

The Auditor-General
Audit Report No.33 2002-03
Performance Audit

Management of e-Business in the Department of Education, Science and Training

Australian National Audit Office

© Commonwealth
of Australia 2003

ISSN 1036-7632

ISBN 0 642 80689 6

COPYRIGHT INFORMATION

This work is copyright. Apart from any use as permitted under the *Copyright Act 1968*, no part may be reproduced by any process without prior written permission from the Commonwealth, available from AusInfo. Requests and inquiries concerning reproduction and rights should be addressed to:

The Manager,
Legislative Services,
AusInfo
GPO Box 1920
Canberra ACT 2601

or by email:
Cwealthcopyright@finance.gov.au



Canberra ACT
19 March 2003

Dear Mr President
Dear Mr Speaker

The Australian National Audit Office has undertaken a performance audit in the Department of Education, Science and Training in accordance with the authority contained in the *Auditor-General Act 1997*. I present the report of this audit, and the accompanying brochure, to the Parliament. The report is titled *Management of e-Business in the Department of Education, Science and Training*.

Following its tabling in Parliament, the report will be placed on the Australian National Audit Office's Homepage—<http://www.anao.gov.au>.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Oliver Winder'.

Oliver Winder
Acting Auditor-General

The Honourable the President of the Senate
The Honourable the Speaker of the House of Representatives
Parliament House
Canberra ACT

AUDITING FOR AUSTRALIA

The Auditor-General is head of the Australian National Audit Office. The ANAO assists the Auditor-General to carry out his duties under the *Auditor-General Act 1997* to undertake performance audits and financial statement audits of Commonwealth public sector bodies and to provide independent reports and advice for the Parliament, the Government and the community. The aim is to improve Commonwealth public sector administration and accountability.

Auditor-General reports are available from Government Info Shops. Recent titles are shown at the back of this report.

For further information contact:
The Publications Manager
Australian National Audit Office
GPO Box 707
Canberra ACT 2601

Telephone: (02) 6203 7505
Fax: (02) 6203 7519
Email: webmaster@anao.gov.au

ANAO audit reports and information about the ANAO are available at our internet address:

<http://www.anao.gov.au>

Audit Team

Steven Lack
Eric Turner
Alexandra McElwee
Anne Martin
Susan Murray

Contents

Abbreviations/Glossary	7
Summary and Recommendations	9
Summary	11
Background	11
Audit objective and scope	11
Audit methodology	12
Overall conclusion	13
DEST response	15
Key Findings	16
IT Governance	16
TYIMS and PRISMS	16
Measuring effectiveness	17
Measuring efficiency	18
Quality standards	18
Management of risks and controls	19
Recommendations	21
Audit Findings and Conclusions	23
1. Introduction	25
Background	25
The Department of Education, Science and Training (DEST)	26
The audit	28
2. IT Governance	31
What is IT Governance?	31
Audit approach	31
IT Governance at DEST	32
IT Governance conclusion	38
3. IT Applications—TYIMS and PRISMS	39
Introduction	39
Audit approach	39
Training and Youth Internet Management System (TYIMS)	40
Provider Registration and International Students Management System (PRISMS)	44
Data analysis conclusion	48
4. Measuring the Effectiveness of e-Business	49
Effectiveness	49
Audit approach	49
Measurement of e-Business effectiveness at DEST	50
Audit findings	51
Measuring effectiveness conclusion	54
5. Measuring the Efficiency of e-Business	55
Efficiency	55
Audit approach	55
Measurement of e-Business efficiency at DEST	56
Audit Findings	57
Measuring efficiency conclusion	61

6. Quality Standards	62
Quality	62
Audit approach	63
Quality management at DEST	63
Audit findings	64
Quality standards conclusion	71
7. Management of Risk and Controls	72
IT assets	72
Risk	72
Security	73
Privacy	74
Legal	75
e–Business continuity	75
Monitoring of Internet use	76
Records management	76
Index	79
Series Titles	81
Better Practice Guides	84

Abbreviations/Glossary

ABAC	Audit and Business Assurance Committee
ABMS	AEI Business Management System
ABN	Australian Business Number
AEI	Australian Education International
ANAO	Australian National Audit Office
AS/NZS	Australian Standards/New Zealand Standards
CIO	Chief Information Officer
CITC	Corporate IT Committee
CLG	Corporate Leadership Group (Chair–Secretary)
CobiT	Control Objectives for Information and Related Technology
CRICOS	Commonwealth Register of Institutions and Courses for Overseas Students
DEST	Department of Science, Education and Training
DETYA	Department of Education, Training and Youth Affairs
DEWR	Department of Employment and Workplace Relations
DIMIA	Department of Immigration and Multicultural and Indigenous Affairs
DSDM	DEST System Development Methodology
eCoE	Electronic Confirmation of Enrolment
ESOS	Education Services for Overseas Students
IBTC	Information and Business Technology Committee
ISO/IEC	International Organisation for Standardisation/ International Electrotechnical Commission
IT	Information Technology
IT & T	Information Technology and Telecommunications
ISG	Information Services Group
NAC	New Apprenticeship Centre
NOIE	National Office for the Information Economy
PIR	Post Implementation Review

PRISMS	Provider Registration and International Students Management System
SSL	Secure Socket Layer
STA	State Training Authority
TYIMS	Training and Youth Internet Management System

Summary and Recommendations

Summary

Background

1. In common with governments in many other countries, the Australian Government is committed to modernising public administration, particularly through the use of information technology (IT) and the Internet. The Australian Government's strategy to make 'all appropriate services available online via the Internet by 2001'¹ is outlined in the *Government Online* agenda². An October 2001 survey conducted by the Australian National Office for the Information Economy (NOIE)³ indicated that all agencies, including the Department of Education, Science and Training (DEST), met the government's target.
2. The Commonwealth, through the agencies in the Education, Science and Training portfolio, in particular DEST, has a national leadership role in education and training. States and Territories have primary responsibility for school education, and the vocational education and training sector. The Commonwealth Government works towards education outcomes in partnership with the States and Territories, non-government authorities, education and training providers, and industry. Within this arrangement, the Commonwealth Government does not solely, or directly, control outcomes for education, science and training in Australia. The Commonwealth has primary responsibility for funding and policy-making in the higher education sector. The States and Territories are responsible (with minor exceptions) for legislation to establish universities and for accreditation of higher education courses by private providers.
3. DEST provides advice to the Government and administers programs to achieve the Commonwealth's objectives for education, science and training. For 2002–03, DEST has a departmental budget (generally DEST staff salaries and administrative expenses) of around \$234 million and an administered budget (generally funds and grants to external organisations) of \$13 billion.

Audit objective and scope

4. The objective of the audit was to determine whether DEST:
 - has effective governance practices for its IT and e-Business;

¹ Commonwealth of Australia, *Investing for Growth. The Howard Government's Plan for Australian Industry*, viewed October 2002, <<http://www.disr.gov.au/growth/>>, 1997.

² Department of Communications, Information Technology and the Arts, 2000. *Government Online—The Commonwealth Government's Strategy*, AGPS, Canberra.

³ NOIE Government Online Survey, Round 4, October 2001, viewed September 2002, <http://www.govonline.gov.au/projects/strategy/Progress_Report_Round_3_2001/index.htm>, 2001.

- has adequate systems in place to measure the efficiency and effectiveness of its IT and e-Business;
 - implements and maintains appropriate quality standards within its IT and e-Business systems; and
 - implements proper controls, including risk management, to achieve maximum benefit from its IT and e-Business.
5. The audit examined education and training services provided, or managed, by DEST via IT or the Internet.
6. DEST has a number of IT applications, large and small, servicing internal administrative purposes and providing capacity to account for and pay funds and grants to the education, science and training communities. The ANAO selected two of the applications servicing external clients for testing against fundamental components of an IT standards framework. A number of factors were considered in the selection of the applications including:
- financial expenditure;
 - the use of the Internet to allow external clients to interface directly with DEST, including allowing the clients to claim payments due to them;
 - the use of the applications to authenticate clients, and support the security of passwords transmitted across the Internet; and
 - the use of the applications to collaborate with other government agencies, both Commonwealth and State/Territory.
7. The two applications selected for examination, the Training and Youth Internet Management System (TYIMS) and the Provider Registration and International Students Management System (PRISMS), assist in the management of some \$550 million of administered funds and, importantly, support an export industry valued at around \$4.25 billion.

Audit methodology

8. This audit combines two ANAO audit themes: one addressing IT systems within Commonwealth agencies; and a second addressing Commonwealth agencies' use of the Internet⁴. The audit also follows on from a previous audit

⁴ The recent audits on these themes are:

- ANAO Report No.1 2002–03, *Information Technology at the Department of Health and Ageing*;
- ANAO Report No.13 2001–02, *Internet Security within Commonwealth Government Agencies*;
- ANAO Report No.49 2000–01, *Information Technology in the Health Insurance Commission*;
- ANAO Report No.44 2000–01, *Information Technology in the Department of Veterans' Affairs*; and
- ANAO Report No.39 2000–01, *Information and Technology in Centrelink*.

within DEST (then DETYA) in 2000 that considered the application of Business Process Reengineering to the business processes of the department⁵. This audit built on experience and understanding gained in those previous audits. This audit also used the ANAO's Better Practice Guide on Internet use⁶, developed from an examination of agencies' use of the Internet⁷, to determine audit objectives and criteria. In addition, this audit included aspects from an international standard for auditing of IT, CobiT⁸, also used in previous ANAO IT audits.

Overall conclusion

9. The ANAO concluded that DEST's management of its Internet presence and its e-Business was sound. Where improvements could be made, such as in measuring the benefits of, and in assuring the quality of, its e-Business systems, DEST was addressing these aspects with the introduction of a new DEST Systems Development Methodology (DSDM).

10. Governance arrangements for IT and e-Business in DEST were satisfactory in that: responsibility for budgets and structures resides with the Corporate Leadership Group; the role of the other committees was appropriate; and IT and e-Business was included in the internal audit program and was monitored by DEST's Audit and Business Assurance Committee. However, the ANAO found that:

- the respective responsibilities and relationship between the Corporate Information Technology Committee and the Information and Business Technology Committee could be clarified in their Terms of Reference; and
- while the four committees examined by the ANAO had established most of the more important elements of a committee charter, all of the committees would benefit from a regular review to assess their achievements.

11. Based on the audit analysis undertaken of TYIMS and PRISMS, the ANAO considers that DEST has adequate procedures in place to measure the effectiveness and efficiency of its IT and e-Business. However, the ANAO concluded that, while an assessment of e-Business project benefits was undertaken in some post implementation reviews, both the occurrence and

⁵ ANAO Report No.27 2000–01, *Program Administration in Training and Youth Division—Business Process Reengineering*.

⁶ ANAO 2000, *Internet Delivery Decisions: A Government Program Managers Guide*, Canberra.

⁷ ANAO Report No.18 1999–2000, *Electronic Service Delivery, including Internet Use, by Commonwealth Government Agencies*.

⁸ Information Systems Audit and Control Association, *Control Objectives for Information and Related Technology*, viewed September 2002, <<http://www.isaca.org>>.

contents of reviews were inconsistent. To assist the evaluation of e-Business effectiveness and efficiency, the ANAO considers that DEST should:

- ensure that any business case for e-Business proposals aligns with the guidelines provided in its new Systems Development Methodology that requires inclusion of measures and targets by which the success of the project can be assessed; and
- include formal and consistent analysis of actual costs and realisation of actual benefits in post implementation reviews.

12. On the latter point, the ANAO recognises DEST's intention to make the new DSDM mandatory, and that the inclusion in the DSDM of a pro-forma post implementation review form, should address the identified inconsistencies.

13. The ANAO concluded that, overall, the PRISMS and TYIMS data it analysed were generally accurate, complete, consistent, current and unique. However, some exceptions to this conclusion were identified but these did not constitute a significant threat to the integrity of the systems.

14. The scope of the audit did not include reconciliation between DEST and the Department of Immigration and Multicultural and Indigenous Affairs (DIMIA) data. The ANAO is, therefore, unable to attest to the completeness and currency of PRISMS data transferred between the agencies. The ANAO concluded that data transfer arrangements between DEST and DIMIA should be clarified by the development of a Memorandum of Understanding between the two agencies, which should include any requirement for reconciliation of data between the agencies.

15. The ANAO considers that DEST has developed a management culture that encourages a focus on quality in relation to its IT and e-Business. The department regularly benchmarks its IT performance against that of comparable external organisations with generally favourable results. Surveys of internal stakeholders are also favourable.

16. A formal system development methodology is available as a guideline on a trial basis and, following a review of its use, is expected to be made mandatory. The ANAO noted that programming standards were not included, or referred to, in that methodology.

17. The ANAO concluded that DEST appropriately reviews its IT and e-Business standards and guidelines. However, there is no independent capacity in the Information Services Group with responsibility for ensuring adherence to the standards. Adherence to the standards relies on the discipline of the teams using the standards.

18. The ANAO concluded that DEST has appropriate risk management strategies in place for IT and e-Business. As well, its security policies and practices were generally satisfactory. However improvements could be made in:

- setting a departmental standard for the security of Internet transactions; and
- enforcing password rules by appropriate software.

19. While DEST has rules and procedures defined in its security policy covering the use of production data, it allows the use of such data in the testing of programs and applications. It seems reasonable to conclude that DEST needs to ensure application change teams adhere to the rules it has defined.

20. The ANAO concluded that, while DEST does not currently fully comply with legislative and policy requirements for its electronic records, it is implementing appropriate systems that should allow it to comply with these requirements by late 2003.

DEST response

21. DEST is pleased that the audit has confirmed the overall soundness of its management of its e-Business and its internet presence and the satisfactory design and operation of IT and e-Business governance in the Department. Our governance framework and IT Enterprise Architecture is subject to continuous improvement under the guidance of the Corporate IT Committee and the Information and Business Technology Committee to ensure that it delivers efficient, effective and innovative IT and e-Business control and business technology solutions.

22. DEST agrees with all of the ANAO recommendations and is already reviewing and implementing improvements in its system development methodology, data and quality management and other governance processes. A number of these improvements had already been identified and it is gratifying that the directions recommended by the ANAO are supportive of those being taken.

Key Findings

IT Governance

23. At the time of the audit, four DEST committees were responsible for IT and e-Business governance. The ANAO noted that the most senior of those committees, the Corporate Leadership Group (CLG), normally met every two weeks. The ANAO observed that the CLG regularly considered and endorsed IT strategy matters, IT and e-Business proposals, including budgets. As well, it endorsed website issues, including the DEST website 'look and feel' and the DEST logo for inclusion on its websites.

24. The ANAO noted that the Audit and Business Assurance Committee (ABAC) met quarterly. The committee received reports on IT and Internet security, from both ISG and from Audit and Investigations Branch. The committee ensures recommendations are acted on.

25. The ANAO also found that the relationship between the Information and Business Technology Committee (IBTC) and the Corporate Information Technology Committee (CITC) was not clear, particularly in the context of roles and responsibility for e-Business. Both committees had the same chair; both had responsibility for deciding funding for projects, with the IBTC seeking CITC endorsement before forwarding the project to the CLG for approval. Although the CITC is nominated as one of DEST's senior ongoing management committees and the IBTC is not, both sought approval of the CLG for funding and projects. The ANAO found the CITC met irregularly, as, for example, the elapsed time between the last three meetings was 23 weeks and 17 weeks.

