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NATIONAL AUDIT OFFICE

Report by the
Comptroller and Auditor General

Inland Revenue/ EDS Strategic Partnership: Award of New Work

HC 351 Session 1999-2000
29 March 2000

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John Bourn
Comptroller and Auditor General

National Audit Office
22 March 2000

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Executive summary

1 From the 1960s onwards the Inland Revenue developed increasing levels of computer support for its business activities until it was running one of the largest administrative computer networks in Europe. By the early 1990s, its Information Technology Office, which developed and ran the Department's systems, employed over 2,250 and had an annual budget of £250 million.

2 After testing the market and taking external advice, the Department concluded in 1992 that fundamental improvements were required to its information systems and information technology, and that a strategic partnership with a single private sector provider would best meet the objectives of:

- gaining rapid access to modern information systems and information technology skills, tools and technologies;
- achieving substantial improvements in cost-effectiveness;
- improving significantly the speed of response in the development and enhancement of systems;
- optimising career opportunities for Information Technology Office staff.

Following a competition, a ten-year contract was let to Electronic Data Systems Limited (EDS). The work, staff and assets of most of the Information Technology Office were transferred to EDS in two tranches, in July 1994 and January 1996, with some staff remaining with the Department to manage the contract.

3 The Department and EDS run the contract as a partnership, from board level downwards, with both parties putting considerable effort into making the structures work and delivering the high service levels required. Fundamental to the success of the partnership are a clear vision and strategic direction, and a common recognition that it is the objective of both parties to secure benefits under the arrangements. Such an approach requires active management. To assist this, the Department established a risk management strategy, which is reviewed on a regular basis, so that important issues can be drawn to senior management's attention on a timely basis.

4 The contract with EDS is not a fixed price contract because the information systems and information technology needs of the Inland Revenue are constantly developing and changing in response to external factors, such as government policy and Budget changes, and internal factors, such as initiatives to improve the administration of the tax system. New work will account for about a quarter of the forecast £2 billion revenue spend on the EDS contract. The management of the risks of new work is a challenging area for value for money, particularly as the information technology systems developed by EDS will contribute to the future efficiency and effectiveness of many aspects of the Department's operations. This report focuses on the way that new work is commissioned by the Department.

5 In considering how the Department manages the risks associated with the procurement of new work, the report examines three main issues:

- the Department's process for commissioning new work;
- the maintenance and development of the skills necessary to assess the proposals and performance of EDS; and
- how the cost of the service is compared with what is being achieved elsewhere.

The process for commissioning new work

6 The framework which the Department uses to manage the risks associated with commissioning new work from EDS is basically sound and should ensure that value for money is achieved if the steps in the process are followed consistently. Pressure to deliver an increasing workload to demanding timetables has led to closer working with EDS on the development of information technology solutions to business requirements and has increased the importance of effective risk management. The Department has identified, and is addressing, most of the key risks.

7 Recommendations for further improving the Department's management of risk include:

- making a formal assessment of the risks attached to closer working with EDS in the rapid development of information technology solutions;
- formalising the criteria for deciding when to refer EDS proposals to the Department's information technology experts for scrutiny;

- improving project managers' understanding of the contract's complex pricing mechanism to reduce the risk of nugatory expenditure; and

- tightening up post-implementation and hand-over procedures to ensure that live running of new systems can be monitored effectively.

Skills

8 To operate the partnership effectively and to contribute to strategic issues senior staff in the Department need to maintain an independent knowledge of current developments in information systems and information technology. This knowledge depends on key individuals building and maintaining a network of contacts, reading relevant technical publications, attending events and seminars, visiting suppliers and other organisations, as well as purchasing market reports and analyses from specialist information technology research organisations. The Department's framework for staff development has helped to ensure that these activities take place and the Inland Revenue is widely regarded as a source of information on the successful management of information technology outsourcing.

9 There has been very low staff turnover in some small technical units in the Department critical to the operation of the partnership and to the award of new work, resulting in a concentration of skills and knowledge in a small number of people. This had some advantages in the early stages of the contract, but it is important for the Department to have the human resources to remain an intelligent customer and to have a sufficiently large pool of trained information technology staff to secure a reasonable rotation for career development and skill enhancement, as well as to be able to fill vacancies if experienced people leave the Department.

10 Recommendations to the Department on the maintenance and development of skills include:

- reviewing the role of the specialist Information Technology Technical Unit to ensure that its important work on strategic information technology issues is not put at risk by increasing involvement in the detail of projects; and

- improving succession planning and increasing the rotation of staff in specialist units working in partnership with EDS.

External comparisons

11 While the Department's active management of the risks associated with the commissioning of new work and the effective operation of the partnership by skilled staff increase the likelihood of securing value for money, they do not guarantee it. For example, the incentives in the contract to improve efficiency may be insufficient to keep pace with the market. External perspectives can provide assurance about the comparative value offered by EDS.

12 The Department has used benchmarking to compare aspects of the contract with performance elsewhere. Difficulties were encountered, and were to be expected, in making the comparisons, and the results contain significant caveats. Nevertheless the Department concluded that, overall, the parts of the contract studied were competitive with the market. The chief area of concern was a low, but improving, level of software development productivity.

13 The contract allows existing services provided by EDS to be market tested if there is evidence, for example from benchmarking, that the service provided is uncompetitive. Before the Department can proceed to a full market test, EDS is entitled to match or better any indicative price. So far, no existing service has been market tested and one new requirement, the provision of an Internet capability, has been subject to open competition and let to another organisation. Market testing, therefore, has provided little direct evidence of the comparative value offered by EDS.

14 In view of this, recommendations to the Department on making external comparisons focus on benchmarking and include:

- increasing the use of external expertise to help address difficulties in obtaining useable comparative information from other information technology providers; and

- extending the use of benchmarking to other services provided under the partnership with EDS.

Overall conclusion

15 The Inland Revenue's strategic partnership with EDS has, by comparison with many other major projects in the information technology field, been successful in helping the Department deliver significant changes in taxation policy to demanding timetables, thus meeting an important objective of the outsourcing. From the Department's experience, important ingredients of successful management of such partnerships include active involvement by top management, a recognition that both parties need to secure benefits, active management of the risks associated with this type of procurement approach, and a commitment to resolving issues arising in a positive, constructive manner.

Part 1: Introduction

This part describes the historical context of the Inland Revenue's partnership with EDS and the objectives and methodology of our examination.

Why and how the Information Technology Office was outsourced

1.1 The Inland Revenue is one of the largest and most geographically diverse Government departments, employing some 65,000 people in more than 700 offices throughout the United Kingdom.

1.2 Starting in the late 1960s the Department developed increasing levels of computer support for its business activities. The in-house Information Technology Office was responsible for building and running the computer systems, which now form one of the largest administrative networks in Europe. By the early 1990s, the Information Technology Office was one of the largest public sector organisations of its kind, with around 2,250 employees, and an annual budget of some £250 million.

1.3 By the late 1980s, the Inland Revenue recognised that fundamental changes would need to be made if the Information Technology Office was to continue to support the Department's business requirements in the 1990s and beyond. The Information Technology Office faced a number of pressures and constraints including:

- increasing internal demand for information technology;
- the complexity of development work on existing systems, which had been designed in-house, resulting in extended development times and increased costs;
- difficulties in attracting and retaining skilled staff and in developing their skills at the pace demanded by technological change;
- increasing reliance on contractors to provide the skills required;
- funding constraints, which led to new developments taking priority over efficiency improvements.

1.4 In 1991, the then Government's White Paper "Competing for Quality" (Cmd 1730) established the policy that, wherever possible and appropriate, public sector services should be tested against the market, with the work going to the provider offering best value for money for the taxpayer. In response, and with the advice of outsourcing consultants, the Department conducted a market test of its information systems and information technology services. The test was guided by four key objectives:

- to gain rapid access to modern information systems and information technology;
- to achieve substantial improvements in cost-effectiveness;
- to improve significantly the speed of response in the development and enhancement of systems; and
- to optimise career opportunities for Information Technology Office staff.

1.5 The Department concluded that a strategic partnership with a single private sector supplier was the route most likely to provide it with the stability, flexibility and resources needed to achieve its objectives. In May 1994, following an open competition, the Inland Revenue awarded a ten-year contract, the Information Technology Services Agreement, to Electronic Data Systems Limited (EDS). The work, most of the assets, and 1,900 staff of the Information Technology Office were transferred to EDS in two main tranches, in July 1994 and January 1996.

1.6 The contract with EDS is not a fixed-price contract, reflecting the fact that the information technology services to be provided would change over the ten-year life of the partnership in response to Government policy developments, Budget provisions, changes in the economic climate, developments in technology, and customer service expectations. In contrast to more traditional procurement arrangements, where individual suppliers are contracted to deliver defined services without continual, detailed liaison with the customer, the Inland Revenue's partnership agreement with EDS allows for regular reviews of the service to be supplied and how risks are to be shared. These arrangements, which include regular meetings between the partners, including discussions at board level, form a relationship in which both parties secure benefits over the life of the contract. Appendix 1 provides details about how the partnership operates.

1.7 Contracts for complex procurements such as information technology services require active management to ensure that the benefits are delivered. The Department established a risk management strategy at the outset, under which a comprehensive risk management plan is reviewed on a quarterly basis. The plan analyses the probability and potential impact of risks which could affect the successful operation of the partnership and identifies actions designed to address the risks and the individuals responsible for managing them. These arrangements are intended to ensure that important issues are drawn to the attention of the Department's Partnership Review Board on a timely basis.

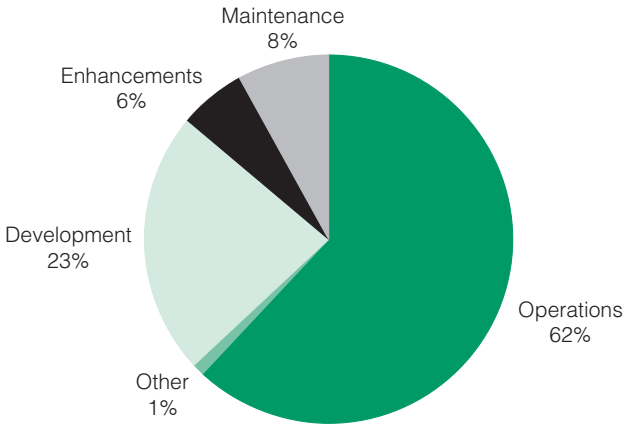
The scope of the contract

1.8 Under the contract, EDS is responsible for delivering most aspects of the Department's information technology requirements, including the development and implementation of new systems and the operation, maintenance and enhancement of both new systems and the systems inherited from the Information Technology Office. EDS also supplies some items of capital, for example mainframe computers, under the contract where these are required. The Department pays for these on an amortised basis.

1.9 At 31 March 1999, cumulative revenue expenditure on the provision of information technology services under the contract with EDS stood at £874 million, and payments to EDS for the use of capital equipment amounted to £163 million. Figure 1 illustrates the proportionate value of the components of the total volume of work (excluding payments for the use of capital equipment).

Figure 1

Mix of services by value provided by EDS in the first five years of the contract



Source: Inland Revenue

A significant proportion of contract costs is devoted to the development and enhancement of information technology services.

1.10 The Department's desktop equipment, for example, personal computers, terminals, printers and other equipment installed on its premises, was not transferred to EDS and remains the Department's property. The Inland Revenue procures new equipment from a number of suppliers under call-off contracts. EDS is responsible for its successful integration into the office environment, for live support, and for maintenance.

1.11 The information technology systems provided by EDS include:

- national taxes systems supporting, for example, PAYE and self assessment, which can be accessed by staff in most of the Department's network of over 700 local and central offices;
- systems supporting the activities of specialist offices, such as the Oil Taxation Office and the Capital Taxes Office; and
- systems supporting the administration of the Department, for example, the Payroll and Personnel Management Information System.

Developments continually take place in response to changes in the tax system, such as the introduction of tax credits, and in response to business needs, for example, to improve the design of the statement of account provided to income tax payers under self assessment. In addition, new systems are developed in response to Government initiatives, for example the introduction of individual savings accounts. As a result, by the end of the contract the Department's information systems and information technology infrastructure will be substantially different from those in place at the outset.

The value of the contract

1.12 As noted at paragraph 1.6 above, the contract with EDS is not a fixed-price contract, reflecting the fact that it was difficult for the Department to predict with any degree of certainty the size or nature of its long-term information technology requirements. The Department's current forecast of the projected revenue spend on the ten-year contract is £2 billion. Figure 2 shows the factors underlying the current forecast and the reasons for the changes since the contract was let are explained below. The original projected value of the contract covered the provision of information technology services, but excluded any element for capital because

the Department was unable to predict with any certainty what developments would emerge over the next ten years. To maintain consistency, Figure 2 also excludes capital expenditure.

Factors contributing to change in projected revenue spend under the contract

Figure 2

Projected value at contract award (1994)	**£1,033 million**
Post-contract verification adjustment	£203 million
Workload increases, including new work completed, ongoing and projected	£533 million
Inflation	£248 million
Current projected revenue spend	**£2,01 million**

Note: The projected capital spending figure under the contract is £409 million, including expected spending on approved projects.

Source: Inland Revenue

1.13 The market test and competitive tender were conducted using a fixed set of data based on the Department's assets, work types and volumes in 1992-93. This ensured that the bids were prepared on a common basis. As the Department had continued to develop its information technology services between the preparation of the invitation to tender and the award of the contract in 1994, a post-contract verification exercise needed to be carried out to value the assets and liabilities actually transferred to EDS. Under the post-contract verification, the EDS bid was adjusted to reflect the actual situation at the date of transfer. Increases in service levels, and other liabilities existing by the time the contract was awarded, added £203 million to the projected contract value over the ten year period.

1.14 The cost of additional work and volume increases since the contract was awarded is based on expenditure to date and on the assumption that new work will continue to be commissioned over the remaining life of the contract at broadly the same annual rate as in 1998-99. The Department's latest estimate of the cost of new work is over £500 million.

1.15 The tenders and the original estimates of contract value were expressed in constant 1994-95 prices. The estimated impact of inflation to the end of the contract is £248 million.

1.16 The main incentive under the contract for EDS to improve the cost-effectiveness of the service is an arrangement where the price of the original volume of work transferred reduces by about 35 per cent over the life of the

partnership. New work is charged at prices based on the reducing cost of the transferred work, including any additional improvements in efficiency. Appendix 2 explains how the pricing mechanism works.

Scope of the examination

1.17 In 1995, we published a report on the process and results of the market test of the Information Technology Office[1]. The report concluded that the contract provided reasonable safeguards to the Department's, taxpayers' and staff's interests, and that EDS appeared both capable and willing to meet the Department's objectives. Although the Department had introduced contract management processes to enable the desired benefits of the partnership to be achieved, the report acknowledged that the effectiveness of these processes could only be fully evaluated once the relationship had settled down.

