The Auditor-General
Audit Report No.39 2007–08
Performance Audit

Managing e-Business Applications–– Follow-up Audit

Department of Education, Employment and Workplace Relations

Australian National Audit Office

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Australian National Audit Office

Canberra ACT
5 June 2008

Dear Mr President
Dear Mr Speaker

The Australian National Audit Office has undertaken a performance audit in the Department of Education, Employment and Workplace Relations 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 *Managing e-Business Applications—Follow-up Audit.*

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

Ian McPhee
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.

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Audit Team

Paul Nicoll

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Abbreviations and Glossary

AACs	Australian Apprenticeship Centres (successors to the NACs)
AAO	Administrative Arrangements Order
AGIMO	Australian Government Information Management Office in the Department of Finance and Deregulation
ANAO	Australian National Audit Office
CIO	Chief Information Officer
CITC	Corporate IT Committee
CLG	Corporate Leadership Group (Chair-Secretary)
CoBIT	Control Objects for Information and related Technology. CoBIT is a set of better practices for IT management developed by the Information Systems Audit and Control Association and the IT Governance Institute.
DEEWR	Department of Education, Employment and Workplace Relations
DEST	(the former) Department of Education, Science and Training
DET	NSW Department of Education and Training
DEWR	(the former) Department of Employment and Workplace Relations
DIAC	Department of Immigration and Citizenship
DSDM	(the former) DEST's Systems Development Methodology. DSDM was a methodology being implemented to guide the department's IT systems development during the previous audit.

e-Business	e-Business in this report refers to conducting government services online through the Internet.
ESOS Act	*Education Services for Overseas Students Act (2000):* this Act protects Australia's reputation as an education provider in a competitive global market.
FaCSIA	(the former) Department of Families, Community Services and Indigenous Affairs
IBTC	Information and Business Technology Committee, a sub-committee of the CITC
ICT	information and communications technology
ISG	Information Services Group (in DEEWR)
IT	information technology
ITIL	Information Technology Infrastructure Library. ITIL is a set of concepts and techniques for managing IT infrastructure, development, and operations, which was developed in the United Kingdom by the Office of Government Commerce.
NACs	New Apprenticeship Centres, predecessors to the Australian Apprenticeship Centres
NOIE	National Office for the Information Economy, the predecessor to AGIMO
PIR	post-implementation review
PMF	Project Management Framework. The department's PMF includes guidelines and templates on a full range of project management processes.
PMO	Project Management Office. The PMO, part of the ISG, was established to provide a focus for improving project management across the department.

PRISMS	Provider Registration and International Students Management System
TYIMS	Training and Youth Internet Management System

Summary and Recommendations

Summary

e-Business

1. The Australian Government is committed to improving the delivery of information and services to the Australian community, particularly through the use of information technology (IT) including the Internet. In 1997, the Government set a policy to make 'all appropriate services available online via the Internet by 2001'.[1] Over the past several years, the Government and its lead information management agency have reiterated this commitment to e-Business; that is, conducting government services on line through the Internet.

2. The Government through the Department of Education, Employment and Workplace Relations (DEEWR) provides advice and administers programs to achieve the Government's objectives for education, training and employment.[2] Most of these programs are supported by IT applications, with several of the IT applications accessible to the department's clients and contractors through the Internet.

ANAO's previous audit on managing e-Business

3. In March 2003, the ANAO tabled a performance audit of the Department of Education, Science and Training's (DEST's) management of its Internet presence and its e-Business. The objective of the 2003 audit was to determine whether DEST:

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

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[1] Commonwealth of Australia, *Investing for Growth. The Howard Government's Plan for Australian Industry*, 1997,<http://www.industry.gov.au/assets/couments/intranet/investforgrowth20040607125733.pdf>. ANAO Audit Report No.33 2002–03, Management of e-Business in the Department of Education, Science and Training.p.11<http://www.anao.gov.au/uploads/documents/2002-03_Audit_Report_33.pdf>.

[2] The department does this by working with state and territory governments, the education and training sectors, industry, communities and a range of contracted service providers.

4. The ANAO concluded at the time 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 system development methodology.

5. The ANAO made six recommendations concerning improvements to the department's IT governance, recordkeeping, performance monitoring and to its reviews of IT including Internet services. The department agreed with all six recommendations.

Audit objective, scope and methodology

6. The objective of this follow-up audit is to examine DEEWR's implementation of the six recommendations made in the ANAO's 2003 report. This audit has had regard to the issues underlying the recommendations and new administrative issues affecting their implementation.

7. The Government established DEEWR in December 2007, bringing together the education and training functions from the former DEST, with the functions of the former Department of Employment and Workplace Relations (DEWR) and the child care functions from the Department of Families, Community Services and Indigenous Affairs (FaCSIA). The audit, which was originally designated in the former DEST, has not considered e-Business functions which transferred from, or to, the portfolio. To assist readers, the term DEEWR has been used throughout the audit to identify the department.

8. The audit examined DEEWR's actions and outcomes in addressing recommendations in the following areas:

- improvements to IT governance through clarifying roles and responsibilities of its IT committees;
- accuracy of records held in the Training and Youth Internet Management System (TYIMS) relating to those apprenticeships that would have been expected to be finalised but not recorded as such;
- implementation of a Memorandum of Understanding (MOU) between DEEWR and the Department of Immigration and Citizenship (DIAC), for the transfer of data affecting DEEWR's Provider Registration and International Students Management System (PRISMS). The audit also engaged DIAC on this issue to determine its perspective;

- identification of measures and targets to assess the success or otherwise of e-Business projects;
- conduct of post-implementation reviews on e-Business projects; and
- implementation of a single computer system to record, authorise and track application changes.

Audit conclusion

9. DEEWR has actioned the recommendations from the previous audit. Three have been implemented, with a further recommendation in the process of being implemented. Two recommendations are partially implemented. Set out below in the *Key findings by chapter* are the original recommendations as agreed by DEEWR, and a summary of ANAO's assessment of progress against each.

10. DEEWR has continued to enhance its management of e-Business since the previous audit. In particular:

- IT governance has improved with IT committees operating within clearly defined roles and responsibilities;
- the accuracy of TYIMS records has improved, reducing the number of records where there was uncertainty about whether apprentices had completed their apprenticeships;
- DEEWR is in the process of rolling out a single computer system that will record, authorise and track application changes;
- DEEWR and DIAC have formalised an agreement through an MOU, that outlines the respective roles and responsibilities for the transfer of data on the visa and enrollment status of international students; and
- DEEWR has improved its guidance and tools for IT project managers.

11. The ANAO considers that there are opportunities to improve the governance of the MOU between DEEWR and DIAC for timely resolution of IT issues that have arisen in DIAC systems, affecting the accuracy and completeness of PRISMS, a database that supports education providers for international students.

12. The ANAO also considers that there is scope for improving the evaluation of e-Business projects. In particular, better governance, guidance and tools are required. Such evaluations assist in both assessing the benefits

achieved from investment in such projects, as well as supporting continuous improvement in project management.

Key findings by chapter

IT Governance (Chapter 2)

Original recommendation 1: The ANAO recommends that DEEWR clarify the respective roles and responsibilities of its Corporate Information Technology Committee and its Information and Business Technology Committee. In doing so, DEEWR 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.

Finding: **Implemented**

13. DEEWR has implemented this recommendation. The audit identified that:

- the respective and separate roles and responsibilities for the corporate IT committees were clarified in their charters;
- the charters identified the authority of each committee and the role of their members;
- both the corporate IT committees operated in line with their respective charters;
- there was an annual work program for the committees; and
- the two IT committees regularly reviewed the progress of work in their own annual programs.

14. Implementation of this recommendation has resulted in both committees operating with clear lines of authority and without unnecessary duplication of effort, leading to improved efficiency in their work.

IT Applications – TYIMS and PRISMS (Chapter 3)

TYIMS – Exception Reporting

Original recommendation 2: The ANAO recommends that DEEWR upgrade the Training and Youth Internet Management System (TYIMS) 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 (NACs) to finalise the records.

Finding: **Implemented, decreasing doubtful cases by two-thirds**

15. DEEWR has implemented this recommendation, completing the actions outlined in their response to the recommendation. The department has made enhancements to TYIMS, and to its contracts with the Australian Apprenticeship Centres (AACs), the successors to the NACs. Although the number of doubtful incomplete cases decreased by two-thirds, there remains a number of doubtful incomplete apprenticeship records. The exception reports developed in response to the recommendation do not highlight incomplete records that have remained on the system since the implementation of those reports. Clarifying the status of these doubtful incomplete cases would enhance the certainty of DEEWR's performance reporting and the amount that DEEWR owes NACs for final payments.

PRISMS – MOU with DIAC

Original recommendation 3: The ANAO recommends that DEEWR initiate discussion with DIAC with a view to developing a Memorandum of Understanding to clearly define each agency's responsibility for 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 DEEWR seek to resolve the discrepancy in the Provider Registration and International Students Management System (PRISMS) error rates arising from incomplete transfer of data between DEEWR and DIAC.

Finding: **Implemented, but MOU not fully complied with**

16. DEEWR has implemented this recommendation. DEEWR has made substantial efforts to address the accuracy and completeness of international student records resulting from data transfers between DEEWR and DIAC. In particular, the departments implemented an agreement on data transfer, consistent with the original recommendation, documented in an MOU titled *Protocol for the Development and Enhancements of Electronic Data Exchange and Systems Interoperability for DEEWR and DIMIA Relating to International Education*. In addition, DEEWR made changes to its international student database, PRISMS, to minimise errors and initiated comparisons of the data held by DEEWR and by DIAC.