TYIMS and PRISMS

Training and Youth Internet Management System

26. The ANAO noted that the total population of apprentice registration records was 1 096 861. Of this total, 608 482 records had a completion status recorded; and 44 423 records had an expected end date of at least 15 months earlier and did not have a completion status recorded. Thus, there were a large number of doubtful incomplete cases as at October 2002. It was not clear to the ANAO whether these cases had been completed or not. This raised concerns about whether correct payments had been made, and therefore whether the scheme was meeting its objectives, especially to administer Commonwealth incentive payments to employers.

27. A number of other consequences may arise from these doubtful incomplete cases. Cases that were completed but not recorded would distort some performance indicators (such as exaggerate the number of active registrations) and would inflate the value of liabilities recorded in DEST's accounts (based on the number of incomplete claims). Delayed payment for cases may encounter problems such as a change of provider name and change of bank account.

Provider Registration and International Students Management System

28. An international student enrolling in an Australian course, and being confirmed by the provider, creates a record on PRISMS. The record is then sent electronically to DIMIA. DIMIA's overseas officers are able to access and check the existence of the registration record before issuing a visa. DIMIA then electronically advises DEST of the issue of the visa, and of the arrival of the student in Australia.

29. The ANAO found that successful operation of PRISMS depends on the transfer of complete and accurate data between DEST and DIMIA. In separate discussions with the two agencies, the ANAO was provided with different views on the error rate in the data transferred. DIMIA took the view that errors were around one or two per week and manageable. DEST advised the ANAO of a number of categories of errors that resulted in an estimated 33 000 records not containing the most recent information on either the DEST or DIMIA systems over a period of 15 months.

30. The ANAO was informed that there was no Memorandum of Understanding between the two agencies for the transfer of data, nor for the reconciliation of the data contained on the two systems.

Measuring effectiveness

31. The ANAO found that DEST had taken suitable steps to identify appropriate services for online delivery.

32. The ANAO found that, while assessments of the benefits arising from the implementation of e-Business systems were undertaken in some post implementation reviews, both the occurrence and contents of post implementation reviews were inconsistent.

33. The ANAO found DEST conducted surveys of external TYIMS users and the surveys found a high level of external satisfaction with TYIMS. An external consultant commissioned by DEST to conduct a post implementation review concluded that project objectives had been achieved.

34. Key performance measures for assessing the success, or otherwise, of the PRISMS project had not been identified. The ANAO found that a recently introduced system development methodology addressed the inconsistencies. The ANAO also found post implementation reviews for PRISMS were limited to technical issues and did not consider whether business benefits had been achieved.

Measuring efficiency

35. The ANAO found DEST's system development proposals included a cost/benefit analysis supporting the proposal. However, the ANAO found a lack of formal measurement of actual costs and identification of benefits realised after each of TYIMS and PRISMS were implemented.

36. The ANAO found that DEST compared and benchmarked its performance against that of other comparable agencies. In the surveys, DEST's performance compared favourably against that of other agencies and organisations, particularly in the areas of cost efficient staffing arrangements. However, a 2001 survey found that defects in newly implemented applications were higher than the industry standard, and also identified an absence of defect data for other applications.

37. A September 2000 survey of DEST users of IT highlighted that, when benchmarked against 14 other federal government agencies, DEST reported higher levels of satisfaction and perceived service quality than five of the agencies that outsource their IT services to an external provider. However, the survey also reported lower levels of satisfaction and quality than experienced by several agencies that provided IT services internally. A second survey in April 2001 found a net increase in satisfaction by around 10 per cent of users compared to the previous survey results.

Quality standards

38. In response to a July 2001 consultant's report, DEST developed a system development methodology based on the *Microsoft Solutions Framework*. The methodology (*DEST Systems Development Methodology–DSDM*) was introduced as a guideline in December 2001. At the time of the audit, the ANAO was informed that the DSDM was on trial with the expectation that, following a review in late 2002, it would be made mandatory. DEST advised the ANAO that it expects the revised methodology to be implemented by the end of the third quarter 2003. The DSDM is kept current and made available to all staff via DEST's intranet. The DSDM includes a Quality Plan⁹ for IT projects. However, generally,

⁹ Department of Education, Science and Training, *Systems Development Methodology-Quality Plan*, DEST, Canberra.

responsibility for quality resides solely with the project team. This has resulted in differing approaches between teams. For example, TYIMS has a Quality Management Plan but PRISMS does not. There is no independent group within Information Services Group with responsibility for quality assurance testing and sign-off.

39. The ANAO found that TYIMS and PRISMS used different systems to record application changes, with TYIMS using a computer based system and PRISMS using a paper-based system. Examination of the change requests for both systems resulted in generally favourable results but revealed isolated incidents of missing required fields and insufficient/inappropriate authorisations.

40. At the time of the audit, the responsibility and processes for managing DEST's websites and website content were in the process of significant change, including ongoing discussions with business owners aimed at a mainstream approach to websites. The ANAO considers that the proposed change process provides a sound base for the management of DEST's websites. The process includes quality assurance responsibilities, together with the involvement of the responsible owner, which provide an expectation that the resulting information is accurate, and that DEST standards and guidelines have been properly followed.

Management of risks and controls

41. DEST has a Risk Management Policy, a Risk Management Manual and a Risk Management Section responsible for promoting risk awareness and training.

42. At the time of the audit, DEST had stringent rules defining passwords. However, the software used by DEST did not enforce the rules. The ANAO has been provided with a revised DEST Security Policy with password rules based on the AS/NZS ISO/IEC 17799:2001 : *Information Technology—Code of Practice for Information Security Management*. The ANAO has also been advised that the new rules concerning passwords, due to be implemented in April 2003, will be enforced by software.

43. The ANAO found one instance of a copy of production data, containing personal information, being used to test system and programming changes. The DEST security policy includes rules for the use of production data for testing of applications. The rules place the responsibility for use on the owner of the data.

44. The Legal and Business Assurance Branch is required to examine and provide advice on all new websites for legal and privacy issues. The ANAO found that Branch representation is included on appropriate project steering committees.

45. The ANAO found that, at the time of the audit, DEST was progressively testing adequate recovery procedures for all its e-Business and Internet systems.
46. DEST has a formal email/Internet code of conduct readily available to all staff on DEST's intranet. As well, the access icon is prominently displayed on the intranet/Internet entry screen. DEST appropriately monitors email/Internet use and appropriately applies sanctions.
47. The ANAO found that DEST stored web pages that had been replaced or discarded by inserting */archive* in the address. While this is a sensible interim solution that retains the web page for future access, it does not comply with the record-keeping requirements of the *Archives Act 1983* that requires a record to be unchangeable. At the time of the audit, DEST was completing a tendering process for a new records management system. DEST informed the ANAO that the new system will comply with the Australian Recordkeeping standard, as outlined in AS4390¹⁰, and be consistent with the National Archives of Australia e-Permanence policy guidelines. This will be able to be tested on implementation in late 2003.

¹⁰ Standards Association of Australia, Australian Standard: AS 4390 *Recordkeeping Guidelines*, replaced by: Standards Association of Australia, Australian Standard: AS ISO 15489.1 – 2002 *Records Management-General* & AS ISO 15489.2 – 2002 *Records Management-Guidelines*, Standards Australia, Sydney.

Recommendations

Set out below are the ANAO's recommendations with a report paragraph reference and the agency's response to the recommendations. More detailed responses are shown in the body of the report together with the relevant audit findings. The ANAO considers DEST should give priority to recommendations 3, 4 and 6.

**Recommendation
No.1
Paragraph 2.32**

The ANAO recommends that DEST clarify the respective roles and responsibilities of its Corporate Information Technology Committee and its Information and Business Technology Committee. In doing so, DEST should consider the development and use of committee charters that include the authority and role of the committee, the roles of the chair, members and secretariat, and a work program together with a regular review of the progress and achievements of the committee.

DEST response: Agreed.

**Recommendation
No.2
Paragraph 3.17**

The ANAO recommends that DEST upgrade the Training and Youth Internet Management System to produce an exception report that identifies apprenticeship records that would have been expected to be finalised but are not, and seek assistance from the appropriate New Apprenticeship Centres to finalise the records.

DEST response: Agreed.

**Recommendation
No.3
Paragraph 3.41**

The ANAO recommends that DEST initiate discussion with DIMIA with a view to developing a Memorandum of Understanding to clearly define each agency's responsibility for maintaining the timeliness, accuracy and completeness of the data transfer between the agencies, any requirements for reconciliation of data between the agencies, and each agency's responsibility for timeliness of system changes. In doing so, the ANAO recommends that DEST seek to resolve the discrepancy in PRISMS error rates arising from incomplete transfer of data between DEST and DIMIA.

DEST response: Agreed.

**Recommendation
No.4
Paragraph 4.26**

The ANAO recommends that DEST ensure that any business case for e-Business proposals align with the guidelines provided in its new Systems Development Methodology that requires inclusion of measures and targets by which the success or otherwise of the project can be assessed.

DEST response: Agreed.

**Recommendation
No.5
Paragraph 6.23**

The ANAO recommends that DEST record all application change requests and faults on a single computer-based system. The system should also track application changes through the change process and include authorisations.

DEST response: Agreed.

**Recommendation
No.6
Paragraph 6.28**

The ANAO recommends that DEST consider a two-tier approach to post implementation reviews based on the level of risk inherent in the change. After a periodic release, DEST could conduct a simple and brief self-assessment by the change team and business owners of the management, and effect, of the change (what we did right, what we did wrong, what can we improve). After major enhancements or changes it would be appropriate for a post implementation review to include an assessment of the costs and benefits, and to include surveys of internal and external clients on the effect of the change.

DEST response: Agreed.

Audit Findings and Conclusions

1. Introduction

Background

1.1 In common with governments in many other countries, the Australian Government is committed to modernising public administration, particularly through the use of information technology (IT) and the Internet. The Australian Government's strategy to make 'all appropriate services available online via the Internet by 2001'¹¹ is outlined in the *Government Online* agenda¹². An October 2001 survey conducted by the Australian National Office for the Information Economy (NOIE)¹³ indicates that all agencies, including the Department of Education, Science and Training (DEST), met the government's target.

1.2 Conducting government services online through the Internet, termed e-Business in this report, presents both opportunities and challenges. The opportunities include:

- providing access to a wider public, including, in the case of DEST, potential overseas students wishing to study in Australia;
- access to services 24 hours per day, seven days of the week;
- potentially reduced cost of service delivery; and
- potentially improved quality of services.

1.3 The challenges include:

- security and privacy issues;
- website presentation, currency, and accessibility; and
- collaboration between DEST and other Commonwealth agencies, state and territory agencies, education providers, the public, and other providers of education and training services.

1.4 This report examines DEST's approach to e-Business, and assesses the department's approach to the opportunities and challenges.

¹¹ Commonwealth of Australia, *Investing for Growth. The Howard Government's Plan for Australian Industry*, viewed October 2002, 1997, <<http://www.disr.gov.au/growth/>>.

¹² Department of Communications, Information Technology and the Arts, 2000. *Government Online – The Commonwealth Government's Strategy*, AGPS, Canberra.

¹³ NOIE Government Online Survey, Round 4, October 2001, viewed September 2002, <http://www.govonline.gov.au/projects/strategy/Progress_Report_Round_3_2001/index.htm>.

The Department of Education, Science and Training (DEST)

1.5 The Commonwealth, through the agencies in the Education, Science and Training portfolio, in particular DEST, has a national leadership role in education and training. States and Territories have primary responsibility for school education, and the vocational education and training sector. The Commonwealth Government works towards education outcomes in partnership with the States and Territories, non-government authorities, education and training providers, and industry. Within this arrangement, the Commonwealth Government does not solely, or directly, control outcomes for education, science and training in Australia. The Commonwealth has primary responsibility for funding and policy-making in the higher education sector. The States and Territories are responsible (with minor exceptions) for legislation to establish universities and for accreditation of higher education courses by private providers.

1.6 DEST provides advice to the Government and administers programs to achieve the Commonwealth's objectives for education, science and training. For 2002–03, DEST has a departmental budget (generally DEST staff salaries and administrative expenses) of around \$234 million and an administered budget (generally funds and grants to external organisations) of \$13 billion. As a result of the Administrative Arrangements Order of 26 November 2001, Youth Affairs was transferred to the Department of Family and Community Services from the then Department of Education, Training and Youth Affairs (DETYA), and science functions and programs were included in the new DEST portfolio.

1.7 DEST has three outcomes¹⁴ as shown in table 1.1:

¹⁴ Department of Education, Science and Training 2002: *Portfolio Budget Statements 2002–03, Education, Science and Training Portfolio*, p. 22.

Table 1.1**DEST Outcomes 2001–2002**

	Description	Departmental Budget (\$m)	Administered Budget (\$m)	Average Staffing Level
Outcome 1	Students acquire high quality foundation skills and learning outcomes from schools.	\$74.3	\$6 432.1	553
Outcome 2	Individuals achieve relevant skills and learning outcomes from post school education and training for work and life	\$100.1	\$6 104.1	495
Outcome 3	Australia has a strong science, research and innovation capacity and is engaged internationally on science, education and training to advance our social and economic growth.	\$60.0	\$465.9	283
	Totals	\$234.4	\$13 002.1	1 331

Source: Department of Education, Science and Training Annual Report 2001–2002

1.8 DEST has outsourced its IT infrastructure to the Department of Employment and Workplace Relations (DEWR), and this arrangement is set out in a Memorandum of Understanding between the two organisations. In particular, DEST's interface to the Internet, and the firewall between DEST and the Internet at large, is operated by DEWR. This firewall was examined by the ANAO in collaboration with the Defence Signals Directorate in a recent audit¹⁵. During the audit, DEST was in the process of withdrawing from the outsourcing contract with the intention of providing all services in-house.

1.9 DEST's IT organisation is known as the Information Services Group (ISG). The group manages all aspects of IT within DEST, including the relationship with DEWR. ISG is fully funded by DEST, rather than operating on a cost recovery model.

1.10 DEST has a number of programs that deliver grants and subsidies to individual students, educational related groups, and to educational and training establishments. Most programs are supported by IT applications. Several of the IT applications are accessible to clients through the Internet, and include facilities

¹⁵ ANAO Report No.13 2001–02, *Internet Security within Commonwealth Government Agencies*.

to submit claims for payments online. DEST is working towards the integration of core transaction systems to allow it to provide a single point of registration, and a single point of access, to all 'front-end' business systems. Included in this endeavour is a single directory containing data on all DEST's external clients. Stage 1 of this reengineering of funding and grant management is scheduled for completion in mid-2003.

1.11 DEST has the responsibility for creating and maintaining the Commonwealth Education Portal on the Internet, www.education.gov.au. This portal, together with the Education Network Australia website, www.edna.edu.au, is managed by a company, *Education.Au*. Commonwealth, State and Territory Government Education Ministers own *Education.Au*.

The audit

Audit objective

1.12 The objective of the audit was to determine if DEST:

- has effective governance practices for its IT and e-Business;
- has adequate systems in place to measure the efficiency and effectiveness of its IT and e-Business;
- implements and maintains appropriate quality standards within its IT and e-Business systems; and
- implements proper controls, including risk management, to achieve maximum benefit from its IT and e-Business.

Audit scope

1.13 The scope of the audit was targeted at the education and training services provided or managed by DEST.

1.14 DEST has a number of IT applications, large and small, servicing internal administrative purposes and providing capacity to account for and pay funds and grants to the education, science and training communities. The ANAO selected two of the applications servicing external clients for testing against fundamental components of an IT standards framework. A number of factors were considered in the selection of the applications including:

- financial expenditure;
- the use of the Internet to allow external clients to interface directly with DEST, including allowing the clients to claim payments due to them;

- the use of the applications to authenticate clients, and support the security of passwords transmitted across the Internet; and
- the use of the applications to collaborate with other government agencies, both Commonwealth and State/Territory.