1.18 This report focuses on how the Department has managed the award of new work, which as Figure 2 shows, accounts for about a quarter of the forecast £2 billion total value of the EDS contract. In a partnership such as the one between the Inland Revenue and EDS, which relies on the development of trust and understanding between the two organisations, management of the risks associated with the award of new work is a challenging area for value for money.

1.19 This challenge extends beyond the generally accepted risks associated with procurement because information systems and information technology are central to the efficient and effective operation of the Inland Revenue. The new information technology systems developed by EDS to support the major change programme currently under way within the Department will influence the future efficiency and effectiveness of many aspects of the Department's operations. The processes for awarding new work are therefore some of the most critical elements of the Department's management of the contract. They are the focus of this report.

1.20 For the purposes of the examination, we defined new work as any project to develop new information technology systems or significantly enhance existing systems. New work originates from several sources:

- developments in *Government policy*, including Budget changes and initiatives, such as the introduction of self assessment, working families' tax credit, and individual savings accounts;

1 Inland Revenue: Market Testing the Information Technology Office (HC245)

- developments in *Departmental strategy*, such as the Call Centre experiment to investigate the scope for conducting more of the Department's business with taxpayers and other clients via the telephone;

- requirements identified by *individual Inland Revenue business units*, such as an integrated repayment system for the Financial Intermediaries and Claims Office; and

- developments in the Department's *information technology infrastructure,* such as the project to replace the Department's personal computers and terminals with millennium-compliant equipment capable of supporting more powerful systems (the infrastructure 2000 project), which EDS is helping to integrate into the office environment.

1.21 Most of the expenditure on new work tends to be concentrated on larger projects. Of nearly 400 projects authorised since the start of the contract, 50 (around 13 per cent) accounted for 95 per cent of EDS development effort. Within these 50, the introduction of income tax self assessment and the Department's infrastructure 2000 work are the largest projects, each accounting for over a quarter of EDS development effort. Other significant projects are those implementing government initiatives such as the introduction of corporation tax self assessment, the collection of student loan repayments and the new construction industry scheme. Examples of smaller projects, involving less than one per cent of EDS development effort, include the introduction of the Valuation Office Agency's national database of property valuations, enhancements to Oil Taxation Office systems, and computer support for the Department's Large Employer Compliance Office.

1.22 The decisions and actions which are crucial to determining the long-term value for money of new work start with the Department specifying its outline requirement, continue through its evaluation of proposed solutions from EDS, and end with trials and acceptance of the completed system. The size and form of the solution accepted at the evaluation stage largely determine the costs of live running and on-going maintenance. We therefore concentrated our examination on the processes for commissioning new work, from the initial identification of the business requirement to the beginning of live running. Our study did not examine EDS performance in delivering the service after completion of the development phase.

1.23 The report addresses three main issues:

- the Department's processes for commissioning new work (Part 2);

- the maintenance and development of the skills necessary to assess the proposals and performance of EDS (Part 3);
- how the cost of the service is compared with what is being achieved elsewhere (Part 4).

Study methodology

1.24 The National Audit Office outsourced the study through competitive tender to Lorien plc, who worked in close liaison with National Audit Office staff throughout. The factual content of the report has been agreed with the Inland Revenue, in accordance with our normal practice.

1.25 During the investigation, Lorien:

- interviewed key personnel in the Department, including Board Members and Directors with responsibility and accountability for strategic and project investment, and prioritisation decisions;
- interviewed senior staff in EDS, including the then Chief Executive and the Inland Revenue Division Account Manager;
- reviewed, by examining documentation and interviewing key staff, the Department's procedures for commissioning new work;
- examined a sample of 12 projects undertaken by EDS since 1994, including some started by the Department and transferred to EDS, to see how the Department's procedures had worked in practice;
- carried out a survey of 45 Inland Revenue staff with important roles in the management of the partnership, including the commissioning of new work, to establish how their skills are maintained and developed.

1.26 For each of the twelve projects in the sample, Lorien interviewed staff from the Inland Revenue and EDS with a major role in the development and examined key documents, such as specifications, EDS proposals and business cases. At the time of the examination, some of these projects had been completed and others were in their early stages. They were chosen, with the agreement of the Department, as a representative range of projects likely to be carried out under the contract. Details of the projects are at Appendix 3.

Part 2: The Department's procedures for commissioning new work from EDS

This part examines how the Department addresses the potential risks to value for money in awarding new work to EDS.

2.1 The Inland Revenue is a large and complex organisation which carries out a wide range of tasks, many of which are interrelated and/or closely governed by legislation. The Department's information technology systems reflect this size and complexity and are an integral part of the operation of the UK taxation system. They are subject to continual change and development - to respond to Government initiatives and budget changes, to enable the Department to improve its operations, to take advantage of improving technology and to deal with technological challenges such as the millennium threat and the obsolescence of software and hardware.

2.2 The Department's current projections indicate that 26 per cent of the forecast revenue expenditure (currently £533 million) will be spent on new work. The new information technology systems developed by EDS are central to the efficient and effective operation of the Inland Revenue both now and in the future. In securing optimum value from EDS for the £533 million spend on new work, it is crucial that the Department ensures that the technical solutions procured from EDS offer the most efficient, effective, and economic means of supporting its business requirements.

2.3 For any organisation, effective procurement of information technology depends on a number of factors including:

- a correct understanding and precise definition of the business requirement;
- clear specification of the appropriate technical solution and identification of the optimal route for delivering the solution;
- rigorous evaluation of proposed solutions before approval; and
- control of software development so that a quality solution is produced in a timely and efficient manner.

2.4 In this Part of the report we examine the Department's procedures for commissioning new work from EDS and assess whether they minimise potential risks to securing value for money.

The process for commissioning new work

2.5 The Department follows clearly defined procedures in commissioning new work from EDS and a number of individual units within the Department are involved in the process (see Appendix 1). Figure 3 shows the main steps between the identification of a new requirement and approval of the EDS information technology solution and Figure 4 shows the involvement of various Departmental units, the majority of which are located within its Business and Management Services Division.

2.6 There are five main stages in the overall process:

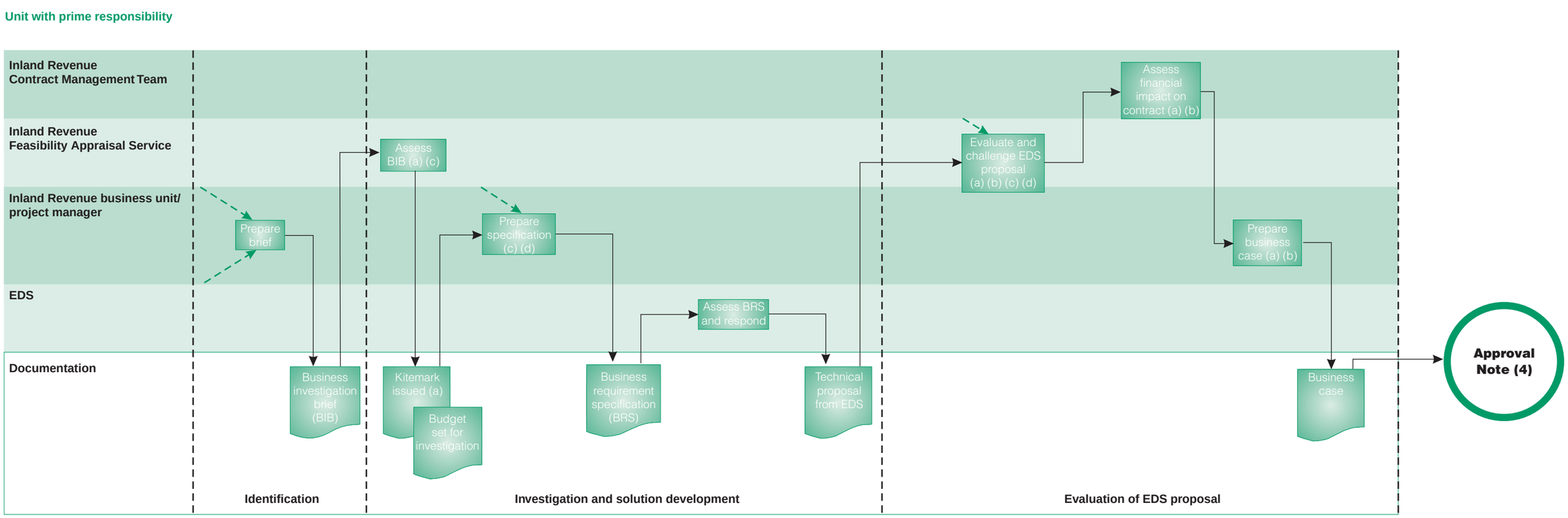
- identification of the requirement;
- investigation of the requirement, definition of the information technology element, and development of solutions;
- evaluation of proposed solutions received from EDS and approval of the project concept and of the funds to proceed;
- project management of the overall development – with the Department responsible for the coordination of the development and delivery of the whole project and EDS responsible for the management and development of the information technology solution; and
- project evaluation and handover to live running.

We examined each of the stages of the commissioning process and considered the main risks to value for money. These are set out in Figure 5 on page 17.

Figure 3 overleaf

Figure 3

The basic process for commissioning new information technology work from EDS



Notes:

1. Other Inland Revenue Divisions and parts of Business & Management Services Division have an input into the basic process, as indicated.

   (a) Strategy and Planning Division
   (b) Finance Division
   (c) Information Technology Technical Consultancy
   (d) Operational Research Service

2. Broken arrows show where the unit of prime responsibility is assisted by other units.

3. Assessment of BIBs, BRSs and EDS proposals may include referral back to the originator for amendment.

4. Approval is carried out at different levels depending on the lifetime value of the project (Figure 9).

5. Following approval, EDS is responsible for developing the information technology system within the total project framework, which is controlled by the Department. On completion, the Department tests and, when acceptable, puts the system into live running.

Source: Lorien analysis

Figure 4

The role of the various Departmental teams involved in commissioning work from EDS

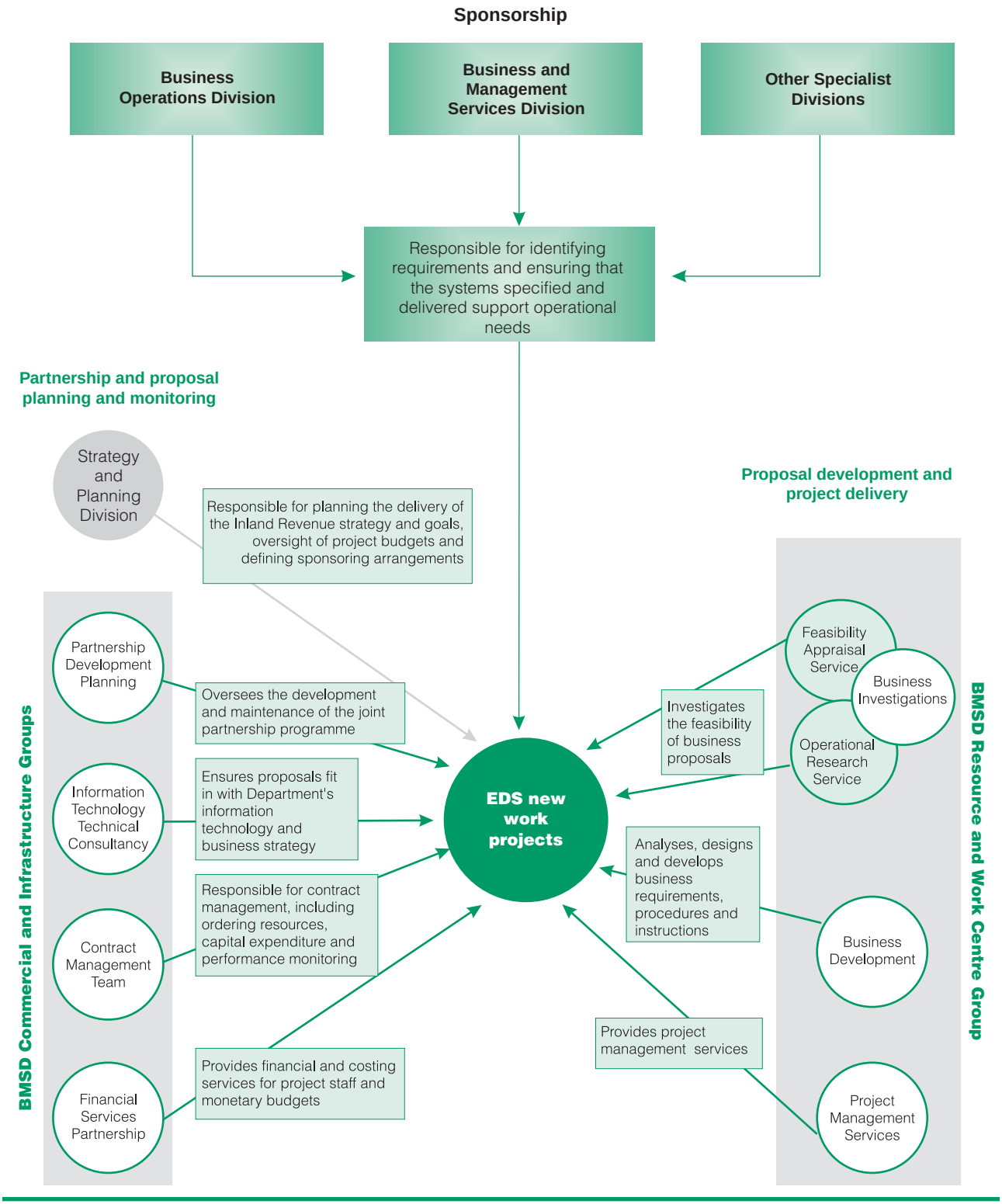


Figure 5

Potential risks in commissioning new work from EDS

Stage 1: Identification of the requirement

- EDS may unduly influence the identification and specification of new requirements and/or the solution

Stage 2: Development of solutions

- Solution may not be in line with the Department's information technology strategy
- Solution may fail to meet business needs because the requirement was not defined accurately
- Insufficient time may be allowed for the definition and/or development of the requirement and/or the solution
- Excessive scope growth of projects, particularly those which use rapid application development (Figure 8)

Stage 3: Evaluation and approval of EDS proposals

- The Department may not evaluate with independence and objectivity
- The Department may not choose the most critical projects for technical and/or financial assessment of EDS proposals
- Ineffective evaluation may result in the Department becoming "locked in" to EDS as a provider
- Approval authorities may have insufficient assurance on the reliability of business cases

Stage 4: Project management

- A shortage of trained and experienced project managers and requirement managers may adversely affect the efficient management of projects
- Project managers may have insufficient understanding of the contract pricing mechanism

Stage 5: Project evaluation

- Lack of rigour in following post-implementation procedures may prevent adequate assessment of development and live system performance

Stage One: identification of the requirement

2.7 When a requirement is identified, the relevant business unit within the Department appoints a project sponsor, usually one of its senior managers, to oversee and control the project to fulfil the requirement. The project sponsor is responsible, with assistance from the Feasibility Appraisal Service of the Department's Business and Management Services Division and the EDS account manager, for preparing a business investigation brief. This sets out the scope and terms of reference of the investigation and the objectives and anticipated benefits of the proposed project. Agreement to fund a business investigation is the first step of the formal project approval process.