17. The accuracy and completeness of data on PRISMS is compromised by data transfer issues between DEEWR and DIAC. The current MOU governance arrangements are not operating in line with the agreement. Given its competing IT funding priorities, DIAC has not undertaken all the IT changes necessary to address accuracy and completeness of data transfer to DEEWR, although it has made a number of system changes over the period since the

last audit. Instead, DIAC currently places a high reliance on manual processes and DEEWR's technical resources to address its data transfer issues.

18. The interim solutions implemented by DIAC to support the accuracy and completeness of the data transferred to DEEWR have adverse impacts on the data integrity of PRISMS. To date, the efforts of officers in both departments have minimised the short-comings of the PRISMS data for end-users, namely, education providers to international students. The education providers' current level of satisfaction with PRISMS could change, if they do not consider that they are receiving value for money from their efforts to provide DEEWR with accurate PRISMS information.

Measuring and Assessing the Effectiveness of e-Business Projects (Chapter 4)

Project Measures and Targets in Business Cases for e-Business Proposals

Original recommendation 4: The ANAO recommends that DEEWR 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.

Post-Implementation Reviews – Risk-based Approach

Original recommendation 6: The ANAO recommends that DEEWR consider a two-tier approach to post-implementation reviews based on the level of risk inherent in the change. After a periodic release, DEEWR 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.

Finding: **: Partially implemented**

19. DEEWR has partially implemented these recommendations. DEEWR made substantial progress in developing a project management methodology to guide its IT developments, consistent with established, widely used approaches to IT governance, project management and software development. As part of this methodology it has guidance and procedures for measuring IT and e-Business project effectiveness, as well as reviews of IT projects. However, DEEWR is inconsistent in its application of its guidance on measuring project effectiveness, while its adherence to its guidance on project evaluation was limited.

20. While DEEWR has completed the actions that it agreed to against the original Recommendations 4 and 6, it has not applied the guidance in the way

that addressed the original intent of the recommendations. On this basis, the ANAO concluded that DEEWR partially implemented Recommendations 4 and 6 from the previous audit.

Managing e-Business System Changes (Chapter 5)

Original recommendation 5: The ANAO recommends that DEEWR 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.

Finding: **Implementation in progress**

21. DEEWR is in the process of introducing a single computer-based system which, based on its design, is expected to address the requirements of this recommendation.

22. In the interim, DEEWR implemented processes to manage IT application changes, which address many, but not all, of the underlying issues that led to this recommendation.

DEEWR's and DIAC's response

DEEWR's response

23. DEEWR accepts the findings presented in this report. The department notes the original audit findings that the department's management of its Internet presence and its e-Business was sound, and we are pleased to note that actions agreed to further improve this management have been found to be largely completed.

24. We accept the need for continued efforts to improve management of these critical assets and welcome the recommendations provided in the report.

DIAC's response

25. The report identifies issues relating to data transfer between DIAC systems and PRISMS. DIAC accepts the recommendation that relates to it, Recommendation No.1.

26. DIAC's student visa program supported growth in the international education industry by delivering a record 228 000 visas in 2006–07. The data transfer between DIAC systems and PRISMS plays an important part in managing the student visa program. While there are currently high levels of satisfaction with PRISMS from end users, DIAC agrees that ongoing work is required to support the data transfer.

Recommendations

Recommendation No. 1

Paragraph 3.36

To achieve the outcomes stated in the Memorandum of Understanding (MOU) titled *Protocol for the Development and Enhancements of Electronic Data Exchange and Systems Interoperability for DEEWR and DIMIA Relating to International Education*, the ANAO recommends that DEEWR and DIAC:

(a) prioritise and set time-frames for the resolution of issues affecting the accuracy and completeness of data on overseas students, and the prompt transfer of data between the departments; and

(b) review the operation of the MOU.

DEEWR's response: *Agreed*

DIAC's response: *Agreed*

Recommendation No. 2

Paragraph 4.33

To improve IT project management, the ANAO recommends that DEEWR:

(a) identify, as part of project approval process, those key IT and e-Business projects that need assessments of their effectiveness in achieving project benefits, with reporting of results to DEEWR's IT committees;

(b) develop templates and guidance for evaluating the effectiveness of the project once sufficient time has elapsed for project benefits to be measured; and

(c) require an assessment of project management at the close of IT and e-Business projects using standardised tools, capturing and communicating the lessons learnt from these projects to continuously improve DEEWR's project management.

DEEWR's response: *Agreed*

Audit Findings and Conclusions

1. Background

This Chapter provides the background to e-Business management in the Department of Education, Employment and Workplace Relations (DEEWR), information on the results of, and key developments since the 2002–03 audit, and the objective and approach to the follow-up audit.

e-Business in the Australian Government

1.1 The Australian Government is committed to improving the delivery of information and services to the Australian community, particularly through the use of information technology (IT) including the Internet. In 1997, the Government set a policy to make 'all appropriate services available online via the Internet by 2001'. In 2000, the Australian National Office for the Information Economy (NOIE) released a strategy to implement this policy,[3] with a subsequent survey of October 2001 finding that all government agencies met the Government's target.[4]

1.2 Over the past several years, the Government and its lead information management agency has reiterated this commitment to e-Business. In particular:

- in 2004, the Government set a priority to 'raise Australian public sector productivity, collaboration and accessibility through the effective use of information, knowledge and ICT';[5] and
- the Australian Government Information Management Office (AGIMO), NOIE's successor, in 2006 elaborated on that priority and charted how the Government intended to 'build on progress in e-government to date

[3] Department of Communications, Information Technology and the Arts, 2000. *Government Online – The Commonwealth Government's Strategy*, <http://www.agimo.gov.au/publications/2000/04/govonline>.

[4] ANAO Audit Report No.33 2002–03. *Management of e-Business in the Department of Education, Science and Training.* p.11 <http://www.anao.gove.au/uploads/documents/2002-03_Audit_Report_33.pdf>.

[5] Department of Communications, Information Technology and the Arts, 2004. *Australia's Strategic Framework for the Information Economy 2004–06*,

<http:www.dcita.gov.au/communications_and_technology/policy_and_legislation/australias_strategic_framework>.

and move forward towards the vision of connected and responsive government by 2010'.[6]

1.3 Within this context, e-Business is a tool for effective service delivery and for interacting with Government. Government agencies provide a range of services on-line through the Internet. These services include, amongst others:

- information and support for the clients of Government programs;
- application forms for program funding;
- reporting by Government-funded service providers;
- procurement;
- payments to suppliers;
- receipts of revenue;
- public relations; and
- advertising.

1.4 The adoption and use of e-Business provides agencies with:

- access to a wider public than might otherwise be possible, reaching for example, students based overseas who may wish to study in Australia;
- provision of citizen access to certain services 24 hours per day, seven days of the week;
- potentially reduced cost of service delivery; and
- potentially improved quality of services.

1.5 However, the effective delivery of services using e-Business solutions comes with some key challenges. Examples include the need to ensure security and privacy of information; presentation, currency, and accessibility of websites; and the integration of service delivery when responsibilities are split between agencies and/or service providers.

About the department

1.6 The Government established the Department of Education, Employment and Workplace Relations (DEEWR) in December 2007, bringing together the

[6] Department of Finance and Administration (Australian Government Information Management Office), 2006. *Responsive Government: A New Service Agenda – 2006 e-Government Strategy*, <http://www.agimo.gov.au/government/e-government_strategy>.

education and training functions from the former DEST, with the functions of the former Department of Employment and Workplace Relations (DEWR) and the child care functions from the Department of Families, Community Services and Indigenous Affairs (FaCSIA).

1.7 The Australian Government, through the agencies in the Education, Employment and Workplace Relations portfolio, particularly DEEWR, has a national leadership role 'in developing and implementing innovative policy solutions in the areas of learning, skills acquisition and building Australia's knowledge'.[7] The Australian Government works towards education and training outcomes with a range of stakeholders, including state and territory governments, the education and training sectors, industry, communities and a range of contracted service providers.

1.8 DEEWR provides advice and administers programs to achieve the Government's objectives for education, training and employment. For 2007–08, the former DEST had a departmental budget of around $532 million for departmental expenses (generally departmental staff salaries and administrative expenses) up from a budget of $234 million in 2002–03. Its administered budget (generally payments for external organisations and state/territory governments) is $21 billion, up from $13 billion in 2002–03. This increase in part reflects increases in responsibilities over the period including, for example, the transfer to the department of responsibility for income support for students and new apprentices.[8]

1.9 DEEWR's e-Business systems support a range of areas important to Australia's economy. These include Australian Apprenticeships and international students. In 2006, 142 520 people completed Australian Apprenticeships, an 11.5 per cent increase over three years.[9] International students contributed $11.7 billion in export earnings to the Australian economy in 2006–07, making education services the largest services export. These earnings are up by 139 per cent compared with $4.9 billion in earnings in 2002–03.[10] This audit includes a focus on the computer systems that the

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7 DEST 2007: *Annual Report 2006–07. p* 3.
<http://www.annualreport2007.dest.gov.au/chapter_one/DESTs_Strategic_Plan.htm>

8 This change was announded in the Administrative Arrangement Order of 22 October 2004.

9 ibid, p. 111.

