National Audit Office

REPORT BY THE COMPTROLLER AND AUDITOR GENERAL

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Department of Health

The National Programme for IT in the NHS: an update on the delivery of detailed care records systems

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The National Programme for IT in the NHS: an update on the delivery of detailed care records systems

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Amyas Morse
Comptroller and
Auditor General

National Audit Office

16 May 2011

The National Programme for IT in the NHS is an £11.4 billion programme of investment. Launched in 2002, its stated aim was to reform the way that the NHS in England uses information, and hence to improve services and the quality of patient care.

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Summary

1 The National Programme for IT in the NHS (the Programme) is an £11.4 billion programme of investment. Launched in 2002, its stated aim was to reform the way that the NHS in England uses information, and hence to improve services and the quality of patient care. By 31 March 2011, total expenditure on the Programme totalled some £6.4 billion. These costs include central expenditure on managing the Programme, delivering national systems, procuring systems for local NHS organisations, and the cost to those organisations of implementing these systems locally.

2 The Department has spent £2 billion on the development and delivery of national systems, including a broadband network and a system to electronically share X-rays. Delivery of these systems is almost complete, and the majority are now providing the NHS with valuable infrastructure and services. A further £1.7 billion has been spent on the maintenance of national systems by local NHS organisations and on central Programme management by the Department.

3 Central to the Programme, however, is the creation of a fully integrated electronic care records system that is designed to reduce reliance on paper files, make accurate patient records available at all times, and enable the rapid transmission of information between different parts of the NHS. The system is intended to comprise for each NHS patient:

- a **Detailed Care Record** containing full details of the patient's medical history and treatment, that is accessible to a patient's GP and local community and hospital care settings, for example, in the event that the patient is referred for hospital treatment; and
- a **Summary Care Record** containing key medical information, such as allergies, made available across England to NHS staff involved in treating the patient.

4 The Department expects to spend some £150 million on the development of the Summary Care Record, and has so far spent around £100 million that is accounted for within the expenditure on national systems. In comparison, to support the creation of detailed care records, in 2003-04, the Department awarded five 10-year contracts totalling some £5 billion to four suppliers for the delivery of local care records systems: Accenture in the East and in the North East; BT in London; Computer Sciences Corporation (CSC) in the North West, and West Midlands; and Fujitsu in the South. The aim was for detailed care records systems to be delivered to all NHS trusts and GP practices (excluding GP practices in the South) by the end of 2007, with increased functionality and integration added until full implementation was complete in 2010.

Figure 1

Delays in the delivery of detailed care records systems reported by the National Audit Office and Committee of Public Accounts

Year	Development
2006	The National Audit Office (NAO) reports that care records systems will be delivered later than planned, and recommends that while some adjustment of suppliers' milestones may be a necessary, the Department "should not allow this to compromise the eventual achievement of the vision of the fully integrated care record service that was the objective of the Programme at its inception".
2007	Accenture announces a $450 million provision in its accounts for future expected losses relating to the delivery of systems for the NHS. Accenture's local service provider contracts are transferred to CSC. The Committee of Public Accounts reports that delivery of care records systems is two years behind schedule. It also reports that: • suppliers are struggling to deliver and there are no published plans for the systems in line with the Programme's original vision; • the introduction of clinical software has scarcely begun because essential clinical software development has not been completed; and • serious problems with the systems are contributing to resistance from NHS staff.
2008	The NAO reports that it will be 2014-15 before every NHS trust has a fully delivered care records system, and identifies the delivery of these systems as the Programme's major outstanding challenge. The Department terminates Fujitsu's contract in the South.
2009	The Department reports to the Committee that the original timescales had not been achieved because the suppliers were having to do more customisation to meet the needs of individual NHS organisations than was envisaged and because of the technically ambitious nature of the systems. The Department also reports to the Committee that it terminated Fujitsu's contract after negotiations to reset it had failed. One particular area of difficulty was the cost of what Fujitsu termed 'new requirements.' • The Department's position was that the majority of these requirements were remedial and were necessary to make the system being provided by Fujitsu fit for purpose. Furthermore, that the delay to the programme was as a result of Fujitsu's failure to meet its contractual obligations. • Fujitsu's position was that all the requirements were new and incremental to the existing contract and therefore needed additional funding. Fujitsu's view was that the Department had caused delay to the Programme as a result of substantial changes to the system. The Committee questions the remaining suppliers' capacity to deliver and raises concerns about the strength of the Department's negotiating position. Following the termination of Fujitsu's contract, the Committee also reports that the revised completion date of 2014-15, is in doubt. The Committee concludes that the Programme is not providing value for money because there had been few successful deployments of care records systems in acute trusts and recommends that the Department should: • assess BT's and CSC's capacity to meet their substantial commitments; and • consider the impact on the strength of its negotiating position of having only two suppliers.
2010	BT's contract is reset to reflect the need for greater flexibility in the delivery of care records systems than originally envisaged.

Source: National Audit Office and Committee of Public Accounts

5 The delivery of both the Summary Care Record and Detailed Care Record have been delayed. Whilst the Department has now overcome the ethical issues that delayed implementation of the Summary Care Record, the delivery of care records systems to support the creation of the Detailed Care Record has proven to be far more difficult than expected. Previous reviews by the National Audit Office and Committee of Public Accounts have reported on delays in software development and delivery, difficulties in implementing standard systems across the NHS, and contractual issues that have led to one supplier exiting the Programme and the contract for another being terminated (**Figure 1** on page 5).

6 The Department now has contracts with only two local service providers across three Programme areas. BT is the local service provider in London and has taken on some of the work previously contracted to Fujitsu in the South, and CSC is providing systems in the North, Midlands and East. Each region is treated as an individual project, and has its own contractual arrangements. Different care records systems are being delivered in different care settings, and the systems being delivered vary between regions (**Figure 2**).

Figure 2
Care records systems to be delivered through the Programme

Region (supplier)	Care setting	Care record systems being delivered
London (BT), South (BT)	Acute trusts	Cerner Millennium
	Mental health trusts and community health services	RiO
North, Midlands and East (CSC)	Acute trusts and mental health trusts	iSoft Lorenzo
	Community health services	iSoft Lorenzo/TPP SystmOne
	GP practices	TPP SystmOne/GP Lorenzo
	Ambulance trusts	Medusa Siren ePCR

Source: National Audit Office

7 The Department has so far paid some £1.8 billion to suppliers of care records systems and a further £900 million has been spent by local NHS organisations on implementing the systems provided. Of the further £5 billion expected to be spent on the Programme overall, some £4.3 billion will be spent on the delivery and implementation of care records systems up to 2015-16 (**Figure 3**).

Figure 3
Expenditure on the Programme as at 31 March 2011

Category	Actual expenditure (£bn)	Expenditure remaining to 2015-16 (£bn)	Expected total expenditure (£bn)
Programme management	0.82	0.37	1.19
Local NHS costs of running national systems	0.89	0.21	1.10
Delivering national systems	1.98	0.18	2.16
Local implementation of care records systems by NHS organisations	0.88	1.38	2.26
Delivery of care records systems by suppliers	1.78	2.91	4.69
Total	**6.35**	**5.05**	**11.40**[1]

NOTE

1 This figure does not include the £391 million cost of extending the N3 network by two years from 2011 to 2013, which the Department considers to be outside of the Programme.

Source: National Audit Office analysis of Connecting for Health data

8 This report provides an update on the delivery of detailed care records systems in each of the three Programme areas. In particular, it examines changes in the scope of the Department's contracts with its suppliers, the implications of these changes on the costs of care records systems, what these systems are able to do, and what risks and challenges the Department needs to manage in taking the Programme forward. This report does not seek to quantify what benefits are being realised through utilisation of those care records systems which have been delivered, or to establish the views of NHS staff on the Programme and its systems.

9 The information used within this report is drawn from departmental documents, interviews with lead officials, interviews with the Department's main contractors and visits to three NHS acute trusts at the forefront of the delivery of care records systems (see Appendix One). Unless otherwise stated the cost information in this report is at 2004-05 prices to enable comparison with cost information in previous National Audit Office reports on the Programme. Our findings are presented in the context of a lack of clarity between the Department and its suppliers about basic management information. In some cases we have been unable to reconcile the discrepancies we have identified. For example, information we received from the suppliers on Friday 13 May does not reconcile with information provided by the Department the previous day. The Department was unable to provide clarification to reconcile the discrepanicies by the time this report was submitted by the Comptroller and Auditor General for publication on Monday 16 May.

Key findings

10 The problems with implementing care records systems identified in previous reports by the National Audit Office and Committee of Public Accounts have continued. Delivery of the contracted number of systems continues to fall well below expectations and fewer systems will now be delivered to NHS organisations, although the cost of delivering care records systems remain substantially the same. In September 2009, the Department announced that it was changing its approach to a more locally-led system allowing NHS organisations to introduce smaller, more manageable change in line with their local business requirements and capacity. The Department no longer intends to replace systems wholesale, and will instead in some instances build on trusts' existing systems.