2.8 An imbalance in the relationship between EDS and the Department could lead the company to suggest unnecessary requirements simply to generate income. This would not apply in the case of new work arising out of Government

policy changes, and the Department's project approval process also has safeguards to ensure that projects which do not meet a genuine need are not approved.

- The Departmental planning procedure translates high level objectives into individual business unit plans. Requirements are generated from these plans.

- No project can proceed without at least the approval of the Feasibility Appraisal Service.

These safeguards, combined with the pressures imposed by restrictions on financial and staff resources, should result in the rejection of proposals which do not meet a genuine business need.

2.9 Of the twelve projects we examined, four were initiated before the Department's contract with EDS. Of the remainder, three arose from legislative or other policy changes and five were identified by the Department to improve business processes, such as the Call Centre experiment to reduce reliance on paper-based systems (see Figure 6).

2.10 We conclude that the Department's arrangements provide reasonable assurance that projects which did not meet a genuine business need would be rejected before proceeding to the investigation stage.

Figure 6

Source of business requirement

Project	Pre-dated EDS contract	Post- dated EDS contract	
		Arose from legislative or policy changes	Arose from need to improve business procedures and continuity
1. Computerised environment for self assessment	✔		
2. Infrastructure 2000			✔
3. Construction industry scheme	✔		
4. Collection of student loan repayments		✔	
5. Payroll and personnel management information system	✔		
6. Individual savings accounts		✔	
7. Integrated debt management system			✔
8. Call Centre experiment			✔
9. Business continuity implementation			✔
10. Integrated repayments system			✔
11. Repayment of interest on PAYE		✔	
12. Regional processing centre rationalisation	✔		

Note: Some projects may have arisen for a number of reasons. The figure shows the main source of the business requirement for sample projects developed since the contract with EDS was let.

Stage Two: development of solutions

Consistency with information technology strategy

2.11 Once a project has been through the Department's approval process, the next stage is for EDS to develop a technical solution. If the Department is to achieve value for money in the award of new work to EDS, it is essential that information technology developments are directed by a strategy which will:

- ensure that technical solutions are consistent with, and contribute to, the achievement of the Department's objectives;

- give the Department access to hardware and software which are widely used and capable of operating together, giving it freedom in the choice of suppliers and avoiding, as far as practicable, "lock-in" to any one system or supplier;

- obtain maximum value from investments in hardware and software, especially bespoke developments, by enabling them to be shared or re-used in different systems;

- encourage operational efficiency by setting rules on data formats, storage and access which enable common data to be shared and avoid duplication of keying or storage; and

- minimise the cost of hardware provision by encouraging standardisation, which maximises the Department's purchasing power and minimises maintenance costs.

2.12 A comprehensive information systems and information technology strategy, by encouraging common standards, should enable savings to be made in the procurement of hardware and software and their subsequent maintenance. It should also produce indirect benefits by, for example, reducing the need for staff training, and the risks associated with acquisition and operation, such as the risk of a purpose-built software system failing to meet specification, or of no back-up being available in the case of hardware failure.

2.13 Under the partnership, the Department is responsible for defining its information systems strategy and it shares responsibility for the information technology strategy with EDS. The information technology strategy aims to achieve long term value for money by specifying a preference for:

- open operating systems (systems for operating computers which allow a wide variety of different producers' software to be run, rather than a single manufacturer's systems);

- the purchase of off-the-shelf software rather than the development of purpose-built software;

- development of single software modules for common procedures, such as the handling of receipts and payments, which can be used in a number of systems supporting individual taxes or administrative processes;

- data to be only keyed once and to be stored in a single place; and

- use of a common desktop computer system throughout the Department.

2.14 The Department's strategy also builds on the information technology strategies of EDS, where they are compatible with the aims and interests of the Department, so that the expertise, facilities and purchasing power of EDS can be exploited to best advantage.

2.15 Information technology strategies are not, however, set in stone. Developments in information technology and policy developments flowing from, for example, the Modernising Government initiative, mean that the strategy needs to be kept under review to ensure that current developments are in line with the medium- and long-term vision of the Department's business. The Department has recognised this as a key issue for the continued success of the partnership.

2.16 Without an overall strategy, each technical solution might be developed in isolation, leading to fragmentation and failure to secure the advantages outlined at paragraph 2.11 above. Departures from the Department's strategy have, however, occurred and could still occur, because, for example, the Department has had to make tactical decisions which are out of step with the strategy in order to deliver systems in time to meet legislative or other deadlines (see Figure 7). As this may result in further work being necessary at a later date to bring a development into line with the information technology strategy, as with self assessment, such departures should be made consciously, for defined and justifiable reasons.

Examples of strategic and tactical decisions in procurement of new work

Figure 7

Strategic
It had originally been assumed that the Government's timescale for introducing individual savings accounts (ISAs) by April 1999 would require the Financial Intermediaries and Claims Office to develop, as a tactical solution, a stand-alone system based on that used to administer PEPs and TESSAs. The project feasibility study demonstrated the financial and business-related benefits of using the introduction of ISAs as a catalyst for the modernisation and integration of the Office's systems.

Tactical
The self assessment computer system was developed on the ICL VME operating system rather than on an open system because work had already started at the time EDS took responsibility. The target dates for introducing self assessment would not have been met if a completely fresh start had been made.

Clarity of business requirement

2.17 If EDS is to deliver effective technical solutions, it needs a clear and unambiguous definition of the business requirement to reduce the risk of errors in the selection of the technical solution or of confusion and wasted work during development and implementation. This is not, however, always possible where a business requirement arises from a legislative or policy initiative, if the elapsed time to deliver the project requires the Department to commence development before the business requirement has been defined fully. To be effective, the process of requirement definition should be iterative and involve all key stakeholders, including users and EDS specialists.

2.18 Our investigations highlighted two projects where difficulties during project development could be attributed to an inadequate business requirement specification.

- The work required to develop an *integrated repayments system* for the Financial Intermediaries and Claims Office was 93 per cent more than had been estimated at the outset. The post implementation review noted that the Department's business requirement specification had not identified the need for the information technology software to be able to calculate the amount of the tax repayment due, which was fundamental to the achievement of staff savings included in the business case. Had the proposed specification been discussed with users, the omission might have been identified.

- The size and complexity of the *integrated debt management system*, which was under development at the time of our review, had increased by about a third. The increase was attributed by the Department to the fact that the implications of its business requirement were not considered fully. The specification had assumed that forms generated from the system would be largely automated, but it later became apparent that a greater amount of manual input to generate forms would be required. The change required the use of a new software product which increased the technical complexity of the system. The original specification had been developed within the Business and Management Services Division without consultation with users in the Inland Revenue office network.

Timing constraints

2.19 Many of the Department's projects are subject to timetables which leave little room for slippage, for example, because they have to be operational by key target dates such as 6 April, the beginning of the tax year. If the definition and development of the requirement is rushed, stakeholders may not be fully consulted and a poorly defined specification may be produced. Similar risks are attached to the development of solutions.

2.20 Our investigation of the projects selected for review highlighted the value of allocating sufficient time to developing the business requirement to provide a firm foundation for EDS proposals. The scope of a project is also less likely to expand during the development stage if the Department has considered the business requirement fully.

2.21 The benefits of allocating sufficient time at this stage of a project are illustrated by the *construction industry scheme* project. The Department originally envisaged that the project would be procured from the private sector as a managed service under the Private Finance Initiative. To ensure fair competition and ultimate delivery of the desired service, a very clear specification was needed and the Department allowed sufficient time for this to be prepared. The Department then decided that EDS should produce the software through the normal new work process. Although the project was still in development at the time of our review, the level of EDS costs closely corresponded to its original estimates. This is attributed by both EDS and the Department to the quality of the original specification.

2.22 To reduce project development times, EDS have introduced "rapid application development" (see Figure 8) and this development tool is now used on many projects.

Rapid application development

Figure 8

Traditionally, software is developed in discrete stages. The user first draws up a requirement. Systems and business analysts from the information technology supplier then consider the requirement and propose a solution. This proposed solution sets out the analysts' understanding of what the user has asked for and describes how their proposed system will fulfil the requirement. The proposed solution is considered by the user, who either accepts it or requests changes. This cycle can be repeated several times until a mutually acceptable proposed solution is arrived at. Development of the system then starts.

Rapid application development seeks to shorten the overall time from requirement definition to delivery of the completed system. Under the approach, the user and the systems analyst work together as a team to refine the detail of both the requirement and the solution as development takes place. As they build the system together, the analyst develops and demonstrates to the user increasingly refined versions of the system as his/her understanding of the requirement, and the user's understanding of the solution, develops.

The approach tends to reduce the input required from EDS staff, saving scarce resources and cost, but at the expense of greater input from Departmental users. This input can add value to the final product because early involvement of users may not only prevent nugatory work but may also lead to additional benefits which might not have arisen using the traditional approach.

The advantages of rapid application development need to be balanced against the increased risks, at least in theory, of weak control over solution development, poor documentation and the choice of a solution without sufficient consideration of alternative approaches. These risks may make rapid application development less suitable than traditional approaches for very large or complex projects without the use of appropriate controls.

2.23 The rapid application development process requires the original business requirement specification to be sufficiently defined to allow the joint Inland Revenue/EDS development team to consider alternative solutions. This is because the process does not separate requirement definition, solution generation and solution evaluation as sharply as the development processes traditionally used by the Department. The broad specification and the iterative process also make it more difficult to estimate accurately at the outset the likely cost of a project. The Department addresses this difficulty by setting a maximum budget which is 40 per cent higher than the minimum estimate for the development. Any growth above the maximum budget would require specific authorisation. This limits, but does not remove, the risk of the developed solution exceeding the true business requirement.

2.24 Five of the twelve projects we examined were subject to rapid application development. One of the five reduced in scope, two showed no growth, while growth on the remaining two projects was 35 per cent (the *integrated debt management system* currently in development) and 93 per cent (the *integrated repayments system* for the Financial Intermediaries and Claims Office) (see paragraph 2.18 above). In neither case could the growth be attributed to the choice of the rapid application development approach.

2.25 Departmental project managers considered that projects carried out using the rapid application development approach tended to increase in scope, but considered that this was a reflection of the positive impact which user involvement in the development of solutions had on the quality of the final product.

Conclusions and recommendations

2.26 The Department's information technology strategy reflects industry best practice and should help minimise the risk of EDS developing solutions which are unlikely to provide long-term value for money. Departures from the strategy have, however, sometimes been necessary to meet legislative, or other requirements. The Department has recognised the importance of keeping the strategy up to date to reflect developments in information technology and changes in its medium- and long-term vision of its business.

Recommendation 1

The Department should continue to seek to minimise the number of developments which are inconsistent with the strategy and, where departures are necessary, the decision should be made consciously, and for justifiable reasons.

Recommendation 2

In view of the strategy's importance in securing value for money, the Department should continue to keep it under review and amend it, as necessary, in response to developments in information technology and changes in its medium- and long-term vision of its business.

2.27 In view of the frequent constraints on the time available to develop new systems, we endorse the efforts made by the Department and EDS to explore accelerated methods of requirement development by working in closer partnership. The rapid application development approach, however, carries other risks such as weaker control of costs and loss of objectivity in evaluating solutions. While these had been recognised by the Department, at the time of our examination the risks had not been formally included in its partnership risk management plan.

Recommendation 3

The Department should make a formal assessment in its partnership risk management plan of the issues associated with working in closer partnership with EDS in the rapid development of applications and take steps to mitigate any material risks identified.

Stage Three: evaluation and approval of EDS proposals

2.28 The evaluation of EDS proposals (the technical solution and the estimated costs of development, capital and infrastructure and subsequent running) is led by the Inland Revenue's Feasibility Appraisal Service. They are supported as required by operational research specialists, the Information Technology Technical Consultancy, the Contract Management Team and the Strategy and Planning Division. The purpose of the evaluation is to determine whether the proposed solution meets business needs, complies with the Department's information systems and information technology strategies, and can be delivered for an acceptable price.

Objectivity of review

2.29 It is fundamental to the philosophy of the partnership that there should be close, co-operative working between the Department and EDS at most stages in the commissioning, development and implementation of new work. It is also important that there should be a clear distinction of roles at critical phases in the appraisal process to ensure independent and objective scrutiny by the Department of the solutions proposed by EDS.

2.30 The Information Technology Technical Consultancy and, more recently, the operational research specialists have co-located with their EDS counterparts. An increase in joint working was a planned aspect of the partnership and demonstrates that it is developing at an operational as well as a strategic level. There is a risk, however, that joint working could blur roles and responsibilities and reduce the ability of these important Inland Revenue units to evaluate EDS proposals objectively.

2.31 Our interviews, and reviews of documents relating to evaluations, indicated that this risk had not crystallised, evidenced by the fact that EDS solutions are regularly questioned, resulting in amendments to the business design and consequential technical solutions and reductions in cost. For example:

- A reconsideration of EDS estimates for the *infrastructure 2000* project resulted in business design changes leading to a reduction of over £17 million over two years in the EDS estimate. The agreed baseline cost for the project was over 11 per cent lower than the original EDS estimate.

- The Department secured reductions of almost £2 million in the estimated cost of the *integrated debt management system* by probing staffing estimates and the cost of software and hardware requirements.

- Within the package of services to be provided by EDS in support of *processing centre business continuity*, it was originally intended that the Department would be required to pay additional charges in the event of an invocation of the disaster recovery facility. Negotiations by the Contract Management Team secured an agreement that EDS would obtain insurance cover for the first £3.5 million of costs for any invocation.

2.32 Although we found that the Department does challenge EDS on proposed solutions, there are longer-term risks associated with the partnership approach which need to be managed carefully. In particular:

- closer working could, in the longer term, lead to the loss of objectivity and independence of Inland Revenue staff, particularly as former Information Technology Office staff in the Inland Revenue are replaced with people with less experience of information systems and information technology in the Department;

- it may also make it difficult for the Department to extract itself from the partnership in the event of contract termination or of a future contract being awarded to a different supplier. This is because areas of expertise essential to the Department's ability to evaluate the work of any contractor may no longer be held by Inland Revenue staff but may have passed to EDS.

Part 3 of the report examines how the Department maintains and develops the skills needed to maintain an independent perspective.

Selection of projects for scrutiny

2.33 Proposals for new work vary considerably in scale and cost. Of almost 400 projects with an information technology content authorised by the Department since the start of the contract, 50 (around 13 per cent) accounted for some 95 per cent of the EDS development staff input. However, the increasing move towards integrating the Department's systems and the development of single software modules for common procedures, such as the handling of receipts and

payments, which can be used in a number of systems supporting individual taxes, mean that proposals are becoming more complex, in the sense that dependencies between projects are increasing.