10 Australian Vice-Chancellors Committee assessment.
<http://www.universitiesaustralia.edu.au/documents/publications/stats/International.xls>.

department uses to manage its programs for apprenticeships and international students.

DEEWR has made changes to e-Business management since 2003

1.10 DEEWR currently uses its own staff and contractors to provide information technology services. In particular, as at February 2008 one of DEEWR's IT groups was the Information Services Group (ISG). ISG manages the following functions related to departmental responsibilities that had transferred from the former DEST: the delivery of information and communications technology services, including infrastructure, business applications development and support, telephony and information management.[11] The current arrangement is in contrast with that at the time of the original audit. At that time, the former DEST outsourced its IT infrastructure to the former DEWR in an arrangement set out in a Memorandum of Understanding between the two agencies.

1.11 At the time of the previous audit, DEST was in the process of fully implementing a methodology[12] to guide all IT system developments in the department, including e-Business projects. Since that time, the department has replaced this methodology for managing systems development with a project management framework (PMF). The PMF approach is applicable to the management of a wider range of IT projects, covering all aspects of managing business technology projects from conception and set-up, to post-implementation reviews.

The previous audit identified DEEWR's management of e-Business to be sound, but with opportunities for improvement

1.12 The objective of ANAO's previous audit of DEST's management of its Internet presence and its e-Business,[13] was to determine whether DEST:

- had effective governance practices for its IT and e-Business;

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[11] DEEWR also had an IT Services Group, which managed functions similar to those of ISG, transferred from the former DEWR.

[12] DEST Systems Development Methodology (DSDM).

[13] ANAO Audit Report No.33 2002–03, *Management of e-Business in the Department of Education, Science and Training.* <http://www.anao.gov.au/uploads/documents/2002–03_Audit_Report_33.pdf>.

- had adequate systems in place to measure the efficiency and effectiveness of its IT and e-Business;
- implemented and maintained appropriate quality standards within its IT and e-Business systems; and
- implemented proper controls, including risk management, to achieve maximum benefit from its IT and e-Business.

1.13 The previous audit focussed on e-Business systems that support Australian Apprenticeships and international students. 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 its new system development methodology.

1.14 The ANAO made six recommendations concerning improvements to the department's IT governance, recordkeeping, management of e-Business projects and change control processes. The department agreed with all six recommendations. The ANAO was briefed through the department's Audit Committee that the department had implemented these recommendations, by completing the actions to which it had agreed in its response.

1.15 Sufficient time has now past for the realisation of improvements to DEEWR's e-Business management intended by the recommendations.

How the ANAO conducted this audit

1.16 The objective of this audit is to examine DEEWR's implementation of the six recommendations made in Audit Report No.33 2002–03, *Management of e-Business in the Department of Education, Science and Training*. The audit has had regard to the issues underlying the recommendations, changed circumstances and new administrative issues affecting their implementation.

1.17 The Government issued a new administrative arrangement order on 3 December 2007, during the audit fieldwork. The audit, which was originally designated in the former DEST, continued. The audit did not consider e-Business functions which transferred from, or to, the portfolio. The audit report refers to the department as DEEWR, unless clarity is lost through this usage.

1.18 DEEWR's national office staff and managers briefed the ANAO. The audit team examined and analysed DEEWR's records – both electronic and paper files – to gather evidence of DEEWR's progress in implementing the

recommendations. The ANAO invited DEEWR to provide a statement on its progress on implementing each of the recommendation, which the audit drew on to provide a basis for evidence gathering.

1.19 The previous audit assessed the management of e-Business projects, making recommendations relating to the measurement and assessment of e-Business projects. In this audit, the ANAO followed up these recommendations by examining 14 e-Business projects funded from the department's IT budget in 2005–06 and 2006–07. The eight 2005–06 projects had total budgets of $5.9 million, or 52 per cent of the funding for all the business services systems projects that the department financed from its IT budget that year. The six 2006–07 projects that were reviewed as part of this follow-up audit, had total budgets of $3.1 million, or 17 per cent of all business services systems projects that were funded that year from the IT budget.

1.20 This audit's scope was limited to following up the issues and recommendations of the previous audit.

1.21 The ANAO used the services of KNJ Professional Services Pty Ltd in the conduct of this audit.

1.22 The ANAO conducted the audit in accordance with ANAO Auditing Standards at a cost of $127 000.

Structure of this report

1.23 The remainder of this report has four chapters:

- Chapter 2 examines DEEWR's implementation of recommendation 1 from the previous audit relating to IT governance;
- Chapter 3 examines DEEWR's actions to improve its IT applications, TYIMS and PRISMS, in line with recommendation 2 and 3 from the previous audit;
- Chapter 4 examines DEEWR's progress against recommendations 4 and 6 from the previous audit, to improve measuring and assessing effectiveness of e-Business projects; and
- Chapter 5 reviews the DEEWR's implementation of recommendation 5 relating to managing e-Business system changes.

2. IT Governance

This Chapter considers whether DEEWR implemented the ANAO's recommendation on improving IT governance through clarifying the roles and responsibilities of its IT committees.

IT governance

2.1 The previous audit drew on internationally recognised better practice principles[14] in considering DEEWR's e-Business and IT governance. The principles affirm that:

- responsibility for approving IT and e-Business strategies, budgets and structures resides at board level, and are regular items for discussion by the board;
- the management 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 follow-up the implementation of agreed recommendations.[15]

2.2 The Australian Standard for IT governance draws together key elements of the better practice principles used in the previous audit in the following definition:

> *(IT governance is) the system by which the current and future use of (IT) is directed and controlled. It involves evaluating and directing the plans for the use of (IT) to support the organisation and monitoring this use to achieve plans. It includes the strategy and policies for using (IT) within an organisation.*[16]

[14] These were Control Objects for Information and related Technology (CoBIT) principles. CoBIT is a set of better practices for IT management developed by the Information Systems Audit and Control Association (ISACA) and the IT Governance Institute (ITGI) <http://www/isaca.org>.

[15] ANAO Audit Report No.33 2002–03. p. 32.

[16] Standards Australia, 2005 *AS 8015—2005: Corporate governance of information and communication technology. p*. 6.

Findings on IT governance from the previous audit

2.3 The previous audit examined the roles, responsibilities and operations of four committees in DEEWR with a direct concern with IT governance. The four committees were:

- The Corporate Leadership Group (CLG), chaired by the Secretary, and membership comprising the Deputy Secretaries and Group Managers,

  > *is responsible for the efficient, effective and ethical corporate governance of the Department. The committee also manages corporate and strategic portfolio policy issues.*[17]

- The Audit Committee, chaired by one of the Deputy Secretaries, with membership drawn from the department's senior executive team, and with two external members,

  > *provides the Secretary with assurance in relation to financial reporting, maintaining an efficient system of internal controls and promoting high performance and strong accountability.*[18]

- The Corporate Information Technology Committee (CITC) with responsibility for the IT functions in DEEWR, is one of the six strategic committees that advises and supports the Executive through the CLG, introduced above. At the time of the previous audit, the CITC was chaired by the Group Manager with responsibility for IT.[19]

- The Information and Business Technology Committee (IBTC) is a sub-committee of the CITC, chaired by the Group Manager with responsibility for IT.[20] IBTC has responsibility for providing advice to the CITC on business technology and information management polices and strategies.

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17 DEST 2007: *Annual Report 2006–07*. p 231.

18 ibid, p. 231.

19 CITC is currently chaired by the Deputy Secretary with responsibility for Information Services. Membership is comprised of the CIO, ISG Branch Managers, the Chief Finance Officer and four business group representatives, appointed on a rotating basis.

20 The Group Manager with responsibility for the IT function is the CIO. Membership comprises representation from most of the Department's business groups, all of its corporate groups, the Chief Audit Officer and branch managers from ISG.

2.4 The ANAO identified in the previous audit that IT and e-Business governance in DEEWR were satisfactory in that:

- responsibility for budgets and structures resided with the CLG;
- IT and e-Business were included in the internal audit program and were monitored by DEEWR's Audit Committee; and
- overall structures were appropriate, although the relationship between CITC and IBTC was not clear, particularly in the context of their roles and responsibilities for e-Business. Both committees had responsibility for funding projects, with IBTC seeking CITC endorsement before forwarding the projects to CLG for approval. Although the CITC was nominated as one of DEEWR's senior ongoing management committees and the IBTC was not, both had sought CLG's approval for funding and projects.

2.5 In addition, while the four committees examined by the ANAO in 2003 had put in place most of the more important elements of a committee charter, neither the CITC nor the IBTC assessed their achievements on an annual basis.

2.6 In order to address the issues of clarity of roles and responsibilities of the IT committees and assessment of committee achievements, in 2003 the ANAO made the following recommendation:

Original recommendation 1: The ANAO recommends that DEEWR clarify the respective roles and responsibilities of its Corporate Information Technology Committee and its Information and Business Technology Committee. In doing so, DEEWR 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.

