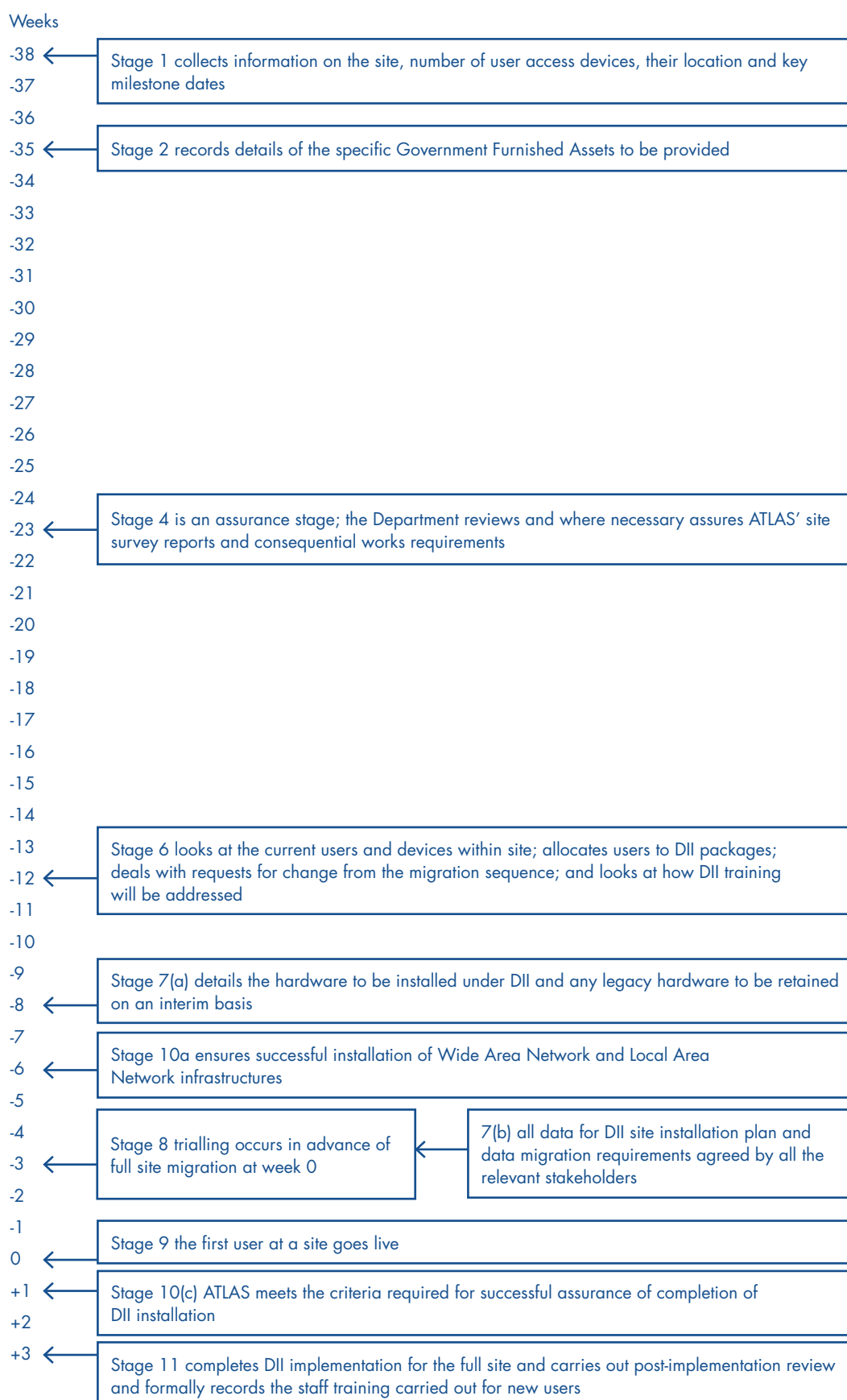
2.7   Among other work carried out by the Department and contract bidders before the DII contract was let, analyses were made of the environment into which the new computer system would be installed. These focused on the location and number of existing terminals and the range of systems and applications that were used at each site. Very little work was done to examine the physical condition of the land and buildings into which DII would be installed.

2.8   The DII Programme made too optimistic an evaluation of the average physical condition of defence sites and made incorrect assumptions about the availability of up-to-date site plans and statutory Health and Safety documentation. For example, the team embarked on the Programme assuming that all asbestos and power supply surveys would be in place. At that time, the Department had a poor understanding of the condition of its land and buildings. Better engagement with Defence Estates, the Department's internal expert on estate matters, would have brought this gap in understanding to the DII Programme's attention.

2.9   On the basis of this work, the Department accepted ATLAS' proposition that a generic rollout methodology, with fixed timescales, would be suitable for implementing DII at all defence sites, irrespective of their size or condition. Each site was to be surveyed, made ready and fitted with DII in 38 weeks. The methodology also assumed that third-party organisations, such as telecommunications contractors, local councils and heritage bodies, would be able to meet deadlines laid down by the Programme. **Figure 4** shows the different stages of the process.

2.10 As shown in **Figure 5 on page 20**, the Fixed Rollout Methodology gave the Programme an extremely demanding schedule to meet, with almost no margin for error or opportunity to learn from experience. A number of developments, including early changes to the order in which sites were to migrate to DII, made the situation more challenging. The number of terminals scheduled for delivery in the first two months of rollout was increased substantially and a number of sites were given less than 38 weeks to move through the methodology.

4 The Fixed Rollout Methodology

Weeks

-38 ← Stage 1 collects information on the site, number of user access devices, their location and key milestone dates

-37

-36

-35 ← Stage 2 records details of the specific Government Furnished Assets to be provided

-34

-33

-32

-31

-30

-29

-28

-27

-26

-25

-24

-23 ← Stage 4 is an assurance stage; the Department reviews and where necessary assures ATLAS' site survey reports and consequential works requirements

-22

-21

-20

-19

-18

-17

-16

-15

-14

-13

-12 ← Stage 6 looks at the current users and devices within site; allocates users to DII packages; deals with requests for change from the migration sequence; and looks at how DII training will be addressed

-11

-10

-9

-8 ← Stage 7(a) details the hardware to be installed under DII and any legacy hardware to be retained on an interim basis

-7

-6 ← Stage 10a ensures successful installation of Wide Area Network and Local Area Network infrastructures

-5

-4

-3 ← Stage 8 trialling occurs in advance of full site migration at week 0   ← 7(b) all data for DII site installation plan and data migration requirements agreed by all the relevant stakeholders

-2

-1

0 ← Stage 9 the first user at a site goes live

+1 ← Stage 10(c) ATLAS meets the criteria required for successful assurance of completion of DII installation

+2

+3 ← Stage 11 completes DII implementation for the full site and carries out post-implementation review and formally records the staff training carried out for new users

Source: National Audit Office analysis of Departmental data.

5   Events during the early months of the DII Programme

Pre-contract Plan

ATLAS was due to take ownership of the first legacy system on 31 July.

The first Departmental staff were due to transfer to ATLAS on 1 August.

The first 'Single Point of Contact' call centre was scheduled to begin work on 21 September.

Decisions to revise the DII programme

On 7 April, the Department made significant changes to the order in which sites were to move to DII. This was done to meet the needs of the Joint Personnel Administration Programme.

In June, the Department decided to remove all sites that required Secret DII terminals from the installation plans for January and February 2006, and replaced them with sites that only handled Restricted material. Some of these sites then had less than the mandated 38 weeks to move through the Fixed Rollout Methodology.

In August, the Department decided to alter the rollout schedule to reflect important organisational changes it was undergoing, including the merger of the two headquarters organisations of the Royal Navy.

Revised Plans

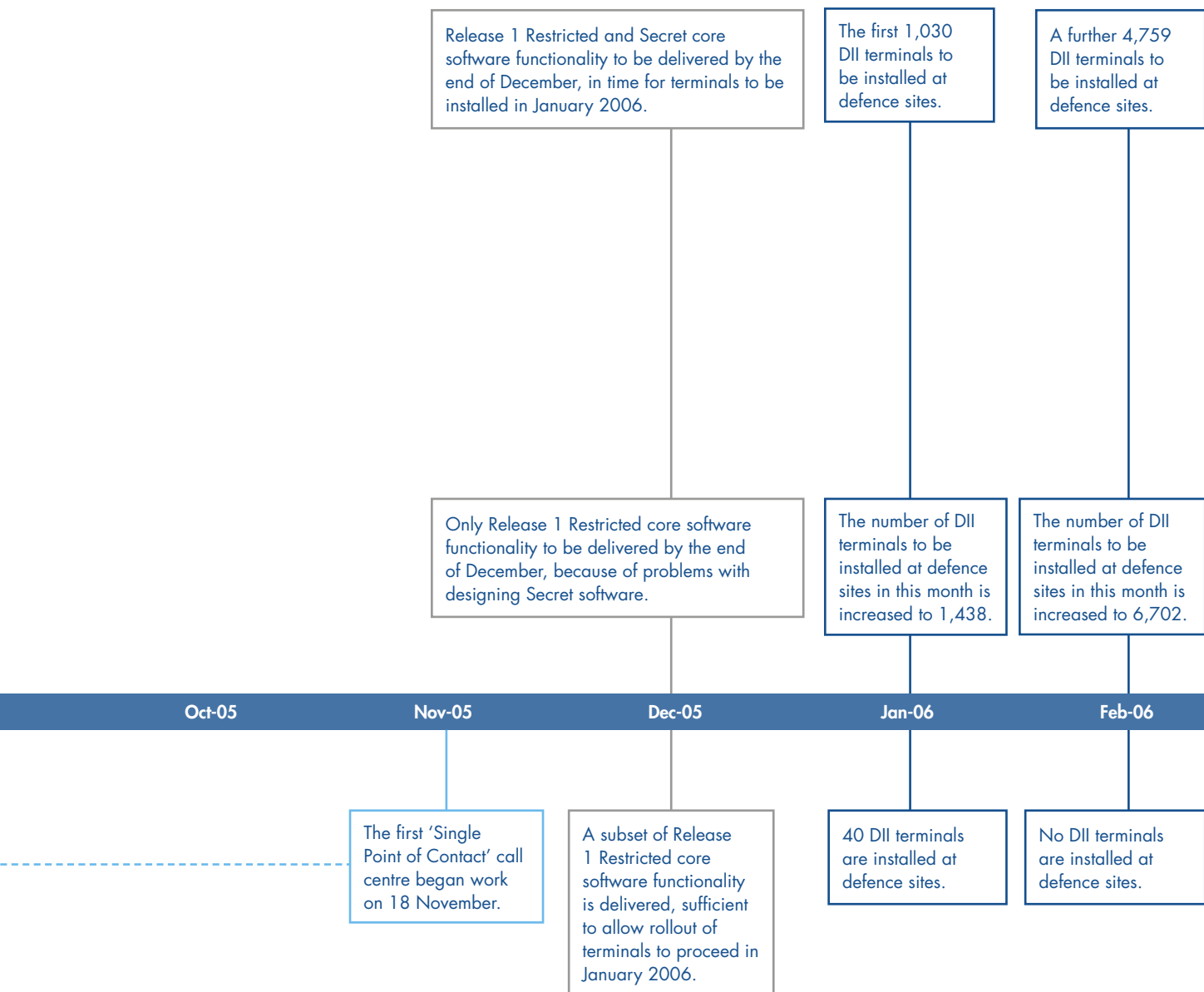| Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05

Events

ATLAS took ownership of the first legacy system on 1 August.

The first Departmental staff transferred to ATLAS on the same day.

Key

☐ Rollout of Terminals
☐ Management of legacy systems
☐ Software development

Source: National Audit Office

Release 1 Restricted and Secret core software functionality to be delivered by the end of December, in time for terminals to be installed in January 2006.

The first 1,030 DII terminals to be installed at defence sites.

A further 4,759 DII terminals to be installed at defence sites.

Only Release 1 Restricted core software functionality to be delivered by the end of December, because of problems with designing Secret software.

The number of DII terminals to be installed at defence sites in this month is increased to 1,438.

The number of DII terminals to be installed at defence sites in this month is increased to 6,702.

Oct-05	Nov-05	Dec-05	Jan-06	Feb-06

The first 'Single Point of Contact' call centre began work on 18 November.

A subset of Release 1 Restricted core software functionality is delivered, sufficient to allow rollout of terminals to proceed in January 2006.

40 DII terminals are installed at defence sites.

No DII terminals are installed at defence sites.

2.11 These additional challenges exacerbated the inherent difficulties that the Programme faced in preparing sites to receive DII using the fixed implementation methodology. The main problems were as follows:
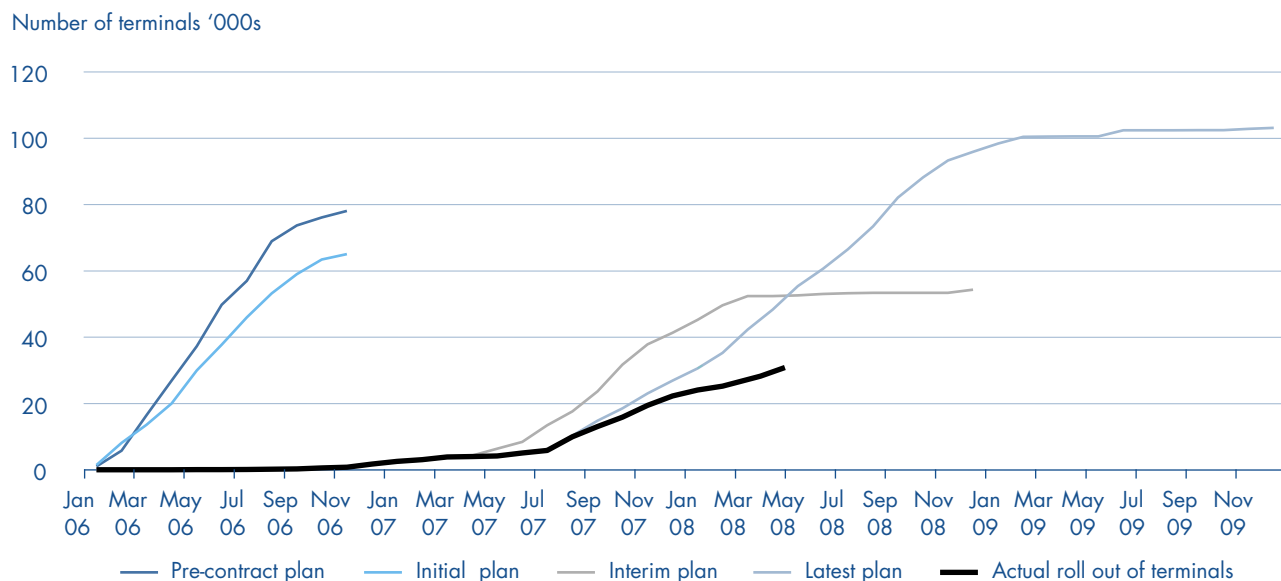
■ **Government Furnished Assets.** At many sites it was difficult to provide ATLAS with rooms suitable to house DII network and server equipment. Sometimes, when a location had been identified, the Department had to carry out substantial work to bring it up to the minimum standard required in the contract. Although the Department was able to pay for this work out of the funding it had identified for risks, it could do little to reduce the amount of time this work took to complete.

■ **Survey and design.** ATLAS had difficulty in completing site surveys and designs on time and to the satisfaction of the Department. Some important documentation was missing at many sites and, in some cases, changes were made to detailed requirements. These made the task of completing surveys more laborious, and the quality of ATLAS' work was not always good enough. Many survey and design documents had to be rewritten. During the first 18 months of the Programme, some 150 out of 200 design documents (75 per cent) were agreed late.

■ **Work to enable the implementation of the design.** Site surveys and designs typically lead to other works that need to be done before installation of the new system can begin. On the DII Programme, these works were often more significant than had been anticipated and took longer to complete, in part because the third parties involved could not meet the DII timetable.

■ **Discovery of users' requirements.** 12 weeks before DII was due to be installed at a site, the Programme conducted a detailed analysis of the requirements of users. After this point, users were not permitted to make any significant changes until DII had been installed, so that ATLAS knew how many terminals to install in each room and which software applications each user needed to access. The analysis was not always completed accurately and users at many sites continued to make changes after the 12-week limit.