Care records systems are no longer being delivered in every NHS organisations and the Department is no longer intending to replace systems wholesale

11 Delivery of care records systems to all NHS organisations has not been achieved and the Department has now reduced the number of systems to be delivered. Significant reductions have been made in the number of acute trusts, ambulance trusts, and GP practices to receive care records systems through the Programme (**Figure 4**). These reductions mean that the aim of creating an electronic record for every NHS patient will not be achieved under the Programme. The Department has not stated what impact these reductions in the scope will have on the expected benefits of the Programme.

12 In December 2009, the Department revised its approach to implementing care records systems and each acute trust is now allowed to build on their existing system where this is possible and take the elements of the system they most require. Due to changes in the contracts, however, which enable trusts in London and the South to configure systems as they require, the Department cannot easily compare the level of functionality available across the NHS with that set out in the Programme's original specification. To support interoperability of the systems the Department has developed a set of standards which systems will be required to meet. With fewer systems being provided through the Programme and more use being made of a variety of existing systems, there is an increased risk of not achieving adequate compatibility across the NHS to effectively support joined up healthcare. The Department estimates that achieving interoperability will cost at least £220 million.

13 Although far fewer systems are now being delivered in **London** (Figure 4), there has not been a significant reduction in the total contract value. Care records systems for 1,243 GP practices and the London Ambulance Service have been removed from the Programme. In addition, the number of systems being delivered in acute trusts has reduced by around half. Savings achieved as a result of this reduction in scope have, however, been just £73 million out of £1,021 million because the original approach to delivering systems did not work and the Department has paid more for the systems to be tailored to meet the local needs of NHS trusts. There is a lack of transparency, regarding the impact these changes have had on the functionality now being provided compared to what was originally expected. The Department has also been unable to provide us with a full breakdown of the cost implications of these changes but Departmental papers suggest that they resulted in an increase in the average cost of Millennium per acute trust by at least 18 per cent.

Figure 4

Changes in number of care records systems contracted to be delivered

	London		South		North, Midlands and East		Total	
	Original 2003 contract	Contract as at 31 March 2011 (% reduction)	Original 2004 contract	Contract as at 31 March 2011 (% reduction)	Original 2003 contract	Contract as at 31 March 2011 (% reduction)	Original 2003-04 contracts	Contracts as at 31 March 2011 (% reduction)
Acute trusts	32	15 (-53)	42	10 (-76)	97	97 (0)	171	122 (-29)
Community health services	31	29 (-6)	31	12 (-61)	90	90 (0)	152	131 (-14)
Mental health trusts	10	8 (-20)	13	13 (0)	35	35 (0)	58	56 (-3)
GP practices	1,243	0 (-100)	–	– (0)	4,400	4,400 (0)	5,643	4,400 (-22)
Ambulance trusts	1	0 (-100)	4	0 (-100)	6	6 (0)	11	6 (-45)

NOTES

1 In some cases the number of trusts to receive systems has reduced since the original contracts were agreed as a result of mergers.

2 Ambulance and GP practice systems were removed from the scope of the Programme in London in March 2010.

3 GP practice systems were not included within the scope of the original contract for the South.

4 Ambulance systems were removed from the scope of the Programme in the South in March 2009.

5 In the South, some of the shortfall of care records systems is expected to be met through additional contracts which have not yet been let.

Source: National Audit Office analysis of Connecting for Health data

14 The reduction in the number of care records systems contracted to be delivered in the **South** (Figure 4) follows the termination of the original contractor, Fujitsu, in 2008. The replacement supplier, BT, is contracted to deliver only 35 of the original 90 care records systems at a cost of £454 million. The costs of delivering three care records systems in acute trusts under this contract are some 47 per cent higher than the cost of delivering the same system in London, although BT advises that the system is being delivered in a different way. The Department expects to deliver the remaining systems through a framework contract at a cost of no more than £470 million, meaning that the level of funding available for systems at each trust is significantly lower than that which is available under existing contracts.

15 There have been no reductions in the number of systems to be delivered by CSC in the **North, Midlands** and **East** (Figure 4). The Department is, however, in negotiations to reduce the total contract value by at least £500 million. To secure this cost reduction it is likely that the Department will need to reduce the number of care records systems to be delivered and the capability of these systems. The negotiations began in December 2009, but have not yet been concluded.

Progress with delivery of care records systems continues to fall well below expectations

16 The Department has so far spent some £1.8 billion on delivering care records systems, but was unable to provide us with a breakdown of what it has so far paid for each system. A further £900 million has been spent by local NHS organisations on implementing the systems provided. At the outset of the Programme, the aim was for implementation of care records systems to be complete and for every NHS patient to have an electronic care record by 2010. Progress has, however, fallen well below expectations and even with the agreed reductions in the number of systems being delivered, a substantial amount of work remains (**Figure 5**). Based on overall performance to date, we consider that under the terms of the current contracts it is unlikely that the remaining work can be completed by the end of the contracts in 2015-16.

17 In **London**, care records systems have been delivered to all 37 community health services and mental health trusts, and around half of the contracted number of acute trusts (Figure 5). In the **South**, care records systems have been delivered to 23 of 25 community health services and mental health trusts by BT. Seven acute trusts have care records systems. No new acute systems have been delivered since 2008 when Fujitsu's contract was terminated (Figure 5), although BT has completed the transfer of data and services from the seven former Fujitsu acute sites and upgraded the systems at four of these trusts. No contracts have yet been let to provide care records systems to those NHS organisations in the South not covered by the £454 million extension of BT's London contract.

18 In the North Midlands and East some 1,380 of 4,400 GP systems and all six ambulance trust systems have been delivered (Figure 5). Care records systems have also been delivered to 56 of 90 community health services, There have, however, been particular delays in acute trusts where only 10 of 97 systems have been delivered, and in mental health trusts where none of the 35 systems have been delivered. Because of delays in developing one of its systems, CSC has also delivered 81 interim systems to trusts whose systems needed to be replaced urgently. These systems were not previously considered by the Department to meet the aims of the Programme and under the terms of the current contract will need to be replaced (Figure 5). The Department does not now expect all of the interim systems to be replaced, although this is subject to finalisation of the ongoing negotiations to reset the contract in the North, Midlands, and East.

Figure 5

Progress in delivering care records systems as at 31 March 2011

	London		South		North, Midlands and East		Total	
	Delivered	Remaining (%)	Delivered	Remaining (%)	Delivered	Remaining (%)	Delivered	Remaining (%)
Acute trusts	8	7 (47)	7	3 (30)	4	93 (96)	19	103 (84)
Community health services	29	0 (0)	10	2 (17)	5	34 (38)	95	36 (27)
Mental health trusts	8	0 (0)	13	0 (0)	0	35 (100)	21	35 (63)
GP practices	–	–	–	–	1,377	3,023 (69)	1,377	3,023 (69)
Ambulance trusts	–	–	–	–	6	0 (0)	6	0 (0)

NOTES

1 Two of the deployments in acute trusts in London pre-date the Programme, but have since been integrated into the Programme, with services now provided by the Local Service Provider.

2 Ambulance and GP practice systems were removed from the scope of the Programme in London in March 2010.

3 GP practice systems were not included within the scope of the original contract for the South.

4 Ambulance systems were removed from the scope of the Programme in the South in March 2009.

5 The figures for systems delivered in the North, Midlands and East do not include interim systems.

6 In the North, Midlands and East, a module of SystmOne is contracted to be delivered to 54 child community health service organisations. As at 31 March 2011, all 54 contracted systems had been delivered. In London and the South, child health modules are delivered through the community health services system.

7 CSC is also contracted to deliver SystmOne to 136 prisons. As at 31 March 2011 all 136 had been delivered.

Source: National Audit Office analysis of Connecting for Health data

Care records systems require further development to reach the contracted level of functionality

19 Since January 2011, the National Audit Office has made a series of requests for an explanation of what level of functionality has been delivered to update those data provided to the Cabinet Office for its 2010 review of the Programme. On 5 May 2011, the Department provided an assessment of functionality, but this was based on an alternative methodology than that used for the data provided to the Cabinet Office.

20 The Department has stated that the assessment presented to the Cabinet Office used a proxy measure based on the functionality delivered across the range of releases. The Department now believes that this method did not provide a consistent approach across regions, care settings and systems, and did not take into account its new approach to delivering care records systems. This is despite the fact that these data were prepared for the Cabinet Office around the same time as the Department announced its new approach to delivering care records systems at the end of 2009.

21 The Department now judges development of functionality on the basis of the development of individual modules rather than entire releases of functionality across NHS organisations. On this basis, the Department now reports that in London and the South 91 per cent of the functionality for the acute system has been proven to work. Similarly, the Department estimates that 64 per cent of the acute system to be provided in the North, Midlands and East has also been developed.