2.34 It would be impractical and unnecessary, as well as contrary to the aims of the outsourcing, for staff in the Department's Feasibility Appraisal Service to evaluate in detail the technical or financial aspects of every EDS proposal. Projects which are large or business-critical should always be considered for appraisal, however, as should those which are potentially innovative in terms of either the information technology solution or the business process. Potential cost should be a criterion, but not the sole one.

2.35 The staff responsible for examining projects rely on their judgement and experience, much of it gained with the Information Technology Office, to determine the scope and depth of an evaluation of an EDS proposal. We noted that the Information Technology Technical Consultancy, the operational research specialists and senior members of the Contract Management Team were involved with the evaluation of larger projects, such as the sample of twelve covered by our investigation.

2.36 A fundamental objective of the Department's information systems and information technology strategies is to avoid, as far as is practicable, becoming tied to EDS, or any other supplier - that is, to suffer "lock-in". For example, the Department has recognised that EDS has commercial relationships with suppliers which make certain products available at favourable rates which might not be available to the Department or to other potential service suppliers at the end of the contract. And work involving recent information technology developments, such as internet technology, presents greater risks of "lock-in" than more mature areas of information technology. One of the key responsibilities of the Information Technology Technical Consultancy is to evaluate the strategic implications of EDS proposals. In deciding which projects to refer to the Information Technology Technical Consultancy, the staff responsible for examining projects therefore need to be alert to the possibilities of "lock-in" and its implications for retendering the contract.

2.37 The effective use of resources is particularly critical in the case of the Information Technology Technical Consultancy, where the knowledge of its two experienced staff needs to be focused on projects involving strategic issues. But as new, less experienced staff are recruited to assess projects, they may be less able to make judgements about when they should seek the assistance of specialists, without formal criteria to guide them. Such guidance did not exist at the time of our study.

2.38 Although the Department had not included the risk of failing to seek expert advice in its formal risk management plan, it told us that it believed that its training and induction arrangements would address the risk. It also considered that it would be difficult to prepare anything other than general guidance in what was a fluid area.

Assessment of costs

2.39 As the majority of new work is awarded to EDS without competition, it is important for the Department to examine the cost of proposals as well as the technical aspects. There are three main types of cost associated with new work: staff costs associated with the development and enhancement of software; infrastructure costs, for example the costs of transmitting data across the information technology network; and capital costs. EDS charges the Department in accordance with the terms and conditions set out in the partnership contract, which, in broad terms, commit EDS to reducing unit costs over the life of the contract and allow the Department to procure additional work at prevailing unit costs. Details of these arrangements are set out at Appendix 2.

2.40 The estimated cost of a software development is based on the number of "function points". These are related to the number of features in a system, for example, the number and types of input and output, and number of cross references within the computer program. EDS provides function point counts for each new proposal which are then validated by the Department's operational research specialists.

2.41 EDS estimates the number of staff days needed to develop a new proposal based on the function point count and expected productivity. The productivity achievable depends on a range of factors, including the complexity of the application, the development tools used, and the platform and programming language. The Department's Feasibility Appraisal Service and operational research specialists assess whether the proposed productivity is reasonable, having regard to productivity achieved on previous projects and the baseline productivity for different types of development. These arrangements, and the requirement to reduce unit costs over the life of the contract maintain pressure on EDS to improve productivity.

2.42 The unit costs of EDS staff are agreed annually between the Department and EDS in accordance with the contract. Aggregate increases are capped to levels indicated by wage indices published by the Office of National Statistics.

2.43 As noted at paragraph 2.31 above, our examination of projects provided assurance that EDS proposals are challenged regularly, resulting in reductions in cost. However, although the contract commits EDS to reducing unit costs, there remains a risk that the productivity implicit in EDS proposals is out of line with the market. This risk, which was considered by the Department when the contract was let, is examined further in Part 4 of the report.

2.44 Additional capital and infrastructure costs associated with new work are charged on a cost-plus basis. The Department monitors prices and has carried out benchmarking work to help assess the competitiveness of EDS charges (see Part 4). In the case of capital, in order to provide an incentive to EDS to negotiate a competitive price with information technology suppliers, the Department allows it to retain half the savings it secures compared with list prices, subject to third party scrutiny of claims.

Project approval

2.45 Every project has to be approved formally before the project manager can order the required EDS resources. The greater the value of a project, the greater the involvement of senior management in the approval process (see Figure 9).

2.46 The Department prepares business cases for submission to the relevant approval authority summarising the key issues for each project. If approval authorities are to make informed decisions, they need assurance that business requirements will have been assessed fully and that optimal technical and economical solutions have been recommended. These factors depend on:

- the quality of the earlier appraisal and approval processes;
- the rigour with which the processes have been followed;
- the skills and expertise of staff involved in the processes.

2.47 The Department has clear procedures for commissioning new work and these are subject to continual refinement. However, Departmental staff involved in commissioning new work acknowledge that the rigour with which the procedures are followed may at times be affected by:

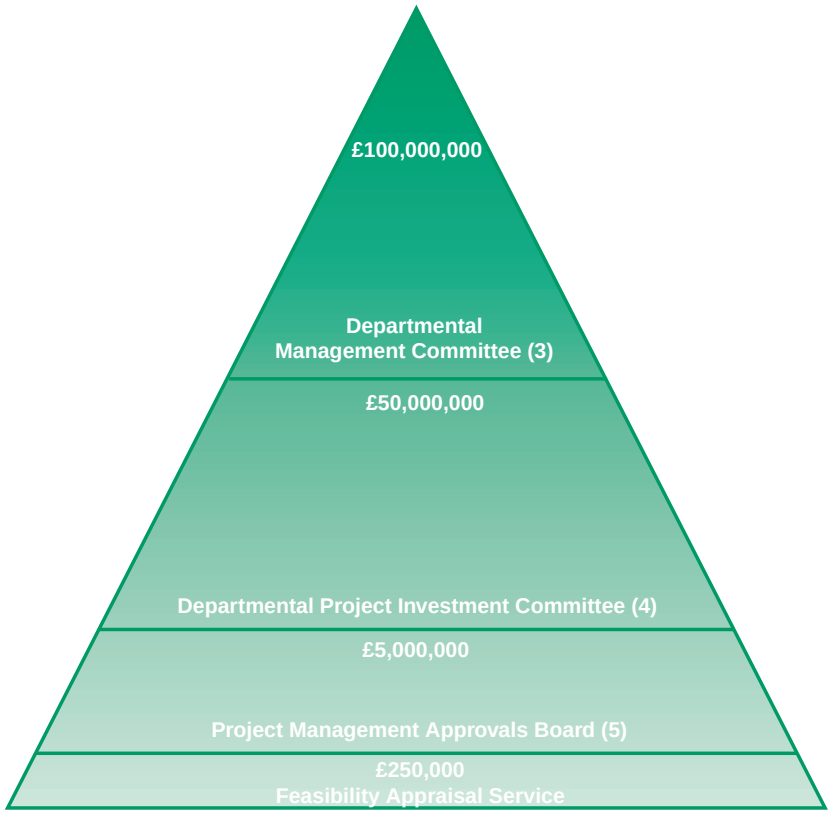
- insufficient levels of resource or expertise in the Department's assessment units;

- constraints on development times;
- the absence of criteria to define when consultation with particular experts is required during the evaluation process.

There is a risk, therefore, that the quality of analysis and assessment supporting business cases may vary both between projects and over time.

Figure 9

Inland Revenue approval authorities for new work



Notes:
1. Figure 9 shows the position at 30 September 1999.
2. Project approval boundaries are determined by the total estimated cost of the project.
3. Treasury approval is also required for projects over £100 million.
4. Comprises senior Departmental managers and the EDS Account Director (EDS withdraw during discussions where there would be a conflict of interest).
5. Comprises the Director and other members of the Strategy and Planning Division.
6. Further approvals are required for substantial changes in technical or financial aspects of the project.

2.48 Management of this risk is particularly important in the case of the Feasibility Appraisal Service which, in addition to evaluating proposals, acts as the approval authority for smaller projects with a lifecycle value up to £250,000. The Department acknowledges this risk but told us that it considered that the financial implications were limited, since projects of this value accounted for less than 5 per cent of total expenditure on new work. It also believed that, in practice, smaller projects were given an appropriate level of review under its evaluation procedures.

Conclusions and recommendations

2.49 The increase in joint working by the Department and EDS under the partnership offers benefits to both parties. It also presents risks which could affect the independence and objectivity of Departmental evaluations and it could make it difficult or costly for the Department to extract itself from the partnership at the conclusion of the contract in 2004, or lead to the loss of skills to EDS.

Recommendation 4

The Department needs to continue to manage the risks associated with joint working to ensure that it retains sufficient independence to assess projects objectively and to avoid becoming locked in to the partnership with EDS to an extent which would restrict options at the conclusion of the contract in 2004.

2.50 The absence of guidance identifying issues which the Department should be alert to in evaluating EDS proposals means that the Feasibility Appraisal Service may fail to address risks or to bring in expert advice where necessary.

Recommendation 5

The Department should consider developing guidance setting out the main risks to be addressed during evaluation and when to call for expert advice.

2.51 Those responsible for approving projects need assurance that business cases are supported by an objective and thorough analysis of the options, soundly based, and correctly costed.

Recommendation 6

The Department should consider commissioning independent reviews of selected projects, for example, by its Internal Audit Office to assess whether projects with a value below £250,000, which are approved by the Feasibility Appraisal Service, have been fully and accurately specified and assessed and to confirm that business cases put before the senior approval bodies are soundly based.

Stage Four: project management

2.52 Projects are managed by a project manager drawn from the business unit sponsoring the development or by a specialist project manager from the Business and Management Services Division's Project Management Unit. The project manager is responsible for co-ordinating all activities of a project's development, monitoring progress against plan and ensuring that appropriate action is taken in the event of variations. This involves developing and maintaining project documentation, identifying and mitigating risk, and maintaining an effective reporting mechanism. As the interdependency of projects has grown, the role of the project manager has become more complex and the services of specialist project managers have been increasingly called upon.

2.53 On large projects, the Department may appoint a requirements manager to provide a link between the business unit sponsoring the project and the EDS team carrying out the development. Key roles of the requirements manager are to ensure that the scope to the project remains focused and does not expand unjustifiably, and to ensure that the solution proposed by EDS meets the requirements.

2.54 The Department has not always been able to appoint managers at the start of a project because of shortages of project management specialists and suitably qualified requirements managers. In some cases, such as the *experimental Call Centre project*, the requirements manager was not appointed at the start of software development, and in others project managers have been changed during the course of a project. Both Inland Revenue and EDS project sponsors and managers consider that this weakens communication and project direction and it has sometimes increased the work content of projects, even where it has not extended timescales.

2.55 During 1998, the Project Management Services Unit began to respond by expanding and restructuring to help provide the most appropriate expertise to each project. For example, it started to define the different levels of project management expertise available. The potential difficulties of managing each new project are now assessed and project managers with appropriate experience and seniority are allocated. Larger or more complex projects may have teams of project managers with different levels of seniority and experience.

2.56 The Department also began to respond to the shortage of project managers and recruited more than 30 staff between April 1998 and March 1999. Despite this expansion, at the time of our examination the unit was still ten staff below complement and was employing five full-time contractors. The projected growth in

workload indicated that an additional 20 project management staff would be required and it was likely that further use of contractors would be required to cope with the short-term lack of project management resource. The Department told us that it had appointed five staff since our examination and that it intended to recruit an additional 15 in 2000-01.

2.57 One of the key tasks of Inland Revenue project managers is to monitor the use of EDS (and Departmental) resources on projects. If EDS staff resources are to be used effectively, managers need to alert the Department's Contract Management Team to any changes in resource requirements so that, subject to the normal approval procedures, new resources can be ordered as far as possible in advance to take advantage of lower EDS charge-out rates (Appendix 2) and to ensure that potentially under-utilised resources, which the Department are committed to paying for, are redeployed.

2.58 We found that project managers may not have sufficient understanding of the contract pricing mechanism and how changes in EDS productivity and the volume and timing of resource requirements may impact on project costs.For example, in the *experimental Call Centre project*, a delay meant that some EDS staff were not required at the time planned but during the following quarter instead. The project manager did not inform the Contract Management Team, which meant that the EDS staff ordered for the project and paid for by the Department were not used. EDS staff had to be paid for again at higher short-term rates when they were required in the following quarter. The Department told us that, although it had no contractual commitment to do so, EDS had worked with it to minimise the overall financial impact of such cases.

2.59 The Department has recognised the need for training and guidance in its risk management plan. It told us that it had run a contract education session each year and that it planned to produce a guide to resource ordering based on a document which EDS had produced for its staff.

Conclusions and recommendations

2.60 The Department's initiatives to match its project management expertise to the requirements of individual projects should help minimise the risk of projects drifting away from plan. In responding quickly to meet additional demand for project management skills, it has increased its reliance on contractors until staff can be recruited on a permanent basis.

Recommendation 7

In view of the significant growth in workload, the Department should keep its in-house project management skills base under review to minimise the risk of over-dependence on bought-in resources.

2.61 To make effective use of resources ordered from EDS under the contract, project managers need to understand how variations in the timing of requirements impact on what the Department has to pay, and that failure to report surplus requirements risks the Department incurring nugatory expenditure. The Department has identified this as a risk and plans to issue guidance on the subject.

Recommendation 8

To minimise the risk of nugatory expenditure, the Department should ensure that its guidance provides project managers with sufficient information about the contract pricing mechanism and the impact of changes in requirements. In particular, managers should understand how changes in EDS productivity and in the volume and timing of resource requirements may affect costs.

Stage Five: project evaluation and handover

2.62 On completion of a project, the Inland Revenue business unit tests whether the information technology system developed by EDS meets its requirement and, if it does, takes ownership of the system for live running. As part of this process, it should agree key criteria with EDS for evaluating the system's performance. Where a project is an enhancement of an existing system, the existing key performance criteria should be amended. Thereafter EDS should provide the Inland Revenue Contract Management Team with monthly data on performance of the live system against the agreed criteria. If the agreed performance criteria are not met, this may trigger financial remedies.

2.63 Project managers are also required to conduct a project evaluation review at the conclusion of each project. Its purpose is to confirm whether the original project objectives have been achieved and whether the customer has taken delivery of the final product. It should evaluate the effectiveness of the project management, provide assurance that all project documentation is complete and up to date, and set out lessons learnt, including any issues outstanding.

2.64 In some cases, the project's sponsor, usually a senior manager, may decide to commission an independent post implementation review three to six months after implementation or, if a full year's operating data are required, up to 24 months after implementation. Such reviews build on the project evaluation review and are conducted only where there is a clear likelihood of useful knowledge being gathered. Their key objectives are to establish actual and

estimated outcomes, for example costs and performance, identify outstanding issues and proposals for their resolution, and to communicate the key lessons learnt from the project.

2.65 Figure 10 illustrates the extent to which the Department has evaluated the projects in the sample which had been completed at the time of our review.