■ **Fixed Rollout Methodology.** The difficulties described above generally tended to lengthen the implementation process beyond the 38 weeks allotted in the Fixed Rollout Methodology. However, in 2005 and 2006, there was no robust process in place to reschedule work at a site once delays had occurred. In some cases, subcontractors continued to arrive at sites in accordance with the original timetable even though it had ceased to be relevant. It was difficult to escalate problems for resolution higher in the management chain because of the small number of project managers employed by ATLAS.

2.12 By the end of August 2005, over 400 sites were supposed to be at some stage of the Fixed Rollout Methodology. As more sites entered the preparation phase during the summer of 2005, the DII Programme's resources were stretched more thinly. When the time came to move some users to DII in January 2006, the pace was much slower than was required. The Programme had set itself extremely ambitious targets for the rate at which DII terminals were to be delivered – between 6,000 and 7,000 terminals each month – but these were missed. Performance throughout 2006 delivered very few terminals and in three months of the year no terminals were rolled out at all. By the end of 2006 only 1,600 out of 62,800 terminals had been delivered. **Figure 6** shows that the actual rate of delivery of terminals has been slower than that planned in successive migration sequences. A detailed breakdown of rollout is at Appendix 6.

2.13 When sites have not moved to DII on time, legacy systems have had to run for longer, costing the Department more money in service charges, although this is offset by fewer service charges paid to ATLAS as DII is late. In some cases, these systems have required additional maintenance to keep them running. According to the terms of the original contract, all users of legacy systems that were transferred to ATLAS as part of Increment 1 should have moved to DII by December 2006, with all legacy terminals being removed shortly afterwards. However, delays have meant that the number of terminals in place on legacy systems has only reduced by some 15 per cent since the start of the hardware rollout **(Figure 7)**. Although most of these legacy systems remain robust and are capable of meeting the Department's standard business needs, there is a risk that some may not be able to continue to operate without major upgrade work. Moreover, the benefits of having the Department working on a single computer system have been delayed.

6 The planned and actual rate of the rollout of DII terminals

Number of terminals '000s

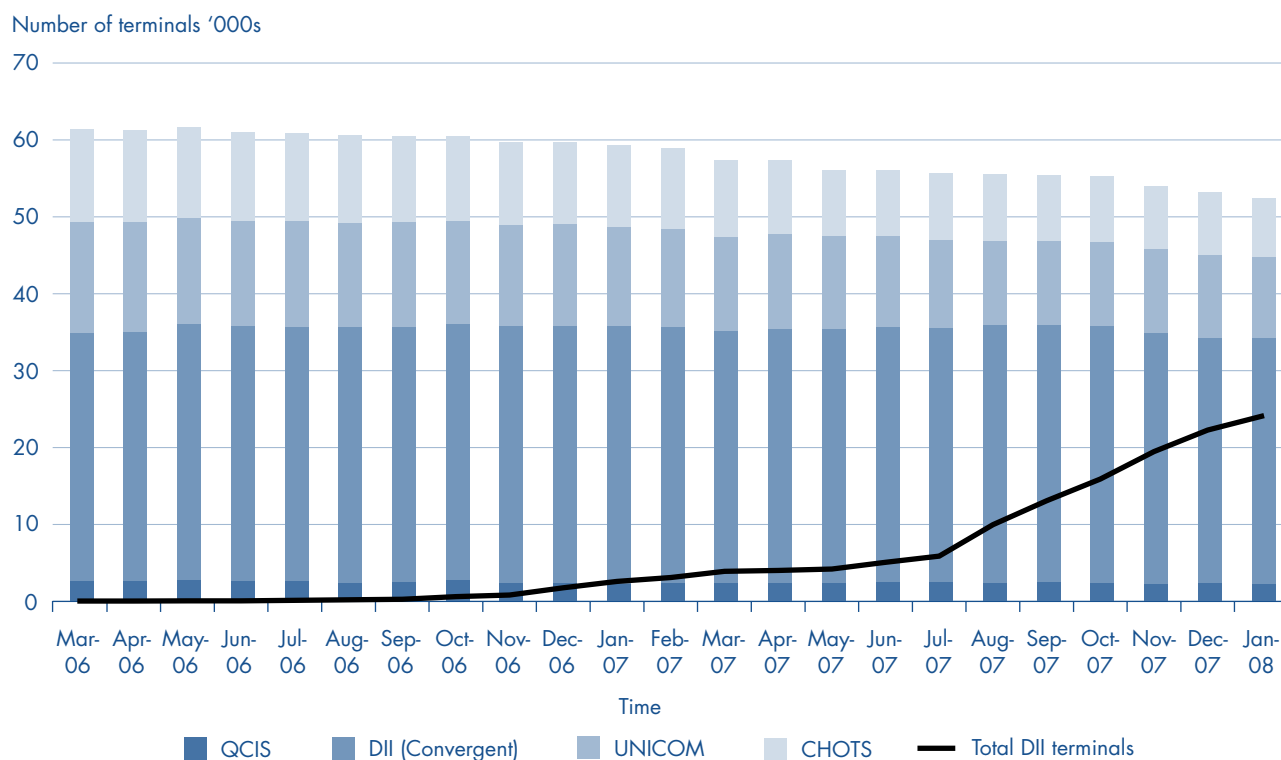Pre-contract plan — Initial plan — Interim plan — Latest plan — Actual roll out of terminals

Source: National Audit Office analysis of Departmental data.

NOTE

Detailed numbers of planned and actual rollout of DII terminals are given in Appendix 6.

7 The number of terminals running on legacy systems has reduced very little

Number of terminals '000s

Time

QCIS ■ DII (Convergent) ■ UNICOM ■ CHOTS — Total DII terminals

Source: National Audit Office analysis of Departmental data.

Hardware Rollout: Improved Performance

2.14 Faced with the problems described above, it took the DII Programme some time to understand and address the causes. First and foremost, the Programme sought to ensure that it did not prevent the Joint Personnel Administration Programme from being implemented. The DII Programme Board acknowledged in February 2006 that delays to the installation of DII were putting the timetable of the Joint Personnel Administration Programme at risk. To address this problem and protect the substantial financial savings that were to be delivered by this programme, the Department took a number of actions, which are described in **Box 3**. This work allowed most users to access this application after only a slight delay. Currently, the Joint Personnel Administration Programme is reporting that it has realised benefits of £118 million to date. The DII Programme has protected the Joint Personnel Administration Programme's ability to realise gross benefits of £972 million from 2005-06 to 2014-15. We have not audited the benefits delivered by the Joint Personnel Administration.

2.15 Throughout 2006, the Department and ATLAS tried to understand the reasons for the delays to hardware rollout. When the DII Programme Board had first become aware of the problems in August 2005, it had not understood the scale and eventual impact of the delays that would occur. For many months after the large-scale rollout of terminals should have commenced, the Programme continued to believe that the Fixed Rollout Methodology could work and that better engagement with site owners and other stakeholders would solve most of the problems.

2.16 During the last months of 2006, the Department and ATLAS agreed that the Fixed Rollout Methodology would not work in the context of defence and replaced it with a more flexible procedure, known as the Decision Point Process. This Process is more responsive to the variable condition of defence sites and requires more active project management. The main tenets of the new methodology are depicted in **Figure 8**. Although the activities that have to be completed before a site can switch over to DII have remained the same, the approach is now different:

■ Sites are now given their place in the rollout based on realistic assessments of how long preparatory works will take. For some sites, a 38-week implementation timetable remains an aspiration, but is no longer mandatory.

■ Engagement with key stakeholders, in particular those outside the DII Programme, such as Defence Estates, BT and local planning bodies, has improved. Meetings are held regularly, with all key stakeholders present, to address problems at each site and agree ways to proceed. This means that it is much more difficult to ignore problems and that early warning is given to allow a site to be replaced by others in the sequence.

■ The detailed preparatory works themselves are much more actively managed by ATLAS project managers, which is, in part, behind a 60 per cent increase in the consortium's planned management costs.

BOX 3

The Contingency Programme to Enable Joint Personnel Administration

In early 2006, the Programme discovered that the rollout of DII would be delayed and that this would impact directly on the rollout of the Joint Personnel Administration application. It then worked with the Joint Personnel Administration team to change the date on which the application would be switched on for the Royal Navy and the Army. It took swift action to address this problem and meet the subsequent revised deadlines.
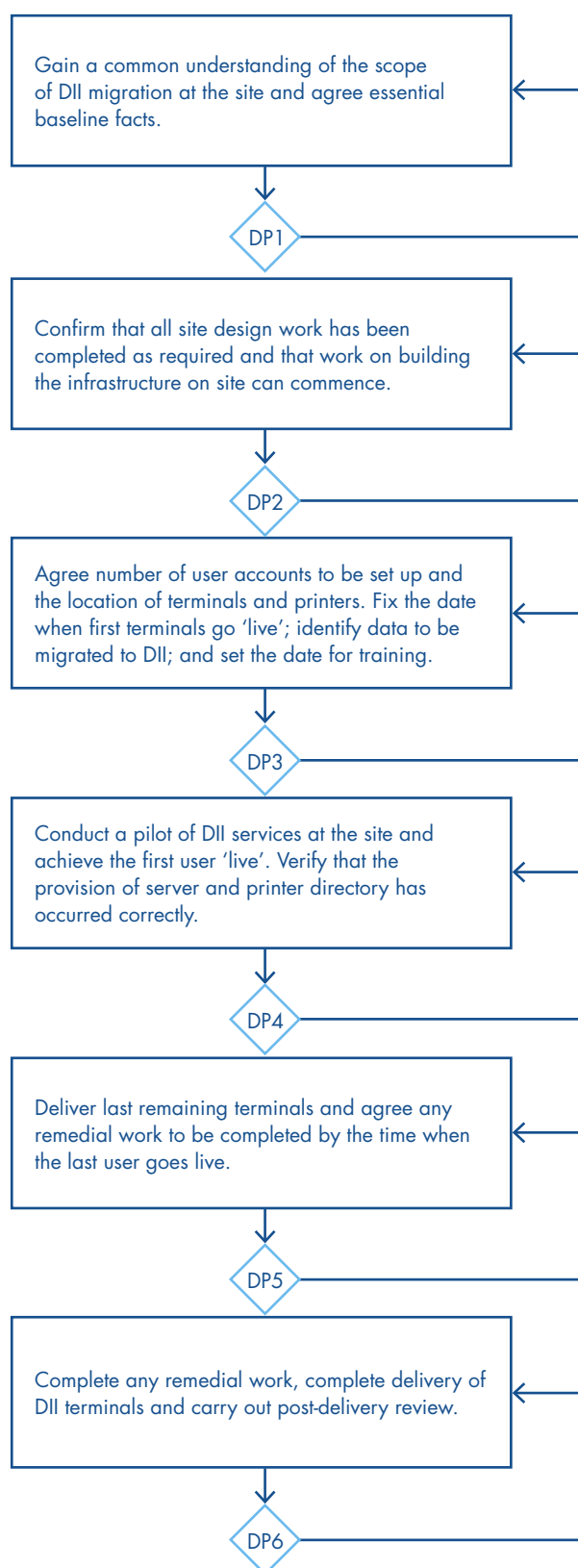
■ In order to re-align the two programmes, the Department decided to delay the implementation of the Joint Personnel Administration by four months primarily because of delays in the DII rollout but also due to other Joint Personnel Administration related issues. It instructed EDS, which is the prime contractor on both DII and Joint Personnel Administration, to implement Joint Personnel Administration to the revised timetable. It paid the EDS team working on Joint Personnel Administration £12.7 million in respect of this delay.

■ The Programme reprioritised the Migration Sequence a further time to ensure that during 2006 and early 2007 only sites requiring DII to access the Joint Personnel Administration application would receive DII terminals.

■ It coordinated its own programme of purchasing additional terminals to run on legacy systems to make up the shortfall left by the slow rollout of DII and to enable the Joint Personnel Administration Programme to meet its new timetable. This separate programme cost £12 million. The table below describes the number of additional terminals now running on legacy systems and the number of sites involved. This programme, which did not involve ATLAS, worked quickly and effectively with almost no margin for error.

	Number of terminals	Number of sites
Army	3,330	257
Navy	621	50

Source: National Audit Office analysis of Departmental data

8	The Decision Point Process

Gain a common understanding of the scope of DII migration at the site and agree essential baseline facts.

DP1

Confirm that all site design work has been completed as required and that work on building the infrastructure on site can commence.

DP2

Agree number of user accounts to be set up and the location of terminals and printers. Fix the date when first terminals go 'live'; identify data to be migrated to DII; and set the date for training.

DP3

Conduct a pilot of DII services at the site and achieve the first user 'live'. Verify that the provision of server and printer directory has occurred correctly.

DP4

Deliver last remaining terminals and agree any remedial work to be completed by the time when the last user goes live.

DP5

Complete any remedial work, complete delivery of DII terminals and carry out post-delivery review.

DP6

Source: National Audit Office analysis of Departmental data

2.17 The Programme implemented the new methodology and other improvements progressively at sites during the early months of 2007, which initially led to a dip in performance but has subsequently brought about significant improvements. Since August 2007, performance has improved markedly, with the number of terminals installed each month increasing to an average of 3,000 during the last five months of 2007. Although not sufficient to allow the Programme to adhere to its latest schedule, the delivery of terminals in this period went more closely to plan than ever before. Subsequently, the rate of rollout has reduced again, with an average of some 1,700 terminals being installed each month since the start of 2008. The main causes of the fall off in the rollout rate are the Programme's inability to deliver core software, problems with the preparation of some sites, change and difficulties with the installation of network infrastructure. The Decision Point Process remains a robust methodology for guiding the hardware implementation.

2.18 At the end of April 2008, 29,015 of the 62,800 terminals in Increment 1 had been installed, and 81,900 of a contracted 184,000 users had access to DII.

2.19 Since the Decision Point Process was implemented, ATLAS and the Department have undertaken to improve other elements of implementation:

- The Department now seeks to identify equipment and server rooms at sites as early as possible, even before the site has started formal preparations to receive DII. Planning permission can then be sought and building work can commence earlier.

- In early 2007, the Department told site owners to abide by the contract by not making major changes to their IT in the period immediately preceding migration to the system. In early 2008, ATLAS agreed to reduce the length of this period from 12 weeks to 9 weeks to make the requirement easier to meet. These changes should provide the rollout programme with more stability.

- ATLAS also undertook to improve the quality of its surveying and design work at sites, reducing the proportion of designs that need to be resubmitted for assurance.

- The Programme is now much more active in learning lessons from the experience of implementation at sites. Abbey Wood near Bristol is the largest site to have transferred to DII to date. When migration began in mid-2007, the Programme faced a number of problems that had not been anticipated. For instance, the process for installing software onto terminals remotely, using telephone cables, worked too slowly and was replaced by a locally managed

build room, where software was installed using compact discs. When the system was first switched on, the number of users who experienced teething problems was much greater than anticipated and overwhelmed ATLAS' small team of on-site support staff, known as floorwalkers. More floorwalkers were appointed at short notice and larger teams will be available for similar sites in the future.

Core Software Functionality: Delays

2.20 In addition to the hardware that is being installed at sites, the new DII system requires core software to make it work. The Department's requirement for core software functionality has remained largely unchanged since the contract was let, but the Programme has found it very difficult to deliver. Whereas all core software functionality should have been available in June 2006, less than half has been delivered to date. The Programme's inefficient processes for software design and issues with the designs themselves, as well as changes in the Department's detailed requirements, have been the main causes of delay. In a way similar to the delays in hardware rollout, delays in the delivery of software functionality mean that some legacy systems will have to run for longer and that the realisation of some benefits has been delayed.

The Requirement

2.21 The DII contract contains detailed information about the core software functionality that is to run on the new infrastructure. This requirement has changed very little since the contract was signed. It took longer than anticipated for the Programme to translate that contracted requirement into the detailed requirements needed for design and development and it has been unable to deliver the software to the schedule anticipated at contract award. Although most of this functionality was available through DII(Convergent), the Programme decided that it would not base DII on that architecture but instead would design the new system from first principles.