1.15 The two applications selected for examination, Training and Youth Internet Management System (TYIMS) and Provider Registration and International Student Management System (PRISMS), assist in the management of some \$550 million of administered funds and, importantly, support an export industry valued at around \$4.25 billion.

1.16 TYIMS is the application supporting the payment of funds to New Apprenticeship Centres (NACs), apprentices and employers. In dealing with apprentices it is necessary for DEST to collaborate with State Training Authorities, and computer linkages to those authorities have been and are being developed. TYIMS replaced a previous IT system and supports the Government's 1998 New Apprenticeships initiative. Some 362 000 apprentices were in training in 2002¹⁶. The total cost of this output is around \$542 million.

1.17 PRISMS is the DEST application supporting the enrolment of international students in approved education provider courses, and tracking the students progression through the course and, where applicable, movements between providers. This program requires collaboration between DEST and education providers, particularly universities. It also requires electronic exchange of information with another Commonwealth agency, the Department of Immigration and Multicultural and Indigenous Affairs (DIMIA). This exchange is necessary to allow DIMIA to issue visas to students for travel to Australia, and to ensure that the students comply with Australian immigration laws and regulations. PRISMS has been developed to assist DEST and DIMIA's administration of the *Education Services for Overseas Students Act 2000*. Although departmental expenditure on PRISMS and the international student program is moderate at around \$6 million, international students as an 'export' are valued at in excess of \$4.25 billion¹⁷ annually to Australia. Some 240 000 overseas students were in Australia in 2002¹⁸.

1.18 The two applications are discussed in greater detail in chapter 3.

¹⁶ Department of Education, Science and Training, *Annual Report 2001–2002*, p. 1, AGPS, Canberra.

¹⁷ *ibid* p. 2.

¹⁸ *ibid* p. 2.

Audit methodology

1.19 This audit combines two ANAO audit themes: one addressing IT systems within Commonwealth agencies; and a second addressing Commonwealth agencies' use of the Internet¹⁹. A previous ANAO audit at DEST (then DETYA) in 2000 reviewed the impact of Business Process Reengineering on the department's business processes and served as a basis of understanding for this audit²⁰. The ANAO also used its Better Practice Guide on Internet use²¹, developed from an examination of agencies' use of the Internet²², to develop audit objectives and criteria. In addition, this audit included aspects from an international standard for auditing of IT, CobiT²³, used in previous ANAO IT audits.

1.20 The ANAO interviewed key staff of DEST and other appropriate Commonwealth agencies, examined DEST's internal records, and examined a number of DEST websites.

1.21 Audit fieldwork was conducted over a period from June 2002 to October 2002. The audit was conducted in accordance with ANAO auditing standards at a cost of \$320 000.

¹⁹ The recent audits on these themes are:

- ANAO Report No.1 2002–03, *Information Technology at the Department of Health and Ageing*;
- ANAO Report No.13 2001–02, *Internet Security within Commonwealth Government Agencies*;
- ANAO Report No.49 2000–01, *Information Technology in the Health Insurance Commission*;
- ANAO Report No.44 2000–01, *Information Technology in the Department of Veterans' Affairs*; and
- ANAO Report No.39 2000–01, *Information and Technology in Centrelink*.

²⁰ ANAO Report No.27 2000–01, *Program Administration in Training and Youth Division—Business Process Reengineering*.

²¹ ANAO 2000, *Internet Delivery Decisions: A Government Program Managers Guide*, Canberra.

²² ANAO Report No.18 1999–2000, *Electronic Service Delivery, including Internet Use, by Commonwealth Government Agencies*.

²³ Information Systems Audit and Control Association, *Control Objectives for Information and Related Technology*, viewed September 2002, <<http://www.isaca.org>>.

2. IT Governance

This chapter examines the governance arrangements for information technology and e-Business in DEST. It assesses the roles of four committees with direct responsibilities for the governance of IT and e-Business, and the relationships between the committees.

What is IT Governance?

2.1 Governance is the set of responsibilities and practices exercised by the organisation's executive with the goal of providing strategic direction, ensuring stakeholder and organisation objectives are achieved, managing risks appropriately and using resources responsibly.

2.2 IT governance is an integral part of agency governance. IT governance ensures that: an agency's IT strategy is aligned with, and supports, the agency business strategy; appropriate control structures are implemented; IT resources are used responsibly; and IT performance is measured and appropriately managed. In summary, IT governance is a system of control to ensure that business objectives are achieved efficiently and effectively²⁴.

2.3 In the Australian Public Sector, the management of core Commonwealth agencies is devolved to the secretary or CEO of an agency. The *Financial Management and Accountability Act 1997* states 'A Chief Executive must manage the affairs of the Agency in a way that promotes proper use of the Commonwealth resources for which the Chief Executive is responsible'²⁵. The legislation further defines proper use as meaning 'efficient, effective and ethical use'. The governance structures and processes of the agency determine the efficient, effective and ethical use of resources and these are addressed in this chapter. The following chapters further address efficient and effective use of resources.

Audit approach

2.4 As previously indicated, a number of sources were used by the ANAO to develop the audit criteria. Governance of IT is addressed by the CobiT standards and the ANAO considered the following CobiT principles for DEST's e-Business and for DEST's IT:

- responsibility for approving IT and e-Business strategies, budgets and structures resides at board level (in the case of DEST, the Corporate

²⁴ Governance, Control and Audit for Information and Related Technology, CobiT Guidelines 3rd Edition, CobiT Framework Principles.

²⁵ *Financial Management and Accountability Act 1997*, (Cwlth) Part 7, Section 44.

Leadership Group (CLG) is the appropriate group) and is a regular item for discussion at board level;

- the management and structures for IT and e-Business are appropriate and effective; and
- the organisation's audit committee ensures that IT and e-Business are included in the program of audits, reviews the results of audits and follows up the implementation of agreed recommendations.

2.5 In considering these issues, the ANAO focussed on those structures most likely to have an impact on IT and e-Business meeting DEST's business objectives, specifically:

- the role of the CLG in the governance of IT and e-Business;
- the roles and relationship between the Corporate IT Committee (CITC) and the Information and Business Technology Committee (IBTC); and
- the internal audit work program and the role of the Audit and Business Assurance Committee (ABAC).

2.6 The ANAO also considered responsibilities for actioning recommendations from reports of several recent consultancies, both from the Internal Audit work program, and from consultancies initiated by the Information Services Group (ISG).

IT Governance at DEST

2.7 The DEST Annual Report 2001–02 identified nine senior ongoing management committees of the department²⁶. Of the nine committees, three: the CLG; the CITC; and the ABAC are directly concerned with the governance of IT. A further committee, the IBTC, is not included amongst the nine senior committees but also has an important role in the management of business technology.

Corporate Leadership Group (CLG)

2.8 The Secretary of DEST chairs the CLG and its mandate includes corporate management, strategic issues and portfolio policy functions. It assists the Secretary in managing the department efficiently, effectively and ethically²⁷. Membership includes the Deputy Secretary, the First Assistant Secretaries, a State/Territory Manager representative, the Chief Information Officer, the Chief Finance Officer, and the Assistant Secretaries of Business Performance Information and of People Management. The secretariat is provided by the Executive Officer to the Secretary.

²⁶ Department of Education, Science and Training, *Annual Report 2001–02*, Chapter 8 p. 107, AGPS, Canberra viewed August 2002, <<http://www.dest.gov.au>>.

²⁷ *ibid* p. 107.

2.9 The CLG meets fortnightly. Results of the meetings are published on the DEST intranet as the *Secretary's Summary of Discussion*. The Secretary's Summary includes apologies, but not actual attendance; notes on items discussed; a note that oral reports were received, but no details of the content of the oral reports; and other business if appropriate. Action items are not recorded in the Secretary's Summary. While the authority of the CLG is not stated, the Chair of the CLG, the Secretary of DEST, has ultimate responsibility and authority in DEST, and therefore authority to implement any proposals endorsed by the CLG.

Audit finding

2.10 The ANAO examined the Secretary's Summary of Discussion for meetings for the last two years. The ANAO found that the CLG normally met every two weeks. The CLG regularly considered and endorsed IT strategy matters, IT and e-Business proposals, including budgets, and endorsed website issues including the DEST website 'look and feel' and the DEST logo for inclusion on its websites.

2.11 The ANAO concluded that the CLG satisfied the CobiT principle that responsibility for IT and e-Business strategies, budgets and structures resides at board level and is a regular item for discussion.

The Audit and Business Assurance Committee (ABAC)

2.12 The Deputy Secretary of DEST chairs the ABAC. Membership includes two external members appointed by the Secretary. A number of officers attend as observers, including officers of the external auditor (the ANAO); the Assistant Secretary, Finance Branch; and the Chief Lawyer. The Assistant Secretary, Audit and Investigations provides advice to the committee and ensures provision of secretariat services.

2.13 ABAC recommendations are submitted to the Secretary of DEST for consideration and approval.

2.14 ABAC has wide-ranging powers within DEST. It may request any information it requires from any employee of DEST, and may, at its discretion, require a departmental employee to attend a committee meeting to provide advice. It may also obtain any independent professional advice it considers necessary to carry out its role.

2.15 ABAC's responsibilities include identifying national audit priorities, approving audit plans, and monitoring Audit and Investigations Branch progress in implementing the plans. ABAC reviews reports from internal and external auditors and ensures timely remedial action in response to audit recommendations.

Audit finding

2.16 The ANAO examined the minutes of the ABAC for the last two years. The committee met quarterly. The committee received reports on IT and Internet security, from both ISG and from Audit and Investigations Branch. The committee ensured recommendations were acted on. Internal audits include audits of both IT and e-Business. DEST has a three-year strategic audit plan and an annual audit plan.

2.17 The ANAO concluded that, in regard to IT and e-Business auditing, the ABAC and Audit and Investigations Branch operate satisfactorily.

The Corporate Information Technology Committee (CITC)

2.18 The Group Manager, Communication, Information and Legal Group chairs the CITC. Membership includes two external members, two business area members, the Chief Information Officer and the Chief Finance Officer. The CITC Terms of Reference indicate that meetings are to be held six-weekly as required. The secretariat is provided by ISG.

2.19 The CITC is responsible for providing advice to the CLG and the Executive on IT matters, specifically²⁸:

- coordination and development of DEST's IT strategic direction;
- establishing appropriate methodologies, standards, controls, and contingency arrangements for the maintenance of high performing IT services;
- monitoring the performance, stability and security of IT services available to DEST, and providing exception reporting to DEST's Executive as required; and
- coordinating the assessment of, and through consultation with line areas make recommendations on, the relative priorities for IT funding, and monitor the implementation of projects approved by the Executive.

2.20 The Terms of Reference state that the CITC would be supported by the IBTC on matters concerning corporate information management, business application management, and the adoption of e-Business. The Committee also addresses legislative and whole-of-government policy requirements, as well as industry and Australian Public Service developments and leading practice.

²⁸ Department of Education, Science and Training, *Corporate IT Committee Terms of Reference*, DEST, Canberra.

2.21 A recent document by the Management Advisory Committee²⁹ draws the attention of agencies to the need for Information and Communications Technology (ICT) governance to promote optimal outcomes across the federal government. The document states ‘Agencies will continue to manage their own ICT strategy, development, implementation and support, but there are areas in which federated principles should apply’³⁰. DEST has a number of systems that cross agency boundaries. It is therefore appropriate that the department take into consideration the principles applying to federated systems outlined in that document.

Audit finding

2.22 The ANAO examined the minutes of the CITC for 2001 and 2002, and discussed the operation of the committee with the chair and the secretariat. Although the Terms of Reference for the committee require six-weekly meetings, the committee met irregularly, varying from twice in one month (May 2001) to six months between meetings (5 December 2001 to 14 May 2002). The elapsed time between the last three meetings was 23 weeks and 17 weeks. The ANAO noted that significant breaks between meetings may raise difficulties in a committee monitoring activities for which it is responsible, and pursuing implementation of decisions made by the committee.

2.23 Matters discussed at the CITC meetings included IT hardware and software, IT security, DEST’s Enterprise Architecture, the relationship and Memorandum of Understanding with DEWR, and the use of CobiT within DEST as a self-assessment tool. The CITC also discussed IT project proposals as endorsed by the IBTC. The relationship between the CITC and the IBTC is further discussed below.

The Information and Business Technology Committee (IBTC)

2.24 The Group Manager, Communications, Information and Legal Group chairs the IBTC as well as the CITC. Membership comprises senior representatives from all business groups, and includes a representative from Audit and Assurance Branch. Meeting frequency is not stated in the IBTC Terms of Reference; however, the ANAO noted that recent meetings were held approximately monthly. The secretariat is provided by ISG.

2.25 The IBTC Terms of Reference state that it will ‘seek CITC endorsement for project proposals involving the use of IT and hence seek approval from the CLG’. The Terms also define ‘business technology’ for the purpose of the IBTC that

²⁹ Management Advisory Committee, *Australian Government Use of Information and Communications Technology*, 2002.

³⁰ *ibid* p. 12.

‘encompasses not just e-Business applications but all business applications, both internal and external’. Similarly, the term ‘Information’ ‘refers to the development and implementation of information management policies, practices and systems that encompass all aspects of the information life cycle, including records’.

2.26 The Terms of Reference for the IBTC include³¹:

- propose strategic direction for, and provide advice on, business technology and information management issues;
- oversee the development of, and ensure the integration of the business technology and information management frameworks into the Department’s standard business planning processes;
- develop information management and business technology policy for approval by CLG, and develop protocols to operationalise the Information Management and Business Technology Frameworks;
- make recommendations to CLG on refinements to the Information Management Framework, the Business Technology Framework and the Enterprise Architecture to ensure they meet the needs of the various Divisions and the Department as a whole; and
- establish and propose priorities and resource needs to the Executive through the Corporate IT Committee, including evaluating business technology projects for business areas consistent with the Strategic Business Technology Framework and the Enterprise Architecture and meet the specified criteria.

Audit finding

2.27 The ANAO examined the minutes of the IBTC for a number of meetings for 2002, and discussed its operation with the committee chair. The committee monitored progress on IT projects, and reviewed bids for funding new projects. The committee took particular responsibility for progress of the *Online Funding and Grants Management* model and the *Client Directory* model. Projects receiving endorsement from the IBTC for funding are forwarded to the CITC for endorsement, and then to the CLG for approval.

2.28 The CITC and the IBTC have the same chair. The Terms of Reference of both committees indicate responsibility for strategic planning in technology, the CITC for information technology, the IBTC for business technology. The relationship between the two committees was not clear, particularly in the context of their roles and responsibilities for e-Business. Both committees had responsibility for deciding funding for projects, with the IBTC seeking CITC

³¹ Department of Education, Science and Training, *Information and Business Technology Committee Terms of Reference*, DEST, Canberra.

endorsement before forwarding the project to the CLG for approval. Although the CITC is nominated as one of DEST's senior ongoing management committees and the IBTC is not, both sought approval of the CLG for funding and projects.

2.29 In discussions with DEST, the ANAO was informed that the two committees had different and distinct roles. However, the ANAO considers that the Terms of Reference for the committees could be modified to clarify the respective responsibilities, and the relationship between, these committees.