Figure 10

Extent of project completion reporting on sample projects

Project	Project evaluation report	Post implementation review	Key performance criteria
Computerised environment for self assessment – release 2	Yes	Yes[1]	Yes
Payroll and personnel management information system	Yes	No[2]	No
Business continuity implementation	Not due	Not due	Yes
Integrated repayments system	Yes	Yes	Yes
Repayment of interest on PAYE	Yes	No	Yes
RPC rationalisation – Phase 2	Yes	No	Yes

Notes:
1. A full post implementation review of CESA was carried out following completion of the whole project, including release 2.
2. The post implementation review of PPMIS will start in Spring 2000. It was delayed because not all of the functionality of the project was initially available.

Source: Lorien analysis of Inland Revenue data

2.66 Our examination of project evaluation reports identified a number of weaknesses in approach.

- While project evaluation reports summarised the outcome of a project, they varied in quality and did not, for example, include comparisons of estimated and actual costs and the functionality delivered compared with the original specification.

- The reports did not analyse what had gone well and what had gone less well, so that lessons could be learnt for the future.

- In five of the six completed projects, the Department had agreed key criteria with EDS for judging the performance of the system. In one case, however, the *payroll and personnel management information system*, no key performance criteria had been established some 18 months after implementation. The system, a commercial software package, was selected by the Department, not by EDS; EDS did not take responsibility for the information technology aspects of the project until after it had started.

- In one project where the Department had carried out a post implementation review, the *integrated repayments system*, it had not quantified the extent to which the project had delivered the anticipated staff and monetary savings, despite the fact that the system was delivered in April 1997.

2.67 The Department told us that it now had a clear process for project evaluation reports and post implementation reviews, documented in a Project Reviews Guide. The process was overseen by a formal review board. This board ensured that:

- reviews were planned in advance and terms of reference were agreed;

- reviews were completed to an acceptable standard; and

- evaluation reports were analysed and lessons learned were taken into account for the future.

Since May 1999, 15 project evaluation reports and four post implementation reviews had been reviewed by the board and, in addition to this, a further ten project evaluation reports and five post implementation reviews were imminent or already under way.

2.68 The Inland Revenue's risk management plan has identified the need to define key performance criteria and keep them up to date. The Department told us that although it was not always possible to define these at the outset, it was taking action to review all major new developments which had gone live over the past year to ensure that key performance criteria were in place. It would also be reviewing all services due to go live in the next twelve months to ensure that such criteria were developed.

Conclusions and recommendations

2.69 The Department's arrangements for reviewing projects should help ensure that lessons learned are taken into account for the future. However, failure to set key performance criteria for new work delivered under the partnership prevents the Department's Contract Management Team from obtaining a reliable view of the quality of EDS service delivery. It would also make it difficult for the Department to identify poor performance and take remedial action.

Recommendation 9

Key performance criteria should always be established before the Department accepts delivery of a product from EDS, and the development of such criteria should be monitored actively under the Department's risk management plan.

Part 3: Maintenance and development of skills

This part examines how the Department maintains and develops the skills needed to maintain an independent perspective of its partnership with EDS.

3.1 The effective operation of the partnership requires skilled people. To achieve value for money the Department must have enough staff with the skills to manage the contract and to commission new work effectively.

3.2 When an organisation decides to outsource a service previously provided in-house, it will normally surrender a significant level of internal expertise to the service provider. If it does not do so, the outsourcing is unlikely to be fully effective. However, the amount and type of expertise surrendered, and the balance between what is surrendered and what is retained, can have a direct impact on its ability to:

- shape and define its strategy and specify future requirements;
- avoid becoming "locked-in" to the service provider, making effective re-tendering difficult;
- control service provision; and to
- determine the suitability and value for money of the service being delivered.

3.3 The Department recognised when it entered the partnership with EDS that to manage and control the relationship and secure high quality service delivery, it would need to retain or develop the skills to:

- develop its overall information systems strategy and to participate fully in developing the information technology strategy;
- assist business unit managers in specifying requirements;
- assess the technical and commercial aspects of EDS proposals;
- monitor and evaluate service delivery; and to
- manage the contract.

Most of these skills already existed in the Information Technology Office, or elsewhere in the Department, with the exception of those associated with contract management, which largely had to be developed or acquired.

3.4 This part of the report examines the steps the Department's Business and Management Services Division has taken to secure the skills required to evaluate and manage new work.

Maintenance and development of skills

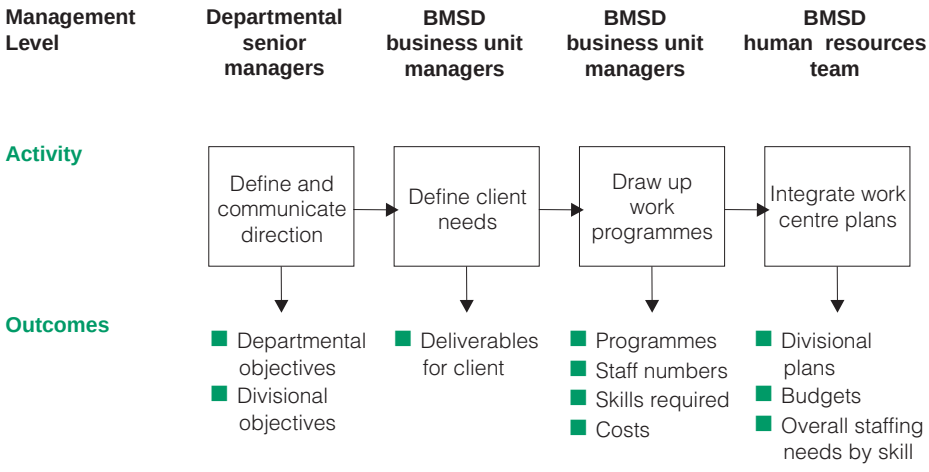
Introduction

3.5 In common with the rest of the Department, the Business and Management Services Division operates by empowering managers to act within the overall strategic direction defined by senior management. Responsibility and accountability for the direction and performance of individual business units is therefore devolved to their managers. This principle is applied to staff development and training.

3.6 The Division's staff planning arrangements (see Figure 11) are co-ordinated by the Divisional Human Resources Team. The Team monitors progress against plan through the year and conducts a half-yearly review to ensure that the overall plan continues to reflect developing Departmental and Divisional needs.

Figure 11

Business and Management Services Division staff planning process



Source: Inland Revenue

We examined how these arrangements had worked in practice. The report focuses first on the expertise required at senior level within the Division and then examines the wider operation of the staff planning process.

Maintaining independent expertise at senior level

3.7 The Department's ability to develop and maintain information systems and information technology strategies and to assess the technical merit and value for money aspects of EDS proposals is dependent on senior decision-makers and advisers maintaining a high level of personal awareness of developments in the field of information technology. Without this awareness, the Department's ability to assess the value of EDS proposals may be weakened, running the risk of procurement of solutions which do not offer value for money.

3.8 The Inland Revenue has recognised the key role of individuals in developing and evaluating strategies, and assessing solutions to specific business requirements. While decisions may be ultimately made or ratified collectively, the creative exploration of possibilities, balancing of options and formulation of recommendations must be done by individuals who, to be successful, must have:

- sufficient skill, expertise and technical knowledge to know what to ask and where to look for answers, and to understand and assimilate the information gained;

- the experience to make soundly based judgements.

It is difficult to judge precisely what level of personal knowledge is adequate for each senior post. However, the Department attempts to consider the requirements systematically through its staff planning process.

3.9 Senior Inland Revenue staff with direct responsibility for ensuring that the Department is provided with an adequate information technology service and for the management of the contract, such as the Director of the Business and Management and Services Division and the head of its Commercial Group, are conscious of the need to maintain their personal knowledge of the wider information technology market. They do this by:

- membership of formal and informal networks of fellow professionals, including international networks of major users of information technology in government – in the United Kingdom, for example, the Department is a member of the Sainsbury Technical Infrastructure

Forum, a group of 150 organisations which manage large information technology operations and meet regularly to discuss issues of common concern;

- attending conferences and seminars, both as speakers and delegates;
- visiting suppliers and other information technology users, both with EDS and separately; and
- reading professional journals, the trade press and reports from information technology research companies to which the Department subscribes.

3.10 The Department is widely regarded as a source of information on the successful management of information technology and systems outsourcing. It also acts as a reference site for EDS in the firm's dealings with potential new customers.

3.11 The Inland Revenue believes that dealing with such enquiries offers a number of benefits.

- It leads to contacts with other taxation authorities and keeps the Department alert to new approaches to outsourcing, not only of information technology, but of other business processes. For example, site visits were made to Australia, Canada and the United States prior to the development of self assessment, which helped identify best practice, thereby avoiding unnecessary reinvention.
- It encourages contact and the sharing of knowledge with other government departments and private sector organisations with outsourced business processes. The Department is, for example, currently working with HM Customs & Excise to develop a common approach to organisational intranets.
- It helps maintain an awareness of developments in outsourcing essential to the evaluation of the Department's options at the end of the contract.

Strategic information technology expertise

3.12 The Department's Information Technology Technical Consultancy Unit is responsible for maintaining a strategic view of the market and for advising the operational research specialists, Feasibility Appraisal Service and Strategy and Planning Division on technical issues. The unit consists of one Inland Revenue employee, who was previously the Chief Technologist and Architect of the Information Technology Office, supported by an external consultant.

3.13 The head of the Information Technology Technical Consultancy and the retained consultant maintain their external perspective and market knowledge through contact with a wide range of IT industry suppliers, users, observers and research organisations. These include: the Gartner IT Executive Programme and its annual symposium; GIGA; the Sainsbury Technical Infrastructure Forum and the Toshiba UK Customer Council which comprises 20 major UK users of laptop computers. In addition, EDS organises technology visits to major suppliers, such as Sequent and Microsoft, and to other EDS customers. These arrangements also help other staff, including those in the Feasibility Appraisal Service, to keep their knowledge of information technology developments up to date.

3.14 The Department supplements its in-house skills by using external advisers to provide specific advice on strategy. The following examples illustrate the use of external advice.

- During the market testing and competitive tendering process which led ultimately to the formation of the partnership, the Department obtained advice from Wentworth Research on information technology outsourcing and from Lucidus on the development of contract management procedures.

- Before adopting the current programme to replace its desktop personal computers and terminals, two reports were commissioned, one from the Central Computer and Telecommunications Agency and one from Gartner, on likely developments in desktop personal computers and client/server systems and the strategy the Department should adopt.

In these cases the Department was able to demonstrate how it had used the advice received to refine its strategy and decisions.

General information technology expertise

3.15 For the day to day management of the partnership and for important activities such as the commissioning of new work, the skills required and the development and maintenance of those skills are addressed through the Department's staff planning arrangements (see Figure 12). These arrangements are underpinned by a system for managing the performance, training and development of individual staff. This system is based on individual performance agreements, which set out a description of an individual's job, their key responsibilities, the skills required, the key tasks and targets for the next year and the criteria for assessing performance against the targets. Managers ensure that these are kept up to date and that individual responsibilities are aligned with organisational objectives.

3.16 Individual development needs identified by comparing an individual's competencies with the skills they need to do their job effectively are recorded in personal development plans. These plans are agreed between each individual and their manager, and show how an individual's needs will be met (for example, through training, development and secondments), the expected outcomes, and the timing of and responsibilities for action.

3.17 We examined how these arrangements were working in practice, focusing on aspects which are key to the effective management of the partnership, including the award of new work.

3.18 We reviewed performance agreements for a representative sample of 47 personnel within the Business and Management Services Division who had important responsibilities in the process of awarding new work to EDS. Forty five agreements had been updated for the current year, while two were unchanged from the previous year.

3.19 The specific information about the competencies required for individual jobs set out in the performance agreements is important for performance planning, recruitment and training. Two distinct types of competency are identified: core competencies and specialist competencies. Core competencies are those common to all Inland Revenue jobs, and include:

- managing people
- managing resources
- oral communication
- written communication
- interpersonal skills
- analytical skills
- decision-making

3.20 In contrast, specialist competencies tend to be peculiar to particular organisational units and are often more technical in nature. Unit managers are responsible for identifying and defining specialist competencies and their associated skill sets. Figure 12 below illustrates the range of skills identified by one unit, the Commercial Group, and how they have been developed in staff.

Commercial Group – skill development

Figure 12

The Commercial Group manages the contract with EDS. The Department identified at an early stage the mix of skills required to enable it to act as an intelligent customer. These skills, which were not generally available from within the Department included resource planning, cost monitoring and financial control, performance monitoring and performance improvement, as well as knowledge of the Department, its operational requirements and information technology structure, and an awareness of commercial practice.

In the nine months preceding contract signature, and with consultancy support, contract management processes were developed and documented. In recognition that new disciplines would require new skills, the Department arranged training sessions on the details of the contract, the fundamentals of the Partnership agreement, and on the general experience and principles of managing outsourcing. Additional training involved presentations on the contract management processes as they were developed, role playing to allow the Contract Management Team to visualise the EDS perspective and to think through tactics which a partner might deploy, training in negotiation and visits to relevant contract sites in the UK and the USA.

This initiative has also been supported through external training, transfer of specialist skills to new staff through on-the-job mentoring, and by "hot topic" presentations given by team members to each other. As contract monitoring processes have been refined, the changes have been reflected in training and development planning, and included in performance agreements and personal development plans.

3.21 We interviewed the heads of the Commercial Group and the Resource and Work Centre Group and the managers of six key units in these and other groups within the Division. They displayed a clear appreciation, based on experience, of the specialist competencies needed in their unit and of the minimum skills set, both core and specialist, required for entry to it. However, these were not documented.

Meeting changing requirements

3.22 The rate of change in the Department accelerated during 1997-98, partly in response to programmes and policies introduced by the new Government, and partly as a result of the Department's own initiatives to improve its infrastructure and working methods. This put pressure on processes such as project management and required an increase in staff numbers and skills to manage and deliver the work involved.

3.23 In Business Development the average number of projects in progress during 1997-98 increased from one or two to over 20, and staff increased from 20 to 50. Staff numbers in the Project Management Unit increased from 67 in April 1998 to 98 by March 1999, and by November 1999, 103 staff were employed. Divisional managers told us that the Division's structure of devolved and empowered management, and the structured planning and staff development processes helped them respond successfully to the demands of the Department's change programme.

3.24 The Information Technology Technical Consultancy Unit had also been affected by the increase in workload. The original aim of the Unit was to work primarily at the strategic level, developing the information technology strategy and reviewing EDS proposals in the light of the strategy. Over time, it has become more involved in the detail of projects. In view of the potential impact of strategic information technology issues on value for money, it is important that the Department strikes the right balance between increasing involvement at the tactical level and its key strategic work.

Conclusions and recommendations

3.25 The Department's staff planning arrangements provide a framework for identifying the skills required to operate the partnership with EDS effectively, for maintaining and developing individuals' skills to meet those requirements, and for drawing on external expertise, where necessary.