2.22 The Department and ATLAS agreed before signing the contract that the core software functionality should be delivered in two parts **(see Figure 9)**. The first part, known as Release 1, was a subset of the overall functionality, and was to be delivered by December 2005 to allow the first sites in the migration sequence to switch over to DII. Release 2, which included all remaining functionality, was to follow a few months later in June 2006. A number of the Department's legacy systems provided users with greater functionality than Release 1, and sites using these systems were only to be migrated once Release 2 was available.

According to the contract, no users were to migrate to DII until the system could at least match the functionality they enjoyed on their legacy system.

2.23 In 2006, the Department made its only substantial change to the software functionality it had contracted for. In consultation with ATLAS, it decided to replace the contracted solution for electronic document and records management with one substantially made up of Microsoft's products. It was evident that these products would become available within the lifetime of the Programme, had the potential to give better value for money, and the Programme still faced challenges with the development of the software. Work on the detailed designs of the complete functionality is unlikely to start until 2009 although part of the planned electronic document and records management functionality will now be delivered in Release 2b, and is due in early 2009. ATLAS has not yet provided detailed costs to the Department and negotiations are ongoing about how to pay the consortium for the design of the original solution.

2.24 Users of the DII(Convergent) system, installed at the Royal Navy's and Royal Air Force's headquarters, the Permanent Joint Headquarters, and in the Department's Main Building, already have access to high-quality electronic document and records management services. As a result of delays, this functionality will not now be available on DII for some time and the Department has given a commitment that users at these sites will not migrate to DII until current levels of functionality can be maintained. Consequently, an interim solution, which involves linking the DII(Convergent) and DII systems, has been ordered from ATLAS. This allows DII users to "reach back" into DII(Convergent) to manage documents and collaborate with colleagues. The Department is spending money to strengthen and expand DII(Convergent) to allow users to store additional data until the full DII functionality is delivered. It estimates that this will cost £1.3 million.

The Difficulties

2.25 As with the rollout of hardware, the Department and ATLAS assumed that the design of software functionality would be relatively straightforward. Most of the software requirements relating to functionality for users of DII were already available, albeit in earlier versions, to users of DII(Convergent). The software tools necessary for ATLAS to monitor and manage the system are, for the most part, standard in the IT service industry. The risk analysis that helped the Department to decide to fund DII stated that 'work to integrate, test, assure and accredit the detailed technical design presents a low technical risk'.

2.26 In creating the core software functionality, each release moves from strategic statements of requirement through high-level and low-level designs and tests and trials to produce usable outputs. This is standard practice in software engineering. At each stage the contractor's designs are reviewed by the Department to ensure that they meet the requirements. This process has taken longer than anticipated by the Programme.

2.27 In the first few months following the signature of the contract, the DII Programme began to experience major difficulties in delivering core software functionality. The main causes of the difficulties are as follows:

■ **An underestimation of the complexity of the functionality contracted for and a lack of capacity within ATLAS to run multiple streams of software design work concurrently.**

■ **Differences of opinion about the readiness of solutions, and time-consuming cycles of reviewing and reworking designs.** In a number of cases, the Department says that designs have not been ready to review, while ATLAS says that the Department has been too doctrinaire in its application of review criteria. Programme planners have sometimes decided to delay a release while

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9   Release 1 and Release 2 core software functionality

Type of software	Key elements of Release 1	Key elements of Release 2
Software that the Department needs to conduct its business, including what end-users need to carry out tasks. This includes office automation, web-browsing and electronic document and records management.	■ Standard office tools, including word processing, internet and e-mail access, and standard file storage. ■ Desktops and laptops supported. ■ Access to a contractually agreed list of applications.	■ Electronic document and records management services. ■ Collaborative tools. ■ A new Department-wide personnel directory. ■ An enterprise-wide search capability. ■ Scanning services. ■ Remote access to Departmental intranet for laptop users.
Software that ATLAS needs to monitor the system and to deliver the managed 'end to end' service. This includes software to measure Key Performance Indicators and online catalogues to allow users to order additional services or changes to their existing IT environment.	■ Software tools to allow the Single Point of Contact call centres to manage contacts, user configurations and change requests. Also, software to track incident resolution and to monitor customer satisfaction. ■ Tools to measure a contractually agreed subset of the Performance Indicators and Key Performance Indicators. ■ Pairs of data centres holding back-up copies of all data to ensure service continuity.	■ Tools to measure all of the Performance Indicators and Key Performance Indicators. ■ Web and application hosting services.
Software that is required to make the system secure from external attack and to ensure that material classified as Restricted and Secret can be handled safely.	■ Discrete systems that can safely handle material classified as Restricted and Secret. ■ Identification, authentication and authorisation services, including, for instance, password protection. ■ Vulnerability testing and audit. ■ Basic Grade Messaging.	■ Public Key Infrastructure services supporting additional security such as signing and encryption. ■ A domain that can handle material classified as Confidential and provide access to the Government-wide XGSI domain. ■ Full business continuity support. ■ Medium and High Grade Messaging.

Source: National Audit Office analysis of the Department's data

designs are amended and resubmitted for review, and sometimes to allow work to continue at risk, on the understanding that concerns will be addressed at a lower level of the design process. Ultimately, on many occasions, disagreements about the adequacy of designs have persisted through tests and into the trials stage, with ATLAS and the Department sometimes unable to agree about trial criteria. During the first two years of the Programme, the number of defects found during trials was very high.

■ **An inability to meet the Department's security requirements.** The problems with software designs have been even more acute where the design of security features is concerned, with many defects being identified only at a late stage of design. In part, this is because the requirements are understandably strict and there is a clear risk that criteria may be applied in an unrealisable way. This aspect of software design is reviewed and accredited by Departmental bodies other than the DII Programme itself. However, during the review process, ATLAS has not always been good at providing clear empirical evidence to show that it has considered security issues or to prove how secure its designs are.

■ **Changes to requirements.** In addition to the change to the electronic document and record management requirement described above, there has been difficulty with changes to software requirements, for example, directory structures.

2.28 These problems have led to very long delays in the release of functionality. To date, most of the user-facing requirements for the Restricted element of Release 1 have been delivered. However, software tools that ATLAS needs to implement, monitor and manage the DII service are still to be delivered. The Secret element of Release 1 is still not available. Successive estimates of how long it will take to deliver the remaining functionality have proved to be wrong. One response to difficulties has been to divide the two releases further, to create a more incremental approach to the delivery of functionality. However, to date, this response has not led to improved delivery. **Figure 10** shows that functionality is now being delivered in more releases over a longer period than was originally intended.

2.29 It is difficult to quantify the impact of delays on the development of more efficient and effective working patterns throughout the Department, although it is clear that the realisation of these benefits has been postponed at most sites.

10	Timing of software releases

| **Release 1 Restricted.**

Partially delivered in December 2005, fulfilling the majority of user-facing requirements. The outstanding components of this release are mainly software tools required by ATLAS for the implementation of DII at large sites and to manage and monitor the service provided to users once the system has been installed. They are being delivered between June 2008 and March 2009. | **Release 1 Secret.**

Undelivered at present, this release was originally to be in place by May 2006. This has been revised to July 2008. | **Release 2a (Reachback).**

Undelivered at present, this release will provide users of DII (Convergent) with access to their existing Electronic Document and Records Management systems. This will compensate users of the Department's best legacy system for the lack of functionality on DII when they first transition, in accordance with the Programme's principle that no one will migrate to a less functional system. This was to have been delivered by January 2007 but is now due in September 2008. |

| **Release 2b.**

This will contain the key enhanced capability of DII Release 2. It was initially planned for delivery in January 2007, but this has now been revised and it is expected between January and April 2009. | **Release 2d.**

This will contain the DII Electronic Document and Record Management Services. It was estimated that this would be delivered at some point during 2008-2009, but design work is now unlikely to commence until 2009. |

Source: National Audit Office analysis of the Department's data

Core Software Functionality: Making Improvements

2.30 The Department and ATLAS have found it difficult to understand precisely what has been causing the difficulties with the delivery of core software functionality. A number of attempts to improve the delivery of core functionality have had limited success. From mid-2007, reviews were conducted in parallel of ATLAS' software design team and the Department's software review team. These have led to wide-ranging changes to the structure of the teams which will deliver Releases 2b and 2d, as well as to key processes. The structure of the teams delivering Release 1 (Secret) and Release 2a have remained broadly unchanged.

■ At the start of 2008, ATLAS formed discrete teams to work on each software release and sub-release, rather than drawing subject matter experts from a pool. The new system is intended to help ATLAS run multiple consecutive streams of work more successfully.

■ The Department and ATLAS have agreed new protocols for the design and review cycle. The Department will dedicate more resources to helping ATLAS to achieve successful designs in advance of review points. There will be more emphasis on reviewing high-level designs at the start of the design cycle and on the successful completion of tests and trials at the end. Test and trial criteria will be agreed explicitly between the Department and ATLAS at the beginning of each design cycle.

2.31 The Department believes that these changes are already having a positive effect, but that further time will be needed to make the delivery of core software functionality more predictable. In the meantime, during the early months of 2008, further delays have occurred to the delivery of Release 1 (Secret) and Release 2a, which have, for the first time, impacted adversely on the rollout of DII terminals. The continued unavailability of Release 1 (Secret) software contributed to only 2,000 terminals being installed in March 2008 against a plan to install some 7,000.

2.32 The Programme has also been forced to delay the start of the installation of terminals at some of the Department's most important sites, in the first instance the Royal Navy's headquarters at Whale Island. This work was due to begin in March 2008, but **Figure 11** shows the extent of the delays. These were caused by the continued unavailability of both Release 1 (Secret) and Release 2a, the solution which will allow users to reach back into DII(Convergent) for certain types of functionality. The Department anticipate that they will manage to complete the rollout to the new schedule.

11 Rollout in Headquarters will begin later than anticipated because core software functionality is not available
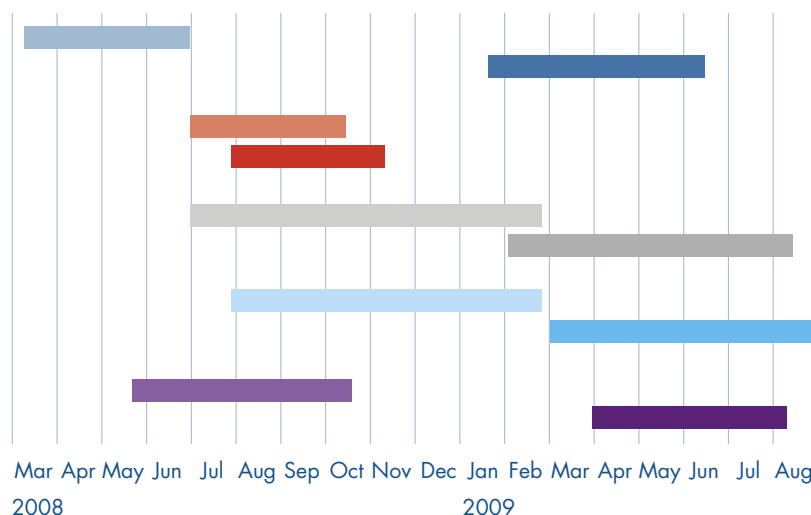

Source: National Audit Office analysis of Departmental data

Software Applications: Delays

2.33 In addition to core software functionality, the DII system needs to be able to provide access to other software programmes used by Departmental personnel. Although ATLAS does not have responsibility for designing and maintaining these other applications, it must ensure that they can be used effectively on the DII infrastructure. The length of time it takes to approve an application for use on the system varies according to the complexity of the application, its compatibility with DII, and the availability of necessary documentation describing what it does and how it has been designed. Despite having a clear portfolio of applications to handle, the DII Applications Factory still faced difficulties, which led to delays in approving such applications.

2.34 Different defence sites make use of different sets of applications. Under the terms of the contract, ATLAS was committed to enabling all the applications required at a given site to work on DII by the time the site was due to migrate to the new system. To this end, the Department undertook to provide all necessary information to the contractor in a timely fashion.

2.35 Increment 1 of the contract included some 300 applications which ATLAS was to integrate with DII, with a further 200 needed for the migration of Abbey Wood and sites included in Increment 2a. During the first two years of the Programme, applications were made ready to run on DII at a slower rate than had been planned. This delay has meant that some users have switched to DII without all the applications they need to do their job being available on it. These difficulties occurred for a number of reasons.

- The degree of change in the rollout schedule, which determines the order in which sites are to move to DII, has made it difficult for ATLAS to determine the order in which applications should move through the factory.

- The Department did not provide ATLAS with all the necessary documentation, such as licences and descriptions of codes, to allow some applications to move through the factory in a timely fashion. In some cases, ATLAS has helped the Department to source documentation for no additional payment.

- Sometimes, even when all the necessary information for an application has been available, it has been technically difficult to make it compatible with the new DII system. This difficulty can be due to the age of the application or the language in which it is programmed.

- Some applications link the Department to other Government departments and private sector companies, but this linkage was not fully understood when the contract was let and has added both to time and complexity.

- A significant number of applications were submitted to the Applications Factory only to be withdrawn by their owners in the Department after resources had been spent on them unnecessarily.

2.36 Originally, all 300 applications in Increment 1 were to be integrated by October 2006. However, by June 2007, just over 40 applications had been integrated. As a result, some legacy systems have had to run for longer and some users have temporarily had to use two different computer terminals to do their jobs. At Abbey Wood, a number of applications still cannot be accessed through DII, and this was one of the reasons why, when DII was installed, some 1,500 terminals of a legacy system were left running in a site where some 8,000 DII terminals have been delivered. Other reasons were the continued unavailability of Release 1 (Secret), the DII Programme's decision not to migrate some data to DII and the need to communicate with other sites. Similar problems have caused the Department to retain terminals on legacy systems at other sites but the DII Programme does not keep a record of the number of these terminals.

Software Applications: Improved Performance

2.37 In mid-2007, the DII Programme successfully took action to improve the operation of the Applications Factory. A concerted effort has been made to provide all necessary documentation to ATLAS as early in the process as possible, and applications that are likely to be particularly difficult are now dealt with separately so as not to slow down other work.

2.38 Currently, of 624 applications that are required, 173 had been integrated by the end of January. The Programme intends to have all 300 Increment 1 applications integrated by the end of July 2008, with the remainder following by the end of December 2008. In the meantime, terminals that run legacy systems may need to be retained at a number of additional sites.

Changes to Governance

2.39 As has been described in a number of previous reports by the Committee of Public Accounts and the Comptroller and Auditor General, many Government IT programmes have suffered from difficulties at various stages.[1] While Departments must make every effort to avoid problems through good planning, procurement and management, they must also put in place measures to address problems when they occur. For the most part, the governance structures set up at the outset of the DII Programme have remained robust. In addressing the problems that have affected the implementation of DII, the Department and ATLAS have tried to work jointly wherever possible and have adopted a partnership approach. Aspects of the governance arrangements have been improved, as follows:

- **Risk Management.** In March 2006, changes were made to the risk management regime. The processes for gathering information about key risks have been improved, and the leaders of the Programme now take greater ownership of strategic risks.

- **Executive Review.** In July 2007, a new monthly governance board, the Executive Review, was created. It comprises only the top members of the DII Programme, from the Department and ATLAS, unlike the DII Programme Board, which includes many internal stakeholders, and it is used to address promptly critical issues affecting DII.

- **Stakeholder Engagement.** The DII Programme has improved its engagement with Defence Estates and other third-party stakeholders, who are required to provide inputs to enable the rollout of the system.

- **Tiger Teams.** Where delays to DII have put other important programmes at risk, the Department has formed Tiger Teams to address problems in a pragmatic, swift way. For instance, this was done to enable the Joint Personnel Administration Programme to be switched on.

- **Internal Audit.** The Department has moved to exercise its contractual right to audit ATLAS, to gain a better understanding of the root causes of problems inside the consortium. In particular, the Internal Audit database and two reports commissioned from Qinetiq have helped to identify where some of the improvements described above were needed.