22 We have not had time to validate the Department's assessment, but our initial view is that it risks presenting an overly positive position on progress. For example, the Department's assessment does not mean that 91 per cent or 64 per cent of functionality is available across acute trusts in London and the South, and the North, Midlands and East, respectively. That is because this assessment does not measure the extent to which functionality has been delivered and is in use. It measures technical readiness of individual modules and assesses development to be complete when it has been delivered in one care setting, for example, a ward or a unit, in one NHS organisation. The Department considers that delivery in one setting provides assurance that the functionality can be delivered to any NHS organisation, even though past experience of delivering systems through the Programme indicates that it may not be this straightforward. Furthermore, the Department's assessment is not weighted according to the complexity or potential benefit of each module.

23 The Department's assessment also does not measure progress against the original aims of the Programme, but rather a minimum specification level of functionality agreed with clinicians in 2008, reflecting the move towards a more flexible approach. The Department has recognised that the measure of functionality delivered should ideally relate to the detailed requirements set out in each of the original contracts, weighted according to the clinical benefit provided and complexity of implementation, but has not undertaken such an assessment.

24 At the outset of the Programme, it was expected that care records systems would be introduced incrementally with each system requiring a number of upgrades, releases, or enhancements after their initial delivery in order for the NHS to have access to the full extent of functionality expected through the Programme. If progress is set against the original aims of the Programme, the overall level of functionality provided to date is well below what the Department contracted for. For example, clinical benefits, such as the ability to electronically manage the prescribing and administration of drugs in hospitals, are expected to be delivered in later releases of the systems which are not yet available. Some of these later releases, have yet to be developed which puts at risk the delivery of the Programme's aims, even in London, where progress is more advanced (paragraph 26).

25 In the **North, Midlands** and **East** there have been significant delays with the development of the new care records system for acute trusts, mental health trusts and community health services. Three further releases of this system have yet to be developed and no functionality has been delivered to any mental health trust. The latest release of the system delivered at three early adopter sites is an additional release containing some of the functionality originally expected in the second release. This release has not yet been signed off as meeting the requirements of any of the receiving trusts. In addition, a fourth early adopter, a mental health trust, announced in April 2011 that it no longer wished to remain in the Lorenzo early adopter programme and was considering other options available in the wider IT market. Because of the significant delays, the Department has funded delivery of interim systems where trust's existing systems needed to be urgently replaced. These systems, however, do not deliver the full level of functionality contracted for by the Department.

26 Further progress has been made in acute trusts in **London** and the **South**, where two of the three planned releases of the system for acute trusts are available for delivery, BT is contracted to deliver the third release to acute trusts by October 2014. In addition, two further releases of the system for community and mental health services are still in development, with the first expected to be delivered in summer 2011.

Conclusion on value for money

27 Central to achieving the Programme's aim of improving services and the quality of patient care, was the successful delivery of an electronic patient record for each NHS patient. Although some care records systems are in place, progress against plans has fallen far below expectations and the Department has not delivered care records systems across the NHS, or with anywhere near the completeness of functionality that will enable it to achieve the original aspirations of the Programme. The Department has also significantly reduced the scope of the Programme without a proportionate reduction in costs, and is in negotiations to reduce it further still. So we are seeing a steady reduction in value delivered not matched by a reduction in costs. On this basis we conclude that the £2.7 billion spent on care records systems so far does not represent value for money, and we do not find grounds for confidence that the remaining planned spend of £4.3 billion will be different.

The Department's view on value for money

28 "The Department considers, however, that the money spent to date has not been wasted and will potentially deliver value for money. This is based on the fact that more than half of the Trusts in England have received systems under the programme and no supplier is paid for a system until that system has been verified by the Trust to have been deployed successfully. The Department believes that the flexibility provided by the future delivery model for the programme will deliver functionality that best fits the needs of the clinical and managerial community. The future architecture of the programme allows many sources of information to be connected together as opposed to assuming that all relevant information will be stored in a single system. This approach has been proven in other sectors and is fully consistent with the Government's recently published ICT strategy."

Recommended action to be taken by the Department

29 Since the contracts for care records systems were let in 2003-04, their implementation has been subject to delay and difficulty, and delivery targets have been repeatedly missed. Despite repeated warning signs (Figure 1), these problems have persisted over several years and the Department has now compromised the vision of the fully integrated care record system that was the objective of the Programme at its inception.

30 In September 2010, following a Cabinet Office assessment of the Programme, the Department announced that the Programme's existing contracts, which require further payments of up to £2.9 billion for the delivery of care records systems, would nonetheless be honoured. Together with the associated £1.4 billion of local implementation costs, the costs of continuing to deliver care records systems up to 2015-16 represent some 86 per cent (£4.3 billion) of the remaining £5 billion to be spent on the Programme overall.

31 Given its past history, the major issues still confronting the care records systems, and with such significant funds still at stake, there is a compelling case for the recently announced Whitehall-wide review to re-evaluate the business case for the Programme to determine what should happen now to safeguard against further loss of public value. That re-evaluation should include consideration of the significant risks outlined below.

32 Although in January 2011, the Programme's Board reported that a significant gap existed between the funds required for the Programme and those available, following the Spending Review settlement the Department now reports that it has been allocated sufficient funds to cover the expected costs of the Programme for 2011-12. There remain, however, a number of uncertainties with the delivery of care records systems that put at risk their delivery within the remaining budget of £4.3 billion. In particular:

- Significant contract renegotiations to the value of £500 million with CSC have not yet concluded. The Department is considering all options including termination or a significant reduction in both scope and functionality.

- The costs of the additional procurement required in the South are not yet certain, and the level of funding available for systems at each trust is significantly lower than that which is available under existing contracts.
- As payment is dependent on suppliers delivering, profiled expenditure could slip, putting pressure on funding in subsequent financial years.
- Local costs may increase as a result of the need to make systems provided outside of the Programme compatible with systems provided through the Programme.

33 There is a considerable amount of outstanding work to be undertaken before the care records systems are able to do what the Department expected at the outset of the Programme. In particular:

- In the North, Midlands and East, under the existing contract there will need to be over 160 deliveries of care records systems at a rate of between two and three systems a month until July 2016.
- In the South, care records systems need to be procured and delivered to 28 acute trusts, 13 community health services and four ambulance trusts by October 2015.

34 By 2012, as part of the reorganisation of the NHS, strategic health authorities will be abolished and the existing governance structure for the delivery of care records systems will disappear. Although initial proposals have been discussed by the Programme Board, it is not yet known:

- who will manage the existing contracts up to July 2016;
- who will measure and report on the benefits of the Programme; and
- how the financial implications for the Programme of the structural changes to the NHS will be managed and by whom.

35 By 2015-16, when contracts for the delivery and support of care records systems expire, responsibility for the continued support of these systems will transfer from the Department to the NHS organisations using them. These organisations, however, currently have no direct contractual relationship with those providing the systems. There remains considerable uncertainty about:

- the financial liability of NHS organisations using the Programme's systems; and
- the cost and mechanism for transferring services from the Programme to any new suppliers.

Part One

Overview of the Programme

The purpose of the Programme

1.1 The Programme is designed to reform the way that the NHS in England uses information. Its vision is centred on using modern information technologies to improve the way the NHS in England plans and delivers services and, ultimately, to improve the quality of patient care. The Programme comprises a range of systems, such as Choose and Book, which are being developed and delivered by a number of partner organisations. These systems are underpinned by a national infrastructure consisting of the N3 broadband network and the Spine. The national infrastructure and the majority of the national systems have been delivered and are available for use across the NHS. Exploitation of some national systems, however, remains short of expectation (**Figure 6**).

1.2 Central to the Programme, however, is the creation of a fully integrated electronic care records system which is designed to reduce reliance on paper files, make accurate patient records available at all times, and enable the rapid transmission of information between different parts of the NHS. The system is intended to comprise for each NHS patient:

- a **Detailed Care Record** containing full details of the patient's medical history and treatment, that is accessible to a patient's GP and local community and hospital care settings, for example, in the event that the patient is referred for hospital treatment; and
- a **Summary Care Record** containing key medical information, such as allergies, which is available across England to NHS staff involved in treating the patient.

1.3 The Summary Care Record, one of the Programme's national systems (Figure 6), is expected to cost £150 million excluding local implementation costs which are not recorded centrally by the Department. In comparison, contracts held by the Department for the delivery of systems to support the creation of detailed care records total some £4.7 billion, and there are expected to be associated implementation costs of some £2.3 billion to be met by local NHS organisations.