3.26 We endorse the Department's efforts to maintain independent information technology expertise at senior levels. This should help minimise the risk of the Department approving the development of new systems which do not offer value for money and assist the Department in identifying and evaluating options for future service delivery when the contract expires in 2004.

3.27 The heads of the Units responsible for managing the partnership demonstrated a clear appreciation of the competencies required in their Units, but these were not documented. This failure to capture the knowledge of managers, particularly in relation to specialist requirements, leaves the Department vulnerable to the departure of these key individuals.

Recommendation 10

The Department should systematically analyse and document the skill sets required for all activities that support the management of the contract, including the award of new work, and the relationship with EDS. These analyses should then be used for monitoring the relevance of individuals' personal development plans and for the development of training programmes.

3.28 The Information Technology Technical Consultancy Unit's increasing involvement in the detail of projects runs the risk of it being unable to devote sufficient attention to strategic information technology issues, which are fundamental to the achievement of long-term value for money.

Recommendation 11

We recommend that the Department reviews the role of the Information Technology Technical Consultancy Unit. If some redefinition is required, the impact of this on staff numbers and skills should be quantified, and any gaps addressed.

The extent of job rotation, succession and contingency planning

3.29 Whilst our examination confirmed that the Division's overall staff planning processes were sound, there were some areas where the arrangements could be strengthened. The most critical to the management of the partnership and the commissioning and assessment of new work, because they affect the continuity of the Department's skill base, were:

- staff rotation, both between units and between individual key posts;
- contingency planning for key posts; and
- succession planning, especially in the smaller units and for key posts.

3.30 There has been limited staff rotation within parts of Business and Management Services Division, for example in both the Commercial Group and the Resource and Work Centre Group, despite the view, widely held within the Department, that staff rotation is desirable for both career development and for the Department. The situation has arisen because:

- there is less scope and opportunity for staff rotation where units are small and specialist;
- unit managers tend to resist releasing staff with scarce skills or when workloads are expanding; and
- the devolution of responsibility for development of staff can sometimes prevent local managers viewing matters from the wider Divisional perspective.

3.31 There is also some concern among the managers of specialist units, such as the operational research specialists and the Feasibility Appraisal Service, that current Department personnel practice tends to favour the acquisition of core rather than specialist skills. This perception discouraged staff from moving into specialist areas, and made movement out of them more difficult. Managers considered that this limited their ability to set up career development and succession plans involving interchange with other areas of the Department, especially if staff perceived that development and training in specialist skills was at the expense of the core skills they believe are essential for wider promotion.

3.32 Among those managing the EDS partnership, critical knowledge is held by relatively few individuals. This is unsurprising, given the specialist technical or contractual knowledge that has to be developed and, indeed, there are advantages in terms of:

- continuity;
- development of experience as well as knowledge of technical issues; and
- establishing firm relationships with managers from EDS.

3.33 But there are also potential disadvantages, including:

- individuals becoming isolated from the rest of the Department;
- managers and staff becoming over-familiar with their opposite numbers in EDS, risking a loss of objectivity;
- people becoming stale and less innovative; and
- critical knowledge becoming confined to a limited group.

3.34 While there was little evidence that the first three risks had materialised, this is probably due less to any planning or deliberate action than to the pressures created by the Department's change programme, and to changes of key EDS people.

3.35 However, as regards the fourth risk, important detailed knowledge about the contract is confined to a limited number of individuals within the Commercial Group and Partnership Development Group. Equally, very few people in the Department have sufficient technical knowledge of the large-scale application of information systems and information technology to advise on strategic issues. In both areas there have been no significant changes of staff involved since the start of the contract.

3.36 There were no formal succession plans for any of the staff in key positions in the Commercial Group and the Resource and Work Centre Group. Neither were there formal contingency plans, although it was well known who could cover which positions on a temporary and, in some cases, a permanent basis. These informal plans were, however, based on the assumption that only one post at a time might need to be covered. No plan existed for a situation where several key members are lost within a short period.

3.37 We recognise that the small size of some units critical to the management of the contract and the technical assessment of EDS proposals makes career progression and job rotation difficult to plan and carry through. These factors, however, combined with caution about moving staff regarded as crucial to maintaining relationships within the partnership, have led to virtually all staff turnover stopping in some units. We believe that this:

- concentrates important skills and knowledge among too few individuals;
- heightens the risk that the departure of these people will result in critical, and perhaps irreplaceable, knowledge and skills being lost to the Department; and
- may result in a decline in performance through over-familiarity with their existing roles.

3.38 These findings are of concern in view of the widespread external demand for staff with the specialist skills which the Department has developed, both in outsourcing large information technology service contracts and in evaluating the technical aspects of proposals. And increased internal demand for such skills arising from the Inland Revenue's new responsibility for managing the former Contributions Agency's contract with Andersen Consulting for operating the national insurance recording system increases the risk to the successful management of the partnership with EDS.

3.39 The Department told us that it had included the need to develop succession plans for critical areas in its risk management plan. There were a number of people with a general knowledge of the contract whose expertise could be developed to meet specific needs and a recruitment initiative in autumn 1999 had added to that pool.

Conclusions and recommendations

3.40 The absence of succession plans for key staff in the units responsible for operating the partnership with EDS, and of contingency plans in the event of their departure, exposes the Department to significant risks, should one or more of these individuals leave. The risk is accentuated by the limited movement of staff in and out of the units concerned, which means that skills and knowledge essential to the effective operation of the partnership are concentrated in a few key individuals.

Recommendation 12

The Department should review its policy for the rotation of staff in the Business and Management Services Division and consider how to address the factors which are inhibiting staff rotation. The objective should be to achieve an exchange of staff with other parts of the Department so that the Division is regularly refreshed and detailed knowledge about the operation of the partnership is spread more widely within the Department.

Part 4: The Department's activities to compare the cost of the service with that being achieved elsewhere

This part examines how the Department assesses the financial aspects of the partnership.

4.1 An inherent risk in any outsourcing contract is that the purchasing organisation may lose its direct contact and familiarity with the marketplace for the outsourced service. This may weaken its ability to assess the comparative value of the service provided by its supplier and may lead to the procurement of solutions that do not provide value for money. The risk is greatest in fluid markets like information technology.

4.2 Part 3 of the report examined how the Department maintains and develops the in-house skills needed to help maintain an external perspective. This part of the report examines how the Department assesses the financial aspects of the partnership.

How the Department assesses the financial aspects

4.3 The contract to provide information technology services was let to EDS after a carefully structured and thorough competitive process. In that sense, the tender provided the best option the market was prepared to offer at the time of the competition. Although the current cost of the service is largely based on the Fixed Standing Charge determined during the tender competition, as adjusted by the post-contract verification, the Department needs to obtain assurance that contract costs continue to be competitive.

4.4 There are three main reasons why this is important.

- First, whilst effective processes for managing a contract and commissioning additional work can increase the probability of an organisation continuing to achieve value for money, they do not guarantee it. For example, a contract may allow the supplier to increase prices faster than the market generally, or other suppliers may develop different and better solutions. External comparisons are therefore necessary to check the outcomes of the management process.

- Second, although the Fixed Standing Charge for the work transferred reduces by 35 per cent over the contract life and provides an incentive for EDS to improve the efficiency of the Department's information technology services, this incentive may, in practice, be insufficient to ensure that EDS keeps pace with the market. The market must therefore be checked independently.

- Third, the Department has a duty to account to Parliament for its use of public funds. While the partnership approach offers advantages to the Department by enabling it to work with a single contractor to secure a service responsive to policy and information technology developments, it provides less assurance on the comparative value for money of solutions than a more traditional "adversarial" approach to procurement, in which there are frequent competitions to provide individual packages of well-defined services. The Department therefore needs to seek assurance from elsewhere, for example external comparisons.

4.5 The Department can check EDS prices against the market in two main ways: by benchmarking, that is comparing aspects of the partnership against the performance of other organisations; and by exposing proposed or existing services to competition (see Figure 13).

Benchmarking and market testing

Figure 13

Benchmarking is a process for comparing the performance of different organisations. It requires organisations to exchange information on defined aspects of their operations, such as methods, processes, costs or prices, either directly or through an independent intermediary. The benchmarking can be used to study and compare most aspects of organisational performance within and between economic sectors and types of activity. For example, the performance of call centres could be compared between the public and private sectors.

Market testing is the process of comparing the value for money of goods or services by using open competition. It usually refers to a situation where the goods or services of an existing supplier are compared with those of others to establish the value for money offered by the existing supplier.

The Department's use of benchmarking

4.6 One of the Department's reasons for outsourcing its information technology operations was to reduce the costs of the service, which were estimated to be up to 30 per cent higher than comparative organisations. The partnership with EDS was designed to deliver cost reductions on a phased basis over the life of the contract. In

July 1997, three years into the contract, the Department's Contract Management Team decided to commission some benchmarking work and identified a number of areas where external comparisons could, in theory, be made.

Scope of benchmarking work

4.7 The areas identified were:

- the prices paid by other organisations for infrastructure and capital items, for example the costs of hardware, software licenses, and hardware and network maintenance, to confirm that prices paid by the Department to EDS were comparable with those paid by other organisations;

- industry trends in the price and performance for various items of information technology infrastructure, for example, the cost of a unit of mainframe processing power (pounds per million instructions per second - £/MIPS), to confirm that the Department's choice of infrastructure was sound;

- external salary costs compared with EDS charge-out rates, to confirm that EDS rates were competitive; and

- EDS staff efficiency rates, principally for software development, to confirm that EDS productivity was comparable with other software developers.

Results

4.8 The results illuminated some important aspects of the information technology market and the partnership's relative position within it. The main conclusions were that:

- prices paid by EDS for capital and infrastructure were competitive;

- the information available did not allow the comparative efficiency of the Department's infrastructure to be clearly assessed;

- EDS charges for staff had increased at a slower rate between 1995 and 1997 than salaries in the information technology industry generally; and

- EDS software development productivity had been relatively low on some major projects although it was improving at a faster rate than in the industry comparators.

Details of the benchmarking work are shown at Appendix 4.

4.9 The evidence on staff cost inflation and software productivity was provided by commercial benchmarking organisations or established benchmarking groups. We believe that it is sound and supports the conclusions drawn. In contrast, the Department had considerable difficulty in gathering evidence on hardware and infrastructure costs directly from other organisations in the private and public sectors, with the result that the sample was possibly unrepresentative. We therefore believe that only limited assurance can be drawn from the conclusions based on this information.

4.10 The findings on software productivity were not unexpected, given that, when it outsourced the service, the Department recognised that this was one of the areas where performance needed to improve under EDS and that this would take some time to achieve. The Department and EDS explained the variation by pointing to the unique difficulties faced in developing complex taxation software to tight timetables. However, the findings have encouraged them to take further initiatives to control and reduce costs, including greater emphasis in proposals on the factors affecting cost, and the employment of consultants to improve the use of software development tools and to provide training.

Issues arising

4.11 The Department encountered difficulties in obtaining commercially sensitive price and cost information from other organisations. This experience is not unusual and reflects the fact that quantitative benchmarking often requires:

- access, on an anonymous basis if required, to data sources;
- facilities for secure storage and handling of the data;
- knowledge of the quality and meaning of the data and the skills and experience to manipulate and interpret the data;
- the ability to demonstrate these attributes to potential providers of comparative data.

4.12 We consider that it is unlikely that these requirements can be met economically, if at all, by the Department. There are, however, commercial research organisations which specialise in providing benchmarking services to information systems and information technology users and providers. There are also groups of users and providers who share information of mutual interest and value, known as benchmarking clubs.

4.13 If the Department established long-term relationships with commercial research organisations and benchmarking clubs it could concentrate its internal resources on:

- identifying areas where there is a need for information on the external market;
- specifying the study requirements; and
- interpreting the study results and translating them, when appropriate, into action plans.

4.14 The effectiveness of the Department's benchmarking of hardware and infrastructure costs was also handicapped by the fact that, in some cases, EDS was prevented by contractual arrangements with its suppliers from sharing information on prices with third parties, in view of the commercial sensitivities involved. The Department told us that, subsequent to our examination, it had established some procedures and EDS was participating actively in further software benchmarking.

4.15 The Department also told us that it believed that the benefits of benchmarking lay more in providing information which it could use in its price and performance negotiations with EDS than in providing absolute assurance about where the Department stood in relation to other information technology service providers. On the cost of development work, for example, there were questions whether information supplied by third parties included the cost of work on abortive systems development as well as successful development work. It was considering how best to take its benchmarking work forward with the assistance of external advisers.

Conclusions and recommendations

4.16 Comparing the cost of the information technology services provided by EDS with other organisations' costs can provide important information on the value for money provided by the partnership. We endorse the Department's attempts to benchmark the cost of services delivered through the partnership. This has enabled the Department in its first round of benchmarking to find comparative information for the cost underlying around 37 per cent of its annual expenditure with EDS.

Recommendation 13

The Department should continue to use benchmarking as a key tool for assessing the value for money of its partnership with EDS. It should consider how it could collect, analyse and present the information in such a way that it can be used in the evaluation of proposals for new work as well as for assessing the value for money of existing activities. It should also consider extending the benchmarking to include direct comparisons of EDS efficiencies and costs in operating and maintaining information systems.

4.17 The Department had difficulty in collecting price and cost information from other organisations. EDS was also, in some cases, contractually prevented from letting the Department share commercially sensitive data with third parties.

Recommendation 14

In view of the difficulty in obtaining benchmarking data, the Department should explore the scope for using commercial organisations or benchmarking clubs to gather this information and concentrate its own resources on specifying the areas where external comparisons are needed and on interpreting the results.

Recommendation 15

The Department should establish a protocol with EDS on the provision and use of data for benchmarking in order to clarify the part EDS is prepared to play in benchmarking exercises. The protocol should specify what information EDS is prepared to offer the Department and what it is prepared to supply to others, either directly or through the Department.

The Department's use of market testing

4.18 The contract with EDS allows the Department to market test:

- any new requirement;
- an existing service provided by EDS, if the Department can provide evidence that the existing service provision is uncompetitive.

In exercising this option, the Department would need to balance the operational advantages of continuing with a single contractor under its strategic partnership with EDS against any possible cost advantages of subcontracting elements of its information technology service to other providers.

4.19 Up to end of 1998, the Department had carried out no formal market tests of existing services provided by EDS. This was because there had been no prima facie evidence that an EDS service was uncompetitive with the market, the circumstances contractually required to permit a market test. And, even if they had occurred, EDS is entitled to match or improve on the market price, before the Department can proceed to a full market test. In 1998 the Department tested one new service, the provision of an Internet capability for the Department. The service was contracted to a third party supplier on the basis of capability.

4.20 In theory, competitions under these arrangements should provide a clear comparison between the value for money provided by EDS and by other potential suppliers. In practice, the facility has significant limitations.

- In tendering for work, unless the service was completely ring-fenced, outside suppliers would not have the advantages which EDS derives from integration with other services it provides to the Department, including operational and technical economies of scale, and client-specific knowledge. This could disadvantage outside suppliers in an evaluation.