2.40 In the Comptroller and Auditor General's report, *Delivering Successful IT-Enabled Business Change*, (HC 33-I, 17 November 2006), a checklist of nine questions was provided to assist Departments embarking on major IT programmes. As shown in **Figure 12 overleaf**, the DII Programme has in general addressed most of the issues.

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1   C&AG's reports: *Delivering successful IT-enabled business change* (HC 33-I, Session 2006-07); *The National Programme for IT in the NHS* (HC 1173, Session 2005-06); *Child Support Agency – Implementation of the Child Support Reforms* (HC 1174, Session 2005-06); *Improving IT procurement: The impact of the Office of Government Commerce's initiatives on departments and suppliers in the delivery of major IT-enabled projects* (HC 877, Session 2004-05); *National Savings and Investments' deal with Siemens Business Services, four years on* (HC 626, Session 2002-03); and *New IT systems for Magistrates' Courts: the Libra project* (HC 327, Session 2002-03).

12 Assessment of DII against key questions for departments undertaking major IT-enabled business change

Question.	Our analysis of the DII Programme's current performance.
1. Is the board able to make informed judgements about the Department's capacity to manage change?	From the outset, the Department has taken key decisions about the Programme following consideration of the other defence business change programmes which either impact on, or are enabled by, DII. The dependency of the Joint Personnel Administration Programme on DII was explicitly recognised and managed.
	The Department did considerable work to understand the required scope of DII and acted to manage risks including through centralising control of legacy systems and rationalising applications.
	However, the Department did not do enough work to understand the physical environment into which it was installing DII. It also agreed to a Fixed Rollout Methodology, understanding that it would minimise the project management required, and this proved, in many cases, to be inappropriate to the circumstances of the Department.
2. Does the Department have in place a decision-making structure that will ensure strong and effective leadership of the IT-enabled business change?	The Programme created robust governance structures at the outset with members drawn from the Department and ATLAS. The governance structures incorporated all important internal stakeholders, such as representatives of the three Services and the Department's other Top Level Budget areas. The Programme has secured the engagement of senior management both within the Department and in the constituent members of ATLAS.
3. What incentives exist to drive performance?	The Department has structured the DII contract so that ATLAS recoups the majority of its investment in the Programme through performance-based payments. The decision that the consortium would receive the majority of the payment for work only when terminals had been installed has protected the Department from paying for services before they have been delivered, when delays have occurred because of contractor error.
	The Department has adopted an incremental approach to DII which it has refined as the Programme has progressed. This has been used to drive contractor performance when decisions to let additional increments were being assessed and to manage better the risks of the more complex aspects of the Programme.
4. Does the Department have the necessary programme management skills?	Both the Integrated Project Team Leader and the Senior Responsible Owner have well-resourced teams of staff to monitor and assist with the delivery of the Programme. Many members of these teams have undergone formal training to acquire programme management skills.
	After letting the contract, the Department kept the team of people which had been responsible for determining the requirement and conducting the negotiations for DII in post for much longer than usual. Key individuals in the Department have considerable experience of IT programmes and the acquisition of major defence equipment.
5. What is the natural division of duties between the Programme and Project Management Centre of Excellence and the Chief Information Officer?	The Senior Responsible Owner for the Programme is also the Department's Chief Information Officer.
6. How will the Department establish and promote an open and constructive relationship with suppliers?	Governance structures contain members drawn from both the Department and the contractor. At the highest levels within the Department and ATLAS' constituent companies senior management have been well engaged in the DII Programme.
	The Department's and the contractor's senior management have done much to instil a partnering ethos throughout their organisations. The development of partnering methods is assessed through a maturity model.
7. How clear is the Department about the business process that it is seeking to change or develop?	The Department had a sound rationale and a convincing business case for the Programme in terms of improved military operational effectiveness, more effective and efficient running of the business, and particularly through the business change programmes that DII supports.

12 Assessment of DII against key questions for departments undertaking major IT-enabled business change *continued*

Question.	Our analysis of the DII Programme's current performance.
8. Does the technology exist to deliver the change?	The core technology underpinning the DII Programme exists and, to a significant extent, has been used in the Department's temporary system, DII(Convergent), which contains versions of most elements of DII functionality including, for example, collaborative working and electronic document and records management. DII(Convergent) was designed and managed by Fujitsu Services Ltd, a member of the ATLAS Consortium.

Nonetheless, the DII Programme has proved more challenging in a number of respects, including its scale and security requirements. The key challenge has been in applying existing technology, particularly with regard to software development. Here, delays have arisen as a result of the Programme's inefficient processes for software design, issues with the designs themselves and changes in the Department's detailed requirements for core software. |
| 9. Beyond immediate technical success, how will wider benefits be secured? | The DII Programme has maintained a focus on the wider benefits that the new infrastructure would enable and has placed the realisation of these benefits at the centre of its planning. During implementation, it has monitored closely the impact of changes on the delivery of these benefits.

Programme delays, in particular because of work to improve the condition of many defence sites, have meant that legacy systems have had to run for longer. The Programme has taken concerted action to protect benefits, particularly relating to the introduction of the Joint Personnel Administration Programme. |

Source: National Audit Office analysis

Costs Incurred to Date

2.41 The Department has spent less than it expected on the DII Programme to date, including the full level of risk funding, although significantly less capability has been delivered than expected. As shown in **Figure 13 overleaf**, the Department has incurred costs of £1,728 million on DII and dependent programmes in the three-year period to 31 March 2008 against forecast costs of £1,772 million; £959 million were direct payments to ATLAS in this period. In addition, the Senior Responsible Owner's team costs some £2.3 million each year and support staff in the user community cost an estimated £7.1 million each year. These costs are not expected to be ongoing throughout the life of the Programme. See Appendix 7 for more detail.

2.42 The Programme has experienced a number of changes in cost from the forecast made at contract let.

Cost decreases

■ **Payments to ATLAS.** Payments to ATLAS have been lower than forecast at contract let because ATLAS recovers the majority of its investment in DII through performance-based payments. The composition of payments made to ATLAS, which is shown in Appendix 7, differs from the forecast profile due to the delays in implementing DII.

■ **Assets.** Implementation delays have also meant that fewer assets have been required to date than forecast. The Department owns the assets acquired by ATLAS for the DII Programme.

Cost increases

■ **Legacy systems.** The delays in implementing DII have resulted in higher than forecast costs for the management of legacy systems as systems have been required to function for longer than expected. £78 million of the cost increase is for unanticipated work to legacy systems transferred to the Programme which the Department had been unable to identify prior to the centralisation of IT funding, as mentioned in Part 1 of the report.

■ **Payments to ATLAS.** The Department has made unscheduled payments to the consortium of £202 million to acknowledge the financial impact on ATLAS of programme delays and other changes for which the Department has agreed it is responsible. The payments are composed of £42 million for additional costs, £149 million for lost revenue and £11 million in rescheduled payments for other deliverables **(Figure 14 overleaf)**. The compensation process and these payments are described in greater detail in Appendix 7. The Department is currently negotiating with ATLAS to settle four further claims for compensation, but the consortium is yet to submit detailed costs claims for these. In addition, the Department and ATLAS have not commenced negotiations to agree the cost and revenue impact for the current implementation plan.

| **13** | Comparison of incurred costs against forecast costs (£m) to 31 March 2008 |

	Payments for DII[1]	DII Assets[2]	Legacy System Costs[3]	Future Increments' Assessment Phases[4]	Retained Departmental Costs[5]	Sub-total	Risk[6]	DII Programme Total	Dependent Programmes[7]	DII and Dependent Programmes Total
Incurred										
2005-06	15	89	222	13	41	380	0	380	77	457
2006-07	168	105	155	12	53	493	0	493	112	605
2007-08	154	134	189	12	60	549	0	549	117	666
Total	**337[9]**	**328[9]**	**566[9]**	**37**	**154**	**1,422**	**0**	**1,422**	306	1,728
Forecast[8]										
2005-06	11	132	129	16	70	358	10	368	68	436
2006-07	188	138	66	10	62	464	50	514	80	594
2007-08	285	194	18	1	47	545	97	642	100	742
Total	**484**	**464**	**213**	**27**	**179**	**1,367**	**157**	**1,524**	248	1,772
Difference	**–147**	**–136**	**353**	**10**	**–25**	**55**	**–157**	**–102**	58	–44

Source: National Audit Office analysis of the Department's data

NOTES

1   DII terminal and user account charges, application service charges and milestone payments made to ATLAS.

2   Asset and software acquisition costs incurred by ATLAS.

3   Service management costs of legacy systems transferred to ATLAS, the retained costs for managing systems before they transfer and the cost of providing contingent solutions to enable benefits.

4   Costs incurred by ATLAS and the Department to define the scale and scope of Increments 2 and 3.

5   The Department's programme management costs, excluding the costs of the Senior Responsible Owners team, and the cost of providing a suitable physical environment for DII delivered by the Department's estate management contractors.

6   Contingency funding for the mitigation of risks as they emerge and the cost of changes to the Programme. In 'Incurred costs', the value of risk is shown as 0 because it is not monitored separately, but is included in the sub-total.

7   The cost of the Department's contract with BT to provide wide area support services, which the DII programme is dependent on. Costs of other projects, such as J1J4 Interim Operating Solution delivered by ATLAS.

8   For the Increments on contract; forecast costs for Increment 1 and 2a were made in March 2005 while those for Increment 2b were made in September 2007.

9   Payments made to ATLAS to 31 March 2008 total £959 million and comprise of £337 million for DII, £328 million for DII assets and £294 million for legacy systems. The balance of incurred legacy system costs are retained costs incurred by the Department on systems yet to transfer to ATLAS.

Future Funding

2.43   The Department has had to make savings against programme funding which may impact on its ability to fully deliver a single information infrastructure if further funding or efficiencies are not forthcoming. The work already on contract will now cost an estimated £6,109 million (including the cost of related programmes outside DII). The Department is currently forecasting that it will cost £7,093 million to deliver the entire Programme, including the full requirement for deployed and Top Secret capabilities, **Figure 15**. Direct forecast costs have increased by £182 million on the DII Programme, some three per cent, with further increases on dependent programmes which are not the responsibility of DII, **Figure 16**.

| **14** | DII compensation settlements and rescheduled payments made to date |

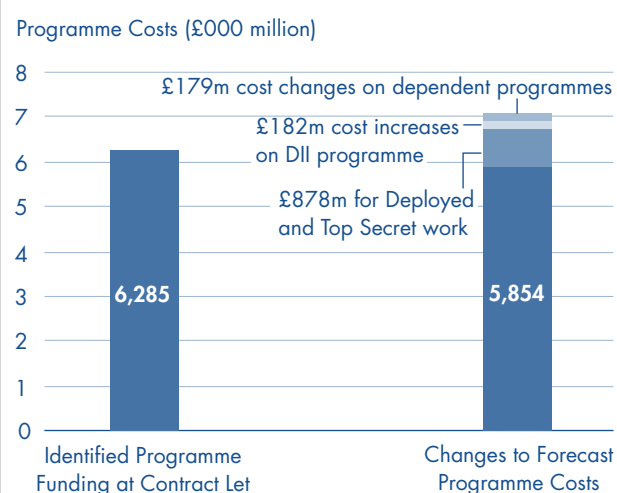|	Additional costs £ million	Lost revenue £ million	Rescheduled payments[1] £ million	Total £ million
Total paid to date[2]	41.9	148.9	11.0	201.8

Source: National Audit Office analysis of the Department's data

NOTES

1   Rescheduled payments were made in the first year of the contract and will be offset against future payments to ATLAS.

2   Payments are the result of five separate commercial settlements since contract let.

2.44 The Programme has been largely successful in protecting Programme funding. DII is recognised as a high priority by the Department and this is reflected in the outcome of the latest Departmental Planning Round negotiations. The Department allocated funding and set efficiency targets, which together will enable it to fund around 140,000 of the planned 150,000 terminals; however it is yet to place this work on contract. The Department is exploring further changes to its approach, which would allow it to close the remaining gap in the number of terminals it can afford. The increasing pressure on future funding, however, means that the Programme has limited ability to manage any future cost increases, including any additional commercial settlements with ATLAS.

15 High-level Comparison of Original and Current Forecast Costs

Programme Costs (£000 million)

£179m cost changes on dependent programmes
£182m cost increases on DII programme
£878m for Deployed and Top Secret work

Identified Programme Funding at Contract Let: 6,285
Changes to Forecast Programme Costs: 5,854

Source: National Audit Office analysis of Departmental data

16 The Current Forecast Cost of the DII Programme[1]

	Payments for DII	DII Assets	Legacy System Costs	Future Increments Assessment Phases	Retained Departmental Costs	Sub-total	Risk	DII Programme Total	Dependent Programmes	DII and Dependent Programmes Total
Forecast Programme Costs										
At increment 1 Business Case[2]	2,666	854	230	27	530	4,307	528	4,835	1,019	5,854
Increment 2b Business Case[3]	263	58	0	0	19	340	44	385	0	385
Total	**2,929**	**912**	**230**	**27**	**549**	**4,647**	**573**	**5,220**	**1,019**	**6,239**
Current Forecast Programme Costs										
Increments on Contract	2,479	847	956	39	397	4,718	194	4,911[4]	1,198	6,109
Fixed Capability not on Contract[5]								491		491
Cost Changes								+182	+179	+361
Deployed and Top Secret Capability not on Contract[5]								493		493
Total								**5,895**[6]	**1,198**	**7,093**

Source: National Audit Office analysis of the Department's data

NOTES

1 Description of Payments and Recipients are as for Figure 13.

2 At the approval of Increment 1 Main Gate Business Case in March 2005.

3 Approved in September 2007.

3 The Programme has received approved funding of £4.5bn for Increments on contract; additional costs have been funded separately.

4 Increments not yet on contract cannot be split into constituent costs.

5 This model assumes that ATLAS will be able to reuse a substantial amount of cabling to provide Local Area Networks, thereby saving £139 million over the remainder of the Programme. In adopting this approach, the Department bears the financial risk that some of this cable may need to be replaced before the end of the Programme.

PART THREE

The future of the Defence Information Infrastructure Programme

3.1   The DII Programme faces a challenging future. If the overall vision for a single infrastructure is to be realised, then the Programme must complete the delivery of increments already on contract in a timely manner, minimising the extent to which benefits are put at further risk. It must focus on the measurement of the managed service, and deliver the critical capability from future increments on schedule.

Consequences of Continued Delay

3.2   Building on the changes made to date, rapid improvement will be necessary in many areas of the Programme already on contract, if the latest timelines are to be met and benefits preserved, without further expenditure on contingency measures.

3.3   Hardware rollout. Although performance has improved markedly as a result of the Decision Point Process, terminals are not yet being installed at the rate originally planned or in a way that will allow the Programme to stick to its latest timetable. When it was adopted in December 2006, the new rollout methodology was supposed to enable a rollout rate of 5,000 terminals per month from June 2007. However, the highest average rollout rate to date was 3,000 terminals per month. The Programme will now need to deliver an average of 6,000 terminals per month and, in some months, the target will be even more challenging: more than 8,500 terminals are due to be delivered in September 2008.

3.4   Core Software Functionality. Continued delays in respect of the delivery and accreditation of core software functionality are threatening to make the current schedule unrealisable. Until key elements of software functionality are delivered, many of the Department's most important staff at military and civilian headquarters will not be able to migrate to DII.

3.5   Benefits at risk. Ultimately, continued underperformance will make it harder for the DII Programme to enable the Department's other change programmes, and may mean that funding has to be diverted to pay for additional terminals to run on legacy systems as an interim measure. See **Box 4** for an example. Similarly, the direct benefits of more efficient ways of working, more functionally rich information technology and better communication are largely being postponed at present. Of the Department's main parts only the Defence Equipment and Support organisation has a majority of its computer users working on DII. When the time comes to realise these benefits, the Department may need to invest additional resources to train its staff in how to exploit fully the new system they are using. The Department will continue to embark on new change initiatives and the DII Programme will be required to adapt; it will need to do this without causing further delays to the rollout of DII terminals.