Figure 6
Progress in delivering national systems

System/Description	Percentage of functionality delivered	Percentage of NHS organisations with the system ready for use	Comment
N3 network: A broadband network connecting all NHS and non-NHS sites providing NHS care.	100	100	The network has been fully delivered and is routinely used.
Spine: A group of eight applications which underpin the NHS Care Records Service.	100	100	The Spine has been fully delivered and is routinely used.
NHSmail: A secure email, text and fax service, transferring patient data, appointment alerts and confidential information.	100	n/a	The Department reports that there are 720,000 registered users of NHSmail, of which 440,000 are active users.
Choose and Book: An electronic referral and booking service giving patients a choice of time and place for their first outpatient appointment.	100	97 (Acute trusts) 95 (GP practices)	Around 52 per cent of first outpatient referrals are being processed through Choose and Book, compared to the 90 per cent originally expected.
Electronic Prescription Service Release 1: When the prescriber issues a prescription, an electronic copy of the information is sent to the Electronic Prescription Service. The patient continues to receive a paper prescription.	100	97 (GP practices) 95 (Pharmacies)	Release 1 has been rolled out but most of the benefits depend on Release 2 which is not yet available for use in all pharmacies and GP practices. As at 31 March 2011, some 112,000 prescriptions had been transmitted using the service.
Release 2: Allows the prescriber to apply an electronic signature to the electronic prescription, removing the need for paper prescriptions.	100	56 (GP practices) 60 (Pharmacies)	
GP to GP transfer: Enables patient records to be transferred electronically between GP practices, replacing the existing manual transfer process.	60	59	It is not possible to determine what percentage of all patient record transfers are made electronically through GP to GP transfer. This is because the GP to GP system does not capture transfers between GP practices using the same care records system.
Picture Archiving and Communications System (PACS): Enables images such as X-rays and other medical scans to be stored electronically and viewed on screens.	100	100	The Department has reported that PACS has increased the number of X-rays reported within 48 hours from 40 per cent to 75 per cent across England.
Quality Management and Analysis System: Provides evidence on the quality of care delivered to patients.	100	100	Over 99 per cent of GP practices supply data automatically through their practice systems.
Summary Care Record: Part of the NHS Care Record Service, containing those elements of the electronic patient record that are important in supporting urgent or unscheduled care.	100	10 (GP practices)	As at 31 March 2011, 5.8 million summary care records had been created out of a potential 54 million.

Source: Connecting for Health

1.4 The successful delivery of detailed care records systems requires development of the systems, their delivery to NHS organisations, and exploitation of them to achieve the intended benefits. At the outset of the Programme the aim was for detailed care records systems to be developed and delivered to all NHS trusts and GP practices (excluding GP practices in the South) by the end of 2007, with increased functionality and integration added until full implementation was complete in 2010. These timescales were not achieved, and implementation is now scheduled to be complete by 2015-16.

1.5 At the end of 2009, the Department announced that it had revised its approach to implementing detailed care records systems. Because of the delays in delivering care records systems and a requirement to reduce the overall cost of the Programme, the Department expects to make more use of NHS organisation's existing systems by linking them together rather than replacing them wholesale. It is not clear how many trusts will now end up with the full range of functionality as agreed and priced in the Programme's original contracts, or what impact these changes have had on the unit costs of each system under the terms of the contracts.

1.6 To get clinical support for the new approach to delivering care records systems in acute trusts, the Department agreed with clinical stakeholders in 2008 a 'minimum specification of functionality that would make a system acceptable to them, specifically in secondary care'. This specification comprises:

- a patient administration system that can integrate with other systems; order communications and diagnostics reporting; discharge letters with coding; scheduling for beds, tests and theatres; and electronic prescribing;
- five departmental systems – accident and emergency, maternity, community, child health, and operating theatres; and
- core infrastructure, such as case note tracking and data security.

1.7 Although this means that each trust will be allowed to build on their existing system and deploy the modules that they most require, there is an increased risk of not achieving adequate interoperability across the NHS to effectively support joined up healthcare. Over the last two years the Department has developed an interoperability toolkit to mitigate this risk. In a paper presented to the National Programme Board in January 2011, however, the Department noted that to deliver on its revised approach a number of other fundamental building blocks need to be put in place:

- Standards need to be developed and managed to support local interoperability needs.
- Sufficient suppliers must adopt the standards.
- An accreditation process is required to support suppliers in the use of these standards.

Roles and responsibilities in the management and delivery of the Programme

1.8 The Programme is managed at national level by Connecting for Health, part of the Department of Health's Informatics Directorate, with the Chief Executive of the NHS the Senior Responsible Owner for the Programme. Connecting for Health is responsible for the management of the Programme's central contracts, including those held by the two local service providers responsible for implementing care records systems across the NHS: BT in London and in part of the South; and CSC in the North, Midlands and East. Responsibility for delivery is split between local service providers and NHS trusts, with trusts generally responsible for business change, delivery plans, staff training and for signing off acceptance of systems as meeting their requirements.

The cost of the Programme

1.9 At the time of our last report in 2008, the estimated total cost of the Programme was £12.7 billion. Although the cost of the Programme has since increased by around £500 million, the Department plans to offset this increase and reduce the overall cost of the Programme to £11.4 billion (**Figure 7** overleaf). By 31 March 2011, the Department and the NHS had spent some £6.4 billion on the Programme, of which £1.8 billion has been paid to suppliers of care records systems. The Department was unable to provide us with a breakdown of what it has so far paid for each individual care records system.

1.10 Around £600 million of the cost reductions are expected to come from the local service provider contracts through a reduction in the number of systems being delivered and changes to the approach for delivering them. The Department has reduced the value of the London contract by £73 million from £1,021 million and the estimated cost of systems in the South by £29 million. It also expects cost reductions of at least £500 million to be made from the CSC contract in the North, Midlands and East, but these have yet to be agreed. Further reductions of £1.2 billion are expected to be achieved through efficiencies being made in central programme costs (£400 million), reduced local NHS costs as a result of the anticipated reductions in the number of care records systems being delivered (£600 million), and reduced expenditure on national applications (£200 million).

Figure 7
Estimated cost of the Programme (at 2004-05 prices)

Category	Percentage of total cost	Estimated cost in May 2011	Estimated cost in 2008 National Audit Office report	Variance to estimate in 2008 National Audit Office report
	(%)	(£m)	(£m)	(£m)
National infrastucture	**14**			
Spine		902	889	13
N3 network		530	530	0
NHSmail		207	117	90
National applications	**5**			
Choose and Book		154	145	9
GP2GP transfer		25	34	-9
Contracts added		341	515	-174
Local services	**41**			
London		948	1,021	-73
South		454	483	-29
North, Midlands and East		2,507	3,007	-500
Additional Supply Capability and Capacity		470	621	-151
Interoperability		52	0	52
Amount retained by Accenture		110	110	0
Amount retained by Fuijitsu		151	0	151
Local NHS costs	**29**			
Picture Archiving and Communications System (PACS)		886	885	1
N3 network		216	0	216
Local deployment costs		2,084	2,701	-617
Interoperability		172	0	172
Central Programme costs	**10**	1,190	1,599	-409
Total	**100**	**11,400**	**12,657**	**-1,257**

NOTES

1 In December 2010, the contract for the N3 network was extended for two years to 2013 at a cost of £391 million. The Department considers these costs to be outside the scope of the Programme.

2 The £500 million cost reduction in the North, Midlands and East has yet to be agreed.

3 Percentage of total programme cost figures do not sum to one hundred due to rounding.

Source: Connecting for Health

The intended benefits of the Programme

1.11 The Programme is intended to generate substantial benefits for patients and healthcare professionals, and financial benefits for the NHS. The anticipated qualitative benefits of the Programme include increased patient safety through reducing duplicated information that is more likely to contain omissions; and efficiency improvements by, for example, automating back office administration.

1.12 For each element of the Programme, business cases were prepared setting out the intended benefits to be achieved through the investment, although for some elements only qualitative benefits were identified. The investment in the infrastructure, for example, was not expected to result in any direct quantifiable benefits, as it provides the underpinning architecture for the Programme. The business cases for the local service provider contracts also contained no formal projections of financial benefits. The Department expects benefits to be realised by NHS organisations through locally developed business cases, and information on benefits realised by these organisations is submitted on a voluntary basis to the Department which risks the information being incomplete and not necessarily representative. The Department has not stated what impact the reductions in the scope of the Programme or the change to the delivery strategy have had, or will have, on its expected benefits.

1.13 In response to recommendations by the National Audit Office and Committee of Public Accounts concerning the measurement of the Programme's benefits, the Department published a benefits statement in March 2008. The statement drew on information from some 20 per cent of NHS organisations where the Programme's systems were in daily use and the systems were sufficiently mature to start to draw conclusions. It reported estimated financial benefits of £208 million to 31 March 2007, over 90 per cent of which related to the N3 broadband network; and estimated annualised recurrent financial benefits of £119 million.

1.14 Since publishing a benefits statement in March 2008, the Department has revised its methodology for calculating benefits. No further benefit statements have been published for the Programme, despite the Department's commitment to the Committee of Public Accounts that it would publish one in summer 2010 once it had been subject to audit by the Comptroller and Auditor General. The Department did not formally request this audit until 11 May 2011, which has not allowed sufficient time to audit the statement. However, it seems to rely in some places on a small number of submissions from trusts and only a minority of the claimed benefits relate to care records systems.