DEEWR response: *Agreed. (DEEWR) 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.*

Findings on IT governance from the follow-up audit

2.7 DEEWR has implemented this recommendation. In April 2003 shortly after the completion of the previous audit, DEEWR developed and implemented committee charters for the CITC and IBTC. These charters were further refined following reviews in 2004, with the CITC agreeing to a further review of roles at its September 2007 meeting. A comparison of the leadership,

authority, roles and responsibilities, and terms of reference of the two committees showed that:

- CITC draws its authority from, and reports to, the CLG and the Executive, while the IBTC draws its authority from, and reports to, the CITC;
- CITC is chaired by the relevant Deputy Secretary, and includes in its membership, amongst others, the Chief Information Officer (CIO), the Chief Financial Offficer and an external adviser. The IBTC is chaired by the CIO, and includes representatives from each of the major areas across the department; and
- each committee has a distinct role and complementary responsibilities.
  - The IBTC provides a broad based consultative forum in considering and evaluating IT strategies and investments; and
  - the CITC accepts advice on these issues from the IBTC, considering them in the context of the department's overall business.

2.8 The key issues leading to ANAO's 2003 recommendation were the overlap in responsibilities in the areas of IT strategic planning and determining IT projects for funding, and both committees having the same chair. The department has adequately addressed each of these through the revisions to the committees' charters.

Operations of the CITC and IBTC in line with their charters

2.9 The minutes and agenda papers of the CITC and the IBTC demonstrate operations of the IT governance committees in line with their charters. Examples of these operations, including those associated with the annual work programs and review activities of the committees, include:

- reporting by the IBTC only to the CITC rather than to the CITC and CLG as was indentified in the previous audit;
- annual work programs in line with the committees' charters;
- consideration by the IBTC of detailed proposals, for example, in determining priority for IT project funding with recommendations to the CITC. The CITC reviews and makes decisions on these recommendations;

- the IBTC's consideration of the progress of work program items with reporting to, and consideration by, the CITC, such as quarterly reporting of IT projects whose funding has been approved by the CITC; and
- the IBTC's consultations for the mid-term review of the 2004–2007 IT Strategic Plan. The IBTC proposed changes to the Plan based on the outcomes of these consultations, and the CITC considered the IBTC's proposal.

2.10 Through a review of the minutes of the IBTC over a period of 18 months, and of the CITC over a period of three years, no incidents were identified of either committee functioning outside its terms of reference. This has resulted in both committees operating with clear lines of authority and without unnecessary duplication of effort, leading to improved efficiency in the operation of their work.

2.11 On this basis, the ANAO concluded that the department had implemented Recommendation 1 from the previous audit.

DEEWR's comments on findings on IT governance

2.12 DEEWR notes ANAO findings on IT governance.

3. IT Applications – TYIMS and PRISMS

This Chapter examines whether DEEWR implemented ANAO's recommendations on improving the data quality held on two of its major IT systems, TYIMS and PRISMS.

Introduction

3.1 The previous audit report affirmed that sound governance would provide assurance that DEEWR's IT business applications[21] met the requirements of the Government, the business owners, DEEWR's clients, and other stakeholders.

3.2 In order to assess the effectiveness of the governance framework in meeting the requirements of the stakeholders of DEEWR's IT business applications, the ANAO selected two business applications for close examination. These were the Training and Youth Internet Management System (TYIMS) and the Provider Registration and International Students Management System (PRISMS). The ANAO analysed the business rules[22] for each application, and then assessed whether the data held by each application was accurate, complete, consistent with its business rules and unique (that is, not duplicated).

Findings on TYIMS data from the previous audit

3.3 At the time of the previous audit, the New Apprenticeship scheme was in place. New Apprentice Centres (NACs) were pivotal to the scheme's operation. DEEWR contracted the NACs to:

- provide information on New Apprenticeship options to job seekers;
- market and promote New Apprenticeships in local areas;
- administer Commonwealth incentive payments to employers;
- work with State/Territory Training authorities to provide integrated services; and
- establish effective relations with the Commonwealth's Job Network providers, training providers, schools and other organisations.

[21] IT business applications are programs designed to perform a specific function directly for the end-user.

[22] Business rules provide the guidance for the operation of IT applications. They can be drawn from relevant legislation and program guidelines.

3.4 DEEWR contracted NACs on a fee-for-service basis for each apprenticeship they arranged. At the time of previous audit, the department had contracts with 300 NACs,[23] paying them $111 million in 2002–03.[24]

3.5 DEEWR implemented TYIMS in April 2001 primarily to support the contract management and operation of NACs, including providing for NACs to claim fees for service payments. The ANAO identified in 2003 that the TYIMS data the audit analysed were generally accurate, complete, consistent, current and unique. There was one key exception to this finding which was that there were large numbers of doubtful incomplete cases as at October 2002. Such cases related to TYIMS' records of apprenticeships that would have been expected to be finalised prior to July 2001, but were not. In particular, for over 44 000 such records, DEEWR had a lack of clarity in:

- the amount it owed to NACs for final payments of successful completions;
- the accuracy of payments already made to NACs; and
- the performance information on the number of active cases being managed by NACs and on the number of successful apprenticeship completions.

3.6 In order to provide direct information to the NACs for action on such incomplete records, the ANAO made the following recommendation:

Original recommendation 2: The ANAO recommends that DEEWR upgrade the Training and Youth Internet Management System (TYIMS) 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.

DEEWR response: *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.*

(DEEWR) 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.

[23] DEST 2003: *Annual Report 2002–03.* <http://www.dest.gov.au/annualreport/2003/4.htm>.

[24] DEST: *Portfolio Budget Statements 2003–04*, *Budget Related Paper No. 1.5.* p. 82. <http://www.dest.gov.au/archive/budget/PBS/2003/pdf/part_c_outcome_2.pdf>.

Findings on TYIMS data from the follow-up audit

3.7 DEEWR implemented this recommendation, completing the actions outlined in their response to the recommendation. The number of doubtful incomplete cases has decreased by two-thirds, but there remained a number of doubtful incomplete cases, as outlined in the following paragraphs.

3.8 DEEWR acted in two key areas to address this recommendation as well as the findings leading to the recommendation. These were through enhancements to TYIMS, and to its contracts with the Australian Apprenticeship Centres (AACs), the successors to the NACs.

Enhancements to the TYIMS system

3.9 State and territory governments are responsible for recording completions of Australian Apprenticeships and for issuing relevant certificates for successful completions. State and territory governments now usually enter the 'completions' data into TYIMS. Records on apprenticeship completions held by state and territory governments are electronically transferred to TYIMS, allowing timely entry of TYIMS completion data. Records held by the New South Wales (NSW) State Government are an exception. NSW Department of Education and Training (DET) data on completions currently are not electronically transferred to TYIMS, rather the NSW AACs enter data into TYIMS manually. NSW DET advised that it had recently obtained approval to make systems changes, allowing electronic transfer of completions data by November 2008. This systems change was agreed by DET as part of the annual review of the bi-lateral funding agreement between the Federal Government and NSW under the 2005–08 Commonwealth-State Agreement for Skilling Australia's Workforce.

3.10 In addition to electronic transfers from state and territory governments, each AAC can record in TYIMS that an apprenticeship was completed, provided it has the necessary documentation to demonstrate an apprenticeship completion as specified by the relevant state or territory government.

3.11 Since the last audit, DEEWR had improved TYIMS to assist in identifying doubtful incomplete cases. These improvements were in line with the actions that DEEWR agreed to undertake to implement recommendation 2 from the previous audit. In particular:

- in 2003, an exception report was developed that identifies for each NAC finalised apprenticeship records for the previous month and

records that are expected to be finalised in the coming month.[25] This was in line with recommendation 2 from the previous audit. However, this report does not include records of apprenticeships expected to have ended prior to a month previously; and

- in 2006, an improved enquiry facility was introduced for extracting, reporting and analysing TYIMS data.[26] This enquiry facility,[27] allowed easy extract of data to identify records of apprenticeships not recorded as completed, but expected to have ended prior to one month previously.

Contractual incentives for AACs to ensure 'completed' records up-to-date

3.12 At the time of the previous audit, NACs were entitled to a fee averaging $954 per completion of each apprenticeship that they arranged. A final payment of 10 per cent of this fee (or $95 per completion) was withheld until the successful completion of the apprenticeship.

3.13 Under the current contractual arrangements with AACs, the average payment to AACs per completion is $1180.[28] The percentage of the fee withheld until completion of the apprenticeship, is 25 per cent or approximately $295 per completion under the current contract. DEEWR does not make this final payment until the AAC has verified in TYIMS that the requirements for the completion of the apprenticeship have been met. By increasing the average final payment from $95 to $295 per completion, DEEWR provides AACs with greater incentive to:

- assist apprentices to complete their training; and
- record completions of apprenticeships in TYIMS in a timely way.

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25 'Registrations Past Expected End Date' report.

26 In 2006, a 'dashboard' interface was added to TYIMS, DASHmap, and the report, 'Registrations Past Expected End Date' was migrated to this new software. The interface added enhancements allowing DEEWR to drill down, not only to the AAC level, but to regional, state and national levels. AACs are able to access their own data as well as the aggregated levels. The exception report also has the added feature of excluding those records where the AAC has entered a reason for non-completion.

27 This facility is known as 'DASHmap'.

28 This is based on an estimated 141 500 completions in 2007, and a 2007–08 Budget Estimate for payments to AACs of $167 229 000. DEST: *Portfolio Budget Statements 2007–08*, *Budget Related Paper No. 1.5*.p. 82 and 86.

<http://www.dest.gov.au/portfolio_department/dest_information/publications_resources/resources/budget_information/budget_2007_2008/pbs.htm>

Effectiveness of the changes

3.14 In order to measure the effectiveness of the changes, the audit compared the doubtful incomplete cases at the time of the previous audit (October 2002) with current data (December 2007).[29] Table 3.1 shows the number of such records in total and as a percentage of all incomplete records at the time. In particular, the number of such records has decreased by two-thirds over the period between 2002 and 2007.