- It is difficult to obtain firm evidence on the comparative cost of services, as shown by the Department's benchmarking work.

- The contract requires that, if an outside supplier is shown to offer better value for money than EDS, EDS should be permitted to match or better that value, if it wishes to do so. This is likely to discourage third parties from providing proposals intended to be competitive, except when they know that EDS does not have the skills or the desire to provide the service.

4.21 These factors will not necessarily affect bids for new work where either EDS does not wish to bid or cannot offer any added value compared with other suppliers. In other cases the factors are likely to prevent market testing giving a true assessment of value for money against the outside market.

Conclusions and recommendations

4.22 Market testing is ineffective as a means of assessing the value for money of services which EDS wishes to retain or win because of the contractual requirements which require the Department to provide evidence that EDS prices are out of line with the market and which allow EDS to match the indicative market price if it wishes to do so. Only if EDS declines to match the indicative market price, can a formal competition take place.

Recommendation 16

The Department should only use formal external competitions to test the market when it, and EDS, if it is contractually entitled to provide the service, are genuinely prepared to see the service being tested awarded to the bidder offering the best value for money.

Appendix 1: The Inland Revenue's partnership with EDS

It is fundamental to the running of the contract that the Department and EDS act as partners. This Appendix describes how the partnership operates and the main groups within the Department responsible for running the contract, to help put the material in Parts Two, Three, and Four of the report into context.

1 Information systems and information technology are central to the running of the Inland Revenue and are critical to its success. In outsourcing these services, the Department did not simply wish to maintain the service provided by its Information Technology Office; it wished to improve and transform it. The Department, therefore, had to develop a way of working with EDS which focused not just on minimising risk but on producing an environment which would encourage both partners to support the extensive change programme required.

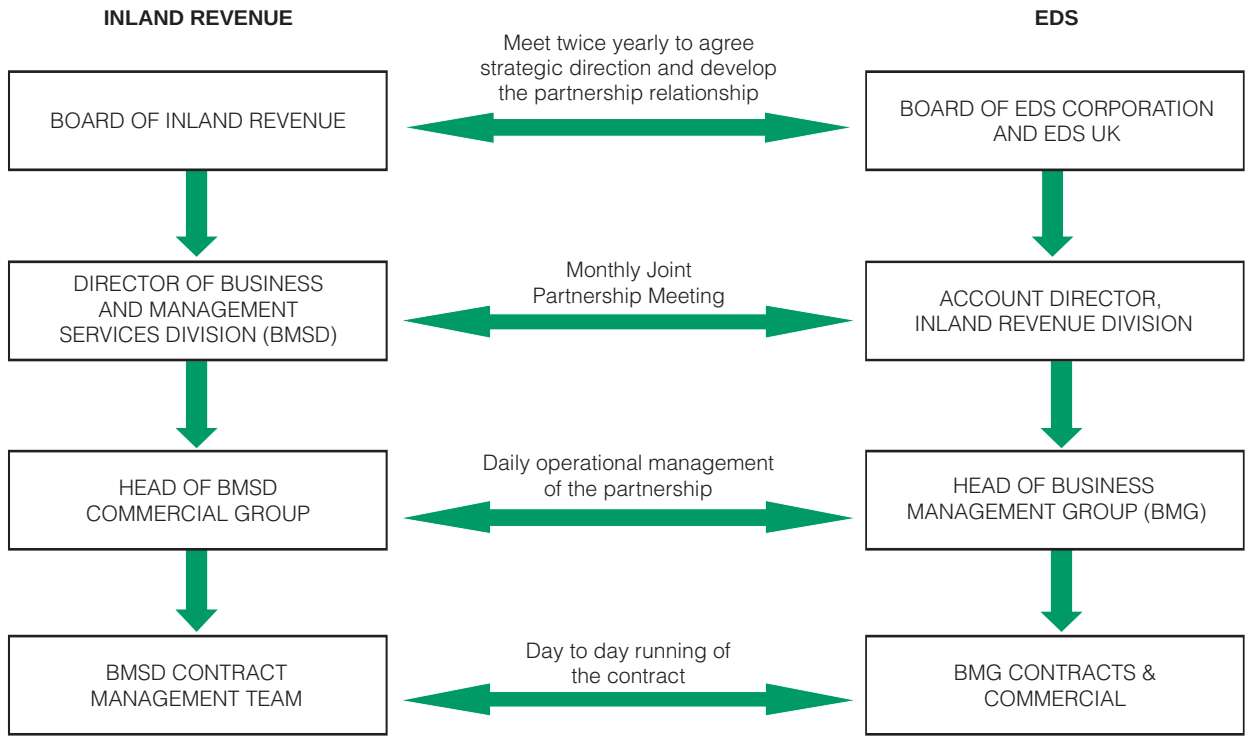
2 The Department considered that this could only be achieved if *both* parties - EDS and the Inland Revenue - agreed, adopted and maintained common objectives in relation to the work of the Department and their contribution to it. The creation of the partnership between Inland Revenue and EDS stems from, and is based on, this understanding. Important aspects of the partnership include a framework of joint consultative and executive committees, co-location of working groups, and a common approach to business. Inland Revenue senior management have a vision of the relationship and actions that are required to ensure that the partnership delivers the best outcomes for the Department. The success of the partnership owes as much to this vision as to the formal structures.

3 The partnership framework has a defined structure, illustrated in Figure 14, to ensure that issues are dealt with at the most appropriate level.

Figure 14

Inland Revenue/EDS partnership structure

Figure 14 shows how the partnership is managed at several levels.

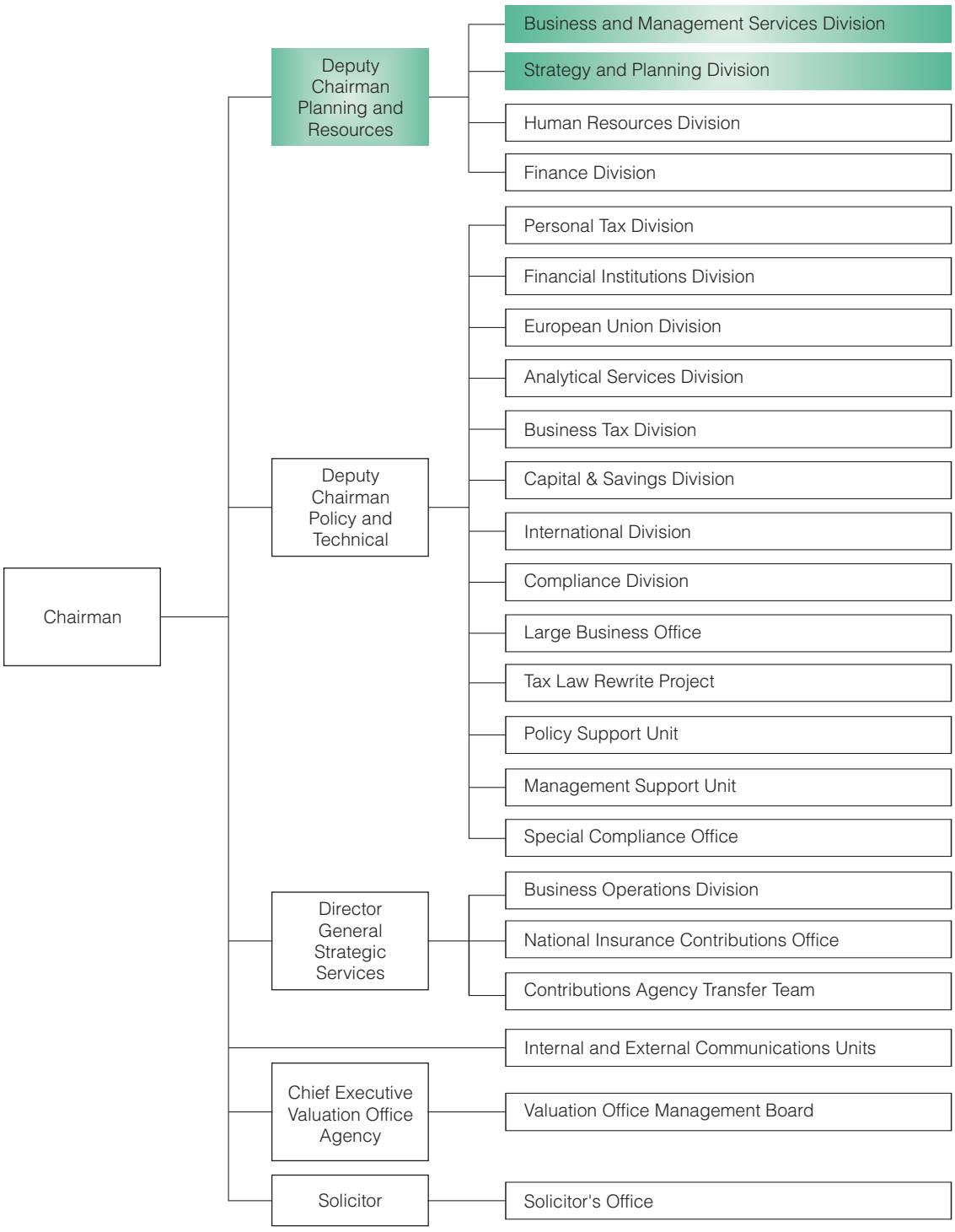


4 Direct responsibility and accountability for the management of the contract and the development of the partnership rests with the Head of the Department's Business and Management Services Division and a number of units within the Division. The Division supplies a range of specialist support services to the Department including project management, work measurement, operational research and management consultancy. Management of the partnership with EDS is one of these support services. The position of the Division in the structure of the Department is shown in Figure 15.

Figure 15

Inland Revenue organisation chart

Units responsible for the management of the contract and the Department's information systems and information technology strategy are situated in the Planning and Resources Directorate

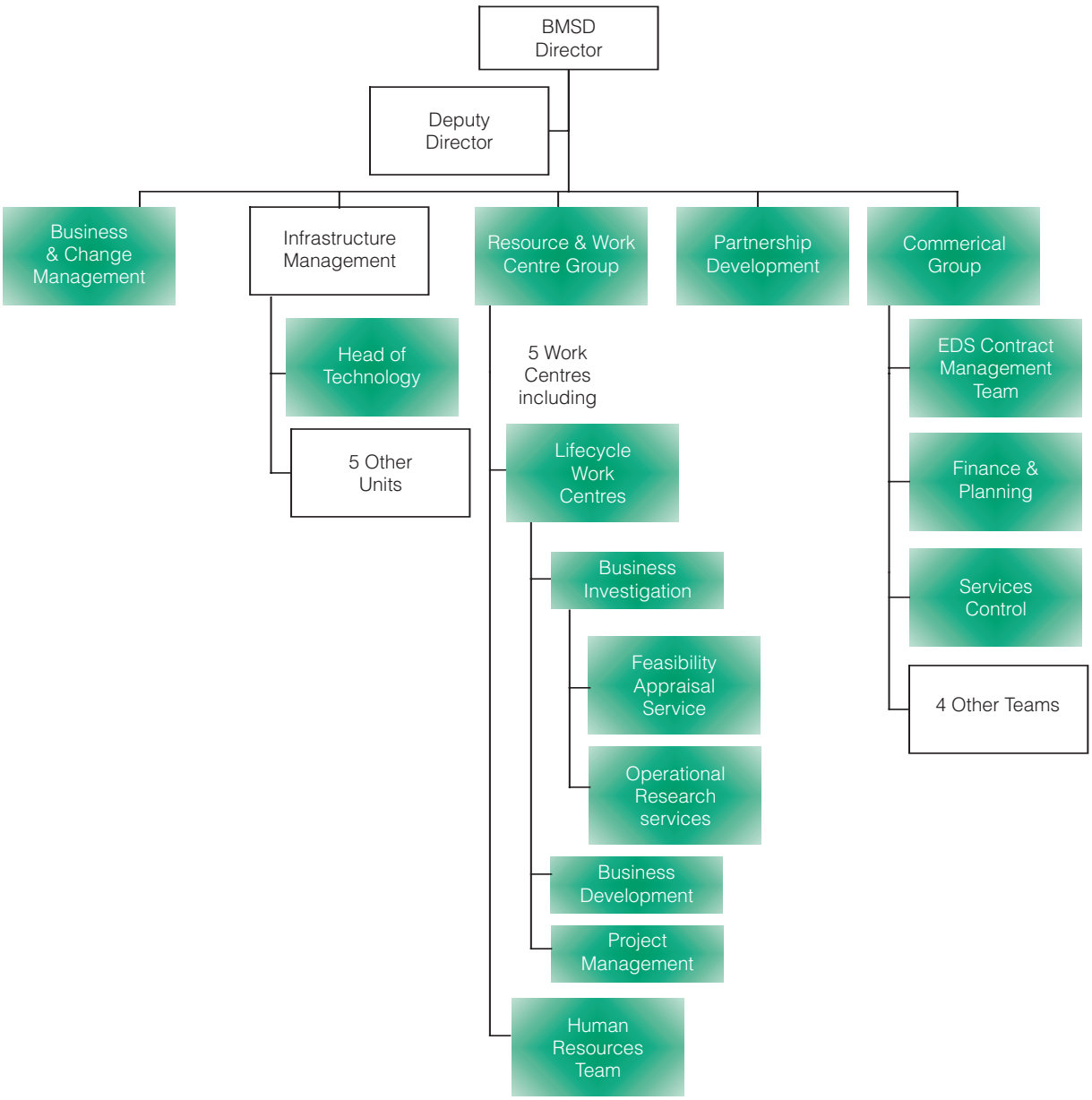


5 The Department's Business and Management Services Division contains a number of units which are involved in the running of the partnership (see Figure 16).

Figure 16

Simplified structure of Business and Management Services Division

Figure 16 shows how the units discussed in the report (indicated in shaded boxes) fit into the structure of the Business and Management Services Division.



6 The most important units in the partnership include:

- The **Business and Change Management Group**, which is responsible for ensuring that the systems specified and delivered support fully the operational needs of the Inland Revenue's ten Regional Executive Offices and local office network, Accounts Offices, and Enforcement Office. The Group's business managers provide support and a point of contact for units responsible for particular taxes and business activities which require national systems.

- The **Infrastructure Management Group**, including the *Information Technology Technical Consultancy*, which ensures that the solutions proposed by EDS fully support the Department's business, are consistent with the information systems and information technology strategy, represent good value for money and minimise the risk of "lock in" to EDS. It also provides technical advice on the development of the Department's information systems and information technology strategy.

- The **Resource and Work Centre Group**, which provides a range of services and support to the Division, and to the Department as a whole. The key units which are involved in commissioning new work include:

  - *Project Management*, which, as its name implies, provides a range of project management services.

  - *Business Investigation*, including the *Feasibility Appraisal Service* and operational research specialists, which assesses and evaluates new work proposals.

  - *Business Development*, which designs and develops business systems.

- The **Commercial Group**, which has overall responsibility for the management of the contract and the relationship with EDS. The key units which are involved in commissioning new work are:

  - The *Contract Management Team*, which is responsible for operational contract management, including ordering resources, approval of capital expenditure proposed by EDS, and performance monitoring.