Part Two

Progress in delivering care records systems in London

2.1 BT is delivering two different care records systems in London: Millennium in acute trusts and RiO in mental health trusts and community health services (**Figure 8**). By 31 March 2011, the Department will have paid BT an estimated £444 million for delivery of care records systems against the total contract value of £948 million. This part examines the delivery of care records systems in London, including changes to the contract cost, the number of systems being delivered, and the degree of functionality now planned to be delivered through the Programme compared to what was previously expected.

Figure 8
Care records systems delivered in London as at 31 March 2011

Care setting	Total number of organisations in NHS estate	Total number of contracted deployments	Deployments complete
Acute – Millennium	31	15	8
Community – RiO	31	29	29
Mental health – RiO	10	8	8

NOTES

1 Millennium was originally delivered at two acute trusts outside of the programme, but these trusts are now managed under the London contract.

2 An additional five acute trusts in London have been funded by the Programme to continue to use their existing iSoft systems through an agreement with CSC.

Source: Connecting for Health

Changes to the contract

2.2 The Department's contract with BT has been subject to two significant renegotiations that have both resulted in a change to the total contract value. In May 2007, following problems with the delivery of the original care records system, BT changed its approach and decided to use a number of systems instead of one. For example, it decided to use Millennium for acute trusts, and RiO for mental health trusts and community health services. This renegotiation:

- increased the total contract value by £55 million to £1,021 million;
- extended the contract from March 2014 to October 2015; and
- configured Millennium specifically for London in three releases rather than in four as originally planned.

2.3 In November 2009, the Department internally considered that BT had not shown it could deliver Millennium as configured on the scale required under contract. At that time, Millennium had been found to have 84 defects against a contractual testing limit of 30. This assessment combined with the need for a more modular and localised system, contributed to a contract renegotiation that reduced the total contract value by £73 million to £948 million. At the same time the Department changed its delivery requirements for acute systems and secured enhanced functionality for RiO.

2.4 These changes to the delivery requirements, however, increased the costs of delivering Millennium and RiO. To meet NHS London's needs and to prevent the total contract value from increasing, the Department reduced the number of acute systems from 31 to 15 and removed from the contract the requirement for BT to deliver systems to the London Ambulance Service and to over 1,200 GP practices (**Figure 9** overleaf). Around 1,500 GP systems are being provided in London at a cost of some £54 million under a separate contract called GP Systems of Choice, which is funded by the Department outside of the Programme. Funding for the ambulance and acute systems no longer being provided will have to be found by the NHS locally if these organisations still require them. The Department has been unable to provide us with a full breakdown of the costs of the revised £948 million contract but Departmental papers suggest that the changes agreed by the Department increased the average cost of Millennium per acute trust by at least 18 per cent.

Figure 9
Changes to the scope and cost of the local service provider contract in London

	Number of care records systems to be delivered			
	Original contract – December 2003	Contract at March 2007	Contract at March 2010	Percentage change between 2007 and 2010
Acute trusts	32	31	15	-52
Community health services	31	31	30	-3
Mental health trusts	10	10	8	-20
Ambulance trusts	1	1	–	-100
GP practices	1,243	1,243	–	-100
Total contract value	**£966m**	**£1,021m**	**£948m**	**-7**

NOTE
1 Ambulance and GP practice systems were removed from the scope of the Programme in London in March 2010.

Source: National Audit Office analysis of Connecting for Health data.

Progress in delivering care records systems

Acute trusts

2.5 While it was originally expected that every acute trust would receive a standard care records system in a standardised way, the contract changes agreed by the Department in March 2010 enable trusts to choose within cost limits which core modules they want and in what order they will be delivered (**Figure 10**). Additional modules can be added by trusts but are not funded through the Programme. The Department is funding three releases of Millennium, with each release increasing the level of functionality provided by each module. The majority of the functionality expected through the Programme is provided in the third release.

2.6 By 31 March 2011, three acute trusts had the first release of Millennium and five had progressed to the second release which offers additional functionality, including connection to the Spine. As of 31 March 2011, no acute trusts had been upgraded to the third and final release of Millennium, which delivers the level of functionality anticipated at the Programme's outset. However, BT reports that this release is ready to be delivered. It requires upgrades for live trusts, which BT reports are in progress, and delivery of new systems at those trusts yet to receive Millennium. All further systems and upgrades of Millennium are expected to be delivered across all 15 acute trusts by October 2014.

Figure 10
Millennium functionality to be available to acute trusts in London

Modules	Functionality to be delivered
Patient Administration System	Includes referrals, waiting list management, outpatient appointment management, inpatient admission management, medical record management and clinical coding.
Accident & Emergency	Follows a patient from their initial admission to their discharge, checking for previous encounters with the patient.
Critical Care	Includes the acquisition, viewing, and documentation of patient results by clinicians.
Medication Management	Includes prescribing, clinical pharmacist review and administration functionality.
Maternity	Enables patient administration, scheduling, requests, results, medication management, critical care assessments and general clinical documentation.
Theatres	Provides: support for the scheduling of all inpatient, day-case and emergency surgical cases; enhanced scheduling; and data analysis.
Clinicals	Includes the electronic ordering and reporting of diagnostic tests, and clinical documentation.

Source: Connecting for Health

Community health services and mental health trusts

2.7 RiO, the care record system being delivered in mental health trusts and community health services, provides functionality in four key areas, including:

- **Referrals** – Enables routing of patients to the most appropriate speciality.
- **Appointments and scheduling** – Enables identification of 'at risk' groups, and automatic scheduling of screening appointments.
- **Treatment** – Enables patient notes to be read from different trusts within the same care setting, eliminating the need to duplicate assessments and tests.
- **Discharge** – Creates discharge summaries for patients.

2.8 RiO has a largely standard system but can be tailored for individual trusts through some local configuration. As part of the BT contract reset agreed in March 2010, it was agreed that two releases of RiO configured specifically for the NHS would be delivered. These two releases include, for example, integration of RiO with Summary Care Records. By 31 March 2011, all deliveries of RiO had been completed and the first of the two new releases will be first introduced at a trust in Summer 2011. All subsequent contracted upgrades, releases, and enhancements are expected to be completed across all 37 NHS organisations using RiO in London by October 2014.

Part Three

Progress in delivering care records systems in the South

3.1 In March 2010, BT's London contract was extended to include delivery of care records systems in the South following the termination of the original contractor, Fujitsu. BT is delivering the Millennium system to acute trusts and the RiO system to mental health trusts and community health services. By 31 March 2011, the Department will have paid BT £213 million and Fujitsu £151 million for delivery of care records systems (**Figure 11**). This part examines the delivery of care records systems in the South, including changes to the contract cost, the number of systems being delivered, and the degree of functionality now planned to be delivered through the Programme compared to what was previously expected.

Figure 11
Care records systems delivered in the South as at 31 March 2011

Care setting	Total number of organisations in NHS estate	Total number of contracted deployments	Deployments complete
Acute – Millennium	41	10	7
Community – RiO	33	12	10
Mental health – RiO	15	13	13

Source: Connecting for Health

Changes to the contract

The termination of Fujitsu's local service provider contract

3.2 After encountering difficulties in delivering Millennium to NHS organisations, Fujitsu and the Department entered into 10 months of negotiations to set a new baseline for delivery. In May 2008, however, these negotiations ceased and the Department terminated the contract. The basis for the termination remains in dispute.

3.3 At the point of termination, the Department had paid Fujitsu £71 million of its £1,104 million contract for delivery of the first release of Millennium at eight acute trusts. After termination, the amount charged by Fujitsu to maintain the live Millennium sites doubled because Fujitsu was no longer bound by its original contractual terms. Fujitsu was paid a total of £80 million in the 12 months prior to BT taking over the live Millennium sites. The Department is seeking to recover the increase in costs as part of its ongoing dispute with Fujitsu.

The options considered by the Department for replacing Fujitsu

3.4 Prior to terminating Fujitsu's contract the Department had undertaken an initial appraisal comparing four options for maintaining services: undertaking a new procurement to identify a new supplier; contracting with BT (based on London prices); contracting with CSC (based on the North, Midlands and East prices); and contracting with BT (75 per cent) and CSC (25 per cent) in combination.

3.5 The Department compared the proposal submitted by Fujitsu during the contract renegotiation against the prices in the existing local service provider contracts held by BT and CSC. The analysis showed having CSC as the sole supplier, or BT and CSC in combination, were lower cost than Fujitsu's proposal when adjusted for risk. The Department's appraisal found that having BT as the sole supplier would cost £8 million more than Fujitsu's proposal on a like-for-like basis (**Figure 12**).