Criteria for committee operations

2.30 When considering the operation of committees, aspects taken into account are: frequency of meetings; whether the committee adequately addresses its Charter or Terms of Reference; whether the minutes of the meetings include decisions and action items; membership; and the structure and content of the Charter or Terms of Reference.

2.31 A good Charter will include all or most of the following items: the authority for creation of the committee; the authority of the committee (can it make binding decisions?); the role of the committee and/or its Terms of Reference; the structure of the committee and its relationship to other committees; membership, including any technical advisors or observers; the role of the chair, individual members, and the secretariat; frequency of meeting, and ability to call extraordinary meetings; how decisions should be reached (consensus or majority vote for example); the work program/calendar; and an annual evaluation of the progress and achievements of the committee.

Recommendation No. 1

2.32 The ANAO recommends that DEST clarify the respective roles and responsibilities of its Corporate Information Technology Committee and its Information and Business Technology Committee. In doing so, DEST should consider the development and use of committee charters that include the authority and role of the committee, the roles of the chair, members and secretariat, and a work program together with a regular review of the progress and achievements of the committee.

DEST response

2.33 Agreed. DEST is reviewing the charters of the Corporate IT Committee and the Information and Business Technology Committee to ensure that, through their distinct and complementary roles, the Committees continue to provide an effective contribution to IT and e-Business governance in the Department.

IT Governance conclusion

2.34 The ANAO concluded that IT and e-Business governance in DEST was satisfactory in that:

- responsibility for budgets and structures resides with the CLG;
- overall, structures are appropriate, although the responsibilities of the CITC and IBTC could be clarified in their Terms of Reference; and
- IT and e-Business is included in the internal audit program and is monitored by ABAC.

2.35 While the four committee's examined by the ANAO had put in place most of the more important elements of a charter, none of the committees conducted a regular assessment of its achievements.

3. IT Applications—TYIMS and PRISMS

This chapter examines the two applications chosen as examples of DEST's e-Business systems. The data held by the applications was analysed and the results of that analysis are presented.

Introduction

3.1 The previous chapter on governance assessed the overall framework of processes and procedures that DEST has in place to assist the organisation meet its business requirements. The expectation is that an appropriate and effective framework would provide assurance DEST's business applications meet the requirements of the government, the business owners, DEST's clients, and other stakeholders.

3.2 The ANAO also selected two applications for close examination: the Training and Youth Internet Management System (TYIMS) and the Provider Registration and International Students Management System (PRISMS). These applications provide DEST with the capacity to service key external clients. The ANAO analysed the data held by these applications against fundamental components of an IT standards framework. The analysis was conducted to determine if the data held on the chosen applications was accurate, complete, consistent, current and unique (that is, not duplicated).

3.3 The nature of the two applications is such that much of the original data is entered by organisations external to DEST, for example by New Apprenticeship Centres (NACs)³² in the case of TYIMS. Hence DEST must rely to a large extent on the accuracy of data entered by those organisations. However, DEST also conducts a program of audits of those organisations to ensure, amongst other requirements, that data is correctly entered from source documentation. The ANAO did not duplicate those audits.

Audit approach

3.4 The ANAO analysed the business rules for the application being examined, then analysed the data held by the application to determine if the data was consistent with the business rules.

³² New Apprenticeships Centres provide New Apprenticeship information and services to employers and people interested in becoming a New Apprentice. They may be public sector (e.g. Employment National) or private sector (e.g. Mission Australia), and are selected by open tender.

- 3.5 In order to determine the business rules and testing criteria, the ANAO:
- obtained and examined any relevant legislation;
 - obtained and examined the most recent versions of the functional specifications;
 - extracted details of any key business rules; and
 - developed a set of test objectives and criteria based on the business rules.
- 3.6 The ANAO used reporting facilities available at DEST to extract records that did not match the business rules. In both applications, data were extracted from copies of the production database. In the case of TYIMS, a reporting database was available that was updated weekly. In the case of PRISMS, it was necessary to create a copy of the production database specifically for use by the ANAO.

Training and Youth Internet Management System (TYIMS)

3.7 In 1998, the Government introduced the New Apprenticeships scheme. The scheme is an alternative to traditional apprenticeships that took up to four years to complete, and a traineeship lasting one or two years. New Apprenticeships are competency based, leading to potentially earlier completion if the required skill level is reached. Pivotal to the scheme are NACs. At the time of the audit there were 35 organisations with 300 NACs across Australia, including some 200 in rural and regional areas. NACs services include:

- providing information on New Apprenticeships options to job seekers, employers and other interested people;
- marketing and promoting New Apprenticeships in the local area;
- administering Commonwealth incentive payments to employers;
- working with the State/Territory Training Authority to provide an integrated service; and
- establishing effective relationships with the Commonwealth's contracted Job Network providers, training providers, schools and other organisations.

3.8 NACs are selected by open tender. Under the resulting contract, NACs are paid a fee for service for each apprenticeship they arrange. Half the fee is paid on commencement of the apprenticeship; two further payments of 20 per cent of the fee are payable during the apprenticeship; and the final payment of 10 per cent is payable to the NAC on completion of the apprenticeship. Incentive and subsidy payments are available to employers, and support payments may be available to the individual apprentice. Details of the apprenticeship, and claims for payments, are made by the NAC through the Internet, and payments are electronically deposited in the bank accounts of the claimants.

3.9 The current TYIMS IT system replaced the previous system (the Integrated Employment System) in mid-2001. TYIMS was designed to support the operation and management of the New Apprenticeships scheme.

3.10 TYIMS was designed to:

- support the operation of NACs under the contract;
- support the administration of New Apprenticeships;
- enable NACs to claim fee for service payments under the contractual arrangements, and payments of Commonwealth incentives and personal benefits;
- provide a mechanism for the monitoring of performance as defined under the New Apprenticeship Support Services Contract;
- provide a mechanism for compliance control and auditing requirements;
- support research and evaluation of New Apprenticeships arrangements;
- provide data efficiently and in a timely manner, particularly on an ad-hoc basis;
- provide a facility for financial management and the processing of payments through DEST's preferred accounts payment system; and
- provide a facility for program performance monitoring and reporting.

3.11 It is the responsibility of the States and Territories to register and approve training providers. It is therefore necessary for DEST to link with the State Training Authorities (STAs) to ensure training providers under the New Apprenticeships scheme are appropriately approved. Changes to TYIMS in 2002 were aimed at eliminating duplicate entry of information by NACs to both TYIMS and the STAs. At the time of the audit, the Australian Capital Territory Training Authority requirements had been included in TYIMS but difficulties were being experienced with the differing requirements of the other STAs.

TYIMS data

3.12 TYIMS was implemented on 17 April 2001. Records from the existing application were migrated into the TYIMS database. The previous application did not have the same business rules as TYIMS. The ANAO was informed that the quality of the data migrated from the existing application was 'average to poor', and in some cases did not meet the new TYIMS business rules. In order to test that the current TYIMS business rules were effective, testing was limited to those records created after 17 April 2001, as records prior to this period were derived from the previous application.

Incomplete apprentice records

3.13 Details of an apprentice's registration include an expected start and expected completion date. As stated above, NACs receive payments for the commencement of a new apprentice, for the successful completion of the apprenticeship, and at two progress points. When an apprentice ends an apprenticeship (successfully or unsuccessfully), and if the NAC is notified, the NAC records a completion status in TYIMS.

3.14 The total population of apprentice registration records was 1 096 861 as at October 2002. Of this total:

- 608 482 records had a completion status recorded; and
- 44 423 records had an expected end date of at least 15 months earlier and did not have a completion status recorded.

3.15 Thus, there were a large number of doubtful incomplete cases as at October 2002. It was not clear to the ANAO whether these cases had been completed or not. This raised concerns about whether correct payments had been made, and therefore whether the scheme was meeting its objectives, especially to administer Commonwealth incentive payments to employers. It is the responsibility of the NACs to follow up on apprentice registrations to determine whether they were successfully or unsuccessfully completed. Only if the completion is successful can the NAC claim the final payment from DEST.

3.16 A number of other consequences may arise from these doubtful incomplete cases. Cases that were completed but not recorded would distort some performance indicators (such as exaggerate the number of active registrations) and would inflate the value of liabilities recorded in DEST's accounts (based on the number of incomplete claims). Delayed payment for cases may encounter problems such as change of provider name and change of bank account.

Recommendation No. 2

3.17 The ANAO recommends that DEST upgrade the Training and Youth Internet Management System to produce an exception report that identifies apprenticeship records that would have been expected to be finalised but are not, and seek assistance from the appropriate New Apprenticeship Centres to finalise the records.

DEST response

3.18 Agreed. As part of the enhancements for Contract Round 3, commencing 1 July 2003, an exception report will be produced to alert New Apprenticeship Centres to registrations which have past expected end dates, to assist New Apprenticeship Centres in managing their work.

3.19 DEST currently produces such a report on request from the New Apprenticeship Centres and has recently system closed 26 584 outstanding registrations where the expected end date was 01-01-2001 or earlier.

Duplicate records

3.20 In migrating the records from the previous Integrated Employment System into TYIMS, the TYIMS business area undertook the task of improving the quality of the records. A prominent issue at the time was the large occurrence of duplicate apprentice and employer records. A data integrity team was established, and tasked with the responsibility of identifying and removing duplicate records. The issue appears to have been largely rectified, and the new TYIMS now checks for and disallows the creation of duplicate records.

Australian Business Numbers

3.21 From 1 July 2000, DEST began collecting Australian Business Numbers (ABN) for employers and NACs. At the time of the audit, 7154 employers had not submitted an ABN number, thus the information within TYIMS is incomplete. The provision of an ABN by these agencies is not mandatory, however, if they submit claims for incentive payments without providing their ABN they will be taxed a 48.5 per cent withholding tax. If a claim for payment is entered into TYIMS and the employer's ABN is not recorded, the application will raise an error message alerting the operator to this fact. In this instance, the operator most commonly withdraws the claim, obtains the ABN and records it in TYIMS, and then re-raises the claim for payment. Six employer records have an ABN status accepting that no ABN is provided and payments should be made. All have received payments in 2001-02. However, as taxation is levied at the maximum rate there is no issue with the arrangement.

Data modification requests

3.22 The TYIMS Help Desk receives several requests each week to change TYIMS data. Requests come from STAs to change training details, from employers who wish to change the date recorded on the system that the apprentice actually commenced working with them, through to simple corrections to typing errors. The most common requests, however, come from STAs.

3.23 Apprentices must sign a Training Contract, which is managed and approved by the STA. NACs currently enter the Training Contract details into TYIMS, and the STA enters the same details into their training database; thus the data is entered twice.

3.24 Complications arise where the STAs alter the Training Contract, and update the details in their database. When this occurs, a Change Request is forwarded to the NAC/TYIMS Help Desk requesting that the corresponding data in TYIMS be altered.

3.25 Specifications for a new TYIMS–STA Interface are being developed by DEST. When the new interface is implemented, TYIMS will be the sole repository for Training Contract details. Only the NACs will enter the Training Contract details. The STAs will still have the role of approving the contract.

NAC Claims

3.26 ANAO testing of NAC claims found one instance where the Contract Unit Price recorded in TYIMS for one NAC was incorrect. The value recorded was the pre-GST rate. Claims for payment by the NAC were for the correct value, hence the NAC was never over or underpaid. The Contract Unit Price for the NAC has subsequently been corrected in TYIMS. In this instance, claims were paid by TYIMS, although the Contract Unit Price recorded in TYIMS did not agree with the claim amount. This suggests that TYIMS is not able to confirm whether the amount claimed is identical to the recorded contract unit price before the payment is approved.

3.27 The NAC claim population was 2 985 827 records as at October 2002. Of these the ANAO examined 970 942 claims made between 1 June 2001 and 1 September 2002. A small number had a claim that was not the expected amount as calculated from the contract. Of the 37 ‘incorrect’ claims identified, 20 were approved and 17 rejected. The total paid to the approved claims was \$4329 of which \$630 was in excess of the expected amount. All this excess was approved, however the comments recording why the approval was given were brief (for example ‘NAC was eligible’). The ANAO considers it would be appropriate for a meaningful reason for the special claim to be recorded in the payment record comments field, and the reason for payment, or refusal of payment, also recorded. This would provide an audit trail of the rationale for the decision.

Provider Registration and International Students Management System (PRISMS)

3.28 The *Educational Services for Overseas Students Act 2000* (ESOS Act) protects the education and training export industry. This industry is Australia’s third largest service export industry earning some \$4.25 billion in exports annually, with around 240 000 overseas students attending Australian universities, schools and colleges. PRISMS assists DEST to meet its responsibilities as defined in the ESOS Act.

3.29 The ESOS Act, which replaced an earlier act, aims to:

- reduce the fraudulent or dishonest use of confirmation of enrolment forms for visa fraud, and strengthen compliance monitoring;
- ensure students receive the tuition for which they have paid, and, in the case of the collapse of a provider, ensure the student receives either alternative tuition or a refund;
- provide greater quality assurance of education and training providers for overseas students; and
- provide more systematic and effective arrangements for the Commonwealth to deal with providers working to facilitate student breaches of their visa conditions.

3.30 The ESOS Act requires the Secretary of DEST to administer the *Commonwealth Register of Institutions and Courses for Overseas Students (CRICOS)*. Institutions are registered on CRICOS on the advice of State/Territory authority. DEST must accept that advice. Access to the information stored on CRICOS, that is regarding course providers and courses of study, is available via the Internet to any interested person, overseas or in Australia.

3.31 The Act also requires the Secretary of DEST to establish an *ESOS Assurance Fund*, and appoint a fund manager. The fund is financed by contributions from, and levies on, registered education providers. The purpose of the fund is to protect the interests of overseas students, and intending overseas students, of registered providers. The fund ensures that the students are provided with suitable alternative courses, or have their course money refunded, if the provider cannot provide the course(s) for which the students have paid. The current fund manager is PriceWaterhouseCoopers.

3.32 An applicant for a student visa must enrol with a CRICOS-registered provider and course, and provide evidence of such enrolment for the purposes of obtaining a visa. Once in Australia, visa conditions require that they must maintain such enrolment. Holders of student visas must be enrolled in full time study, but they can obtain permission to work up to 20 hours per week in Australia. In July 2000, an electronic Confirmation of Enrolment (eCoE) system was introduced. The eCoE project is a collaborative development between DEST and the Department of Immigration and Multicultural and Indigenous Affairs (DIMIA). DIMIA now requires this form of evidence of confirmation of enrolment before issuing a student visa. The student enrolling in a course, and being confirmed by the provider, creates the eCoE on PRISMS. The eCoE is then sent electronically to DIMIA. DIMIA's overseas officers are able to access and check the existence of the eCoE before issuing a visa. DIMIA then electronically advises DEST of the issue of the visa, and of the arrival of the student in Australia.

3.33 Registered providers are required to notify DEST, through PRISMS accessed over the Internet, of any variations in the students' study. These notifications include commencement of study, course variations, non-attendance at the nominated course, and completion of study. The information is used by DIMIA to identify any students who have breached the terms of their student visa.

3.34 PRISMS is therefore a collaboration between DEST, DIMIA, education providers, and state authorities that register education providers. Apart from the DEST-DIMIA data link, communication with PRISMS by these collaborators is via the Internet.

PRISMS data

3.35 Phase 2 of PRISMS was implemented in June 2001. Phase 2 was designed to capture students enrolling from that date. Existing students (around 126 000) were not initially captured in the data, and numbers would be expected to diminish as they completed their course of study. The ANAO was provided with a current estimate of 10 000 to 20 000 students currently in Australia that are not on PRISMS.