BOX 4

The Defence Medical Information Capability Programme

The Defence Medical Information Capability Programme aims to manage patients' records in a more joined-up way. During 2008, the DII Programme has undertaken to provide users at a number of sites with access to a new medical software application. As was the case with the Joint Personnel Administration Programme, a Tiger Team has been formed within the DII Programme to ensure that delays to rollout do not prevent the new application from being switched on. Although the situation has been eased because the medical programme has rolled out more slowly than planned, it is likely that some sites may require terminals of legacy systems before DII is available. The Department has set aside £6 million to pay for this contingency. If the medical programme is not able to meet its new timetable because of delays caused by the Department, including delays to planned DII rollout, its contractor, LogicaCMG, which is also a member of the ATLAS consortium, is entitled to charge for costs up to £31,500 per calendar day.

Cost: Avoiding Future Costs

3.6 There are a number of measures which will help the DII Programme avoid excessive costs in the future. Work has begun to implement these, but it is at a very early stage.

■ **Legacy System Closure.** The Department has estimated that it can achieve gross cost savings of £21 million by reducing the size of legacy systems more quickly than would otherwise be the case. Projects to do this costing £4.7 million are underway and are described in Appendix 7. The estimated savings have not been included in the current forecast programme cost given in Part 2 of this report.

■ **DII User Account and Terminal Charges.** The Department will receive Release 2 functionality over a longer period and in more instalments than was originally planned. It needs to agree a new payment structure with ATLAS so that it is not paying too much for the limited functionality users currently have in Release 1 and will receive until the full functionality in Release 2 has been delivered. This is described in greater detail in Appendix 7.

■ **Costing Change.** ATLAS has been slow to provide the Department with costs for change requests, including updated rollout schedules. It has never met the contracted timescales to cost change, although the Department agrees that for complex changes these timescales are challenging. In such cases, the Department agrees a specific date with ATLAS, but these revised deadlines are not met in the majority of cases. Consequently, the Department has agreed to proceed with some changes without knowing the full cost, but has agreed a set liability with ATLAS to allow work to commence. The Department and ATLAS have established a joint team to improve the timeliness of costing Requests for Change.

The Deployed IT System

3.7 In September 2007, the Department awarded a new increment of the DII contract to ATLAS. Known as Increment 2b, it is to deliver a computer system that can be used by the Armed Forces to handle material classified as Secret when on operations. By the end of 2010, the system will comprise some 1,500 deployable terminals, supported by a similar number operating in the United Kingdom. It is planned to cost £385 million between 2008 and 2015. Part of the original scope of Increment 1, to put DII terminals on the Department's ships and submarines, is now being managed as part of this deployed project, after facing design problems which have led to lengthy delays.

3.8 Before awarding this part of the contract to ATLAS, the DII Programme undertook considerable work to reduce the risks inherent in developing a computer system for use in an operational environment. This was done through the Capability Assessment Programme, which provided ATLAS with funding to examine how risks could be mitigated. As part of this work:

■ prototype versions of a deployable system were tested at Coalition Warrior Interoperability Demonstration events;

■ a Deployed Demonstrator system has been built at the Land Systems Reference Centre at Blandford Camp; and

■ software companies with applications that will run on the deployed DII system have gained access to designs and plans, allowing them to mitigate the risks of incompatibility at an early stage.

3.9 The DII Programme has already successfully designed and installed two important deployed systems at short notice and this has helped further with risk reduction. Soon after the contract for Increment 1 of DII had been let, the Department developed urgent requirements for two computer systems to work in deployed theatres: J1J4 Interim Operating System and OVERTASK. These two projects are described in greater detail in **Box 5**. All this work has given the Department much greater confidence in ATLAS' ability to deliver a deployable system.

3.10 The deployable system must be created to a very tight and inflexible timetable. The main reasons for this are described below.

- The contract amendment was awarded later than planned because the Department's Investment Approvals Board requested evidence that ATLAS' performance on increments already on contract had improved, and also because of delays in getting Release 1 (Secret) software.

- Unlike the delivery of earlier increments, the deployed solution must have full functionality from the start, providing at least the same capability and access to all applications that are currently available to operational commanders on legacy systems. If there are any gaps in capability, there will be no option to run the old and the new systems in parallel, because of space and weight constraints in theatre.

- The dates on which various units are to move to the new deployed system have already been set and are not easy to move. They utilise periods of block leave to train Military Service Providers, the Armed Forces' personnel who will look after the equipment on operations. The first unit is due to receive its equipment by the beginning of 2009.

3.11 The Department and ATLAS are paying special attention to the management of this part of the Programme. As was the case before the contract was awarded, they are keeping a dedicated joint team with full responsibility for delivery. Close links are being maintained with all relevant internal stakeholders, and the Deployed Demonstrator prototype is continuing to work. Though there are challenges with some parts of the work, the deployable system has just passed its Critical Design Review on time and the Programme is confident that scheduled delivery dates will be met.

BOX 5

The Successful Delivery of Deployable Systems at Short Notice

J1J4 Interim Operating System. The requirement for this computer system was identified in July 2005 and it was ordered from ATLAS in March 2006. It provides a capability that can handle material classified as Restricted in operational theatres. The main aim of the system, which comprises 350 mobile terminals and accompanying servers, is to provide military personnel on deployments with access to the Joint Personnel Administration application, allowing them to monitor and manage their pay and annual leave. The new system, which will cost £70 million over the life of the DII contract, was successfully delivered in a very short period of time, by May 2007.

OVERTASK. The requirement for this system, which was procured as an Urgent Operational Requirement, was first identified in mid-2006. It provides United Kingdom forces, which are in charge of the International Security Assistance Force in Afghanistan, with access to NATO systems and applications classified as Secret. It comprises some 200 terminals and associated servers. Following very rapid work to ascertain the scope of the project, the new system was delivered in August 2007 and is now operating successfully in theatre. The cost for the development of the system and the first year of operating costs is some £8 million.

Realising the Vision

3.12 The vision of a single infrastructure across the Department will not be realised if the DII Programme becomes unaffordable or fails to achieve the critical capability from future increments that it has yet to place on contract. DII remains the best way of replacing legacy systems, but there are technical and financial challenges. The key elements of future increments are described below.

3.13 Increment 2c. This will provide a version of DII which is capable of handling material classified as Top Secret. It is a vital part of the Department's wider initiative to improve intelligence gathering and exploitation, known as the Defence Intelligence Modernisation Programme, because it will replace old equipment and will allow different parts of the intelligence community to communicate more easily with one another. Funding of £4 million has been made available to ATLAS to build a Top Secret Demonstrator to reduce risks. Currently, the Department hopes to let this increment by December 2008.

3.14 Increment 3. This has now been split into three smaller increments, which mirror the content of Increment 2. Thus, in Increment 3a, remaining permanent defence sites, including most of the Royal Air Force and Joint Helicopter Command, will be fitted with DII capable of handling Restricted and Secret. Increment 3b will meet additional deployed needs by providing a system capable of handling Restricted material. Increment 3c will provide additional terminals for Top Secret material. An estimate of the new dates for completion of this work will be agreed as part of the remaining assessment phase work for Increment 3.
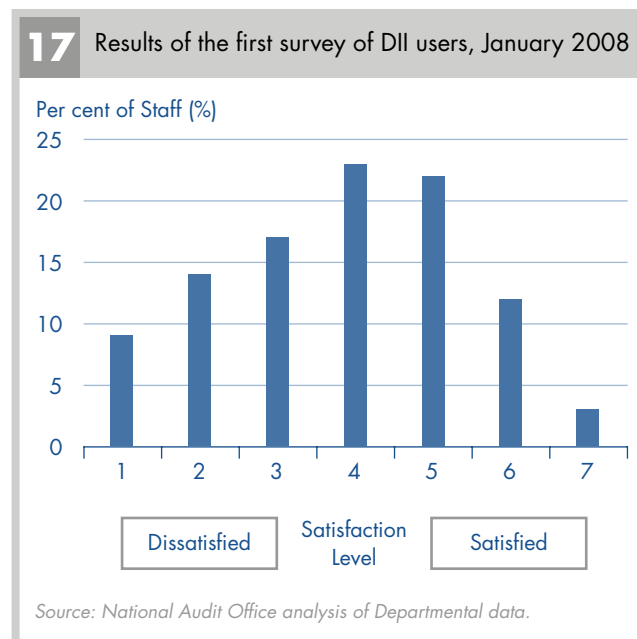
3.15 As described in Part 2 of this report, the Department has had to make savings against the Programme to date and is continuing to pay for legacy systems for longer because of delays. If further funding is not forthcoming, it may adversely affect the Department's ability to contract for future increments and to achieve fully its vision of a single information infrastructure. The greater complexity of some future increments – for example, building a system capable of handling Top Secret material – may result in greater costs than originally anticipated.

Service Management

3.16 The number of users of DII has increased rapidly to 82,000 since mid-2007, requiring the DII Programme to start focusing seriously on service delivery. The Key Performance Indicators through which the performance of the DII system is measured are of a very high quality. To date the system has generally been available when it should be and, when they are measured, Key Performance Indicators are generally being met. However, ATLAS is not yet measuring all Key Performance Indicators as stated in the contract, and the Department was not always fully adjusting payments to the contractor to reflect performance, although full abatement took place between February and April 2008. Users who require changes to be made to their system or who experience problems with it have a more mixed experience of the quality of ATLAS' service.

3.17 The DII Programme carried out its first survey of users in early 2008. This will form the baseline against which the results of subsequent surveys will be measured. In this way, the contractor has an incentive to try to improve its performance on an ongoing basis. Out of 11,000 users who were surveyed, over 2,600 responded, a statistically valid response rate of 24 per cent. The first survey gave an encouraging result for overall satisfaction with DII, considering that users are more likely to respond if they have had a negative experience. However, there is clear room for improvement **(Figure 17)**.

3.18 According to the contract, empirical data on the performance of DII are measured through Availability Indicators and Performance Indicators. ATLAS started to measure some of the Performance Indicators manually in May 2006 and submitted their first monthly report in November 2006, although the first automated measurement did not commence until March 2007. Availability is defined as the user's ability to access the DII system at any time of the day. Different metrics have been defined for Base, Heightened and Critical users. 40 per cent of the monthly payment charge is affected by ATLAS' performance against these measures. On the availability of the DII system to users ATLAS has been performing very well. However, ATLAS can currently only measure availability manually and on an exception basis because electronic tools, which form part of Release 1 core software functionality, have been delayed. This creates a risk that availability data are not reliable.

17 Results of the first survey of DII users, January 2008

Per cent of Staff (%)

Source: National Audit Office analysis of Departmental data.

3.19 Until the full core software functionality contained in Release 2 becomes available, the contractor is only required to measure a subset of the 58 Performance Indicators. ATLAS did not measure any Performance Indicators until May 2006. As shown in **Figure 18**, ATLAS still has difficulty in measuring many Performance Indicators. Only two of the nine Performance Indicators that influence ATLAS' service payments are currently being measured in the way stipulated in the contract. This is, in part, because key elements of Release 1 software functionality are missing.
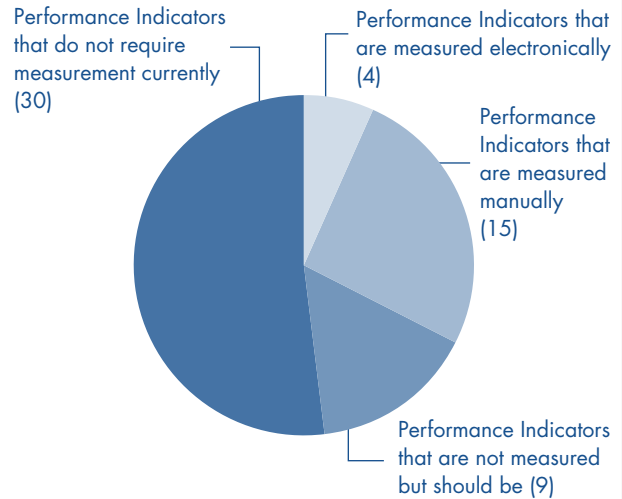
3.20 Where ATLAS measures Performance Indicators, its performance has been good, although in recent months it has found it more difficult to meet some targets because more people are using the DII system. When performance or availability drop below target levels in any month, the Department is allowed to abate payments to ATLAS by reducing the amount that it pays in that month. Between March 2007 and April 2008, the Department exercised this right by penalising ATLAS £130,000 of a possible £250,000, where performance levels had not been met and ATLAS had not taken action to improve the situation. **Figure 19** shows ATLAS' performance against indicators that are being measured and the level of the Department's abatements.

3.21 There are a number of actions that the Department can take to oblige ATLAS to improve its measurement of Performance Indicators.

- When ATLAS fails to measure a Performance Indicator as stipulated in the contract, it is the Department's right to determine that the measure has not been met and to penalise ATLAS accordingly. This mechanism exists to ensure that the contractor has a material incentive to measure all Performance Indicators. The Department has not done this to date. It keeps no record of the penalties it has chosen to forego and does not, therefore, make reference to this in commercial negotiations.

- The Department can change the Performance Indicators which count towards Key Performance Indicators, and could, therefore, replace a Performance Indicator that is currently not measured with one that can be. It has not done this to date.

- The Department can change some of the measurement rules to make them easier to measure. It is currently in discussion with ATLAS about doing so, though this might have the result of making the targets easier to meet.

18 Many Performance Indicators are still not being measured

Number of Performance Indicators

Performance Indicators that do not require measurement currently (30)

Performance Indicators that are measured electronically (4)

Performance Indicators that are measured manually (15)

Performance Indicators that are not measured but should be (9)

Source: National Audit Office analysis of Departmental data

3.22 DII users have been concerned by time taken by ATLAS to resolve change requests. The problems occurred in part because the Department had appointed an insufficient number of staff to approve changes before passing them to ATLAS, a problem which has now been resolved. For its part, ATLAS has been managing change requests through inefficient, manual processes, because of the lack of software functionality, including the lack of a proper service catalogue. ATLAS hired additional staff and simplified the manual process, before a new tool was introduced in April 2008 to resolve the problem.

3.23 The Department believes that the transfer of legacy systems to ATLAS on time has brought direct benefits to users of these systems. ATLAS has been good at meeting the contracted performance levels for most legacy systems **(Figure 20)**.

19 Key Performance Indicators and abatements since March 2007

Performance Indicators (PI)   **Month**

Performance Indicators (PI)	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	Total Abatements
Availability	🔴	🔴	🟢	🟢	🔴	🟢	🟢	🟢	🟢	🟢	🟢	🔴	🔴	🟢	
PI 1.1	X	X	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🔴	🟢	🟢	🟢	🟢	
PI 1.5	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🔴	🟢	🟢	🟢	
PI 2.1	🟢	🟢	🟢	🔴	🟢	🟢	🟢	🟢	🟢	🔴	🔴	🔴	🟢	🟢	
PI 2.2	X	X	X	X	X	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟢	
PI 3.1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PI 3.2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PI 3.3	X	X	X	X	X	X	X	X	🟢	🟢	🟢	🟢	🟢	🟢	
PI 3.4	X	X	X	X	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	
PI 4.6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Possible abatement (£)	210	260	0	1,700	110	0	0	0	0	123,000	77,885	983	47,866	0	252,014
Abatement applied (£)	210	260	0	1,700	110	0	0	0	0	1,400	77,885	983	47,866	0	130,414

Key

🟢 Indicator measured (either manually or automatically) and target met by ATLAS in month

🔴 Indicator measured (either manually or automatically) but target not met by ATLAS in month

X Indicator not measured

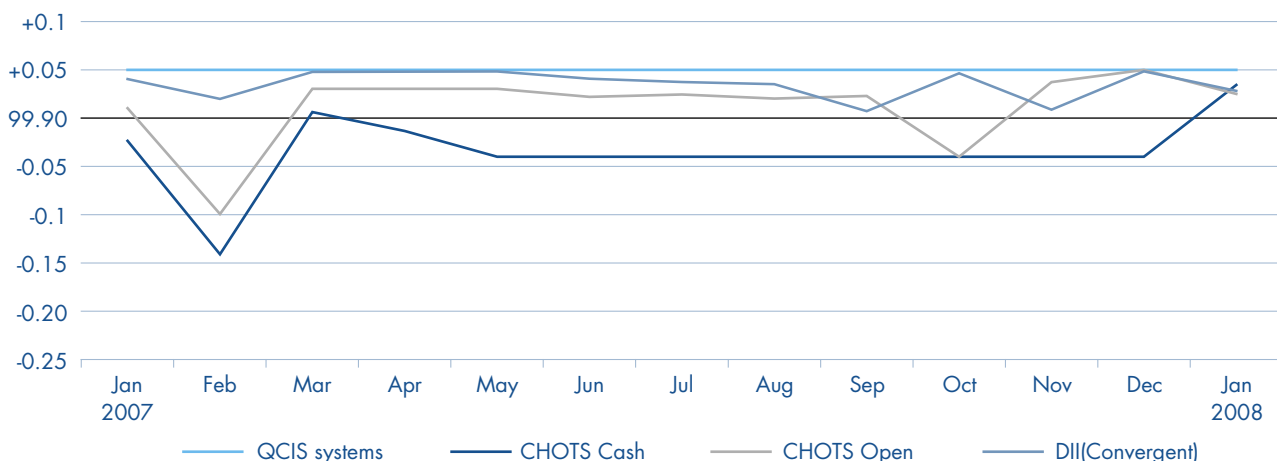*Source: National Audit Office analysis of Departmental data*

NOTES

1 Where ATLAS has not met availability targets in some months, this was because of short-term problems affecting only a small number of users.