Figure 12
Initial appraisal of costs for maintaining services in the South (at 2007-08 prices)

Prices (£m)	Options				
	Fujitsu Proposal	New Procurement	BT	CSC	BT and CSC
Initial pricing	1,259	1,390	1,117	1,226	1,145
Revised price (with uplift/risk)	1,318	1,426	1,326	1,199	1,301
Variance from revised price of Fujitsu proposal	–	108	8	-119	-17

Source: Cost options analysis commissioned by Connecting for Health

3.6 When considering the options for replacing Fujitsu and the timeframe within which it could do so, the Department had to balance costs against a number of other factors, including:

- **Business continuity**: removal of the Millennium system service from the eight live sites would put local NHS care and patient safety at risk.
- **The cost of continuing payments to Fujitsu**: Any new supplier would need to contract with Fujitsu until the point that services could be moved to alternative arrangements.

3.7 Before contracting for care records systems in the South, the Department surveyed acute trusts to establish what care records system they wanted. The most commonly chosen option was to take the system being developed by CSC for the North, Midlands and East, rather than Millennium. At the same time, 20 of the 44 community health services and mental health trusts stated a preference for the system being delivered by BT in London (RiO). Seventeen trusts expressed a preference for the system being delivered by CSC.

3.8 Based on its overall assessment of the options available and their relative risk, the Department chose BT to supply systems in the South on the basis that it was the only supplier with experience of delivering and supporting Millennium. The Department also saw value in contracting with BT for a specified number of RiO systems using the established delivery approach used by BT in London. As part of approving this contract change, HM Treasury required that a further procurement be undertaken for any further systems in the South.

The scope and price of BT's contract

3.9 In March 2009, the Department extended BT's London contract at a cost of £546 million (at 2009-10 prices). This extension consisted of three elements: supporting the live Millennium sites, delivering 25 RiO systems, and delivering three new Millennium systems (**Figure 13**). The Department was able to extend the contract without undertaking a full procurement exercise, using provisions within the existing London contract which enabled the services to be provided in other Programme areas.

Continuity of service at the live Millennium sites

3.10 The Department had no market price comparators when considering BT's £278 million proposal to take on the eight live Millennium sites (**Figure 14**)[1]. Instead, it commissioned Gartner to review the proposal and its costs. On the basis of this review, the Department negotiated a £40 million reduction in BT's initial offer. This brought the price to £237.8 million which was within one per cent of Gartner's industry benchmark data. However, three further changes to the requirements led to the final agreed price being £257 million. This price includes upgrades for six sites from the first release of Millennium to the second release being delivered in London by BT. It does not include the costs of upgrading the system to the level of functionality now anticipated in London, although this functionality was not included within the scope of the original contract for the South. This functionality is, however, available to trusts in the South but, unlike trusts in London, they will have to fund any upgrades themselves.

1 One acute trust later withdrew from the Programme.

Figure 13
Breakdown of BT's contracts for services in the South (at 2009-10 prices)

Scope	Price (£m)
Total for live sites	**256.9**
Service management to eight live sites from July 2009 to March 2010 (prior to transferring the services from Fujitsu)	35.1
Service Management for live sites by BT from April 2010 to October 2015	108.9
Transfer of seven live sites from the Fujitsu to BT	73.8
Upgrade of six live sites to the second release of Millennium	16.5
Upgrade to enable ordering of radiology diagnoses, X-rays, scans and tests	4.9
Other: including resolution of known defects in the first release of Millennium	17.7
Delivery of RiO at mental health trusts and community health services (including service management until October 2015)	**224.3**
Delivery of Millennium at new acute trusts (including service management until October 2015)	**65.0**
Total	**546.2**

Source: Connecting for Health

Figure 14
Cost of running the live Millennium sites (at 2009-10 prices)

	Adjustment (£m)	Price (£m)
BT's proposal		278.2
Savings identified following external reviews	-40.4	
Rebate following the withdrawal of one live site from the Programme	-12.6	
Additional costs due to extended Fujitsu running of the live sites	16.2	
Additional services added by the Department	15.6	
Final price		**256.9**

Source: Connecting for Health

Cost of delivering Millennium at new sites

3.11 When it signed the contract with BT for the live sites in March 2009, the Department committed to the delivery of Millennium at four new sites within a limit of £65 million, with an additional £8 million for other services. The contract for the new sites was, however, not finalised until April 2010. In March 2009, the Department had identified four trusts that wanted Millennium. The £65 million limit was set on the basis of the average cost of an acute trust system as set out in the May 2007 renegotiation of the London contract held by BT. The Department used these costs as they were the only contractually agreed costs available for an acute Millennium system through the Programme at that time.

3.12 One of the four trusts the Department expected to take Millennium later withdrew from the Programme, but the overall cost of delivering Millennium increased from £65 million to £85 million. In part, this was because the £65 million benchmark assumed a smaller average trust size than that of the three new live sites, which led to the overall costs being underestimated. It also did not reflect the cost implications of the changes to the delivery model for Millennium in London which were also agreed in March 2010 (paragraphs 2.2-2.4). To assess the value for money of the £85 million proposal, the Department benchmarked the costs against those of BT providing services at the seven live sites on a pro-rata basis. Although the Department recognised that it was not a like-for-like comparison, it undertook this assessment on the assumption that the work at the live sites offered value for money.

3.13 The same system is being delivered at each of the three new sites as that agreed for acute trusts in London in March 2010, although the average cost for each new site under the BT South contract is 47 per cent higher at £28.3 million compared to £19.2 million in London. BT was, however, able to use hardware previously installed by Fujitsu at one trust, and the Department secured a £16.3 million rebate bringing the total cost of the April 2010 contract to £69 million which was within the Department's cost limit. This reduction also reduced the average cost from £28.3 million to £23.5 million, which is 22 per cent higher than the equivalent cost in London. BT has advised, however, that the system is being delivered in a different way.

Cost of 25 RiO systems

3.14 The Department contracted with BT for 25 RiO systems in the South at a cost of £224.3 million in March 2009. These deliveries include the two tailored releases negotiated in London in March 2010 (paragraph 2.8). No separate business case was prepared for these RiO systems, and the Department has stated that it determined their average £9 million cost on the basis of the costs agreed for RiO systems in London in 2007, but despite repeated requests has not provided us with any evidence of the work

it undertook to assess the value for money of the prices agreed for London. Prior to the Department agreeing for RiO to be provided as the strategic solution for 37 sites in London, BT purchased software and services from the supplier of RiO in 2006, amounting to £46 million. It is not clear what added value the Department is getting for the additional cost.

Overview of care records systems to be provided

3.15 The extended BT contract provides for a significantly reduced number of systems than originally intended in the South. To fill this gap the Department is using a framework of suppliers it set up in 2008 to supplement the Programme's existing capacity (**Figure 15** overleaf).

Progress in delivering care records systems

Acute trusts

3.16 BT took over the seven acute trusts formerly run by Fujitsu in March 2009. By March 2010, it had completed the transfer of data and services for these trusts and, by March 2011, had also upgraded four trusts to the second release of Millennium. The remaining two sites are expected to be upgraded by September 2011. No deliveries of Millennium have been completed at any of the three new sites, with the first deployment currently scheduled for July 2011 and completion of all three expected by March 2012. All further systems and upgrades are expected to be completed across all 10 acute trusts using Millennium in London by October 2015.

Community and mental health trusts

3.17 By 31 March 2011, BT had delivered version five of RiO at 23 sites, with the two remaining RiO systems expected to be delivered in May 2011. All subsequent contracted upgrades, releases, and enhancements are expected to be delivered by October 2014.

Figure 15

Changes to the scope and cost of the local service provider contract in the South (at 2004-05 prices)

	Fujitsu contract 2004-08		Replacement contracts	
	Original Fujitsu contract (January 2004)	Reset Fujitsu contract (April 2005)	BT South Contract (March 2010)	Additional Supplier Capacity and Capability framework
Acute trusts	42	42	10	28
Community health services	31	31	12	13
Mental health trusts	13	13	13	–
Ambulance trusts	4	4	–	4 (covering 2,197 ambulances)
GP practices	–	–	–	0
Total contract value	**£934m**	**£1,104m**	**£454m**	**£470m**

NOTES

1 GP practice systems were not included within the scope of the original contract for the South.

2 Ambulance systems were removed from the scope of the Programme in the South in March 2009.

3 The ten acute trusts under the BT South contract (March 2010) includes three new sites and seven former Fujitsu sites.

Source: Connecting for Health

Part Four

Progress in delivering care records systems in the North, Midlands and East

4.1 In the North, Midlands and East, CSC holds contracts totalling £3,007 million for the delivery of care records systems. CSC is developing a new system called Lorenzo for use in acute trusts, mental health trusts and community health services. CSC is, however, also delivering established products: SystmOne to Community health services and GP practices, and Medusa Siren ePCR to ambulance trusts. There have been significant delays in the development and delivery of the Lorenzo system (**Figure 16**), the reasons for which are the subject of a dispute between the Department and CSC. By 31 March 2011, the Department will have paid CSC £854 million for delivery of care records systems.