3.36 The ANAO was unable to undertake its planned analysis on the actual PRISMS data due to the lack of readily available query facilities. Analysis was completed using a copy of the data specifically created for the ANAO.

Data discrepancies

3.37 A number of discrepancies in PRISMS data were identified by the ANAO. Discussion with DEST indicated that none of the discrepancies affected the integrity of the operation of PRISMS. In some cases, resolution of the discrepancy was outside the control of DEST and depended on action by state authorities and by DIMIA. In one case DEST changed a business rule that was no longer appropriate, in two cases edits were changed to stop inappropriate data being entered.

Lack of query facilities

3.38 To undertake the queries, the ANAO had to analyse the data on a copy of the database. This is due to lack of a generally available query language—there is a query language but it can only be used from two terminals that are also operating consoles and inappropriate for use for general queries. The ANAO was informed that a dedicated reporting server with replicate production data is planned.

3.39 The ANAO suggests that the planned reporting facilities be implemented as soon as practical and include a general query facility for DEST users. This would allow DEST users to extract ad-hoc reports and information as required.

DEST—DIMIA data transfer

3.40 As stated in paragraph 3.32, a student enrolling in a course, and being confirmed by the provider, creates an eCoE on PRISMS. The eCoE is then sent electronically to DIMIA. DIMIA's overseas officers are able to access and check the existence of the eCoE before issuing a visa. DIMIA then electronically advises DEST of the issue of the visa, and of the arrival of the student in Australia. The ANAO found that successful operation of PRISMS depends on the transfer of complete and accurate data between DEST and DIMIA. The scope of the audit did not include any reconciliation of records held by DEST and DIMIA, nor did it include any analysis of the data transfers between DEST and DIMIA. In separate discussions with the two agencies, the ANAO was provided with different views on the error rate in the data transferred. DIMIA took the view that errors were around one or two per week and manageable. DEST advised the ANAO of a number of categories of errors that resulted in an estimated 33 000 records not containing the most recent information on either the DEST or DIMIA system over a period of 15 months. Examples of the errors are: notification of changing CoEs from cancelled to approved not being taken up by DIMIA and having to be completed manually; visa details not transmitted from DIMIA to DEST; and student course variations not transmitted from DIMIA to DEST. The ANAO understands that reconciliation of data between the agencies is not undertaken. The ANAO was informed that there was no Memorandum of Understanding between the two agencies for the transfer of data, or for the reconciliation of the data contained on the two systems.

Recommendation No. 3

3.41 The ANAO recommends that DEST initiate discussion with DIMIA with a view to developing a Memorandum of Understanding to clearly define each agency's responsibility for maintaining the timeliness, accuracy and completeness of the data transfer between the agencies, any requirements for reconciliation of data between the agencies, and each agency's responsibility for timeliness of system changes. In doing so, the ANAO recommends that DEST seek to resolve the discrepancy in PRISMS error rates arising from incomplete transfer of data between DEST and DIMIA.

DEST response

3.42 Agreed. DEST recognises the merits of formalising data management responsibilities and protocols between the Department and DIMIA such as through a Memorandum of Understanding and is addressing data transfer issues raised in the audit.

Data analysis conclusion

3.43 The ANAO concluded that PRISMS and TYIMS data it analysed were generally accurate, complete, consistent, current and unique. Some exceptions to this were identified. These exceptions did not constitute a significant threat to the integrity of the systems. However, the scope of the audit did not include reconciliation between DEST and DIMIA data. The ANAO is, therefore, unable to attest to the completeness and currency of data transferred between the agencies.

3.44 The ANAO concluded that data transfer and reconciliation arrangements between DEST and DIMIA could be clarified by the development of a Memorandum of Understanding between the two agencies.

4. Measuring the Effectiveness of e-Business

This chapter considers whether DEST measures its effectiveness in delivering its IT and e-Business, and whether it has identified all appropriate services to be delivered online.

Effectiveness

4.1 'Effectiveness' means the achievement of the objectives or other intended effects of activities³³. A program can be considered to be effective if it accomplishes the objectives the program set out to achieve. Effectiveness is about delivering results. This chapter examines effectiveness—that is did the system achieve its objectives. The following chapter in this report discusses efficiency—that is the resource usage, particularly financial resources.

4.2 DEST's objectives for its e-Business are set out in its (then DETYA) Online Action Plan. The vision outlined in the plan is that:

- all appropriate DEST services and information will be available online, all the time, by December 2001; and
- all DEST clients and business partners will have seamless online access to services.

4.3 DEST's Online Action Plan Objectives, which DEST used in assessing which services were appropriate to go online, are: improved client/business partner access; improved quality of service and program outcomes; increased responsiveness to client and business partner needs; increased transparency of business services provided; and improved efficiency in departmental operations.

Audit approach

4.4 The ANAO considered whether DEST was measuring and/or assessing its effectiveness in meeting those objectives. In particular, the ANAO considered whether DEST had:

- identified appropriate services to be delivered online;
- identified and realised appropriate outcomes for online delivery; and
- assessed client and stakeholder satisfaction with the online delivery.

³³ Certified Practising Accountants Australia, *Member's Handbook June 2002*, AUS806 Performance Auditing.

4.5 The applications, Training and Youth Internet Management System (TYIMS) and Provider Registration and International Student Management System (PRISMS), were used as examples of DEST's approach to the realisation of appropriate outcomes, and DEST's assessment of client and stakeholder satisfaction.

Measurement of e-Business effectiveness at DEST

4.6 DEST's System Development Methodology (DSDM), introduced as a guide in late 2001, states that a detailed project proposal should include the following³⁴:

- identify measurable and realisable returns expected from the project, both qualitative (e.g. improved service and program effectiveness) and quantitative (e.g. efficiencies leading to reduced cost of outputs);
- identify benefits that may not be measurable (e.g. improvement in quality of information available);
- identify benefits that may represent costs avoided by addressing current business problem;
- indicate the timeframe over which benefits will be realised and how these will be measured (and reported, where appropriate);
- link benefits to business objectives, outputs and outcomes; and
- address feasibility (of both technology and business process changes) and constraints on scope of project and realisation of benefits.

4.7 The same document, under the heading of project governance, requires the project proposal to list key project success factors, key performance indicators, and planned performance reporting.

4.8 The DSDM also includes a pro-forma Post Implementation Review form³⁵. The form identifies items for financial analysis, including actual return on investment. However, it is less detailed on the requirements for assessing the realisation of non-financial benefits, simply providing a table to be filled in with a narrative description of the benefit and of the result. Ideally, the ANAO would look for the expected and measured outcomes to align with the DSDM requirements as stated above in paragraph 4.6.

4.9 As business cases for TYIMS and PRISMS were generally completed before the DSDM was introduced, an exact alignment of planned benefits with the requirements of the DSDM guide would not be expected. Nevertheless, the basic

³⁴ Department of Education, Science and Training, *System Development Methodology, SDM-01*, Project Proposal.

³⁵ Department of Education, Science and Training, *System Development Methodology, SDM-11*, Post Implementation Review.

principles of identification of benefits should be included. The ANAO understands that DEST intends the DSDM will become mandatory after a trial period. Consequently, the ANAO would expect current and future business proposals to reflect the DSDM requirement.

Audit findings

Identification of appropriate services

4.10 A preliminary Online Action Plan (September 2000) was given support by a departmental-wide consultation process to confirm the services offered by the department, and to evaluate the suitability of online delivery of those services. The Online Action Plan was updated in April 2001. The ANAO was advised that DEST is currently revising the Plan to take account of changes in technology and its business environment (especially the inclusion of science in the agency), and its move towards e-government and integrated service delivery across agencies.

4.11 The principal services provided by DEST (then DETYA) were defined as:

1. Youth;
2. Indigenous Education;
3. Schools;
4. Higher Education;
5. Training;
6. Student Assistance; and
7. International Services.

4.12 DEST proposed six online action projects:

1. Online Funding/Grants Management;
2. Collaborative Workspace;
3. Portals;
4. Online Tender/Contract Management;
5. e-Procurement; and
6. Electronic Receipt of Payments.

4.13 The Online Action plan also identifies those services not considered for online delivery. Reasons for not delivering online include: security issues; confidentiality issues; complexity issues; not cost-effective; and need for face-to-face contact.

4.14 Since the development of DEST's Online Action Plan, some low volume transactions not initially considered cost effective for inclusion online have been re-assessed and included in the online agenda.

4.15 The ANAO concluded that DEST took suitable steps to identify appropriate services for online delivery.

Business case and outcomes

4.16 As indicated earlier in this chapter, effectiveness is about delivering results. DEST's online action plan objectives identified the planned results for its online service delivery as stated above in paragraph 4.3. The ANAO examined the business cases developed for various stages of TYIMS and PRISMS for a statement of expected outcomes, business benefits and measures. The ANAO then considered whether DEST had measured the outcomes after implementation. The outcomes would be expected to include outcomes specific to the system as well as outcomes against the Online Action Plan objectives. ANAO findings for TYIMS and PRISMS are described below.

TYIMS

4.17 The ANAO examined the most recent TYIMS project proposal, which was for specific enhancements to TYIMS. The proposal included an interface to each state/territory State Training Authority (STA), debt recovery, and an interface to DEST's contract management system.

4.18 Business benefits were stated by DEST as follows³⁶.

- The enhancement of the TYIMS system will utilise its potential to develop and enhance the work practices and management of contracts with NACs and other providers, particularly through more accurate and timely information, better work flow practices and the automation of previously labour intensive actions (for example, for debt recovery).
- It will support links to STAs which will streamline and support NAC reporting requirements. It will also streamline internal [DEST] reporting processes through links to [the DEST contract management system].

4.19 The implementation of the above enhancements was incomplete at the time of the ANAO audit. DEST advised the ANAO that it expected to commission a review of the changes when implementation was complete. The ANAO therefore considered an earlier implementation, the introduction of TYIMS. Following this implementation, a consultancy firm was contracted to conduct a survey of external TYIMS users. The objective of this survey was to establish a benchmark for the levels of external user satisfaction with TYIMS. The survey received a strong response rate of 83 per cent across a broad cross-section of external users in various associations, for example New Apprenticeship Centres (NACs) and DEST state

³⁶ Department of Education, Science and Training, *TYIMS Project Proposal 1999*, DEST, Canberra.

offices. The main finding of this survey was a high level of external user satisfaction with TYIMS. A post implementation review conducted by another consultant found much the same outcome, with a minor issue regarding the degradation of performance in the initial stages of implementation.

4.20 The terms of reference of the second of the above post implementation reviews included 'determine whether the TYIMS project team has achieved anticipated business objective and benefits within the constraints of projected cost and timelines'. The consultant reported that the project objectives had been achieved. The prime objective was to replace the functionality provided by the previous system. The reason for moving from the previous system was to reduce the cost of processing and to increase the flexibility of the system.

PRISMS

4.21 The ANAO examined the business benefits identified in PRISMS Project Proposals for Phase 3. These were stated by DEST as follows³⁷.

- Accurate and comprehensive data from PRISMS is the key to the effective enforcement of the Education Services for Overseas Students Act 2000, and is necessary to meet DETYA's (now DEST) commitment under the Act.
- Reduced overheads and improved quality for eCoE data transferred from the large education providers and reduced overheads and improved data quality for the Commonwealth Register of Institutions and Courses for Overseas Students data transferred from the state/territory education providers (as re-keying will no longer be required). This will lead to increased good-will of education providers and State/Territory Authorities towards PRISMS and DETYA (DEST).
- Loading all student visa details for students issued with paper based Confirmation of Enrolments into PRISMS will provide a single repository of all overseas students studying in Australia. This will allow for better student tracking and reporting.
- Better links to [the financial management system] or better data transfer arrangements will streamline the process allowing education providers to be invoiced automatically.

4.22 The ANAO found that key performance indicators and measures for assessing the success or otherwise of the PRISMS project had not been identified. Key performance indicators may include items such as time and cost targets, user satisfaction with the final product, faults reported through the help desk, transaction counts, and response times.

³⁷ Department of Education Science and Training, *PRISMS Phase 3 Project Proposal 2000*, DEST, Canberra.

4.23 The ANAO also found that post implementation reviews for PRISMS were limited to technical reviews of the Application Architecture and project management issues. At the time of the audit, a review of the business benefits achieved had not occurred.

Measuring effectiveness conclusion

4.24 The ANAO concluded that:

- some indicators of effectiveness, that is business benefits, were included in DEST project proposals;
- measures and targets were not included in the business proposals provided to the ANAO; and
- the new DSDM provided appropriate guidelines for including measurable benefits in business proposals.

4.25 The ANAO also concluded that, while assessments of the benefits arising from the implementation of e-Business systems were undertaken in some post implementation reviews, both the occurrence and contents of post implementation reviews were inconsistent. The intention to make the new DSDM mandatory, and the inclusion in the DSDM of a pro-forma post implementation review form, address the inconsistencies. Post implementation reviews are assessed more fully in chapter 6. A recommendation with respect to post implementation reviews is at paragraph 6.28.

Recommendation No. 4

4.26 The ANAO recommends that DEST ensure that any business case for e-Business proposals align with the guidelines provided in its new Systems Development Methodology that requires inclusion of measures and targets by which the success or otherwise of the project can be assessed.

DEST response

4.27 Agreed. DEST's guidelines on System Development Methodology and Business Technology Investment require Business Technology (including e-Business) project proposals to identify appropriate measures to evaluate project outcomes that have regard to the nature, scale and risk of the project. DEST is focusing on improvements in these guidelines and greater consistency in their application.

5. Measuring the Efficiency of e-Business

This chapter examines the way in which DEST measures the efficiency of its IT and e-Business, how the process is approached, the tools used to measure efficiency and level of service, and how the information is used.

Efficiency

5.1 'Efficiency' means the use of financial, human, physical and information resources such that output is maximised for any given set of resource inputs, or input is minimised for any given quantity and quality of output³⁸. Efficiency, in relation to IT projects or e-Business, can be defined as the competency with which individuals or organisations accomplish their objectives. It can also be considered as the ratio between benefits achieved and the resources used in developing and delivering the project or programme, otherwise known as Return on Investment. Measuring efficiency is an important part of an organisation's ability to assess its performance against its objectives. It creates an environment of responsible resource allocation and management, and allows the organisation to develop and support sound business practices.

5.2 The Government's strategy to have all appropriate Government services online by 2001, and the growing reliance of Government agencies on electronic service delivery to achieve business and program outcomes, has highlighted the need for agencies to measure their efficiency in developing and running e-Business systems. It is important that agencies acquire and exhibit the requisite knowledge and skills for an efficient electronic delivery of service, and to measure their performance delivering the service.

Audit approach

5.3 The ANAO sought to determine whether DEST was appropriately measuring the efficiency of its e-Business applications by examining how DEST measures the cost and benefits of electronic service delivery for the Training and Youth Internet Management System (TYIMS) and the Provider Registration and International Students Management System (PRISMS). The ANAO examined DEST's approach to cost/benefit analysis for each project, and its use of post implementation reviews to determine actual costs incurred and the benefits achieved. The ANAO also considered DEST's use of benchmarks and

³⁸ Certified Practicing Accountants Australia, *Member's Handbook June 2002*, AUS806 Performance Auditing.

use of tools to measure and compare the performance of its service delivery levels against that of other public and private organisations.