2 In January 2008, no abatement was calculated in respect of PI 2.2, which had not been met because of an unusually high volume of calls from users following the Christmas and New Year holidays. The DII Programme Board decided that this was an unusual occurrence and did not seek to penalise ATLAS.

20 The service provided to users of legacy systems is at least as good as it was before

Performance indicator measuring availability of access devices

Monthly performance

QCIS systems — CHOTS Cash — CHOTS Open — DII(Convergent)

Source: National Audit Office analysis of Departmental data

APPENDIX ONE

Additional conclusions and recommendations

All conclusions refer to the DII Programme, while a number of recommendations, particularly those regarding planning and preparatory activities, are addressed more widely to those in defence who are delivering or contemplating programmes of a similar scale or scope.

1 The work conducted by the Department over several years to understand better the state of its existing computer systems and to reduce the number of software applications that run on them was successful and has helped the DII Programme to avoid pitfalls that it would otherwise have faced. Consequently, the Department's requirement, in terms of software functionality and levels of service, has changed very little since contract let. **Managers of similar programmes should devote sufficient resources to understanding the existing situation before deciding what detailed changes they need to make to their computer systems, as this will help them to avoid the cost escalation caused when changes to requirement are made after contract signature.**

2 The Department developed a sensible commercial strategy. In particular, the incremental approach has helped to drive the performance of the contractor in advance of decisions about the award of future work and has allowed the riskiest parts of the programme to be dealt with separately.

3 The 'No Single Point of Failure' consortium structure which the Department mandated, whereby the prime contractor and each subcontractor was shadowed by another member of the consortium which could step in to do their role, was a creative way of protecting against catastrophic underperformance or the withdrawal from the Programme of any one company.

4 In funding DII, the Department has acknowledged that the Programme is more risky than average and has sensibly devoted additional resources to mitigate risks and address issues when they arise. The full amount of risk funding has been used by the Programme in each financial year to date. **To help it manage its resources as funding becomes tighter in future, the Department should monitor closely the outcome of its interventions to mitigate risks and address issues to identify where this has been most effective.**

5 **Managers of similar programmes should consider the potential benefits of carrying out a pilot with a preferred bidder before or shortly after signing a contract. In particular, this will help managers to see where delivery methodologies are ill-suited to realities on the ground. For instance, fixed or highly rigid methodologies are unlikely to be appropriate in organisations which are very heterogeneous and subject to a high degree of organisational change.**

6 Given the difficulties experienced by the Department in the use of a Fixed Rollout Methodology, the Department and others should be wary of accepting such a methodology in a complex environment. **Without taking back risk onto themselves, managers of similar programmes need to assure themselves, early in the implementation phase, that the contractor has adequate and appropriately skilled programme management resources, suitable planning procedures, and proper management information to aid successful delivery.**

7   The time saved by cancelling the start-up period at the beginning of the DII Programme was more than lost in later delays. **The Department and managers of similar programmes should identify early on whether a start-up period will be necessary and, if so, should not cancel or curtail it.**

8   The partnering ethos that has been observed by senior managers in both the Department and ATLAS is strong, and this has helped the DII Programme to work through difficult problems when they have arisen. In particular, the Department has done well to keep key personnel in post for longer than is usual practice. **As the time approaches for staff in a number of key posts to move on, the Department should plan for their succession carefully. The Programme should also do more to develop a partnering ethos at lower levels of the Department and ATLAS.**

9   **Managers of similar programmes should either include incentives for the early closure of legacy systems within their contracts or should retain sufficient resources in their own teams to identify these efficiencies from the time when work starts.**

10   Although the results of a recent survey of current DII users were encouraging, one of the main areas of dissatisfaction identified was the inadequacy of the DII service catalogue, through which new user accounts and additional services are ordered. **ATLAS should put additional resources into improving the quality of its service catalogue and, in particular, should focus on making it a fully electronic service as soon as possible.**

APPENDIX TWO

Study scope and methodology

1 This Appendix sets out the aims and scope of our examination of the DII Programme, and the methodologies we used in the course of the study.

The aim and scope of the study

2 The aim of our study was to assess the progress made in achieving the Department's vision of a single information infrastructure. Our assessment examined the Department's overall strategy for delivering DII, the levels of financial investment committed and progress in implementing the system, including an analysis of the benefits realised to date. Our work centred on the Programme's main challenges:

■ the rollout of DII terminals to United Kingdom defence sites;

■ the development of the core software functionality for desktop users;

■ accessibility to the Department's applications through DII;

■ the closure of legacy systems; and

■ the development of a DII solution for the deployed environment.

3 We concentrated on the progress of DII in the period after the signing of the ATLAS consortium contract in March 2005. For the period prior to this, we considered only those activities that directly influenced the approach of the Programme going forward, such as the rationalisation of redundant software applications and the lessons learned exercises conducted with similar programmes in the United Kingdom and overseas. We considered the Department's overall commercial approach but did not examine the tendering and procurement process.

4 We examined how the DII Programme is supporting other business and IT change programmes but have not audited these programmes or the delivery of their benefits.

Methodology

5 We conducted semi-structured interviews, site visits, a review of Departmental documentation and quantitative analysis of both financial and non-financial data between October 2007 and April 2008.

Semi-structured interviews and site visits

6 We conducted around seventy semi-structured interviews with key individuals and groups responsible for delivering DII, as well as representatives of the many stakeholder groups with an interest in its outcome **(Figure 21 overleaf)**. We also ran a focus group with Business Unit Points of Contact at Abbey Wood in December 2007 to understand staff experiences during the migration to the new system.

Other field visits

7 We undertook two visits to see demonstrations of working DII terminals in December 2007:

■ We saw a DII demonstrator terminal developed for the operational environment, at the Land Systems Reference Centre, Blandford; and

■ We saw a demonstration of the Joint Personnel Administration application during a visit to Worship Street Territorial Army Centre in London.

Review of departmental papers

8 We reviewed over two hundred Departmental and ATLAS documents. These included contracts, strategies, meeting minutes, slide packs, performance reports, programme plans and schedules. We also examined the various presentations of management information and the programme and project logs that tracked risks, benefits, issues and change requests.

9 On behalf of the National Audit Office, Accenture assessed the management arrangements used to deliver DII, establishing how closely they adhered to good practice. Conducted primarily through an analysis of Departmental papers and supplemented with a small number of interviews, Accenture's work led to a number of recommendations for the Department. These have been summarised in Appendix 5 of this report.

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21 List of semi-structured interviews

Senior Responsible Owner Team
- Senior Responsible Owner
- Deputy Director, Senior Responsible Owner
- Programme Director
- Members of the Programme Board
- Affordability team, including Detica consultants
- Benefits and support team

Integrated Project Team
- Integrated Project Team Leader
- Commercial and contract management specialists
- Estates Management for the North and Deployed
- Estates Management for London and the South East
- Financial management staff
- Programme assurance staff
- Teams with responsibility for the management of change requests, communications, requirements, risks and quality

Top Level Budget Areas
- Royal Navy
- Army
- Royal Air Force
- Defence Equipment and Support
- Defence Estates
- Permanent Joint Headquarters

Senior Stakeholders
- 2nd Permanent Under Secretary, Ministry of Defence
- Director General, Information System Services
- Director General, Resources and Plans
- Director General, Management and Organisation
- DII Non-Executive Director
- Executive Vice President Europe, Middle East and Africa, EDS
- Senior Vice President Europe, Middle East and Africa, EDS
- Deputy Senior Responsible Industry Executive, Fujitsu Services

Defence Change Programme
- Director, Defence Change Programme
- Defence Intelligence Modernisation Programme
- Defence Medical Information Capability Programme
- Joint Personnel Administration Programme

ATLAS
- Chief Executive Officer
- Deputy Chief Executive Officer
- Chief Operating Officer
- Commercial Director
- Chief Technology Officer
- Teams with responsibility for battlespace deployment, security, accreditation and assurance

Other organisations
- British Computer Society
- Gartner

Source: National Audit Office

Quantitative analysis

10   We collected a range of financial data from the Department including DII's Risk Adjusted Whole Life Cost and the funding levels for each contract increment. We also calculated:

■   internal costs of DII to the Department;

■   the Department's expenditure to date, including payments to ATLAS, based on actuals from March 2005 to January 2008, and forecast data for the remainder of 2007-08;

■   the extra cost of extending the life of some legacy systems caused by delays to DII; and

■   the 2007-08 resource costs of DII for each Top Level Budget Area.

11   We also collected non-financial data from the Department including the number of rolled out terminals, changes in staffing levels within the Integrated Project Team, the number of applications progressing through the factory and the performance indicators relating to DII service levels.

International comparators

12   As part of our fieldwork, we visited the United States Department of the Navy and asked a series of questions relating to the Navy Marine Corps Intranet Programme. This faced similar implementation challenges to DII, such as the rollout of large numbers of terminals and the migration of significant numbers of software applications. We were able to question both Navy and Marine Corps officials and representatives of EDS, the prime contractor. As this programme influenced the approach taken by DII, the assistance provided in the United States helped our understanding of the assumptions made by the DII team early in the life of the programme.

Quality assurance

13   Two expert panels reviewed the scope of our fieldwork and the quality of our findings. The first consisted of senior National Audit Office staff with experience in conducting value-for-money studies into large government IT programmes and contract management activities. Its members were independent of the study team and met in September 2007 and March 2008. The second drew on expertise from Dr Mike Rodd, Director of the British Computer Society and from Gartner, who reviewed our findings independently at key points during fieldwork.

Previous National Audit Office publications

14   This report takes account of previous National Audit Office value for money reports, which examined related issues in defence, IT, contract management and risk. These reports were:

■   *Improving the disposal of public sector Information, Communication and Technology Equipment* (HC 531, 31 July 2007).

■   *Delivering successful IT-enabled business change* (HC 33-I, 17 November 2006).

■   *Improving IT procurement: The impact of the Office of Government Commerce's initiatives on departments and suppliers in the delivery of major IT-enabled projects* (HC 877, 5 November 2004).

■   *Managing Risks to Improve Public Services* (HC 1078-I 22, October 2004).

■   *National Savings and Investments' deal with Siemens Business Services, four years on* (HC 626, 8 May 2003).

■   *New IT systems for Magistrates' Courts: the Libra project* (HC 327, 29 January 2003).

■   *Driver and Vehicle Licensing Agency (DVLA) Appropriation Accounts 1999-2000* (HC 25-III, 14 February 2001).

The Scope of the DII Programme

	Increment 1	Increment 2			Increment 3		
Original Increment Structure	Increment 1	Increment 2			Increment 3		
Current Increment Structure	Increment 1	Increment 2a	Increment 2b	Increment 2c	Increment 3a	Increment 3b	Increment 3c
Increment Scope	Fixed DII infrastructure, including on Royal Navy vessels, to replace legacy systems with DII at Restricted and Secret levels. The provision of a managed service for DII and legacy systems.	Fixed DII infrastructure to replace legacy systems with DII at Restricted and Secret levels. The provision of a managed service for DII and legacy systems.	Deployable systems and services	Top Secret systems and services in the fixed and deployed environment	Fixed infrastructure to replace legacy systems with DII at Restricted and Secret levels	Further deployable and Top Secret systems and services, as required.	
Contract award date	21 March 2005	29 December 2006	27 September 2007	Increments not yet contracted			
Number of terminals including DII(C) (18,500)	72,000 (69,200 after the Medium Term Work Strands) (62,800 excluding maritime rollout)	44,000	3,332 terminals. 1,608 to be deployed	Scope of Increments not yet defined			
Number of users	201,500 (195,100 after the Medium Term Work Strands)	57,500	Undefined				
Number of sites	680 locations, including Royal Navy vessels	660 locations	78 different Headquarters plus Royal Navy vessels				

APPENDIX FOUR

Legacy Systems and Business Change Programmes

1 The following legacy systems are to be transferred to ATLAS for management and then replaced by DII.

Legacy system	Description	Delivery Partner
Arrow LAN	Restricted computing environment in Northern Ireland, providing internal e-mail and general office functionality	In-house
NavyStar	Local Area Network providing administrative IT tools in most Royal Navy ships, submarines and Royal Fleet Auxiliary vessels	Fujitsu
NavyNet	Managed, land-based, restricted network infrastructure for the Royal Navy and Royal Marines	In-house, with support contract with Unisys
EMS	Inter-personal mail and directory services working at Restricted and Secret levels	Steria and in-house
QCIS	Infrastructure parts of Communication and Information Systems	EDS
CHOTS	Generic, multi-location system capable of working at Restricted and at Secret levels	Fujitsu
NavyAdmin	A collection of disparate administrative systems for Royal Navy users	In-house
DII(C) Bath Estates	In-house support service for users in Bath Estate	In-house
NOA	Office automation system for Navy Air Stations	In-house
UNICOM	Army computing system providing personnel, training and administration applications	Steria
CIS (Central)	Desktop support and server management to users in Ensleigh	In-house
CIS (West)	Support service to NavyAdmin and NavyNet user communities	In-house
CIS (South)	Support service to NavyAdmin system and collection of other disparate administrative systems for Royal Navy users	In-house
CIS (North)	Support service to defence IT users in the North	In-house
DFDP OANET	The Departmental Financial Management System (DFMS) which provides planning and financial management solutions	In-house
DBA OANET	Support service to the Defence Bills Agency (DBA) Headquarters at Mersey House Liverpool	In-house
RAF Kinloss	Support service to Station Net, stand alone and mobile PCs and their supporting networks	In-house
RAF Brize Norton	Support service to Station Net users in RAF Brize Norton	In-house
RAF Waddington	Support service to Station Net users in RAF Waddington	In-house
RAF Cottesmore	Support service to Station Net users in RAF Cottesmore and all scaled stand alone PCs and their supporting networks	In-house
LCSS(R)&ISIS	LCSS(R) and ISIS are the two principal information systems supporting HQ Land Command Army units	In-house

Legacy system	Description	Delivery Partner
PPANET	The PPANET IT support team provides support services to the Pay and Personnel Agency (PPA)	In-house
DESONET	The DESONET IT support team provide support services to the Defence Export Services Organisation (DESO)	In-house
BDS (Washington)	Support service to defence IT users in BDS (Washington)	In-house
SAI & BIOT	Support service to users in Southern Atlantic Islands (SAI) and British Indian Ocean Territories (BIOT)	In-house

2   The following are the main business change programmes that DII is required to enable. We have not audited these programme or the benefits delivered by them.