Figure 16
Care records systems delivered in the North, Midlands and East as at 31 March 2011

Care setting	Total number of organisations in NHS estate	Total number of contracted deployments	Deployments complete (interim systems)
Acute – Lorenzo	97	97	4 (25)
Community – Lorenzo/TPP SystmOne	90	90	56 (0)
Mental health – Lorenzo	36	35	0 (15)
Ambulance trusts – Medusa Siren ePCR	6	6	6
GP practices – TPP SystmOne/Lorenzo	4,961	4,400	1,377

NOTES

1 Of the 56 community systems delivered, six are Lorenzo and 50 are TPP SystmOne.

2 Child health functionality is being delivered to community health service organisations through a module of TPP SystmOne. As at 31 March 2011, all 54 contracted systems had been delivered.

3 CSC is also contracted to deliver SystmOne to 136 prisons. As at 31 March 2011 all 136 systems had been delivered.

Source: Connecting for Health

Changes to the contract

4.2 The Department has announced that it is seeking to reduce the cost of the CSC contract by £500 million. The Department entered into negotiations with CSC in December 2009 to secure the reduction by changing the scope, functionality and delivery profile for Lorenzo but no changes to the contract have yet been agreed.

Progress in delivering care records systems

Acute trusts, mental health trusts and community health services

4.3 CSC is delivering a new care records system to acute trusts, mental health trusts and community health services, which it is developing specifically for the NHS. Lorenzo is contracted to be delivered through a series of four modular releases (**Figure 17** on page 36) with payments apportioned to reflect the increasing functionality contained in each subsequent release. Community health services also have the option of taking an existing system, SystmOne.

4.4 In 2008, we reported that the development of Lorenzo was taking much longer than originally planned, with an already revised delivery schedule indicating that the first release would be delivered and tested at three trusts for development purposes in summer 2008. All releases were scheduled to be developed and ready for full roll out in summer 2010. Subsequently, further delays have been encountered, and Release 1 has been delivered at only seven trusts and has not been rolled out.

4.5 Lorenzo Release 1.9, which contains the patient administration system upon which the majority of the additional modules are dependent, has been delivered at three sites. This release has, however, yet to be signed off by the receiving trusts although CSC and the Department have reported that it expects two of the three trusts to do so shortly. Release 2 has not yet been delivered at any of the three early adopter sites, which include two acute trusts and a primary care trust, and this work is now not scheduled to be complete until June 2012. No releases of Lorenzo have been delivered at a mental health trust despite work being undertaken at a fourth early adopter site with a view to mental health functionality being available for use by November 2009. Following a number of delays in development, the early adopter trust announced, in April 2011, that it no longer wished to remain in the Lorenzo early adopter programme and was considering other options available in the wider IT market. The reasons for the delays and the trust's withdrawal from the early adopter programme are the subject of a dispute between the Department and CSC.

4.6 Because Lorenzo has not been developed to schedule, CSC is delivering existing systems to those trusts whose systems need to be urgently replaced. TPP SystmOne, an alternative system, has been delivered to 50 of 90 community health services. In acute trusts and mental health trusts, interim systems have been used but offer a lower level of functionality. Forty of the 44 systems delivered in acute and mental health settings to date have been interim systems. The Department does not now expect all of the interim systems to be replaced, although this is subject to finalisation of the ongoing negotiations to reset the contract in the North, Midlands, and East. The costs of delivering interim systems are met from the existing contract but the Department is unable to calculate how much of the £854 million paid to CSC has been spent on these systems. This also means that the funds available for CSC to deliver Lorenzo in the North, Midlands and East are lower than originally expected. CSC reports that to date only a small proportion of what it has been paid by the Department relates to Lorenzo. Local implementation costs are met by the NHS and those trusts that take interim systems will need to undertake further work when Lorenzo is ready.

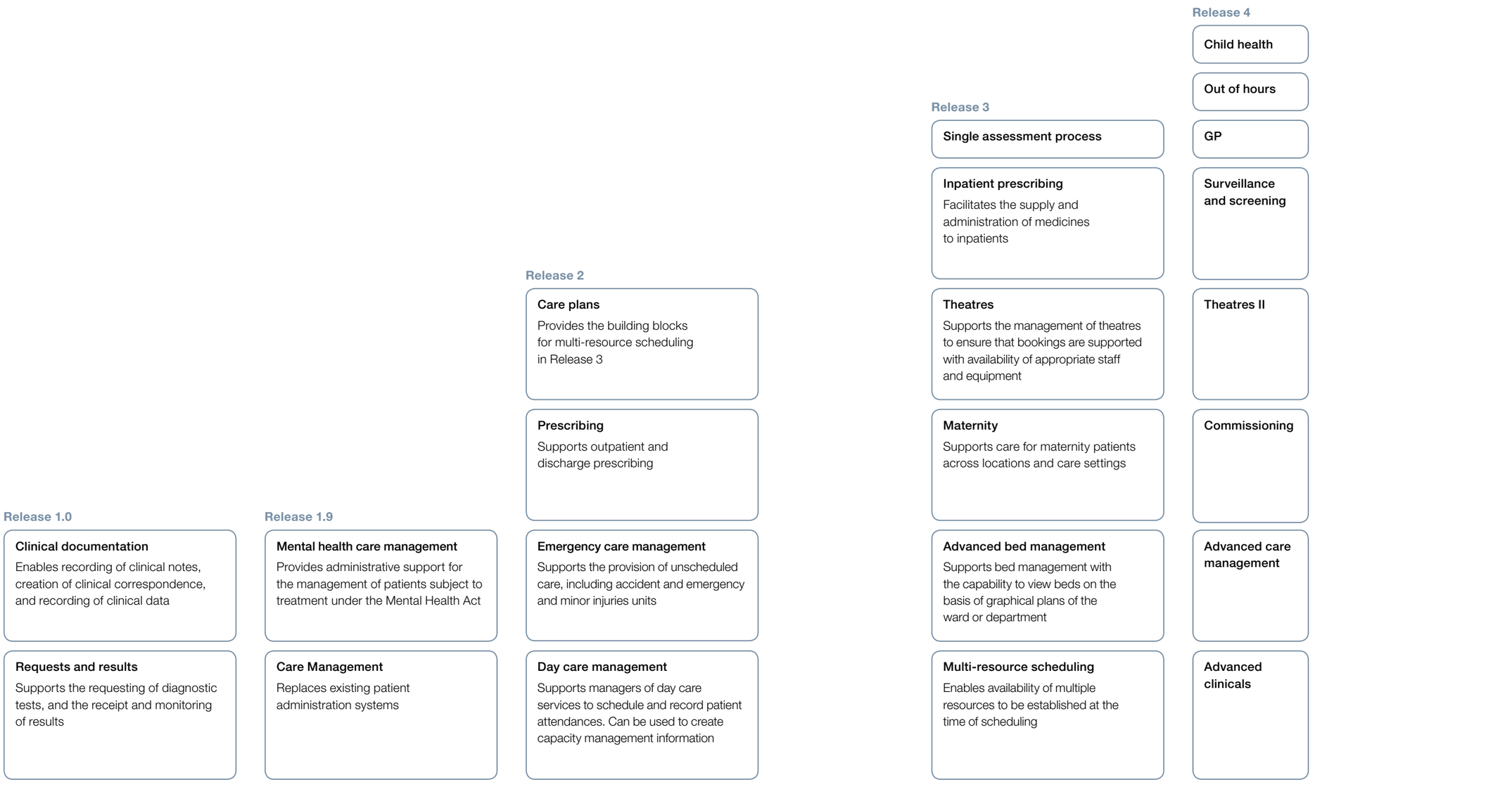
4.7 In November 2009, as a consequence of the limited success achieved in delivering Lorenzo in acute trusts, the Department identified five criteria against which progress would be measured. These covered whether the system existed, was robust and reliable, had been successfully delivered, could be delivered at scale by the supplier and was on track to be delivered at an acute trust by March 2010. Based on CSC's delivery of interim systems, the Department judged that CSC had the capacity to deliver at the required scale. The Department concluded, however, that CSC could not deliver Lorenzo within the timescales required in the contract because it was not ready and had 3,128 identified defects against a contractual limit of 700. The current CSC contract requires Lorenzo to be delivered at over 160 further NHS organisations by July 2016.

GP practices and ambulance trusts

4.8 CSC is delivering an established care record system, SystmOne, to GP practices. SystmOne highlights key diagnoses and conditions on patients' records, and enables GP practices to access information held on the Spine, transmit electronic prescriptions and utilise Choose and Book. The system also provides tools for practices to monitor referral trends and prescribing budgets, and enables patients to book appointments and order repeat prescriptions online.