Table 3.1

Comparison of TYIMS records, October 2002 and December 2007

Date	Total Apprentice-ship Records	Records recorded as completed	Records without completion recorded	Doubtful incomplete apprentice-ship records	% doubtful incomplete apprenticeship records
	(a)	(b)	(c)=(a)-(b)	(d)	(e)=((d)/(c))*100%
October 2002	1 096 861	608 482	488 379	44 423	9.1
December 2007	2 533 803	2 047 222	486 581	14 567	3.0

Source: DEEWR data, ANAO analysis.

3.15 Table 3.2 shows apprenticeship records for each state and territory recorded on TYIMS in December 2007. Table 3.2 shows that in December 2007, of the 14 567 doubtful incomplete apprenticeship records, 12 440 records (or 85 per cent) came from apprenticeships registered in NSW and Victoria. This compares with 296 708 records (or 61 per cent) from NSW and Victoria from all 486 581 records with no completion recorded.

[29] At October 2002, doubtful incomplete cases refer to records of apprenticeships that would have been expected to be finalised prior to July 2001 (15 months beforehand), but were not. At December 2007, doubtful incomplete cases refer to records of apprenticeships that would have been expected to be finalised prior to September 2006 (15 months beforehand), but were not.

Table 3.2

TYIMS records as at 4 December 2007 by State/Territory

State/ Territory as at 4/12/07	Total Apprentice-ship Records	Records recorded as completed	Records without completion recorded	Doubtful incomplete apprentice-ship records	% doubtful incomplete apprenticeship records
	(a)	(b)	(c)=(a)-(b)	(d)	(e)=((d)/(c))*100%
NSW	727 784	555 665	172 119	6 805	4.0
Vic.	760 860	636 271	124 589	5 635	4.5
Qld	508 628	415 090	93 538	987	1.1
WA	181 058	144 166	36 892	234	0.6
SA	205 279	169 642	35 637	692	1.9
Tas.	88 433	74 360	14 073	86	0.6
ACT	39 845	33 489	6 356	83	1.3
NT	21 916	18 539	3 377	45	1.3
Total	**2 533 803**	**2 047 222**	**486 581**	**14 567**	**3.0**

Source: DEEWR data, ANAO analysis.

3.16 As discussed earlier, the NSW DET does not electronically transfer completions data to TYIMS, but the Victorian State Government agency does. This indicates that the relatively high number of doubtful cases is not necessarily due to delays by NSW DET in implementing electronic transfer of data. The design of the exception reporting, however, does not highlight all of the doubtful cases identified in the previous audit. In particular, as discussed in paragraph 3.11, the exception reports only identify records of apprenticeships expected to be completed in the previous month rather than in the previous 15 months or more. The doubtful cases identified in the previous audit would not have been highlighted through such exception reports, and some of these could have carried forward as doubtful cases to the current audit.

Impact of doubtful incomplete records

3.17 Similar to the earlier audit, the data held on the 14 567 apprenticeships (that is, the doubtful cases) does not provide any indications as to whether these were successfully completed, affecting the certainty of DEEWR's

performance reporting and the amount that DEEWR owes NACs for final payments. [30]

3.18 The ANAO considers that investigation of this issue will clarify the status of over 14 000 apprenticeships, as well as DEEWR's current liabilities for final payments. The ANAO suggests that DEEWR follow up with relevant AACs (or former NACs) and state and territory government authorities responsible for approving completions, the current status of the registrations relating to 'legacy' records, and revise TYIMS data as necessary to reflect these entities' responses. Priority should be given to such apprenticeship records from NSW and Victoria because of their larger numbers.

DEEWR's comments on findings on TYIMS data

3.19 DEEWR notes the findings relating to TYIMS data. The department is of the view that these remaining records do not automatically generate a liability payment. Nevertheless, the department is intending to review the incomplete records that have been identified as part of the audit by the end of this financial year. This process will clarify the status of these records held in the TYIMS database.

Findings on PRISMS data from the previous audit

Interactions between students, education providers, DEEWR and DIAC

3.20 PRISMS assists DEEWR meet its responsibilities under the *Education Services for Overseas Students Act 2000* (ESOS Act). The ESOS Act aims include (amongst others):

[30] If all the 14 567 records related to successful completions, DEEWR would be liable for a maximum of $1.37 million in final payments. These records are likely to relate to registrants signed by NACs (rather than AACs), with final payment of 10 per of the fee on successful completion. The average payment to NACs in 2005–06 is estimated at $940 per completion (or $94 per final payment), based on payments to NACs totalling $130.83 million and 138 700 completions. The maximum liability of $1.37 million is approximately one per cent of DEEWR's annual expenditure for AAC and NAC services. It is in the NACs' interests to ensure that successful apprenticeship completions are recorded on TYIMS in order to claim final payments. Consequently, the ANAO does not expect DEEWR to be liable for all of the maximum amount estimated.

DEST, *Portfolio Budget Statements 2006–07,* p. 67 and DEST, *Annual Report 2005–06,* Table 4.3.

<http://www.dest.gov.au/portfolio_department/dest_information/publications_resources/resources/budget_information/2006/pbs.htm>,
<http://www.annualreport2006.dest.gov.au/chapter_four/achievements/output2_2.htm>.

- reduction in the fraudulent or dishonest use of confirmation of enrolment forms for visa fraud, and strengthening compliance monitoring; and
- provision of more systematic and effective arrangements for the Commonwealth to engage with providers that facilitate student breaches of their visa conditions.

3.21 An overseas student wishing to study in Australia, must go through a number of steps that generate data transfers between DEEWR and DIAC. These are outlined as follows:

- enrolling in the course. An applicant for a student visa must enrol in a course and with an education provider registered with DEEWR. Once the provider confirms the student's enrolment, the provider creates an electronic Confirmation of Enrolment (eCoE) on DEEWR's IT system, the Provider Registration and International Students Management System (PRISMS). The provider sends the eCoE electronically to the student. DEEWR electronically sends the eCoE to the DIAC, by a data transfer from PRISMS to DIAC's IT systems[31];
- applying for a student visa. In applying for a student visa, the student must provide DIAC with evidence of an eCoE. An Immigration officer accesses DIAC systems to check the student data prior to issuing a student visa. DIAC advises DEEWR of the issuing of the visa through data transfers between its systems and PRISMS; and
- arriving in Australia. DIAC advises DEEWR of the student's arrival in Australia through data transfers between its systems and PRISMS.

3.22 Once the student arrives in Australia, there are a number of changes that can trigger exchange of information between DIAC and DEEWR. These include:

- advice from the provider that the student has commenced study;
- the student's application to DIAC for a work-rights visa. As an overseas visitor can only hold one type of visa at any one time, the student visa

[31] A number of DIAC's IT systems process student data, including Integrated Client Services (systems) Environment and Immigration Records Information System.

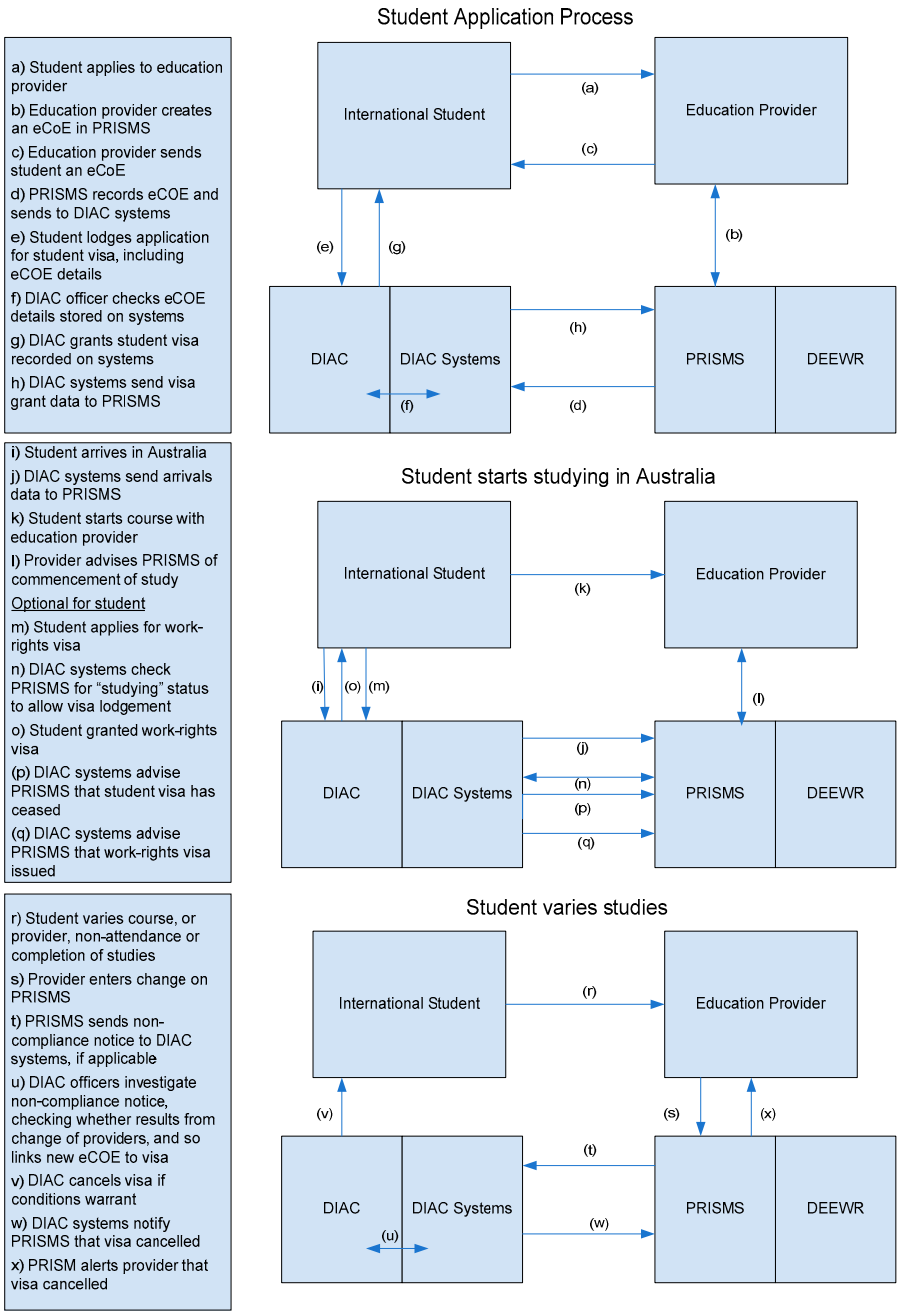
ceases upon issuing a work-rights visa. Many overseas students apply for a work-rights visa, with DIAC issuing 104 153 in 2006–07;[32] and