Name of Business Change	Description, including information on savings enabled to date and potentially in total, and the nature of the dependency on DII	Date on which it was planned to be implemented
Business change applications requiring DII		
DII is required to provide computing facilities for designated users to allow them to access the application.		
Joint Personnel Administration (JPA)	A single personnel and pay application for the three Services with many self-service functions. Total gross savings of £972 million are expected over the ten-year DII contract.	November 2006
Joint Asset Management and Engineering Solution (JAMES)	JAMES 1, the first phase of the programme, is an asset information application for land-based vehicles. Total gross savings of £239 million are expected over the ten-year DII contract from JAMES 1.	March 2009
Management of Materiel in Transit (MMiT)	DII is required to provide a system which will result in improved demand satisfaction, NATO inoperability, interfacing with key industry players and improved cost management in operational theatres. Total savings are unclear.	January 2008
Civilian Human Resources transformation programme	The transformation programme comprises four change programmes: Human Resource Service Delivery (HRSD) Programme; Human Resource Management System (HRMS); Future Pay; and Pay and Personnel Modernisation programme. These will result in clerical staff reductions from the centralisation and simplification of services, and the introduction of user self-service. Total gross savings of £193 million are expected.	July 2007 April 2008
Defence Intelligence Modernisation Programme (DIMP)		
Defence Medical Information Capability Programme (DMICP)	An application for the defence primary care medical community, enabling medical records to be stored centrally and transmitted electronically. Total gross savings of £17 million are expected.	June 2008
Air Movements Operations (AMO)	Replacement of the Air Movements Information System, a suite of four applications, with a single application. Total gross savings of £56 million are expected.	April 2009
High Grade Messaging	Early work has indicated that DII will be the most cost-effective method to deliver a new formal messaging capability. Total savings are unclear.	Legacy systems can run until 2015 without further investment
Joint Command and Control Support Programme (JC2SP)	An applications package to allow better information management and exploitation in the joint battlespace. Total gross savings of £24 million are expected.	First user required by September 2008

Name of Business Change	Description, including information on savings enabled to date and potentially in total, and the nature of the dependency on DII	Date on which it was planned to be implemented
Business rationalisation requiring new IT infrastructure		
DII is required to provide a common computing system for users in the new body or on the renovated site.		
The creation of D(E&S)	The collocation and merger of the Defence Logistics Organisation and the Defence Procurement Agency Savings are expected from reducing the estate and staff numbers; although none of these are directly attributable to DII	Phase 1 completed by 2009 Phase 2 completed by 2011
Project HYPERION	The merger of the two Top Level Budget areas that run the Army, Land and Adjutant General Command, to form a single headquarters Savings of £48 million are expected from reducing the estate and staff numbers, including from the automation of common tasks	April 2008 to mid-2010
Project CATARA	The renovation of RAF Brize Norton. DII will provide computer services to users which will facilitate collaboration with offsite communities involved in air transport. Total benefits are unclear.	By 2012

APPENDIX FIVE

Review of DII's governance structure and management arrangements

The DII Programme's ways of working and their adherence to good practice

1   The National Audit Office commissioned from Accenture an assessment of the management arrangements used to deliver DII, to establish how closely they adhere to good practice.

2   We began the assessment with a review of programme and project documentation to identify the key enablers driving programme delivery. The strategies for the management of stakeholders, risks, issues and benefits were determined along with the structure and configuration of the governance arrangements. In parallel, we conducted interviews with senior members of the DII Programme to gain greater insight into particular areas and to raise the level of our overall understanding. The combination of these activities established a picture of DII's main delivery mechanisms, which we compared with approaches recommended as good practice. OGC guidance was the main source of good practice and in particular the methodologies Managing Successful Programmes, PRINCE2™ and the Management of Risk **(Figure 22)**.

| **22** | Good practice guidance used to assess DII delivery processes |

Managing Successful Programmes provides a formal process for delivering strategic business change. It includes key principles for effective leadership and guidance for the management of risks, issues, benefits and stakeholders. Its framework specifies the roles and responsibilities within a programme and the governance arrangements that ensure ownership and accountability.

PRINCE2™ is a project methodology designed to support the process of bringing together skills, resources and technology to achieve a business objective. It focuses on the Business Case, which drives all the project management processes from project start up through the delivery of benefits to project closure. As a programme is a coherent set of projects, there is a close link between PRINCE2 and Managing Successful Programmes.

M_o_R® (Management of Risk) is a framework for designing internal controls that embed risk management within an organisation's various functions, including programme and project management. It provides tools and techniques to improve decision making, by raising an organisation's visibility to its exposure to risk.

Source: National Audit Office

3 The DII Programme also makes use of tools to support the processes of benefits modelling, risk management and change request tracking **(Figure 23)**.

Summary of findings

4 The scope of the review covered the following six main areas of programme delivery:

- Governance and structure

- Stakeholder management

- Benefits management

- Planning and control

- Risk and issue management

- Quality management

5 Good practice is in evidence within most of these areas. The governance arrangements and management structures benefit from strong leadership underpinned by a clear programme vision. Benefits management is comprehensive in its approach and proactive in its protection of benefits. Stakeholder management, while split between the Senior Responsible Owner, the Integrated Project Team and the ATLAS consortium, is nevertheless well supported by the Executive Leadership. Planning and control processes routinely assess risks and dependencies, and widely engage with key stakeholders. Risk management is comprehensive, robust and well supported with tools that generate clear management information. In the area of issue management, however, the intended close integration between risk and issue management had not materialised at the time of the review. Since the start of 2008, a revised Issue

Management Strategy has been issued, which aims to link issues more closely with risks through a joint tool. It is expected that new processes will take some months to bed in. Quality management has grown as an activity within the Integrated Project Team recently, but no overall Quality Management Strategy exists for the entire programme. While there are areas where processes operate differently from recommended ways of working, our conclusion is these exceptions do not pose a risk to the successful delivery of the Programme.

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23 The tools used to support key areas of the DII Programme

The **Lucidus Integrated Performance Measures Toolset** is a visualisation aid, enabling programme teams to model planned outcomes against criteria for affordability and capability. Stakeholders can visualise how best to derive value, the dependencies between benefits, and the resources required for assuring delivery.

The **Active Risk Management Tool** manages the risk log. As well as storing typical risk identifiers and attributes, it enables the categorisation of risks based on their project, programme and strategic impact. This improves the visibility of risks for nominated review boards and refines the process of escalation.

The **Requests for Change and Task Recording Database Management Information System (RATTMIS)** captures and tracks the Programme's Requests for Change. As well as acting as a central repository, it stores a log of performed actions, assignment history and recommendations for taking the proposed change forward. Intended to protect Programme delivery, it supports the critical assessment of each request against the DII Programme's planned migration sequence.

Source: National Audit Office

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6   The strengths of each process area, and areas that would benefit from
further development, are summarised below:

Governance and Structure

Description — Governance defines the leadership structures, accountability and reporting lines needed to direct and control a programme.

Areas of Strength
- Leadership is evident from a strong and visible executive.
- A clear vision exists and is easy to understand.
- Well-defined management structures ensure the representation of key stakeholders within the decision-making process.
- Management structures remain relevant despite a changing landscape of stakeholders. Revisions are driven by lessons learned exercises conducted within the programme.
- The DII Programme works with the supplier through a formalised partnership model.

Areas of Development
- The DII Programme should continue to conduct lessons learned with other large programmes in a similar way to the engagements undertaken at the beginning of the programme.
- DII should review the various boards, management forums and working groups that now exist to ensure all activities have appropriate oversight, and the terms of reference of each is appropriately distinct so avoiding overlap and duplication of effort.
- The Partnership Maturity Model[1] has received a positive response from senior members of the Integrated Project Team. The programme should expand its coverage to the lower levels of management to strengthen further the close working relationships.

Stakeholder Management

Description — Stakeholders are individuals or groups that have an interest in the outcome of a programme. Where significant change is occurring, there will be those that are supportive of change and those that oppose it. The management of stakeholders requires the formulation of a strategy that identifies all potential stakeholders and attempts to address their individual concerns and needs.

Areas of Strength
- The Executive Leadership has used the opportunity management boards have presented to become involved in stakeholder management. For example, the Programme Director chairs the Joint User Working Group, a forum charged with addressing issues raised by the user community.
- The Senior Responsible Owner, the Integrated Project Team and the ATLAS Consortium conduct stakeholder management at multiple levels. The Integrated Project Team and the ATLAS Consortium's Delivery Executives also tailor communication activities that target different groups of stakeholders at different levels and locations.
- The DII Programme applies lessons learned to its Communication Strategy, after users have provided feedback and a review has been completed of communication methods used during recent site migrations.

Areas of Development
- The DII Programme has a mechanism to analyse each stakeholder's level of interest and influence. To ensure this information accurately reflects the most up-to-date position, the Programme Plan should include a schedule that periodically repeats this analysis.
- DII should undertake a review of the stakeholder and communication strategies to ensure there is an overall structure to the engagement, and existing activities are complementary and consistent.
- The timeline for communication activities extends only to June 2008 and is in draft form. It should look beyond June 2008 and be formalised in the context of the overall revision of the Stakeholder Management Strategy.

Benefits Management

Description — The realisation of benefits is the primary justification for undertaking a programme. A Benefits Management Strategy takes the description of the programme's desired outcomes and formulates a range of benefits. Processes then set out the quantification, measurement and cost of realisation, leading to a framework designed to track the benefits as the programme progresses.

Areas of Strength	■ Benefits management is clear and comprehensive. Every benefit has a profile that includes a description, the 'before' and 'after' states, and the forms of measurement – direct financial, indirect financial, direct operational, and indirect operational.
	■ DII makes effective use of the Lucidus Integrated Performance Measures Toolset, by using it as a single reference point for managing all benefits, and for proactively modelling benefits at risk.
	■ The DII Programme collaborated with Top Level Budget areas to improve the measurement of enabled operational benefits through the better establishment of baselines, and the measuring of progress over time.
Areas of Development	■ A Benefits Realisation Working Group brings together the representatives from the stakeholder community to drive forward the process of benefits management and the underpinning work streams. This represents just one area where the programme engages with stakeholders. The review of stakeholder and communications strategies, recommended in the previous section, would ensure contact between stakeholders and the programme is consistent, and stakeholders are neither over-burdened nor under-represented.

Planning and Control

Description	Planning and control considerations determine the work that needs doing and when it will start, how long activities will take to complete, who will undertake them, how they will be managed and the risks that may affect progress. The Programme Plan brings these aspects together.
Areas of Strength	■ The Integrated Project Team's enlarged role in assuring the ATLAS consortium's plans has added a level of control. Expanding programme assurance gives the Integrated Project Team better visibility, which increases both their ability to review progress and intervene where necessary.
	■ The Integrated Project Team has successfully revised key management information. A recent supplement to existing information, containing critical success factors and a forward-looking analysis, has provided a more focused commentary covering the forecast situation one and three months in the future.
	■ The Integrated Project Team assures the programme timetable by consulting widely among key stakeholders and reviewing risks and dependences.
Areas of Development	■ In the absence of a distinct blueprint document, no clear link exists between DII's deliverables and the future vision and key drivers. Without a direct mapping, there is a risk that coverage is incomplete and the deliverables will not achieve the full vision.
	■ The Through Life Management Plan should include programme management activities, for example when specific stakeholder, risk or quality management activities will take place. Current programme planning includes only delivery or migration dates.

Risk and Issue Management

Description	During the life of a programme, there will be situations that arise that adversely affect its progress. Foreseeing the potential impact of these events is the process of risk management. When undesirable situations do occur and a risk becomes an issue, the mitigating action that contains and manages its impact is the process of issue management.
Areas of Strength	■ DII's Risk Management Strategy clearly describes the specific risk management activities, and lays down the critical success factors for the effective management of risk. The process is robust, well-briefed and well-managed.
	■ The Active Risk Management tool provides a robust facility that supports the identification, management, tracking and mitigation of risk. It is also effective at producing clear management information.
	■ The DII's Issue Management Strategy describes a well-defined end-to-end process that links with risk management and with the Joint Issues Management Plan. However, during day-to-day operations, issue management experienced problems with excessive numbers of minor issues escalated to strategic forums. Within the DII Programme, a clear commitment exists to drive through improvements to this process.
Areas of Development	■ DII should continue to complete its revision of the Issue Management Strategy to ensure closer integration with the risk management process.

Quality Management

Description

Quality management is a continuous process designed to guide programmes towards improved performance. Its purpose is to sustain the satisfaction of customers both internal and external, push explicit improvement goals for critical process areas, seek to prevent non-compliance with product and service standards, and inculcate a sense that quality assurance is the responsibility of every member of the team.

Areas of Strength

- Parts of DII have benefited from the sharing of lessons learned. For example, a documented process exists for sharing the lessons learnt from implementing the DII (Convergent) Programme. In addition, the challenges encountered in rolling out DII to larger sites such as Abbey Wood fed in to the planned approach for future migrations.

- Quality management initiatives such as the Governance of Excellence through Communications, Knowledge and Oversight (GECKO) forum implement and monitor quality improvement projects.

Areas of Development

- DII should conduct a review of quality management at programme level to ensure there are adequate processes, plans and levels of responsibility for quality in both the team supporting the Senior Responsible Owner and the Integrated Project Team.

- The DII Programme should ensure that programme level documents are up to date and have attained an appropriate standard in terms of content and presentation.

- DII should have a more consistent approach to the creation of lessons learned and the sharing of outcomes.

NOTE

1   The Partnership Maturity Model is a tool that measures the state of the relationship between the Integrated Project Team and the ATLAS delivery consortium. In five areas (needs & business drivers, flexibility, people & communications, meeting obligations and continuous improvement), Partnering Champions on both sides assess the state of their relationship with their counterpart using a scale of 1 to 5, where 1 represents 'beginning' and 5 represents 'excelling'.

APPENDIX SIX

Planned and actual rollout of DII terminals

Month	Terminals Delivered	Pre-Contract Plan	Latest Plan
January 2006	40	1,030	
February 2006	0	4,759	
March 2006	0	10,667	
April 2006	0	10,451	
May 2006	25	10,359	
June 2006	2	12,506	
July 2006	61	7,200	
August 2006	69	11,988	
September 2006	86	4,723	
October 2006	336	2,412	
November 2006	206	1,956	
December 2006	936		
January 2007	827		
February 2007	511		
March 2007	801		
April 2007	119		
May 2007	177		
June 2007	892		881
July 2007	803		958
August 2007	4,083		4,363
September 2007	3,115		4,503
October 2007	2,823		3,750
November 2007	3,553		4,493
December 2007	2,820		3,858
January 2008	1,788		3,693
February 2008	1,176		4,671
March 2008	2,140		7,041
April 2008	1,626		5,992
May 2008	2,639		7,085
June 2008	2,087[1]		5,230

NOTE

1 Terminals delivered by 20 June

APPENDIX SEVEN

DII Costs and Funding

1   This Appendix provides additional information on the Programme costs and funding of DII to that written in the main body of the report.

Annual Programme Management Costs

2   The Department has forecast that the cost of the programme management function that it has retained for implementation, including contract management, will be £312 million over the ten year life of the current programme. The current annual cost of the DII Programme Team is £45 million, although this is expected to reduce as staff numbers reduce.

3   The Department's Top Level Budget Areas, including the three Services, also incur additional costs estimated at £7 million per year to manage the requirements of implementation, as shown in **Figure 24**. These costs are not expected to be ongoing through the life of the Programme.

Cost of Legacy Systems

4   Delays in implementation, the use of contingent solutions and reduced functionality due to software delays have resulted in a higher footprint of legacy systems than forecast at contract let. Consequently the cost of legacy systems has been higher than expected.

5   The Department has paid ATLAS approximately £300 million up to September 2007 for the management of legacy systems that have been transferred to it. This is considerably higher than the lifetime cost of £164 million forecast at contract let for legacy systems transferred to ATLAS with the three increments that are currently on contract.

24	Annual resource requirements to manage DII programme rollout for Top Level Budget Areas						
	Land Command	Fleet Command	Air Command	Joint Command	Central MoD	Defence Equipment and Support	Total
Full Time Equivalent Staff	4	8	19	7	12	40	91
Estimated Cost to the Department (£'000)	369	627	1,541	1,031	631	2,125	6,323
Cost of Consultancy Resources (£'000)	772	–	–	–		–	772
Total annual cost (£'000)	1,141	627	1,541	1,031	631	2,125	7,095

Source: National Audit Office analysis of the Department's data

6   The Department has forecast that the total cost increase of legacy systems between programme approval in March 2005 and the approval for Increment 2b in March 2007, including those managed in-house prior to their transfer to ATLAS, is £445 million over the ten-year lifetime of the programme. £327 million of this cost increase is estimated to be due to slippage in the implementation of DII which has resulted in legacy systems being required to run for longer than originally planned and the remaining £117 million is due to the number of terminals on legacy systems being higher than anticipated.