4.9 As of 31 March 2011, SystmOne had been delivered at 1,377 GP practices, which represents around 31 per cent of the contracted volume. The remaining 3,023 deliveries are scheduled to be complete by the end of 2014-15, with almost all of these to be provided under Release 4 of Lorenzo. CSC has, however, not yet developed the system and it is possible that the Department's ongoing negotiations with CSC will result in it being removed from the contract's scope. CSC has also delivered the Medusa Siren ePCR System to all six ambulance trusts in the North, Midlands and East.

Figure 17
Release profile for Lorenzo



NOTE
1 The scope of the modules in Release 4 have not been defined.

Source: Connecting for Health

Part Five

Risks to be managed in taking forward the Programme

5.1 In September 2010, following a Cabinet Office review of the Programme, the Department announced that the Programme's existing contracts would substantially be honoured. In delivering the remainder of the Programme, the Department faces a number of significant challenges. This part examines three key challenges: completing the remaining work; delivering the Programme within budget; and maintaining governance of the Programme in the context of significant changes to the structure of the NHS.

Completing the remaining work

5.2 Of the 4,715 NHS organisations in England now expected to receive a new system under the Programme, 3,197 are still outstanding. The current CSC contract alone requires delivery of 3,023 GP systems and over 160 deliveries of Lorenzo by July 2016. Successful implementation of Lorenzo by this date would require a delivery rate of between two and three trusts a month over the next five and a half years.

5.3 In the South, three separate procurements are being undertaken through a framework agreement to supply care records systems to those trusts not receiving one through the BT South contract. All three contracts need to be let before December 2011 when the framework agreement expires. The Department expected the first procurement to be complete by April 2010 with delivery of the first system commencing in December 2010. These milestones have, however, been missed and no systems have been procured. The Department reports that some of the delay has been caused by external factors such as the General Election and the Cabinet Office review of the Programme. The Department expects procurement of the remaining systems under the framework to cost no more than £470 million and be delivered by 2015 in line with the BT contract for the South. The level of funding available for systems is therefore significantly lower than that which is available under the contract held by BT in the south (**Figure 18**).

Figure 18

Costs of systems to be procured in the South based on prices under the contract held by BT in the South

		BT South prices	
	Additional systems required in the South	Average cost (£m)	Total cost (£m)
Acute	28	28.3	792.4
Community	13	9.0	117.0
Overall comparative cost			**909.4**

NOTES

1 This does not include the cost of delivering systems to four ambulance trusts.

2 The average cost for each new acute system is based on the average cost of the three new sites to be delivered by BT in the South.

Source: National Audit Office analysis of Connecting for Health data

5.4 To meet demand in the South within the funds available, the systems will have a more limited functional scope than the systems being provided by BT and CSC elsewhere. The Department has agreed with clinicians a minimum specification of functionality to be provided and intends to procure systems which have been proven to work in the NHS. For example, acute trust systems are expected to comprise of patient administration systems that can integrate with other systems, order communications and diagnostics reporting, discharge letters with coding, scheduling for beds, tests and theatres, and electronic prescribing. In order to deliver the systems by 2015, the pace of delivery required in acute trusts far exceeds the pace of delivery achieved elsewhere in the Programme to date.

Delivering the Programme within budget

5.5 By 31 March 2011, the Department and the NHS had spent some £6.4 billion on the Programme. A further £5 billion is expected to be spent by 2015-16, bringing the total cost of the Programme to £11.4 billion (**Figure 19** overleaf). There are however, a number of uncertainties that put at risk the delivery of the Programme within this total:

- Profiled expenditure could slip into subsequent financial years as payment is dependent on suppliers delivering according to contracted timescales.
- Significant contract renegotiations with CSC to secure a reduction in the contract value of at least £500 million have not yet concluded. The Department is considering all options including termination or a significant reduction in both scope and functionality.
- The costs of the additional procurement required in the South following the termination of Fujitsu's local service provider contract will not be certain until the procurement process is completed in November 2011.

Figure 19
Expenditure on the Programme (at 2004-05 prices)

Category	Total actual expenditure to 31-3-11 (£m)	2011-12 forecast (£m)	2012-13 forecast (£m)	2013-14 forecast (£m)	2014-15 forecast (£m)	2015-16 forecast (£m)	Total Programme cost (£m)
National infrastructure							
Spine	814	59	50	-21	–	–	902
N3 network	530	–	–	–	–	–	530
NHSmail	159	16	25	7	–	–	207
National applications							
Choose and Book	154	–	–	–	–	–	154
GP2GP transfer	25	–	2	1	1	1	25
Contracts added	297	-11	10	8	7	7	341
Local services							
London	444	187	118	108	60	32	948
South	213	106	55	36	26	19	454
North, Midlands and East	854	192	313	368	304	476	2,507
Additional Supply Capability and Capacity	–	5	65	52	174	173	470
Interoperability	–	24	17	6	4	–	52
Amount retained by Accenture	122	-3	-3	-3	-3	–	110
Amount retained by Fujitsu	151	–	–	–	–	–	151
Local NHS costs							
PACS	675	69	78	34	19	12	886
N3 Network	216	–	–	–	–	–	216
Local deployment costs	882	278	313	205	109	296	2,084
Interoperability	–	22	52	56	43	–	172
Central Programme costs	817	119	87	62	54	52	1,190
Total	**6,354**	**1,084**	**1,179**	**918**	**797**	**1,068**	**11,400**

NOTE

1 The negative expenditure represents expenditure which has been allocated but is not now expected to be used.

Source: Connecting for Health

5.6 At the same time, the NHS is seeking to deliver up to £20 billion of efficiency savings by the end of 2014-15. Although in January 2011 the Programme Board reported that a significant gap existed between the funds required for the Programme and those available, following the Spending Review settlement the Department now reports that it has been allocated sufficient funds to cover the expected costs of the Programme for 2011-12. The Programme Board identified, however, that clarity on the funding of systems in use by the NHS needs to be addressed urgently, to enable planning for 2012-13.

5.7 In September 2010, the Department announced a change in the Programme's fundamental approach, moving away from replacing all trusts' systems to ensuring that their existing systems are able to connect to the infrastructure introduced through the Programme. To support interoperability of the systems, the Department has developed a set of standards which systems will be required to meet. The Department estimates that the central cost of developing an approach to support NHS organisations in achieving this interoperability is likely to be some £52 million. The cost to local NHS organisations of achieving interoperability is to be £172 million.

Maintaining governance of the Programme

5.8 The reorganisation of the NHS announced in July 2010, which involves major changes to the role of the Department and many parts of the NHS[2], has a number of implications for the future of the Programme. Currently the Programme is managed nationally by Connecting for Health, part of the Department, with the ten strategic health authorities responsible for implementation and benefits realisation locally. By 2012, as part of the reorganisation of the NHS, strategic health authorities will be abolished and the existing governance structure will disappear. There is also uncertainty about the future of Connecting for Health.

5.9 Some contracts for national systems such as the Spine, which are in regular use across the NHS, come to an end as soon as June 2013. The Department has three options for continuing these services:

- Use clauses within existing contracts to extend them – this would be a short-term arrangement whilst the Department considered other options.
- Procure new national contracts through open competition – these contracts would need to be managed centrally.
- Give responsibility for procuring services to individual local NHS organisations – this might risk a return to the haphazard procurement practices that the Programme sought to address.

2 National Audit Office, *National Health Service Landscape Review*, HC708, January 2011.

5.10 The Programme's contracts for delivering local systems expire in 2015-16, by which time those organisations currently managing the Programme will no longer exist and the risks will transfer to the NHS trusts using care records systems through the Programme. These trusts, however, currently have no direct contractual relationship with the local service providers or the subcontractors supplying the care records systems. This means that they have no sight of the possible financial implications of continuing to use care records systems beyond 2015-16. There remains, therefore, considerable uncertainty about:

- who will manage the existing contracts up to July 2016;
- who will measure and report on the benefits of the Programme;
- how the financial implications of the structural changes to the NHS will be managed and by whom; and
- the cost and mechanism for transferring services from the Programme to any new suppliers.

Appendix One

Methodology

Our fieldwork took place between October 2010 and April 2011.

Method	Purpose
1 Review of key documents	
We reviewed the Department's documents relating to, for example: • the changes in scope of the contracts; • the implications to cost and functionality; • the risks identified; and • progress made in rolling out the systems.	To understand the rationale for, and process by which, the Department has acted. To evaluate the progress that has been made in delivering the systems and the changes in the costs and what they are able to do.
2 Interviews with officials from the Department	
We conducted semi-structured interviews with lead officials from the Department.	To clarify our understanding of the rationale and process for the changes in the scope of the Department's contracts.
3 Interviews with the main contractors and sector experts	
We conducted semi-structured interviews with the main contractors of the care records systems. We also interviewed key sector experts.	To understand and evaluate the changes in costs and functionality.
4 Visits to users of the care records systems	
We visited three NHS acute trusts in December 2010	To provide, by visiting hospitals at the forefront of the delivery of care records systems, an understanding of the delivery of systems and their functionality.

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