- notification by the provider of a change of course, non-attendance at a course, change of service providers, and completion of studies.

Details of these information/data flows are in Figure 3.1.

[32] Amendments to *Migration Regulations 1994* came into effect on 26 April 2008. As a result of these changes, people granted student visas will automatically receive permission to work with their visa grant. Those people granted student visas prior to 26 April 2008, still need to apply separately for a work-rights visa.

Figure 3.1
Interactions between Students, Education Providers, DEEWR & DIAC



Source: DIAC data, ANAO analysis.

Need for improved data transfer and reconciliation arrangements for PRISMS data

3.23 In the previous audit, DEEWR 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 DEEWR or DIAC system over 15 months. Examples of the errors were: notification of changing eCoEs from cancelled to approved not being taken up by DIAC and having to be completed manually; visa details not transmitted from DIAC to DEEWR; and responses to student course variations not transmitted from DIAC to DEEWR. Further, there was no reconciliation of data between the two departments.

3.24 In order to address these data transfer and reconciliation issues, the ANAO made the following recommendation:

Original recommendation 3: The ANAO recommends that DEEWR initiate discussion with DIAC with a view to developing a Memorandum of Understanding (MOU) to clearly define each agency's responsibility for maintaining the timeliness, accuracy and completeness of the data transfer between the agencies, and each agency's responsibility for timeliness of system changes. In doing so, the ANAO recommends that DEEWR seek to resolve the discrepancy in PRISMS error rates arising from incomplete transfer of data between DEEWR and DIAC.

DEEWR response: *Agreed. (DEEWR) recognises the merits of formalising data management responsibilities and protocols between the Department and (DIAC) such as through a Memorandum of Understanding and is addressing data transfer issues raised in the audit.*

Findings on PRISMS data from the follow-up audit

3.25 DEEWR has implemented recommendation 3 from the previous audit. DEEWR and DIAC have implemented an agreement on data transfer which they documented in a Memorandum of Understanding (MOU), titled *Protocol for the Development and Enhancements of Electronic Data Exchange and Systems Interoperability for DEEWR and DIMIA Relating to International Education*. Despite this, the arrangement has not been wholly effective in addressing data transfer issues in a timely way. In particular, DIAC has competing priorities for expenditure on IT projects, and so has not undertaken all the IT changes to support data transfer. This has impacted on the accuracy and completeness of PRISMS' data, which led to the original recommendation.

3.26 A five year MOU has been in place between DEEWR and DIAC since December 2003. The MOU outlines the respective roles and responsibilities for data transfer between the departments' systems PRISMS and DIAC systems, the frequency of the data transfer, the routine for checking whether the transfer

fault recovery strategies. The MOU also identifies the governance arrangements for the agreement, which operates under the guidance and monitoring of a joint senior management committee, DIAC/DEEWR Strategic Steering Committee.[33]

Data transfer issues

3.27 DEEWR reported that there were on-going issues in the data exchange between DIAC and DEEWR. These related to the timeliness of the data transfer to DEEWR arising from a number of problems with DIAC IT systems, and inadvertent changes made by DIAC compliance officers to data transferred from DEEWR. Each of these issues impacted on the completeness and accuracy of PRISMS records, as well as resulting in up to 1000 alerts per day being sent to education providers advising them incorrectly of student visa cancellations. DIAC has since addressed these problems through manual processes and interventions and reliance on DEEWR's technical resources.

3.28 DIAC confirmed to the ANAO that most of the issues that affect data transfer between the departments could be addressed through changes to, and maintenance of, its IT systems. In this regard, some projects had been completed and others were underway. However, DIAC reported that its new IT system[34] has budget priority. Until this new system is completed in 2010, DIAC plans to handling issues such as those outlined above through manual processes and interventions.

3.29 The processing and transfer of the data currently affects a range of DIAC's IT systems, which increases the cost and complexity of making IT changes. For example, DIAC costed one such change required to address current data transfer issues, at $1.3 million and a further at $300 000. These costs are significant when compared with the annual costs of manual processes that currently address the IT system issues. Further, if funding were available to improve the data transferred, any changes would need to be approved by a number of different IT systems boards to fully determine the implications of each proposed change and the relative priority of the proposed change. As the data being transferred to and from DEEWR will continue to affect a range of programs across DIAC under the new system, there is a significant risk that

[33] This committee is made up of senior managers, including a group manager from DEEWR and three division heads from DIAC, and is supported by an MOU Working Group.

[34] This IT system is known as Systems for People (SFP).

issues affecting data transfer between the two departments will not be addressed as an early priority in the development of the new system.

Actions taken to address accuracy and completeness of data

3.30 DEEWR has undertaken a number of actions to minimise the impact of problems with the transfer of data from DIAC, such as implementing delays in release of alerts to providers, allowing service providers to correct one error per student recorded in PRISMS, and making manual changes in the PRISMS database when advised of issues by education providers.

3.31 In addition DEEWR and DIAC agreed to compare 1.3 million records for completeness. While originally planned for completion in December 2007, the project has been delayed significantly as DIAC had initially provided DEEWR with an incorrect data set.

The effectiveness of the MOU in addressing the data transfer issues

3.32 Based on the minutes of meetings held over the past twelve months, it is clear that the MOU Working Group which supports the DIAC/DEEWR Strategic Steering Committee, is actively engaged in achieving successful data transfer. Subsequent to raising the data transfer issues with both departments, the ANAO was advised that the Working Group developed a list of projects to address outstanding data transfer problems and to improve the system. This project list was endorsed by the Strategic Steering Committee in March 2008.

3.33 The March 2008 meeting of the Strategic Steering Committee was its first in over 14 months. The lack of regular meetings has limited the Committee's ability to operate effectively over the past year. Subsequent to raising this issue with both departments, the ANAO was advised that at its meeting in March 2008, the Strategic Steering Committee agreed to review the MOU.

Impact of data integrity issues

3.34 The data integrity issues potentially affect the confidence that education providers have in the PRISMS' data. Currently, DEEWR collects $8 million per annum from registered education providers, calculated on a self assessment basis with a base fee and a fee per international student enrolment. DEEWR had planned to introduce automated invoicing from the beginning of 2008 using PRISMS data. This has been delayed by 12 months to provide the department with time to try to address some of the data inaccuracies. To date,

data integrity has not affected the level of satisfaction with PRISMS of individual education providers, based on early feedback from a users' survey commissioned by DEEWR. The education providers' current level of satisfaction could change if they perceive that they are not receiving value for money from their registration fees.

3.35 The interim solutions implemented by DIAC to support the accuracy and completeness of the data transferred to DEEWR have adverse impacts on the data integrity of PRISMS. As the largest services export, education services are significant for Australia's balance of payments, with international students contributing $11.7 billion in export earnings in 2006–07.[35] The significance of this sector to Australia's economy highlights the importance of robust systems to support this sector and of effective means of addressing data issues as they arise.

Recommendation No.1

3.36 To achieve the outcomes stated in the Memorandum of Understanding (MOU) titled Protocol for the Development and Enhancements of Electronic Data Exchange and Systems Interoperability for DEEWR and DIMIA Relating to International Education, the ANAO recommends that DEEWR and DIAC:

(a) prioritise and set time-frames for the resolution of issues affecting the accuracy and completeness of data on overseas students, and the prompt transfer of data between the departments; and

(b) review the operation of the MOU.

DEEWR's response

3.37 DEEWR agrees to the ANAO recommendation 1(a) and 1(b). The working group reporting to the PRISMS steering committee has prioritised the data accuracy, completeness and prompt data transfer issues and is working to a schedule for their resolution. The working group has also commenced the review of the MOU between DEEWR and DIAC.

DIAC's response

3.38 Agreed. The PRISMS steering committee has agreed to review the MOU and has endorsed a list of projects to address PRISMS data transfer issues.

[35] Information provided to the ANAO in January 2008 by DIAC.