7   Some business areas have had to retain legacy system terminals after they have received DII due to the delays in developing DII software releases, in particular an accredited Secret solution, and processing applications so that they can be accessed through DII. The Department is unable to estimate what proportion of the £117 million cost increase, attributed to the larger than anticipated legacy footprint, is due to the software and applications problems experienced by the programme.

8   The estimated cost of providing additional contingent solutions, due to delays in DII implementation, is £12 million for the Joint Personnel Administration application and there is a forecast cost of £3 million for the Defence Medical Information Capability Programme.
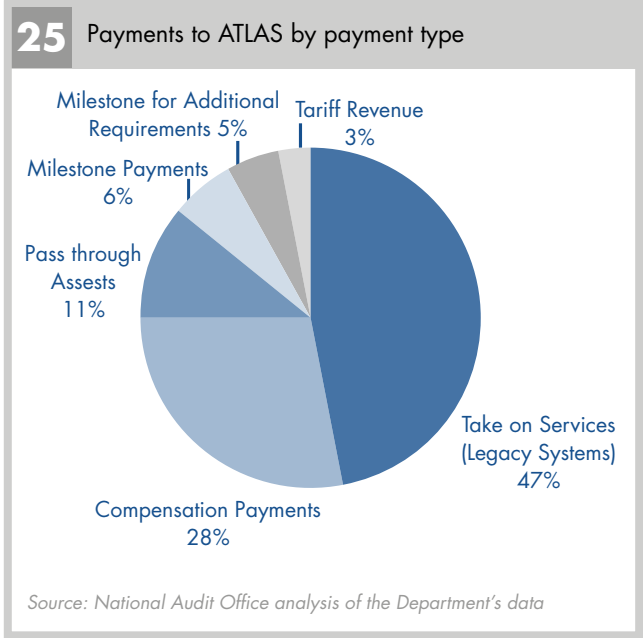
Payments to ATLAS

9   **Figure 25** shows the payments made to ATLAS to date, by type. ATLAS has received £20 million from DII user account and terminal charges; only three per cent of the revenue received under the contract. A further £2 million in retention payments is held by the Department until it receives the necessary paperwork confirming that all required work, including removal of legacy systems, has been completed and site infrastructure designs have been documented. ATLAS has been slow at completing the paperwork required to release retention payments.

10   Milestone payments totalling £77 million have been made to ATLAS up to September 2007. These comprise payments for Increments 1 and 2a and early start activities on Increment 2b. The milestones also include payment for additional requirements, such as the J1J4 Interim Operating Solution and project OVERTASK, and for the provision of contingent solutions to enable other defence change programmes to be delivered.

11   The Department has made compensation and rescheduled payments totalling £202 million. These payments are for the Department's share of ATLAS' additional costs and lost revenue due to the delayed implementation of DII, based on an agreed level of responsibility for the delay.

Changes to the ATLAS Payment Structure

12   The Department added a number of milestones, which are detailed in **Figure 26**, in the first year of the contract to pay ATLAS for activities that it was contracted to undertake, in recognition of the reduced revenue that it received. These led to payments totalling £11 million by contract amendment, on the agreement that this amount would be recovered from future payments to ATLAS. The Department also split some early milestone payments into constituent parts to enable payment to be made to the contractor earlier.

25   Payments to ATLAS by payment type

Milestone for Additional Requirements 5%
Tariff Revenue 3%
Milestone Payments 6%
Pass through Assests 11%
Take on Services (Legacy Systems) 47%
Compensation Payments 28%

Source: National Audit Office analysis of the Department's data

26   Milestones were added in the first year of the contract

Additional Milestone	Requirement
Single Point Of Contact Integration Activities	Integration activities for the Single Point of Contact completed to March 2006
Take on Service Plans	All plans for legacy systems complete, delivered and accepted by the Authority on the contract Vesting Day
Take on Service Transition	The successful transition and delivery of Increment 1 legacy systems in year 1 of the contract
Asset Procurement	Provision of an asset procurement service in year 1 of the contract

Source: National Audit Office analysis of the Department's data

13   The contracted payment mechanisms for Increments 2a and 2b contain a significantly greater proportion of payment by milestone than Increment 1. This enables the Department to retain and extend the banded user account and terminal charges for DII agreed in the contract because ATLAS will recover more of its investment in the infrastructure for Increments 2a and 2b through milestone payments. The milestones are loosely linked to performance delivery so that ATLAS continues to retain the financial risk of implementation delays. For example, ATLAS received a payment of £10 million for the first terminal installed at Abbey Wood and a further £5 million after it had installed 3,000 terminals. Future increments may include a greater proportion of payment by milestone, particularly if there are further delays in placing these increments on contract.

The Contractual Compensation Process

14   ATLAS is contractually obliged to issue the Department with a Delay Notice whenever a delay to the programme occurs. If the delay has a financial impact ATLAS subsequently submits a Compensation Event Notice providing details of the additional costs and lost revenue associated with the delay. This forms the basis of negotiations between ATLAS and the Department to agree relative degrees of responsibility for each delay and reach a financial settlement based on the agreed culpability of the Department.

15   To date, commercial negotiations over Delay Notices have been protracted which has resulted in a loss of evidence to support the claims made on both sides. In future, the Department will require ATLAS to submit costed Compensation Event Notices within six months of issuing a Delay Notice.

Avoiding Future Costs

16   **Proposed Work to Facilitate Legacy System Closure.** As stated in Part 3 of the report, the Department proposes to oversee a number of projects, which will be undertaken by ATLAS, to achieve net cost savings of £16 million. ATLAS will be paid by the Department for the costs that it incurs on the approved work. Details of these projects are given in **Figure 27**. These projects are part of the work that the Department is undertaking to keep the programme within approved funding.

27 Projects for early legacy system closure

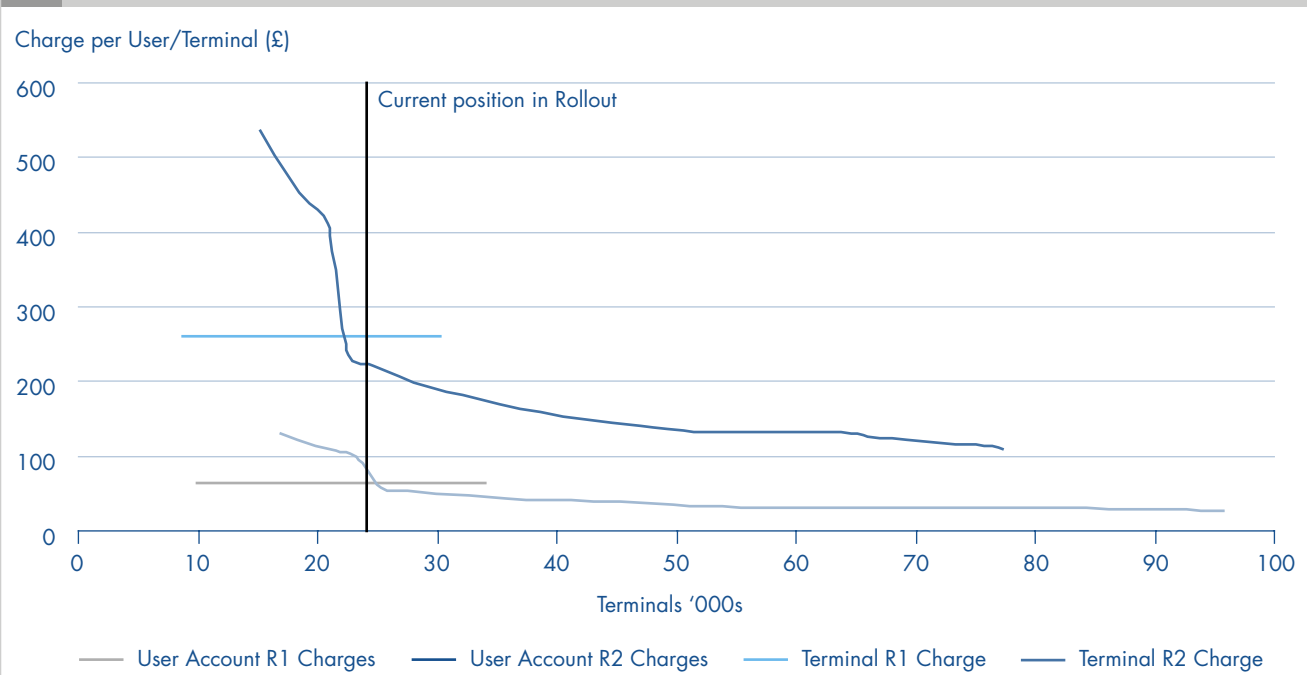| System	Cost Saving Activity	Cost (£'000)	Estimated Savings (£'000)	Net Savings (£'000)
Projects for Optimised Closure				
Savings to be achieved on CHOTS, UNICOM, EMS, QCIS, NavyNet and other Increment 1 systems through accelerating the closure of legacy systems so that it occurs no more than 90 days after DII has been installed and through reducing the level of residual service required for each system. This project is a pre-requisite to achieving the discrete project cost savings identified below.				
Sub-Total		2,800	10,750	7,950
Discrete Projects				
CHOTS	Accelerated closure of a domain through minor changes to the migration sequence to bring forward three sites required to close the domain.	250	965	715
CHOTS	Accelerated closure and rationalisation of core nodes.	1,390	5,305	3,915
UNICOM	Removal of legacy printers through the introduction of a DII printer solution.	54	245	191
UNICOM	Accelerate the delivery of a central UNICOM server to avoid funding server and operating system maintenance.	150	300	150
UNICOM	Eliminate cable maintenance charge and pay for cable fixes only as they are required.	nominal	480	480
EMS	Accelerate the closure of EMS-managed Local Area Network so that the contract does not need to be renewed in April 2009.	120	3,000	2,880
Sub-Total		1,964	10,295	8,331
Total estimated costs and savings		**4,764**	**21,045**	**16,281**

Source: National Audit Office analysis of the Department's data

17   Changing User Account and Terminal Charges.
Release 1 charges are flat-rate charges, irrespective of the volume of terminals delivered, which are 80 per cent of the charges of the highest band for charge for Release 2. Now that programme implementation has increased the Department will start to incur higher charges than it should due to ATLAS' inability to deliver the Release 2 software as shown in **Figure 28**. The Department and ATLAS need to agree how and when the payment mechanism for user account and terminal charges for Release 2 will be applied, as the contract has not made allowances for the incremental way in which software will now be delivered.

28 Charges for a standard user are now higher for Release 1 functionality than they would have been had full functionality been delivered

Charge per User/Terminal (£)

Source: National Audit Office analysis of Departmental data

GLOSSARY

A full description of legacy systems can be found in Appendix 4.

Applications Factory
An ATLAS-operated facility that makes the required modifications to the Department's software applications to enable them to work on DII.

ATLAS
The consortium charged with delivering and operating DII. It consists of EDS, Fujitsu, EADS, General Dynamics and Logica CMG.

Contractor Shadowing
A contingency measure that requires each contractor to be shadowed by a competitor that can step in and deliver the Programme's requirements, if either decides to withdraw or fails as a business.

DAWN
A legacy systyem known as 'Delivering the Abbey Wood Network' (DAWN) deployed at the Department's Abbey Wood site in the early nineties to provide users with a standard suite of office applications.

Data Centre
A facility for housing computer and telephony equipment used to support the information technology and data requirements of an organisation.

Decision Point Process
An approach to project delivery that consists of a flexible set of well-defined steps, each actively managed (see Paragraph 2.16).

Defence Equipment and Support
Formed from the merger of the Defence Procurement Agency and the Defence Logistics Organisation in April 2007, it equips and supports the United Kingdom's Armed Forces for current and future operations.

Defence Estates
The agency of the Department responsible for managing the defence estate, including the letting of all new construction and maintenance contracts.

Defence Information Strategy
A plan endorsed by the Defence Management Board that outlines the Department's desired capabilities around the use, availability and quality of information including objectives for raising the competences of military and civilian personnel in the areas of information exploitation.

Defence Management Board
The most senior non-ministerial committee within the Department, it provides leadership and strategic management of defence with the goal of maximising capability.

Deployed Demonstrator
A prototype DII terminal designed for deployment in the operational environment.

DII (Convergent) System	A short term IT solution providing users with greater functionality in the period between legacy systems becoming no longer fit-for-purpose and the Department finalising its requirements for the DII Programme.
EDRMS	Electronic Document and Records Management Systems manage documents through their lifecycle. Such systems track the changes to documents over time along with recording which user was responsible for each new version. They also enable a document owner to control access and distribution.
EMS	Electronic Messaging Service is a means of providing a text-based real time communication service to the Army, and parts of the Royal Navy and Royal Air force.
Executive Review	A forum comprising only the most senior members of the DII Programme, it meets monthly to address the critical issues facing the programme.
Fixed Rollout Methodology	A method designed to manage the installation of DII at defence sites. It is based on the proposition that each site can be surveyed, made ready and then fitted with DII equipment within 38 weeks, irrespective of size or condition (see paragraph 2.6).
Gershon Efficiency Savings	Public sector efficiency targets set for departments following the Government's acceptance of the recommendations from a review led by Sir Peter Gershon. The Department agreed to deliver efficiencies totalling £2.8 billion by March 2008.
Governance	The systems and processes put in place to manage and control a programme.
Government Furnished Assets	Government-owned equipment, facilities, information or resources loaned to a contractor free of charge to assist in the completion of a contract.
Increment	A clearly bounded portion of the DII Programme delivered under a separate contract amendment.
Information Management Maturity	A model that measures the non-financial operational benefits through better ways of working that follow the delivery of DII.
Integrated Project Team	A team of civilian and military personnel responsible for managing an item of equipment from its inception to its disposal.
J1/J4 Interim Operating Systems (IOS)	A system that enables material classified as Restricted to be handled in deployed environments (see Box 5).
JAMES	Joint Asset Management and Engineering Solution is a software-based process application that supports the Army's management of its equipment.

Joint Personnel Administration Programme	A single personnel and pay administration system for the Royal Navy, Army and Royal Air Force.
Joint User Working Group	A forum chaired by the Programme Director that addresses issues raised by the user community.
Migration Sequence	The order in which United Kingdom Defence sites will receive DII.
MMiT	Management of Materiel in Transit represents the development of an end-to-end control process for consignment management and tracking. Its goal is to optimise the supply chain to ensure operational priorities dictate the movement of materiel while also improving the speed and certainty of consignments.
Project HYPERION	Project HYPERION is designed to amalgamate the two main Army headquarters.
Project OVERTASK	A project to enable United Kingdom Armed Forces, deployed in Afghanistan, to gain access to NATO systems and applications classified as Secret.
Qinetiq	A private company operating in the security and defence sectors.
Reachback capability	A capability to compensate users of the Department's best legacy system (DII(Convergent)) for the lack of an Electronic Document and Records Management System on DII.
Risk Funding	The additional funding applied to a programme or project budget to fund a proportion of the impact of identified risks.
Senior Responsible Owner	The individual with the overall responsibility for making sure that a programme or project meets its objectives and delivers the benefits.
Tiger Team	A dedicated team set up to protect, and ensure the delivery of, benefits from a business change, following delays to the installation of DII.
Top Level Budget Area	The Department is split into a series of budget areas termed Top Level Budgets covering a wide variety of activities, such as the Army. Top Level Budget Holders are responsible for managing the budget for the organisations and executive agencies they represent.
TUPE	Transfer of Undertakings (Protection of Employment) regulations from 1981 and 2006, protecting the rights of employees who continue to do a job when their employer changes, for example through outsourcing.

The Defence Information Infrastructure

A report by the Comptroller and Auditor General

£13.90

ISBN 978-0-10-295422-7

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