- The *Services Control Team*, which manages the funds for running the Department's information technology systems, provides advice on the development of Service Level Agreements with EDS, and manages and monitors EDS performance against them.

- The **Partnership Development Group**, which oversees the development and maintenance of a comprehensive joint partnership programme.

7 The development of information systems and information technology strategy is the responsibility of a different Division within the Department. The Strategy and Planning Division, which reports to the Deputy Chairman, Planning and Resources (see Figure 15), supports the Departmental Management Committee in planning the delivery of the strategy and goals set by the Board and Ministers. It has oversight of project budgets and is responsible for defining the arrangements for sponsoring projects. It has joint responsibility with EDS and the Department's Business and Management Services Division for the development of an information technology strategy consistent with the Department's information systems strategy and for securing compliance with the approved strategy.

Appendix 2: The contract pricing mechanism

This Appendix provides information on how new work is priced under the partnership.

1 The Department's contract with EDS was negotiated on the basis that the information technology services required would change over time in response to new Departmental initiatives and developments and in response to technical developments in the use and capability of information technology. The contract recognised this by establishing a pricing mechanism for most services which:

- commits EDS to reducing the cost of the work originally transferred from the Department by some 35% over the ten years of the contract;
- allows the Department to buy varying volumes of work at prevailing unit prices, which are related to the cost of transferred work;
- pays EDS on a three step scale for staff resources, with the lowest price being paid for work ordered over 12 months in advance of the requirement, with increasing prices being paid as the period of notice becomes shorter;
- allows EDS to adjust daily charge-out rates for staff to take account of the effects of inflation, subject to negotiation and appropriate caps;
- tracks the productivity for various work areas and ensures that the Department can obtain the benefit of improved productivity in ordering additional work;
- permits a retrospective reduction in the price which the Department pays for staff if, as a result of EDS productivity being lower than forecast, the Department is obliged to order resource from EDS at short notice, thereby incurring greater costs than anticipated;
- recharges the cost of additional infrastructure on a cost-plus basis; and
- allows the Department to pay for capital investment, including a capital charge, over an agreed period.

The contract also allows the Department to share any EDS profits over a predetermined threshold.

2 A key element of the pricing mechanism is the Fixed Standing Charge. This is the price agreed in the contract for the volume of work originally transferred to EDS. The Department undertakes to purchase from EDS each year the equivalent of the transferred volume of work at the Fixed Standing Charge, the cost of which is progressively reduced over the life of the contract.

3 Information systems and information technology requirements in excess of the volume of work transferred are purchased from EDS at additional cost. For staff costs, the rates for this additional work are based on the unit prices which underlie the Fixed Standing Charge and vary according to how far in advance the necessary resources to do the work are ordered by the Department. Orders placed more than twelve months in advance attract no premium over the Fixed Standing Charge rates. Staff resources ordered with less notice attract one of two rates of premium, depending on whether they are ordered more or less than three months in advance.

4 In this way the pricing mechanism ensures that:

- the productivity gains EDS must make to achieve the contractual year-on-year reduction in the Fixed Standing Charge reduce the cost of all work done for the Department; and

- the Department is encouraged to assist EDS by planning its staffing requirements as far in advance as possible in order to secure lower unit prices.

5 The resources (staff, capital and infrastructure) required for the development of each piece of new work is assessed by EDS and included in the proposal.

Appendix 3: Projects included in the examination

This Appendix provides information about the sample of twelve information technology projects included in the examination.

Project Name and description	Estimated EDS lifecycle cost (£m)	Estimated total lifecycle cost (£m)	Status during Lorien fieldwork
Computerised environment for self assessment (CESA) – Release 2 *This was the second stage of the information technology project designed to support the implementation of the income tax self assessment initiative and related to the development of software to enable taxpayer returns to be entered and processed. Separate costs were not available for this element of the project.*	N/A	N/A	Completed
Infrastructure 2000 *Department-wide programme to upgrade desktop IT systems.*	122	203	In development
Construction industry scheme *Development of new system to support reform of tax collection in the construction industry.*	55	102	In development
Collection of student loan repayments *To enable the Department to assume responsibility for the collection of student loan repayments, and to pay over and pass details of payments to the Student Loans Company.*	8	32	In development
Payroll and personnel management information system *To develop an integrated payroll and personnel management information system.*	8	28	Completed
Individual savings accounts *To support introduction of individual savings accounts from April 1999.*	9	21	In development
Integrated debt management system *To develop a fully integrated debt management environment.*	1	16	In development
Call centre experiment *To set up a fully functional executive call centre to assess the viability of a national call centre network.*	2	13	In development
Business continuity implementation *To provide a disaster recovery facility for critical mainframe services.*	2	12	Completed
Integrated repayments system *To develop an integrated repayments system for the Financial Intermediaries and Claims Office.*	N/A	4	Completed
Repayment of interest on PAYE *Enhancement to BROCS system (Business Review of the Collection Service) to introduce a cost-effective and efficient means of repaying interest in cases of PAYE overpayments.*	0.6	0.7	Completed
Regional processing centre rationalisation *EDS performance improvement programme involving the closure of three regional processing centres.*	N/A	N/A	Completed

Appendix 4: The Department's benchmarking activities

This Appendix provides details of the Department's four benchmarking investigations - methods used, difficulties encountered and main findings.

1. Capital and infrastructure price benchmarks

Methodology

The Contract Management Team identified the cost of the most significant individual infrastructure and capital items purchased by EDS under the contract. It asked organisations in the public and private sectors for information on the prices they had paid for similar products and services. Information technology industry research firms and the Central Computer and Telecommunications Agency were also asked for information on comparative prices.

Difficulties

Other purchasers of equipment, particularly in the private sector, were reluctant to share information because they did not see any direct benefit to themselves in doing so. A number were also concerned about the potential impact on their commercial and contractual relationships with their suppliers of sharing price information with the Department.

The Department was also unable to share information about the cost of EDS services with third parties in some circumstances. We were told that this was because some EDS contracts with its suppliers prohibited it from sharing that information.

Suppliers bundle products in different ways at different times to different customers, making price comparisons difficult and time consuming.

Results

The Department was only able to make limited comparisons between EDS prices for IT equipment and the market generally. These indicated that EDS obtained better prices than the organisations which provided price data.

2. Capital and infrastructure efficiency benchmarks

Methodology

The Department used data from industry research organisations to compare price:performance ratios for a number of types of infrastructure.

Difficulties

The Department was able to make some limited comparisons, such as the average lifecycle cost of a personal computer, but found that:

- there is no single methodology in the industry for comparing the performance of different types and makes of computer;
- analysing the economic case for changing a computer or telecommunication system to take advantage of a better price:performance ratio over the life of a product requires complex calculations and risk assessment.

Results

The Department considered the majority of its work on capital and infrastructure efficiency inconclusive. The work could not provide assurance, from this perspective, about the merits of the choice of infrastructure in its information technology strategy.

3. Comparison of external salary costs with EDS rates

Methodology

The Department used information on market salaries from reports by Salary Survey Publications, the National Computing Centre, Incomes Data Services and Wentworth Research, together with press articles and data provided by EDS, to review and compare market salary rates between 1995 and 1997 with day rates charged by EDS.

Difficulties

The Department found some difficulty in identifying and matching job classifications between the different surveys and matching them with job descriptions for the grades of staff used by EDS. Despite this, the different sources of external information showed broadly similar bands of pay for apparently similar jobs. Possibly more importantly, they showed similar rates of increase in market pay rates between 1995 and 1997.

Results

The Department concluded that the benchmarking showed with reasonable certainty that, overall, the rates charged for EDS staff had increased significantly more slowly than salaries generally between 1995 and 1997. But further work would be required to match EDS charges for particular grades with market salary rates for similar jobs.

4. Benchmarking software development productivity

Methodology

The Department conducted two separate exercises to benchmark software development performance on 14 projects undertaken between 1992-93 and 1997-98. Ten of the projects involved national tax systems and four were for specialist offices. They included mainframe and mid-range systems developed by traditional means and by newer procedures with users and developers working more closely together, for example using rapid application development techniques. EDS provided data on the outputs from the projects and the staff inputs.

The Business and Management Services Division's operational research specialists compared the sample of projects against a database of 400 software developments compiled by the International Software Benchmarking Standards Group. The Department also commissioned an independent company specialising in the measurement of software development, to compare the 14 projects with a database of 4,000 public and private sector software developments conducted in the UK and overseas.

Both studies compared:

- the productivity of the developments, measured by staff days per function point;
- the delivery rate of software, measured in function points produced per month.

Difficulties

The Department found that, compared with the other three benchmarking exercises where the Department had to collect data from a variety of sources, the use of existing databases created by independent third parties facilitated the analysis. It believed, however, that the information still needed to be treated with healthy scepticism.

Results

Both exercises produced similar results and showed that software development productivity was generally below industry standards, but:

- productivity was higher under the partnership than previously, was improving more quickly than the industry, and, if trends up to 1997-98 continued, it would reach industry levels within five to ten years;
- projects developing software for mid-range and client-server systems had higher productivity than mainframe projects; and
- some projects with well-specified requirements and small development teams had met industry standards of productivity.

The studies also showed the rate of software delivery was closer to industry standards.

The studies identified a number of factors which may affect software development productivity in the partnership, including:

- Complex requirements - many of the Department's systems are governed by tax legislation which is often complex and can change from year to year. This introduces complexity into calculations on top of stringent security requirements, aimed at maintaining taxpayer confidentiality.

- Changes in requirements - changing requirements during software development can lead to time consuming rework. The Department's systems have often been subject to such changes.

- Uniqueness of requirements - many of the Department's requirements are unique and it does not therefore have the same access to proprietary software as private sector organisations, increasing the need to develop bespoke systems.

- Demand for system performance and availability - the Department relies on large systems to carry out its work. They must be designed to provide high performance and availability. They must also be tested thoroughly to ensure they function correctly when introduced.

- Technical stability - most of the Department's existing national systems were introduced over a long period in response to legislation or major organisational change and therefore tended to be developed separately using different design philosophies and development tools. This reduced the opportunity to carry lessons over between projects and makes integrating new and existing systems more difficult.

- Development timescales and team sizes - the relatively short times available to develop some new systems to meet legislative deadlines, such as self assessment, have encouraged the use of large development teams. The external report suggested that such teams deliver software only marginally quicker than smaller teams, but at significantly lower productivity and higher cost.

- Development tools - the software development tools available for the ICL computer systems traditionally used by the Department have been more limited than those available for the open systems which it is now using.

Appendix 5: Summary of recommendations

This Appendix summarises the recommendations included in Parts 2, 3 and 4 of the report.

Recommendation 1 The Department should continue to seek to minimise the number of developments which are inconsistent with its information technology strategy and, where departures are necessary, the decision should be made consciously, and for justifiable reasons.

Recommendation 2 In view of the strategy's importance in securing value for money, the Department should continue to keep it under review and amend it, as necessary, in response to developments in information technology and changes in its medium- and long-term vision of its business.

Recommendation 3 The Department should make a formal assessment in its partnership risk management plan of the issues associated with working in closer partnership with EDS in the rapid development of applications and take steps to mitigate any material risks identified.

Recommendation 4 The Department needs to continue to manage the risks associated with joint working to ensure that it retains sufficient independence to assess projects objectively and to avoid becoming locked in to the partnership with EDS to an extent which would restrict options at the conclusion of the contract in 2004.

Recommendation 5 The Department should consider developing guidance setting out the main risks to be addressed during evaluation of EDS proposals and when to call for expert advice.

Recommendation 6 The Department should consider commissioning independent reviews of selected projects, for example, by its Internal Audit Office to assess whether projects with a value below £250,000, which are approved by the Feasibility Appraisal Service, have been fully and accurately specified and assessed and to confirm that business cases put before the senior approval bodies are soundly based.

Recommendation 7 In view of the significant growth in workload, the Department should keep its in-house project management skills base under review to minimise the risk of over-dependence on bought-in resources.

Recommendation 8 To minimise the risk of nugatory expenditure, the Department should ensure that its guidance provides project managers with sufficient information about the contract pricing mechanism and the impact of changes in requirements. In particular, managers should understand how changes in EDS productivity and in the volume and timing of resource requirements may affect costs.

Recommendation 9 Key performance criteria should always be established before the Department accepts delivery of a product from EDS, and the development of such criteria should be monitored actively under the Department's risk management plan.

Recommendation 10 The Department should systematically analyse and document the skill sets required for all activities that support the management of the contract, including the award of new work, and the relationship with EDS. These analyses should then be used for monitoring the relevance of individuals' personal development plans and for the development of training programmes.

Recommendation 11 We recommend that the Department reviews the role of its Information Technology Technical Consultancy Unit. If some redefinition is required, the impact of this on staff numbers and skills should be quantified, and any gaps addressed.

Recommendation 12 The Department should review its policy for the rotation of staff in the Business and Management Services Division and consider how to address the factors which are inhibiting staff rotation. The objective should be to achieve an exchange of staff with other parts of the Department so that the Division is regularly refreshed and detailed knowledge about the operation of the partnership is spread more widely within the Department.

Recommendation 13 The Department should continue to use benchmarking as a key tool for assessing the value for money of its partnership with EDS. It should consider how it could collect, analyse and present the information in such a way that it can be used in the evaluation of proposals for new work as well as for assessing the value for money of existing activities. It should also consider extending the benchmarking to include direct comparisons of EDS efficiencies and costs in operating and maintaining information systems.

Recommendation 14 In view of the difficulty in obtaining benchmarking data, the Department should explore the scope for using commercial organisations or benchmarking clubs to gather this information and concentrate its own resources on specifying the areas where external comparisons are needed and on interpreting the results.

Recommendation 15 The Department should establish a protocol with EDS on the provision and use of data for benchmarking in order to clarify the part EDS is prepared to play in benchmarking exercises. The protocol should specify what information EDS is prepared to offer the Department and what it is prepared to supply to others, either directly or through the Department.

Recommendation 16 The Department should only use formal external competitions to test the market when it, and EDS, if it is contractually entitled to provide the service, are genuinely prepared to see the service being tested awarded to the bidder offering the best value for money.

Glossary of terms

Economy	Minimising the cost of resources used for an activity having regard to appropriate quality.
Effectiveness	The extent to which objectives have been achieved and the relationship between the intended impacts and the actual impacts of an activity.
Efficiency	The relationship between outputs, in terms of goods, services and other results, and the resources used to produce them.
Function point	A measure of the size of a software system.
Information systems	The processes for carrying out an organisation's business transactions - these may be manual, computer based or a combination of the two.
Information technology	The equipment needed to run computer based information systems, for example mainframe and personal computers, terminals, printers and cabling.
Lifecycle costs	Gross cost of a project over its economical life - normally seven years but the period remaining to the end of the contract, may also be used.
Platform	The hardware, software and communications environment in which business systems operate.
Project	Work authorised through the Departmental approval process.