4. Measuring and Assessing the Effectiveness of e-Business Projects

This Chapter examines whether DEEWR implemented ANAO's recommendations on identifying measures and targets for assessing the success of e-Business projects, and conducting such assessments through reviews.

Importance of measuring and assessing project effectiveness

4.1 'Effectiveness' means the achievement of the objectives or other intended effects of activities.[36] An e-Business project is effective if it achieves through its objectives, business benefits as represented by improvements to, for example, client/business partner access, quality of service, responsiveness to client and business needs, and improvements to departmental operations.

4.2 To determine if a project achieves its objectives, performance indicators need to capture key information about the planned improvement. At the start of the project, the measure of each performance indicator's base-line needs to be captured and targets set. After the project is completed, the outcomes represented through the performance indicators are measured and compared against the targets to assess how successful the project has been in achieving its planned objectives. Important elements of project planning are identifying the project objectives and associated business benefits, establishing the performance indicators, planning the collection of information, capturing baseline information, and determining how and to whom the project outcomes will be reported.

4.3 Project post-implementation reviews (PIRs) primarily are tools to identify the lessons learnt on project management, collecting and capturing these to provide the basis for planning, execution, products and outcomes of future projects. They can include an assessment of the extent to which objectives and associated business benefits are achieved, noting that the latter may not be realised until some time after the project has been completed.

[36] Audit & Assurance Standards Board of the (former) Australian Accounting Research Foundation (July 2002) *AUS806 Performance Auditing.* <www.auasb.gov.au/docs/AUS806_07-02.pdf>.

Findings on including project measures and targets, and assessing project outcomes from the previous audit

4.4 The previous audit considered how DEEWR measured e-Business project effectiveness and used PIRs as a means of ensuring appropriate standards for web-sites and e-Business applications.

4.5 The previous audit findings related to the way DEEWR measured and assessed the effectiveness of IT and e-Business projects, both key elements of project management. For this reason, the status of the related recommendations are both addressed within this Chapter.

Measuring project effectiveness

4.6 At the time of the previous audit, while DEEWR included business benefit statements in its e-Business project proposals, performance indicators to measure the base-line and set targets were not included in the business proposals that the ANAO examined. At that time, DEEWR was in the process of implementing a methodology to guide its IT systems development, DEST Systems Development Methodology (DSDM). The ANAO considered that the DSDM guidelines for measuring benefits in business proposals were appropriate.

4.7 In order to ensure that DEEWR adequately measured the effectiveness of its e-Business projects against relevant targets, as well as fully achieved the benefits of its DSDM, in 2003 the ANAO made the following recommendation:

Original recommendation 4: The ANAO recommends that DEEWR 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.

DEEWR response: *Agreed. (DEEWR'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. (DEEWR) is focusing on improvements in these guidelines and greater consistency in their application.*

Assessing project effectiveness

4.8 The previous audit identified that the department's system development methodology included a template for post-implementation reviews which DEEWR intended to make mandatory for IT projects. This template identified items for financial analysis, including data on proposed

and actual returns on investments. However, it was less detailed on the requirements for assessing the realisation of non-financial benefits, providing a table to be completed with a narrative description of the benefits and results.

4.9 In the previous audit, the ANAO identified that PIRs were not conducted consistently, nor did they have a uniform scope. Further, there was 'a lack of formal and consistent analysis of actual costs and realisation of actual benefits in PIRs'.

4.10 The ANAO recognised at the time that IT and e-Business projects varied in the size of the change to an IT system and its anticipated impact. To take this into account while addressing its finding on PIRs, the ANAO made the following recommendation:

Original recommendation 6: The ANAO recommends that DEEWR consider a two-tier approach to post-implementation reviews based on the level of risk inherent in the change. After a periodic release, DEEWR 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.

DEEWR response: *Agreed. (DEEWR) 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.*

Findings on improvements to the methodology for measuring and assessing project effectiveness from the follow-up audit

4.11 As identified at paragraph 1.11, DEEWR replaced DSDM, the methodology that it introduced at the time of the previous audit to guide its IT systems developments. In February 2004, DEEWR introduced its PMF to improve the value realised from its business technology projects.[37] The PMF drew from well established, widely used approaches to IT governance, project management and software development.[38] This framework includes guidelines

[37] The PMF was a key measure within the Business Technology Investment Framework. This Framework was introduced to improve decision-making on business technology investment in IT projects and project management to achieve the outcome envisaged that led to the investment decision.

[38] These approaches included: project management methodologies, PRINCE2 and PMBOK; Microsoft Solutions Framework; and Capability Maturity Model Integration.

and templates on a full range of project management processes. The two key elements of the PMF most relevant to measure and assess effectiveness are the Value Management Plan and the Post-Implementation Review Report. The Value Management Plan is an important initiative by DEEWR to:

- define the key elements of a project's expected business value at the project's beginning; and
- set out the process and accountabilities for tracking the expected value over the project lifecycle and in the longer term.

4.12 As result of reviewing its process for assessing IT projects for investment, DEEWR has developed detailed guidance to assist project owners identify value from projects[39] and now has a mandatory requirement for Value Management Plans for all funded projects.

DEEWR recognises that its project management capability needs improving

4.13 In May 2005, DEEWR commissioned an external consultant to review the maturity of its PMF and associated practices. The review confirmed that the PMF guidelines, templates and tools were sound. However, the review identified that the PMF lacked some elements normally found in project management frameworks, such as methodologies to measure effectiveness. The review also identified the need for improvements to the knowledge, skills and experience of those involved in IT projects. The review made recommendations on developing training packages, as well as capturing and sharing 'lessons learnt' from projects.

4.14 In May 2006, DEEWR developed a project plan to address these recommendations, the *Portfolio and Project Management Capability Improvement Program*. A report in November 2007 to the department's Audit Committee, identified progress against this plan, but also emphasised the need for improvements to project management knowledge and competencies.

4.15 The department established a Project Management Office (PMO) in September 2007, to provide a focus for improving project management across the department. The PMO reengaged the external consultant to repeat the project management maturity review, completed late in the audit. DEEWR advised of its intentions to revise the project plan for improving project

[39] Guidance was provided on the use of results chain mapping to improve the identification of value to be delivered by projects as well as assumptions that might impact on the realisation of that value.

management knowledge and competencies based on the outcome of this recent review.

Findings on measuring project effectiveness from the follow-up audit

4.16 DEEWR has implemented Recommendation 4 of the previous audit to the extent of its agreed actions against the recommendation. It has guidance and procedures for measuring IT and e-Business project effectiveness, as discussed in paragraphs 4.17–4.18. However, DEEWR is inconsistent in its application of this guidance, as discussed in paragraphs 4.19–4.22. As such DEEWR has only partially implemented the requirement of this recommendation to ensure that business cases align with these guidelines. The initiatives that DEEWR has undertaken to date provide a strong indication that the department is progressing its capability development in this area.

Guidance and procedures for measuring project effectiveness

4.17 The Value Management Plan Guidelines outline requirements for project managers to identify business benefits ('business value') to be realised from the project, and to identify the different elements of these business benefits ('value factors'). The Guidelines direct the project manager to outline the performance indicators that will be used to assess the value factors, how the indicators will be measured and by whom, and the means of tracking and reporting on the results. The Guidelines also require a 'value register' to be completed. For each value factor, the value register identifies the indicators that will be applied, as well as the base-line results and the targets expected from these performance indicators following project completion. The information in the value register forms the basis for measuring the overall effectiveness of the project.

4.18 The ANAO considers that the Value Management Plan, if applied to each e-Business project in line with the Guidelines, would meet the requirements of Recommendation 4 of the previous audit.

There is inconsistent application of the requirements of the Value Management Plan

4.19 The ANAO assessed 14 e-Business projects that the department funded in 2005–06 and 2006–07. Business benefits were identified in each of these projects. However, Value Management Plans were not completed for three projects. Value Management Plans for the other 11 projects were not completed

consistently, decreasing the value of these plans as a key means of capturing information on project effectiveness. The specific issues identified are outlined below.

- Means of measuring performance indicators. None of the plans outlined how the performance indicators will be measured. However, four plans identified who has responsibility for collecting this information.
- Not all benefits had performance indicators.
  - Two plans did not identify any performance indicators against their value factors.
  - For four plans, the listing of value factors was internally inconsistent, with no performance indicators established to measure some project benefits.
  - A further three plans separately identified 'success factors', which were essentially value factors as they were elements of benefits expected to result from the project, but again with no performance indicators with which to measure their outcomes.
- Definitions of the performance indicators. Most of the performance indicators associated with value factors were not well defined but, on the basis of their qualitative descriptions, indicators could easily be developed that would allow measurement and reporting.
- Baseline results and targets. No baseline results were included for any performance indicators, and with the exception of two indicators across all the plans, no targets were set.
- Performance indicators to identify a project's specific contribution to the benefit. Two of the plans examined related to separate projects contributing to the development of a single IT system. Both had common value factors and associated performance indicators that related to the benefits that would arise from the IT system itself rather than each project's individual contribution to the IT system. The performance indicators identified were not capable of measuring the contribution of each individual project but rather the combination of the two projects.

4.20 These findings suggest the need to improve project managers' understanding of the importance of capturing baseline information on performance indicators associated with business benefits, identifying expected targets, and collecting information on the extent to which the project has met these targets. This is consistent with DEEWR's own assessment of its need to improve project management knowledge and competencies.