5.4 The ANAO considered whether DEST:

- tracked the cost and benefits of each e-Business;
- compared the cost of its e-Business with other forms of delivery within the agency; and
- benchmarked the cost of e-Business with that of other agencies and organisations.

5.5 For any public or private organisation the client is an essential consideration in service delivery. The ANAO sought evidence that DEST focussed on the need to improve client service and satisfaction. The ANAO considered whether DEST:

- surveyed stakeholders, and whether the results of the survey were positive; and
- reduced client complaints.

5.6 As already indicated, the ANAO focused on DEST's measurement tools, such as client surveys, post implementation reviews and other surveys/reviews of the department's IT and e-Business systems, some of which are conducted by externally contracted agents. Particular attention was paid to post implementation reviews and client satisfaction surveys for the nominated systems, TYIMS and PRISMS.

Measurement of e-Business efficiency at DEST

5.7 DEST's System Development Methodology (DSDM) was introduced as a guideline in December 2001 and includes an evaluation model. The principle stated for the model is that:

- business technology decision-making needs to be supported by high quality business case analysis and documentation which:
 - clearly identifies the business problem or opportunity;
 - addresses costs, benefits, risks and alternatives; and
 - demonstrates the alignment of the proposal with DEST's strategic business technology objectives and principles.

5.8 The DSDM also includes a pro-forma post implementation review. The document includes a financial analysis, and specifically addresses the actual return on investment. However, as the introduction of the DSDM is relatively recent, TYIMS and PRISMS post implementation reviews did not align with the pro-forma.

The ANAO was informed that DEST intends the DSDM, including the post implementation review pro-forma, to become mandatory after a trail period.

5.9 Included in each of the DEST project proposals for TYIMS and PRISMS examined by the ANAO is an ex-ante cost/benefit analysis. Each benefit analysis describes the benefits that the department hopes to achieve by implementing the proposed project. The efficiency of the e-Business system should be able to be assessed by comparing the actual costs incurred in developing the systems against the actual benefits achieved on implementation.

Audit Findings

Cost and Benefits of e-Business

5.10 The ANAO selected PRISMS and TYIMS as examples to determine whether DEST measured the efficiency of its e-Business.

PRISMS

5.11 The PRISMS Project Proposals for Phase 1 and Phase 2 consisted mainly of functional specifications; business plans for implementation; production application checklists; and migration to main systems procedures. However, the Project Proposal for Phase 3 identified planned business benefits; business impact; funding arrangements; and timeframes for project completion. The proposal also covered the issues of risk and the source of funding. The proposal listed the planned business benefits as stated in paragraph 4.21.

5.12 The proposal also discussed the likely overall business impact. The PRISMS Phase 3 project proposed to enhance the integrity of Australia's education and training export industry through improved monitoring and compliance with the ESOS Act 2000. Its intent was to provide a positive impact on DEST's relations with education providers and State/Territory education authorities. The improvements in security, reliability and integrity of the data were designed to enhance government regulation of the industry, and facilitate the production of more accurate reports and advice to the Minister.

5.13 The estimated project costs prior to the ISG Committees final projections were around \$352 000. The Phase 3 Project Proposal lists estimates for the purchase and upgrade of encryption equipment, Web Servers, Digital Certificates, and the cost of contracting developers. Funds were sought from the now defunct People and Information Technology Committee, now the Corporate IT Committee, as no source of programme funds was available to support the Phase 3 development. The staff resources provided by the Information Services Group to meet the requirement of this proposal included a full time ITO1, a part-time ITO2 and a part-time EL2.

TYIMS

5.14 The TYIMS proposal was in a similar format to the PRISMS Phase 3 proposal and describes the planned business benefits as stated in paragraph 4.18.

5.15 The TYIMS proposal describes the likely overall business impact in terms of an inverse effect if the enhancements are not made. The proposal states ‘...not making some enhancements (such as debt recovery) will have an adverse impact on the operational efficiency of the New Apprenticeship Branch’. It also states that ‘...the interface with the [DEST contract management system] will ensure a consistent tendering and reporting of contracts, especially as the department moves to Contract Round 3’.

5.16 As with the PRISMS project proposal, the TYIMS proposal also included information on the estimated costs. However, the TYIMS estimates included projected costs for future work on debt recovery systems, and for the implementation of a new interface with the STA. The original base proposal for TYIMS estimated a cost of \$18 173 927 over a period of five years. The estimated funds sought for the additional debt recovery system enhancements and the STA interface were \$852 880 for the year 2000–01.

PRISMS and TYIMS findings

5.17 The ANAO found a lack of formal measurement of actual costs and identification of benefits realised after each of TYIMS and PRISMS were implemented. Post implementation reviews were conducted for both applications. The TYIMS review documents discussions with the stakeholders, and includes an assessment of the systems project management. The PRISMS reviews were limited to technical matters. Hence some benefits other than financial are, at least in part, addressed.

5.18 Based on the audit analysis undertaken of TYIMS and PRISMS, the ANAO considers that, as a whole, DEST does have at least informal approaches in place to measure the efficiency of its e-Business. However, there was a lack of formal and consistent analysis of actual costs and realisation of actual benefits in post implementation reviews. A recommendation for post implementation reviews is included at paragraph 6.28.

Comparing the cost of e-Business with other forms of service delivery.

5.19 DEST has demonstrated a strong commitment to delivering services online. As part of that commitment, proposals for new systems include an ex-ante cost/benefit analysis that compares, where applicable, the cost of the e-Business solution with other forms of delivery. However, as indicated above,

there was a lack of formal and consistent ex-post assessment of costs and benefits after implementation. This does not encourage a culture of review and evaluation as an aid to better performance.

Benchmarking the cost of e-Business with other agencies.

5.20 The ANAO found that DEST compared and benchmarked its performance against that of other comparable agencies. In July 1997 and March 2001, DEST retained the Gartner Group to conduct surveys of its IT systems to compare and benchmark DEST against other government agencies and private organisations. Each survey took 11 months. Gartner was able to compare the performance of DEST against its database information for other agencies and organisations.

5.21 The 1997 survey targeted all applications, and included surveys of all staff involved in the development and support of those applications. The survey was completed in 1998 and reported in May 2000. This first report was extensive and detailed. While DEST considered this report worthwhile, it decided that subsequent surveys should be scaled down. The second survey was based on a sample range of applications and contained no staff survey; it also concentrated on the issues of application effectiveness and efficiency. The study was conducted between March 2001 and February 2002 and reported in July 2002.

5.22 Gartner reported in 2002³⁹ that DEST had ‘very good cost efficiency for both development and support. Services are delivered at 39 per cent of the average cost’ and they had ‘cost efficient staffing arrangements’. The general overview of the report suggested that ‘DEST has demonstrated outstanding cost efficiency, and high overall productivity levels for both development and support’.

5.23 In the 1997 survey, DEST’s performance compared favourably against that of other agencies and organisations, particularly in the areas of cost efficient staffing arrangements. The 2001 results were broadly consistent with the 1997 results. However, the 2001 survey found that defects in newly implemented applications were higher than the industry standard, and also identified an absence of defect data for other applications. This high rate of defect data was attributed to the data only being collected for newly implemented functionality, and not for the more stable existing systems. Gartner also concluded that there was a tendency towards below average support productivity for in-house applications.

5.24 The ANAO was advised that the department is committed to continuing to benchmark its applications and e-Business systems.

³⁹ Gartner Group, Gartner Measurement: *Applications Development and Support Service—Department of Education, Science and Training*, June 2002.

Improving client service

5.25 DEST has conducted several internal reviews, and has commissioned external reviews, to assess its client service. In September 2000, DEST contracted a consultancy firm to conduct an internal IT user satisfaction survey. The department intended to conduct similar surveys at six monthly intervals in order to establish a benchmark of IT service within DEST.

5.26 The main aim of the survey was to establish benchmarks of DEST internal users' level of satisfaction with the following;

- the IT infrastructure and services provided by IT Services Group, DEWR, prior to the likely outsourcing of those services to an external provider under the Government's IT Outsourcing Initiative;
- satisfaction with other IT & T services, either provided by the Information Services Group or by third party providers; and
- the overall IT & T service, used to benchmark DEST against other Commonwealth Government Agencies.

5.27 The survey focused on 11 key IT & T components, Desktop hardware; Help Desk; Standard Software; Support Staff; Training; Applications Development; Email; Mobile Phones; Desktop Telephones; and Moves, Adds and Changes.

5.28 Approximately 30 per cent of DEST staff were invited to participate in the first survey and 60 per cent of these (259 persons) responded. Of those responding, 73 per cent indicated that they were satisfied with the service. Of the 11 components, nine were rated as 'better than expected' while Training and Applications Development were rated as 'slightly worse than expected'. The survey highlighted that when benchmarked against 14 other federal government agencies, DEST reported higher levels of satisfaction and perceived service quality than five of the agencies that outsource their IT services to an external provider. However, the survey also reported lower levels of satisfaction and quality than several agencies that provide IT services internally.

5.29 In April 2001, the same consultants conducted a second of this series of user satisfaction surveys. The second survey's main aim was to continue the comparison between DEST and other Australian Government agencies, and to reassess the levels of user satisfaction with the IT services. While the response rate to the survey questionnaire was only 49 per cent, of those that responded, 83 per cent were satisfied with the level of IT service, and 84 per cent perceived the service to be of high quality. This represented a net increase in satisfaction by around 10 per cent of users compared to the previous survey results.

5.30 In general, the use of surveys and post implementation reviews of DEST systems allow the department to gather information with which to instigate improvements in its client service. The department's continued commitment to conducting these reviews and surveys on a regular basis enables continuous development of innovative IT solutions and an improvement in workforce productivity.

Measuring efficiency conclusion

5.31 Based on the audit analysis undertaken of TYIMS and PRISMS, the ANAO considers that, taken as a whole, DEST does have systems in place to measure adequately the efficiency of its IT and e-Business. However, there was a lack of formal and consistent analysis of actual costs and realisation of actual benefits in post implementation reviews. This does not help to create a culture of review and evaluation as an aid to better performance. A recommendation for post implementation reviews is included at paragraph 6.28.

6. Quality Standards

This chapter examines the policies, practices and procedures that DEST has in place to assure the quality of its Internet websites and its e-Business applications.

Quality

6.1 The increasing access by the public to government agency information systems has highlighted the importance of the information provided being current and accurate. Moreover, a citizen accessing a government service through the Internet is immediately aware of whether or not the system is working, and whether it is delivering the intended service. Immediate access also raises the expectations of the public. Twenty-four-hour, seven-day access to government services becomes the normal expectation for online access.

6.2 Hence, greater reliance on IT and the transfer of many business activities into e-Business activities has increased the need for public and private sector organisations to manage the quality of system developments, and the quality of the data processed and held on the systems. Attention to quality also helps to ensure value for money and to maintain consumer confidence.

Information Technology at DEST

6.3 As with many Commonwealth agencies, DEST is continually evolving as an organisation. Some new directions result from Government actions such as the November 2001 administrative changes; some arise from Government initiatives such as the New Apprenticeship scheme introduced in 1998; and some are the result of internal reviews of administrative practices. Included in the latter are:

- establishing a consultancy in 2001 that resulted in DEST developing a new systems development methodology which commenced trial in December 2001;
- changes to the administration and responsibilities for the content and change management of websites, including Executive agreement to a review of the main DEST website, in July 2002; and
- changes to the outsourcing arrangements that DEST had with the Department of Employment and Workplace Relations (in the latter part of the audit).

6.4 These changes, in particular the introduction of a new DEST System Development Methodology (DSDM), were considered by the ANAO and taken

into account in the findings of the audit. Much of the attitude to quality in IT is driven by the system development methodology, and the adherence by IT and e-Business teams to the quality processes identified in the methodology.

Audit approach

6.5 The ANAO examined the processes and procedures put in place by DEST to ensure Internet and e-Business products and data met appropriate standards of quality. The ANAO also analysed the data of the Training and Youth Internet Management System (TYIMS) and Provider Registration and International Student Management System (PRISMS) to assess whether the processes and procedures resulted in quality application data. These data were analysed to determine whether they were accurate, complete, consistent, current and unique (that is, not duplicated). The results of that testing are covered in chapter 3.

6.6 In this chapter, the following principles for managing quality were adapted from the CobiT principles⁴⁰. The ANAO considered whether:

- a quality culture has been established for DEST as a whole, and for IT and e-Business;
- an established process for ongoing evaluation and improvement for IT and e-Business is in place;
- a formal system development methodology and change management process is in place for IT and e-Business systems;
- standards, guidelines and methodologies are reviewed to ensure applicability and quality for IT and e-Business systems; and
- DEST benchmarks its IT and e-Business processes against industry norms.

Quality management at DEST

6.7 Although DEST does not have a specific document addressing quality for the agency as a whole, aspects of quality are addressed in documents such as its *Service Charter*⁴¹ and the *Corporate Plan*⁴² that foster an environment of quality. In particular the Corporate Plan states DEST will 'Provide high quality policy advice' and 'ensure high quality and value for money in delivering Government funded programmes.'

⁴⁰ Information Systems Audit and Control Association, *Control Objectives for Information and Related Technology*, PO11 manage Quality, viewed September 2002, <<http://www.isaca.org>>.

⁴¹ Department of Education, Science and Training, 2002 *DETYA's Service Charter*, viewed November 2002, <<http://www.dest.gov.au/charter/charter1.htm>>, 2001.

⁴² Department of Education, Science and Training, 2002, *Corporate Plan 2002*, viewed November 2002, <http://www.dest.gov.au/publications/corporate_plan/DEST_CORP.pdf>.

6.8 DEST's System Development Methodology (DSDM) includes a *Quality Plan*⁴³ for IT. The *Quality Plan* objectives and policy for the quality process are stated to be:

- provide a comprehensive account and verification of all key tasks undertaken as part of system development project phases;
- verify accuracy and completeness of all project phases;
- monitor the recording of information and administrative processes including steering committee reviews;
- provide objectivity and consistency for project phases by conducting periodic project reviews as part of quality analysis;
- identify and communicate trends or potential problems in the project delivery process; and
- ensure effective issue and risk management.

Audit findings

Quality culture

6.9 The CobiT guidelines include the existence of an independent quality assurance function within the IT group⁴⁴. The existence of a *Quality Plan* for DEST's IT provides a sound basis for the establishment of a quality culture. However, the ANAO found no independent group within DEST with responsibilities for ensuring quality separate from management. The Corporate IT Committee and the Information and Business Technology Committee have responsibility for ensuring that submissions for their consideration are of appropriate quality. Prime responsibility for quality resides appropriately with the project team. This has resulted in differing approaches between teams. For example TYIMS has a Quality Management Plan but PRISMS does not. There is no independent group within the Information Services Group (ISG) with responsibility for quality assurance testing and sign-off for the ISG as a whole. Service providers in an outsourced environment enforce some aspects of quality. For example, the outsourcer ensures the product has appropriate approvals before it is allowed into production. As DEST takes more responsibility for its own delivery of IT, assurance of quality will become more important. The CobiT standard to Manage Quality (P011) provides guidance.

⁴³ Department of Education, Science and Training, *Systems Development Methodology-Quality Plan*, DEST, Canberra.

⁴⁴ Information Systems Audit and Control Association, *Control Objectives for Information and Related Technology, PO4 Define the Information Technology Organisation and Relationships*, viewed September 2002, <<http://www.isaca.org>>.

6.10 DEST, in view of its collaboration with other agencies and external organisations, should also consider the principles as stated in a recent Management Advisory Committee document *Australian Government use of Information and Communications Technology*⁴⁵, in establishing interoperability standards to ensure the integrity of systems and data.

6.11 The ANAO suggests that DEST consider the case for establishing an independent quality assurance group to set and enforce quality standards for DEST's IT and e-Business as a whole.

Ongoing evaluation and improvement of IT

6.12 DEST has a number of mechanisms for ongoing evaluation of IT and e-Business. These include:

- audits conducted and commissioned by Audit and Investigations Branch, and by the ISG (see paragraphs 2.12 to 2.17);
- a feedback mechanism on each website;
- benchmarking by external organisations. Benchmarks have been used to assess DEST's performance against other organisations. DEST ranked well in those benchmarks (see paragraphs 5.20 to 5.24);
- surveys of internal stakeholders; and
- meetings with, and surveys of, external stakeholders (see paragraph 4.19, 5.25 to 5.30).

6.13 The ANAO found that DEST has appropriate processes for the evaluation and improvement of its IT and e-Business services.

DEST System Development Methodology (DSDM)

6.14 In response to a July 2001 consultants report, DEST developed a system development methodology based on the *Microsoft Solutions Framework*. The methodology (*DEST Systems Development Methodology–DSDM*) was introduced as a guideline in December 2001. At the time of the audit, the ANAO was informed that the DSDM was on trial with the expectation that, following a review in late 2002, it would be made mandatory. DEST advised the ANAO that it expects the revised DSDM to be implemented by the end of the third quarter 2003. The DSDM is kept current and made available to all staff via DEST's intranet.

⁴⁵ Management Advisory Committee, *Australian Government use of Information and Communications Technology*, 2002, p. 12.

6.15 The ANAO noted that programming ('coding') standards were not included in, or linked to the DSDM.

6.16 The relatively recent introduction of the DSDM and its guideline/trial status resulted in differing approaches by the TYIMS and PRISMS teams to the management of changes to the applications. The similarities and differences are examined below.

Change control process

6.17 The DSDM includes a change management document⁴⁶ that provides guidance for project change management activities. Changes are prioritised and described as faults or enhancements. Faults are described as 'a functionality in which the system does not meet business requirements'. An enhancement is described as 'new functionality requested for the system. It involves a change to the business requirements definition.' DEST has a computer based system—*Helpman*—to record queries and faults by the help desk.

TYIMS

6.18 The ANAO found that the TYIMS team uses a change process addressing formal approvals, testing and implementation. The TYIMS team uses an undocumented automated change recording system called *Reqman* to record and track the changes. *Reqman* requires electronic sign offs by authorised persons during the various steps of change process.

6.19 The ANAO examined the TYIMS change requests held on *Reqman*, which included tracking of the changes through the process. The examination resulted in generally favourable results but revealed isolated incidents of missing required fields and insufficient/inappropriate authorisations. Descriptions of changes were not always well defined and emergency changes were not readily identifiable. The records also did not include consideration of any impact on security, or of the need to update system specifications or user documentation. The ANAO also found isolated incidents of inefficiencies, for example: prolonged or repetitive cycles of development; and failures during integration testing and acceptance testing. The ANAO was advised that scrambled production data is used in the testing of program changes.

PRISMS

6.20 The ANAO found that the PRISMS team also uses a change process addressing appropriate approvals, testing and implementation. However, the PRISMS team uses an undocumented paper-based system to record changes. In

⁴⁶ Department of Education, Science and Training, *Systems Development Methodology, SDM-17*, DEST, Canberra.

the PRISMS case, the paper-based change control system only recorded application faults. Larger application enhancements were not included in this process.

6.21 The ANAO examination of PRISMS change requests for problems/faults resulted in generally favourable results, but, as with TYIMS, revealed isolated incidents of missing required fields and insufficient/inappropriate authorisations. Descriptions of changes were not always well defined and emergency changes were not readily identifiable. The records included consideration of the impact of the change on security and, for more recent records, on system specifications. The records did not consider the need to update user documentation. Changes were primarily grouped as either enhancements or faults.

6.22 The PRISMS team used copies of production data for program and system testing. This is further discussed in paragraph 7.17.

Recommendation No. 5

6.23 The ANAO recommends that DEST record all application change requests and faults on a single computer-based system. The system should also track application changes through the change process and include authorisations.

DEST response

6.24 Agreed. Implementation of the new System Development Methodology should ensure consistency in the management of changes to business applications. DEST will work towards standardising a single computer-based system catering for all applications. The different application development platforms currently in place however, may require different change management systems to be maintained until full migration to a single development platform can be achieved.

Post Implementation Reviews

6.25 The use of the Post Implementation Review (PIR) has been identified in several parts of this report as a potential tool to address a variety of issues. As stated in paragraph 4.8, the DSDM includes a pro-forma Post Implementation Review form⁴⁷. The form identifies items for financial analysis, including actual return on investment. However, it is less detailed on the requirements for assessing the realisation of non-financial benefits, simply providing a table to be filled in with a narrative description of the benefit and of the result.

⁴⁷ Department of Education, Science and Training, *System Development Methodology, SDM-11*, Post Implementation Review, DEST, Canberra.

6.26 Paragraph 4.20 discusses the use of the PIR to ‘determine whether the TYIMS project team has achieved anticipated business objective and benefits within the constraints of projected cost and timelines’. The consultant conducting the PIR reported that the project objectives had been achieved. In paragraph 4.23, the ANAO found that post implementation reviews for PRISMS were limited to technical reviews of the Application Architecture and project management issues. At the time of the ANAO audit, a review of the business benefits achieved had not occurred. In paragraph 4.25, the ANAO concluded that, while assessments of the benefits arising from the implementation of e-Business systems were undertaken in some post implementation reviews, both the occurrence and contents of post implementation reviews were inconsistent. In paragraph 5.18, the ANAO found there was a lack of formal and consistent analysis of actual costs and realisation of actual benefits in post implementation reviews.

6.27 The ANAO consider the use of PIRs to be an appropriate mechanism to address all the above issues. However, the extent of the PIR will need to be tailored to the size of the change to the system, and the level of risk inherent in the change. Both the TYIMS and PRISMS teams operate on the release system. That is, a number of changes/enhancements are included in a periodic (for example every three months) test and release program. It would be appropriate to conduct a simple and brief assessment of the management of, and effect of, that release. In the event of a major system enhancement or change it would be appropriate to include an assessment of the costs and benefits, and to include surveys of internal and external clients on the effect of the change.

Recommendation No. 6

6.28 The ANAO recommends that DEST consider a two-tier approach to post implementation reviews based on the level of risk inherent in the change. After a periodic release, DEST could conduct a simple and brief self-assessment by the change team and business owners of the management, and effect, of the change (what we did right, what we did wrong, what can we improve). After major enhancements or changes it would be appropriate for a post implementation review to include an assessment of the costs and benefits, and to include surveys of internal and external clients on the effect of the change.

DEST response

6.29 Agreed. DEST will aim to ensure, through the implementation of its System Development Methodology, that the approach to Post Implementation Reviews takes account of project scale, risk and other factors, including the significance of any impact on clients. In each case, the terms of a Post Implementation Review should be agreed with the business owners.

Management of website information

6.30 At the time of the audit, the responsibility and processes for managing DEST's websites and website content was in the process of significant change. Responsibility for ensuring standards for web pages were met lay with Communications Branch. The responsible section had been set up in early July 2002. A revised process for making changes to web pages was being proposed. In addition, agreement had been given to a significant review of DEST's Internet site www.dest.gov.au. The audit therefore considered both proposed and current practices, concentrating more on the proposed practices, some of which were in place.

6.31 Proposed changes included giving the EL2 in the area owning the content of web pages final responsibility for the structure and content of the page, within departmental standards and guidelines. Table 6.1 broadly illustrates, the proposed change process.

Table 6.1

DEST Website Management: Proposed process changes

Requirement	Responsibility
Initiate change	Owner (EL2)
Make change Quality assurance	Area web coordinator
Verify change	Owner (EL2)
Publish to test and approve for release Further quality assurance	Communications Branch
Publish	ISG Email sent to owner (EL2) to verify changes in production

Source: DEST Communication Branch

6.32 The ANAO considers the above process to provide a sound base for the management of DEST's websites. The included quality assurance responsibilities, together with the involvement of the responsible owner, provide an expectation that the resulting information is accurate, and that DEST standards and guidelines have been followed.

6.33 At the time of the audit, the ANAO noted one website did not conform to the above process. The ANAO was advised that the site would quickly conform to the standard process.

6.34 In examining various websites, the ANAO noted a small number of broken links, one of which was important, and remaining references to the former DETYA together with the DETYA logo. The nature of the Internet is such that broken links will occur and are, at times, difficult to identify in testing. The DETYA references would be expected to disappear as web pages are updated.

6.35 The frequency and nature of changes to Internet pages almost certainly means that, even though quality assurance processes are in place, degradation will occur such as broken links, outdated pages, and perhaps deterioration of metadata tagging and accessibility. Broken links in particular are often outside of the control of the website owner.

6.36 In the context of tightening up on its overall change processes for web delivered information, the ANAO suggests that DEST consider mechanisms for addressing degradation of website information.

Review of standards, guidelines and methodology

6.37 Perhaps the most significant standard for an IT or e-Business team is the system development/system change methodology. As stated above, the relevant methodology, the DSDM was implemented as a guideline in December 2001, on a trial basis, following the report of a consultant in mid-2001. In October 2002, during the latter part of the ANAO audit, DEST initiated a review of the methodology. Subsequent to the review the ANAO was informed:

- The review ... identified areas of the SDM which needed to be adapted, streamlined, or included in the current methodology so that an 'end-to-end' process can be established.
- Further to this a Project Plan will be developed to put activities, timeframes, and roles and responsibilities around this.

6.38 The ANAO was advised that Internal Audit considered that it was too early in the life of the DSDM to consider an audit of the use and application of methodology.

6.39 The ANAO concluded that DEST appropriately reviews its IT standards and methodologies.

Benchmarking

6.40 DEST's benchmarking of its IT is examined in paragraphs 5.20 to 5.24. DEST is committed to benchmarking the performance of its IT against that of other comparable organisations.

Quality standards conclusion

6.41 The ANAO concluded that DEST has developed a culture of quality both for the organisation and for IT. A formal system development methodology is available as a guideline on a trial basis and, following a review of its use, is expected to be made mandatory. The ANAO noted that programming standards were not included, or referred to, in that methodology.

6.42 The ANAO concluded that DEST appropriately reviews its standards and guidelines. However, adherence to the standards relies on the discipline of the teams using the standards as there is no independent group in the ISG with responsibility for ensuring adherence to the standards.

6.43 DEST benchmarks its IT against external organisations with generally favourable results. Surveys of internal stakeholders were also favourable.

7. Management of Risk and Controls

This chapter examines DEST's approach to risk management and the implementation of appropriate controls to achieve maximum benefit from e-Business.

IT assets

7.1 The information held by an organisation, the IT applications, the IT physical equipment, and the communications equipment are all important assets of that organisation. The organisation should assess the threats to the security of its information, systems and equipment, and implement practices to protect them. The practices include threat and risk assessments, controls over security and privacy, legal advices, ensuring continuity of service, monitoring Internet use, and the management of electronic records.

Risk

7.2 The CobiT Guidelines⁴⁸ advise that management should establish a systematic risk assessment framework. The ANAO considered whether DEST had established such a framework, and whether it had identified possible impediments to the successful delivery of its online services, and assigned responsibility to monitor and instigate mitigation strategies for those impediments as required.

7.3 The ANAO found that DEST has a Risk Management Policy, a Risk Management Manual and Risk Management Section responsible for promoting risk awareness and training. The DEST System Development Methodology includes templates addressing risk management. DEST's aim is compliance with Australian/New Zealand Standard for Risk Management 4360:1999. A Risk Management database was established in December 2001.

7.4 Within this framework, DEST considered risks for the Training and Youth Internet Management System (TYIMS) and the Provider Registration and International Student Management System (PRISMS) and mitigation strategies to address the risks. In some instances, the risk was recognised and accepted with action not considered necessary.

7.5 The ANAO concluded that DEST has appropriate risk management strategies in place for IT and e-Business.

⁴⁸ Governance, Control and Audit for Information and Related Technology, CobiT Guidelines, 3rd Edition P09 Assess Risks.

Security

7.6 The ANAO examined DEST's practices and policies relating to security. In particular the ANAO examined the current and proposed IT Security Policies, and the security arrangements over DEST's Internet transactions.

7.7 The ANAO, in collaboration with Defence Signals Directorate undertook an examination of the DEWR/DEST firewall in 2001⁴⁹. This audit did not repeat that review.

7.8 The ANAO was advised that Secure Socket Layer (SSL) technology is the DEST standard for securing passwords during transmission over the Internet. Some DEST websites (for example Australian Education International and Australian Education International Business Management System) require a password but are not secured using the SSL technology. SSL is the most commonly used technology for web-based encryption, and is the only one with significant market penetration⁵⁰. The ANAO was advised that other security is in place for the Australian Education International Business Management System and the Australian Education International sites. However, SSL is probably appropriate. The ANAO was advised that a new version of the Australian Education International Business Management System will use SSL.

7.9 The ANAO suggests that DEST consider identifying SSL in its IT Security Policy as the appropriate technology for securing transmission of passwords for all DEST websites requiring secure identification of users.

7.10 DEST regularly undertakes security related activities such as threat and risk assessments, and penetration tests. The activities are commissioned either by the Audit and Investigations Branch or by the Information Services Group, and are conducted by external organisations. The most recent threat and risk assessment identified no major vulnerabilities. However, a number of moderate risks were identified relevant to e-Business with recommendations for reduction. In considering these reports, DEST assesses the identified risk and either takes action to deal with the risk, or recognises the risk exists and accepts the risk. DEST is taking action, where appropriate, on the most recent threat and risk analysis, and penetration test.

7.11 DEST limits penetration tests to 'standard tests' against the firewall from a remote location. 'Social engineering', for example 'tricking' DEST staff into providing their user-id and password to external false bodies, is not attempted. DEST advised the ANAO that it had decided against conducting such tests. It is important to understand the context in which tests of security are undertaken

⁴⁹ ANAO Report No.13 2001-02, *Internet Security within Commonwealth Government Agencies*.

⁵⁰ Australian Communications-Electronic Security Instruction 33 (ACSI 33), *Handbook 10, Web Security*, para.1043, viewed October 2002, <<http://www.dsd.gov.au/infosec/acsi33/HB10.html>>.

to ensure against a false sense of security. Remote 'hacking', while important to guard against, is only one of a number of security risks.

7.12 At the time of the audit, DEST had stringent rules defining passwords. However, the software used by DEST did not enforce the rules. The ANAO has been provided with a revised DEST Security Policy with password rules based on the AS/NZS ISO/IEC 17799:2001: *Information Technology—Code of Practice for Information Security Management*. The ANAO has also been advised that the new rules will be enforced by software. The ANAO suggests that DEST implement and enforce password policies and practices based on this standard as early as practical and ensure the policies are enforced by appropriate software.

7.13 The ANAO concluded that DEST's security policies and practices were generally satisfactory. However, improvements could be made in setting a departmental standard for the security of Internet transactions, and enforcing password rules by appropriate software.

Privacy

7.14 The ANAO considered DEST's adherence to the Office of the Federal Privacy Commissioner guidelines for websites. The four privacy guidelines focus on the issues of: openness; collection of personal information via websites; security; and publication of personal information on a website. The purpose of the guidelines is to assist agencies in adopting best privacy practice and to ensure compliance with the *Privacy Act 1988* in respect to their Internet presence.

7.15 The proposed IT Security Policy mandates that online activities comply with the *Privacy Act 1988*. The IT Security Policy also mandates that all systems used to collect or publish personal information undergo a privacy compliance audit by the Legal and Business Assurance Branch. The ANAO was provided with copies of advice provided by that branch, some of which were commissioned from private law firms.

7.16 The ANAO noted that the Office of the Federal Privacy Commissioner had examined DEST websites. The ANAO also noted that DEST had responded to the concerns raised.

7.17 The ANAO found one instance of a copy of production data, containing personal information, being used to test system and programming changes. Use of production data in this manner has the potential to allow inappropriate persons to view personal information and is against sound practice in protecting that personal information. The DEST security policy includes rules for the use of production data for testing of applications. The rules place the responsibility for the use on the owner of the data, and include a requirement that approval is given each time the data is copied, and a log is kept of the copying. The ANAO

concluded that DEST needs to ensure application change teams adhere to the rules. The ANAO suggests that DEST ensure that use of production data in the testing of system development and system change adheres to the rules stated in the DEST Security Policy.

Legal

7.18 The ANAO considered whether DEST had identified the legal risks associated with providing information on its websites, and had addressed those risks.

7.19 DEST has an internal Legal and Business Assurance Branch headed by DEST's Chief Lawyer. That Branch is responsible for providing legal advice on a variety of issues. The ANAO found that the Branch is required to examine and provide advice on all new websites for legal and privacy issues. The ANAO also found that the Branch is included on appropriate project steering committees. The ANAO was provided with examples of the advice provided by the Branch, some of which were commissioned from external organisations.

7.20 The ANAO concluded that DEST appropriately addressed the legal issues associated with websites.

e-Business continuity

7.21 The ANAO considered whether DEST had appropriate procedures in place to recover its e-Business systems in the event of a system failure.

7.22 In the context of e-Business systems, where data is entered via the Internet, there are aspects of business continuity within the control of the organization. However, other requirements, such as the availability of the Internet, are generally outside the control of the organisation. While the ANAO did not examine all aspects of continuity requirements related to e-Business at DEST, it did seek evidence that DEST had considered and adequately addressed business continuity risks.

7.23 The ANAO found that, at the time of the audit, DEST was progressively testing recovery procedures for all its e-Business and Internet systems. TYIMS and PRISMS were reported as having been tested in full. Testing of some websites and applications not examined by the ANAO were still outstanding. The ANAO was informed that finalisation of the test schedule had been suspended pending moving of the mid-range infrastructure support from DEWR to DEST in November 2002. The template for disaster recovery process testing was being updated within DEST to reflect the changed infrastructure arrangements. Once this is completed, recovery testing can resume.

7.24 The ANAO concluded that DEST is taking appropriate steps to promote adequate business continuity arrangements for its e-Business systems. It is incumbent on DEST to ensure testing already completed is applicable to the new infrastructure arrangements, and to complete the testing as soon as practical.

Monitoring of Internet use

7.25 The ANAO considered whether DEST has appropriate policies on the use of the Internet, whether it monitors compliance with the policies, and whether it imposes penalties in the event of non-compliance.

7.26 The ANAO found that DEST has a formal email/Internet code of conduct readily available to all staff on DEST's intranet. As well, the access icon is prominently displayed on the intranet/Internet entry screen. The agency's code of conduct includes information on privileges, responsibilities, monitoring, and sanctions.

7.27 DEST staff are advised that all data held or communicated over DEST's electronic systems is the property of the Commonwealth and, as such, is subject to the *Archives Act 1983*. Staff are also informed that email/Internet usage is monitored.

7.28 At the time of the audit, DEST had software in place to alert staff when an inappropriate website was about to be accessed. The staff member had the option of ignoring the warning and proceeding. Since completion of the audit, DEST has advised the ANAO that inappropriate websites are now totally blocked from access by DEST staff.

7.29 The DEST staff newsletter of June 2002 advised staff that 15 officers had been investigated for inappropriate use of the email/Internet over the previous nine months. Of the 15: one resigned; two were demoted two levels; five were fined and an official reprimand recorded on their personnel file; and seven were counselled.

7.30 The ANAO concluded that DEST appropriately monitors email/Internet use and appropriately applies sanctions.

Records management

7.31 The ANAO sought to determine whether DEST ensured that electronic records and documents relating to its websites and IT systems were being appropriately archived, and that the appropriate legislative and National Archives of Australia requirements for storage, access, and disposal were being met.

7.32 Information technology has changed the way that most Government agencies operate. The benefits of electronic information systems, such as improved retrieval of information and quicker and cheaper communication, have highlighted the change in the nature of recordkeeping within agencies. In particular, while much of the information published by agencies is made available electronically on their websites, most of the business information is held electronically in IT systems. In the past, the centralised registry provided one corporate store for the recorded information of the agency. Now, information is distributed throughout the agency on IT systems.

7.33 The legislative basis for the storage of records is the *Commonwealth Archives Act 1983*. The National Archives of Australia is the authoritative source of advice for Commonwealth agencies. The National Archives of Australia has released several documents pertaining to the management, archiving, access and disposal of Government electronic records⁵¹.

Electronic recordkeeping at DEST

7.34 The ANAO found that DEST stored web pages that had been replaced or discarded by inserting */archive* in the address. While this is a sensible interim solution that retains the web page for future access, it does not comply with the record keeping requirements of the *Commonwealth Archives Act 1983* that requires a record to be unchangeable. The ANAO was advised that, although it was possible to reconstitute a website as it had been at some past date, the effort would be labour intensive. The ANAO also found that other electronic records, such as emails and information retained on IT systems, were not maintained as records. However, normal system back-ups retained copies of the information, as would be expected for any IT system.

7.35 At the time of the ANAO audit, DEST was completing a tendering process for a new records management system called Electronic Document and Records Management System (EDRMS). The decision to acquire a new system resulted from inadequacies recognised in the previous system. The previous system was seen in the following light:

...while the department is now adequately able to transact its business in most situations, its information management is not best practice and may not give the department the capabilities it needs in the future. The current system does not have the functionality in terms of security and document integrity considerations that is necessary for records to be retained electronically.⁵²

⁵¹ National Archives of Australia, website, viewed October 2002, <<http://www.naa.gov.au/recordkeeping/er/summary.html>>.

⁵² Department of Education, Science and Training, *DETYA Universal Records and Information Framework (DURIF) Draft Requirements Analysis, March 2000*, DEST, Canberra.

7.36 DEST is seeking a new system that would allow users to store, search and retrieve electronic documents with efficiency while adhering to the legislative requirements for permanence of the records. DEST expects the new system to commence implementation in early 2003. The ANAO was also informed that web pages would be included in EDRMS in late 2003, following completion of the inclusion of higher priority records into EDRMS. DEST also plans to capture and store other types of media, such as voice messages, for records purposes.

7.37 DEST informed the ANAO that EDRMS will comply with the Australian Recordkeeping standard as outlined in AS4390⁵³, and be consistent with the National Archives of Australia e-Permanence policy guidelines. Implementation of the system for electronic records will not take place until late 2003 and therefore cannot be tested at this time.

Recordkeeping conclusion

7.38 The ANAO concluded that, while DEST does not currently fully comply with legislative and policy requirements for its electronic records, it is implementing appropriate systems that should allow it to comply with those requirements by late 2003.

Canberra ACT
19 March 2003



Oliver Winder
Acting Auditor-General

⁵³ Standards Association of Australia, Australian Standard: *AS 4390 Recordkeeping Guidelines*, replaced by: Standards Association of Australia, Australian Standard: *AS ISO 15489.1 – 2002 Records Management-General* and *AS ISO 15489.2 – 2002 Records Management-Guidelines*, Standards Australia, Sydney.

Index

B

Benchmarking/Benchmarked 18, 56, 59-60, 65, 70, 81

C

CobiT 13, 30-31, 33, 35, 63-64, 72

Corporate IT Committee 15, 32, 34, 36-37, 57, 64

Cost/Benefit Analysis 14, 18, 22, 25, 27, 29-30, 50-51, 53, 55-59, 61, 68, 84

D

Data transfer 14, 17, 21, 47-48, 53

DEST Service Charter 63

DEST Communications Branch 69

DEST Corporate Plan 63

DEST Security Policy 19, 74-75

DEST Systems Development Methodology (DSDM) 13, 18, 65

E

e-Business continuity 75-76, 84

e-Business proposals 14, 16, 22, 33, 54,

e-Business Standards & Guidelines 14

Education Services for Overseas Students Act 2000 (ESOS) 29, 53

Electronic Document and Records Management System (EDRMS) 77

Electronic records 15, 72, 76-78

email/Internet Code of Conduct 20, 60, 69, 76-77

G

Gartner Group 59

H

Helpman 66

I

Information Services Group (ISG) 14, 19, 27, 32, 57, 60, 64, 73

International Students 12, 17, 29, 39, 44, 55,

IT Governance 16, 31-32, 38

L

Legal and Business Assurance Branch 19, 74-75

N

New Apprenticeship Centre (NAC) 29, 39, 40, 41, 42, 43, 44, 52

National Archives of Australia (NAA) 20, 76, 77, 78

National Office for the Information Economy (NOIE) 11, 25

O

Office of the Federal Privacy
Commissioner 74

Online Action Plan 49, 51-52

P

Penetration Tests 73

Post Implementation Reviews (PIR)
13-14, 17-18, 22, 53-56, 58, 61,
67-68

Privacy Issues 19, 25, 75

Production Data 15, 19, 40, 46, 66-67,
74-75

Q

Quality Plan 18, 64

R

Reqman 66

Risk Management 12, 15, 19, 28, 64,
72

S

Secure Socket Layer Technology (SSL)

Security 12, 15-16, 19, 25, 27, 29, 30,
34-35, 51, 57, 66, 67, 72-75, 77,
82, 84

Stakeholders 14, 39, 56, 58, 65, 71

T

Terms of Reference 13, 34-38, 53

V

Visa 17, 29, 45-46, 53

Series Titles

Audit Report No.1 Performance Audit
Information Technology at the Department of Health and Ageing
Department of Health and Ageing

Audit Report No.2 Performance Audit
Grants Management
Aboriginal and Torres Strait Islander Commission

Audit Report No.3 Performance Audit
Facilities Management at HMAS Cerberus
Department of Defence

Audit Report No.4 Audit Activity Report
Audit Activity Report: January to June 2002
Summary of Outcomes

Audit Report No.5 Performance Audit
The Strategic Partnership Agreement between the Department of Health and Ageing and the Health Insurance Commission
Department of Health and Ageing and the Health Insurance Commission

Audit Report No.6 Performance Audit
Fraud Control Arrangements in the Department of Veterans' Affairs

Audit Report No.7 Performance Audit
Client Service in the Child Support Agency Follow-up Audit
Department of Family and Community Services

Audit Report No.8 Business Support Process Audit
The Senate Order for Department and Agency Contracts (September 2002)

Audit Report No.9 Performance Audit
Centrelink's Balanced Scorecard

Audit Report No.10 Performance Audit
Management of International Financial Commitments
Department of the Treasury

Audit Report No.11 Performance Audit
Medicare Customer Service Delivery
Health Insurance Commission

Audit Report No.12 Performance Audit
Management of the Innovation Investment Fund Program
Department of Industry, Tourism and Resources
Industry Research and Development Board

Audit Report No.13 Information Support Services
Benchmarking the Internal Audit Function Follow-on Report

Audit Report No.14 Performance Audit
Health Group IT Outsourcing Tender Process
Department of Finance and Administration

Audit Report No.15 Performance Audit
The Aboriginal and Torres Strait Islander Health Program Follow-up Audit
Department of Health and Ageing

Audit Report No.16 Business Support Process Audit
The Administration of Grants (Post-Approval) in Small to Medium Organisations

Audit Report No.17 Performance Audit
Age Pension Entitlements
Department of Family and Community Services
Centrelink

Audit Report No.18 Business Support Process Audit
Management of Trust Monies

Audit Report No.19 Performance Audit
The Australian Taxation Office's Management of its Relationship with Tax Practitioners
Australian Taxation Office

Audit Report No.20 Performance Audit
Employee Entitlements Support Schemes
Department of Employment and Workplace Relations

Audit Report No.21 Performance Audit
Performance Information in the Australian Health Care Agreements
Department of Health and Ageing

Audit Report No.22 Business Support Process Audit
*Payment of Accounts and Goods and Services Tax Administration
in Small Commonwealth Agencies*

Audit Report No.23 Protective Security Audit
Physical Security Arrangements in Commonwealth Agencies

Audit Report No.24 Performance Audit
Energy Efficiency in Commonwealth Operations—Follow-up Audit

Audit Report No.25 Financial Statement Audit
*Audits of the Financial Statements of Commonwealth Entities
for the Period Ended 30 June 2002*
Summary of Results

Audit Report No.26 Performance Audit
Aviation Security in Australia
Department of Transport and Regional Services

Audit Report No.27 Performance Audit
Management of Commonwealth Guarantees, Warranties, Indemnities and Letters of Comfort

Audit Report No.28 Performance Audit
Northern Territory Land Councils and the Aboriginals Benefit Account

Audit Report No.29 Audit Activity Report
Audit Activity Report: July to December 2002
Summary of Outcomes

Audit Report No.30 Performance Audit
Defence Ordnance Safety and Suitability for Service
Department of Defence

Audit Report No.31 Performance Audit
Retention of Military Personnel Follow-up Audit
Department of Defence

Audit Report No.32 Business Support Process Audit
The Senate Order for Departmental and Agency Contracts (Spring 2002 Compliance)

Better Practice Guides

Internal Budgeting	February 2003
Administration of Grants	May 2002
Performance Information in Portfolio Budget Statements	May 2002
AMODEL Illustrative Financial Statements 2002	May 2002
Life-Cycle Costing	Dec 2001
Some Better Practice Principles for Developing Policy Advice	Nov 2001
Rehabilitation: Managing Return to Work	Jun 2001
Internet Delivery Decisions	Apr 2001
Planning for the Workforce of the Future	Mar 2001
Contract Management	Feb 2001
Business Continuity Management	Jan 2000
Building a Better Financial Management Framework	Nov 1999
Building Better Financial Management Support	Nov 1999
Managing APS Staff Reductions (in Audit Report No.49 1998–99)	Jun 1999
Commonwealth Agency Energy Management	Jun 1999
Corporate Governance in Commonwealth Authorities and Companies–Principles and Better Practices	Jun 1999
Managing Parliamentary Workflow	Jun 1999
Cash Management	Mar 1999
Management of Occupational Stress in Commonwealth Agencies	Dec 1998
Security and Control for SAP R/3	Oct 1998
Selecting Suppliers: Managing the Risk	Oct 1998
New Directions in Internal Audit	Jul 1998
Controlling Performance and Outcomes	Dec 1997
Management of Accounts Receivable	Dec 1997
Protective Security Principles (in Audit Report No.21 1997–98)	Dec 1997
Public Sector Travel	Dec 1997
Audit Committees	Jul 1997

Core Public Sector Corporate Governance (includes Applying Principles and Practice of Corporate Governance in Budget Funded Agencies)	Jun 1997
Management of Corporate Sponsorship	Apr 1997
Telephone Call Centres	Dec 1996
Telephone Call Centres Handbook	Dec 1996
Paying Accounts	Nov 1996
Asset Management	Jun 1996
Asset Management Handbook	Jun 1996
Managing APS Staff Reductions	Jun 1996