4.21 Project managers would therefore benefit from improved guidelines and specialist advice and mentoring through the PMO, on:

- setting measurable performance indicators for business benefits;
- collecting base-line data;
- setting targets; and
- monitoring and reporting progress on the extent to which a project achieves these targets.

4.22 Such advice and mentoring would assist DEEWR build on its progress and initiatives already underway to improve the realisation of benefits from its IT projects and improved its capability in project management. In providing guidance to project managers, the ANAO suggests that DEEWR draw from better practice principles for setting performance measures and process for monitor progress.[40]

Findings on assessing project effectiveness from the follow-up audit

4.23 DEEWR has implemented Recommendation 6 of the previous audit to the extent of its agreed actions against the recommendation. It has guidance and procedures for reviewing project management and evaluating the outcomes of IT projects, but the guidance to project managers on choosing the form and detail of post-implementation reviews (PIRs) is limited (see paragraphs 4.24–4.25). Few PIRs are undertaken, with even fewer adhering to the guidance (see paragraphs 4.26–4.27). As such DEEWR has only partially implemented this recommendation to conduct PIRs, the type of which should be determined by the level of risk inherent by the change.

[40] The principles outlined in the ANAO better practice guides, ANAO *Better Practice Guide -- Administration of Grants* (May 2002), and ANAO and Department of Prime Minister and Cabinet *Better Practice Guide -- Implementation of Programme and Policy Initiatives* (October 2006) on establishing performance indicators and related measurement frameworks are applicable to IT project management. <www.anao.gov.au>.

Guidance and procedures for post-implementation reviews

4.24 DEEWR's PMF has a template that includes guidance on completion of projects. The instructions to project managers at the beginning of this template, identify that the PIR can take two forms:

- *an initial review focussed on whether the project outputs were delivered, and the lessons learnt from the management of the project, undertaken as part of the project closure; and*
- *an assessment of progress against the business benefit targets as established in the project's Value Management Plan, undertaken once the project outputs have been in operation for sufficient time for the benefits to be realised.*

4.25 This two-tiered approach is consistent with recommendation 6 from the previous audit. The template provides project managers with guidance on the completion of PIRs. However, its benefit for project managers could be substantially strengthened by including the following:

- identification of the type of projects which should be subject to more detailed assessment of business benefits against the costs, compared with those that should only be subject to simpler project closure reviews;
- identification of specific issues that should be addressed in an assessment of lessons learnt compared with a business benefit assessment, as the template currently does not identify which sections should be completed for each type of report;
- reference to methodologies that would assist in assessing effectiveness; and
- identification of to whom the PIR should be reported and how it should be disseminated to assist in the management of future projects.

Few PIRs are done, with limited scope

4.26 Of the 14 e-Business projects examined, three were subject to PIRs. One project was subject to a PIR through an internal audit, a lapsing program evaluation[41] and a review of project management was undertaken on a second

[41] A lapsing program is a policy measure for which the Government has not specified on-going funding. A lapsing program evaluation is required by Government to determine whether the program objectives have been met and the appropriateness of continued funding.

project, and the third project was also subject to a review of project management.

4.27 Both the internal audit and the lapsing program evaluation assessed the achievement of business benefits. However, the internal audit report did not provide detail on the extent to which benefits had been achieved, while the scope of the lapsing program evaluation only covered benefits for external stakeholders rather than the full range outlined in the project plan.

4.28 The PIRs that assessed project management made recommendations for future project management, but did not document the full assessment, limiting their value as a resource for communicating lessons learnt.

4.29 These findings are similar to those of the previous audit. In particular, both the occurrence and contents of PIRs are inconsistent. The findings also suggest that project managers do not have a high level of appreciation of the value that PIRs can bring to the department, nor a high level of skill in conducting the reviews.

DEEWR has made progress in developing PIR knowledge

4.30 In late January 2008, the department conducted the first of a series of forums on project management. That forum focussed on the processes at the completion of a project. It distinguished between project review, aimed at reviewing the management of projects themselves, and project evaluation, aimed at assessing the extent to which the project achieved its goals.

4.31 The momentum and knowledge from this forum can be built upon, in terms of governance, guidance and tools. Such developments would assist the management of future projects, as well as provide information and advice on the success of projects.

DEEWR's comments on findings on IT project management

4.32 DEEWR notes that the ANAO has found that the department has implemented Recommendations 4 and 6 of the previous audit to the extent of its agreed actions as outlined in the original audit. The department remains committed to building maturity in this area and has an ongoing program of portfolio and project management maturity improvement.

Recommendation No.2

4.33 To improve IT project management, the ANAO recommends that DEEWR:

(a) identify, as part of project approval process, those key IT and e-Business projects that require assessments of their effectiveness against their targets, with reporting of results to DEEWR's IT committees;

(b) develop templates and guidance for evaluating the effectiveness of the project once sufficient time has elapsed for project benefits to be measured; and

(c) require an assessment of project management at the close of IT and e-Business projects using standardised tools, capturing and communicating the lessons learnt from these projects to continuously improve DEEWR's project management.

DEEWR's response

4.34 Agreed. The department reviews its project prioritisation and approval process annually with the view to building maturity in this area and has an ongoing program of portfolio and project management maturity improvement.

4.35 The department is also committed to improving skills and capability of project managers in completing post-implementation reviews. The department's Project Management Office (PMO) has recently begun to provide facilitation services to help project managers complete these reviews. The PMO also intends to improve guidance for project managers and project sponsors by collating and sharing examples of best practice from completed reviews with existing IT project managers as well as analysing thematic lessons learnt.

5. Managing e-Business System Changes

This Chapter examines whether DEEWR implemented ANAO's recommendation on recording, authorising and tracking application change requests on a single computer system.

The importance of a sound approach to managing system changes

5.1 Change control is an important process to support an agency's IT infrastructure and applications. It aims to ensure the integrity of IT systems by managing changes to them so that:

- IT systems continue to meet business objectives;
- only changes that have been adequately tested are released;
- changes have minimal impact on other applications and the organisation;
- changes are planned to minimise risks;
- implementation and contingency plans are in place;
- documentation is current; and
- interested parties are kept informed of the status of changes.[42]

Findings on IT change control processes from the previous audit

5.2 The previous audit assessed how DEEWR managed IT and e-Business system changes as part of an overall approach to assuring the quality of its websites and its e-Business applications. In particular, the previous audit examined how DEEWR recorded, authorised and tracked changes for its TYIMS and PRISMS e-Business systems.

[42] Factors consistent with CoBIT principles. (Information Systems Audit and Control Association, *Control Objectives for Information and Related Technology. AI6 Manage Changes*. <http://www/isaca.org>.)

5.3 At the time of the previous audit, 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 incomplete data and insufficient or inappropriate authorisations. However, at that time, DEEWR was changing the responsibility and processes for managing IT changes, through guidance provided by its systems development methodology.

5.4 In the previous audit, the ANAO made the following recommendation to support the department's implementation of its systems development methodology.

Original recommendation 5: The ANAO recommends that DEEWR 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.

DEEWR response: *Agreed. Implementation of the new System Development Methodology should ensure consistency in the management of changes to business applications. (DEEWR) 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.*

Findings on change control processes from the follow-up audit

5.5 DEEWR is in the process of implementing recommendation 5 from the previous audit. The department is rolling out a single computer-based system to record, authorise and track application changes, with potential to implement this recommendation. While the department had not at the time completed this implementation, it has a change management process which addresses many, but not all, of the underlying issues that led to the previous recommendation.

DEEWR's IT change control processes

5.6 In early 2005, DEEWR introduced a new IT change control process to 'ensure that a consistent approach to the assessment of change impact, consideration of risk to business continuity, resolution of resource demands and change endorsement is executed by IT application development teams'.[43] Features of this process are outlined below and detailed in Appendix 1.

[43] Information Services Group (2005) *Application Software Delivery* p. 1.

5.7 The IT change control process defines the roles of key stakeholders in implementing an IT change, including personnel responsible for coordinating and controlling change management, and a stakeholder group whose responsibilities include the assessment of any potential impact from the proposed change on other IT applications and systems

5.8 DEEWR has a checklist to support its IT change control process. This checklist guides and records changes and authorisations central to the change control process. The checklist directed each of the relevant stakeholders to consider, complete and endorse key change steps. The checklist is paper-based, but is supplemented by a spreadsheet in which the personnel responsible for change management enter information from the checklist in order to schedule and track changes.

5.9 A weekly IT change control meeting provided a forum for the promulgation of information about the changes proposed and to review the completion of steps required prior to releasing the IT change. The minutes from these meetings supported the consideration of key requirements prior to the release of any software changes.

5.10 Emergency changes to address issues impacting on DEEWR's reputation or its normal business operations could be 'fast tracked' through the change control process with approval from a relevant DEEWR senior executive.

5.11 DEEWR's change control process is consistent with sound principles for IT change control.[44] These are to:

- develop and implement a process to consistently record, assess and rank change requests;
- assess and schedule changes based on business needs;
- assure that any emergency and critical change follows the approval process;
- authorise changes; and
- manage, track and disseminate relevant information regarding changes.

[44] Information Systems Audit and Control Association, *Control Objectives for Information and Related Technology. (CoBIT) AI6 Manage Changes*. <http://www/isaca.org>.

5.12 However, the department's procedures do not require relevant IT personnel to record that they have revised relevant system documentation, including user guides, associated with the IT change.

Implementation of IT change control processes

5.13 The ANAO examined the documentation supporting the release of five e-Business application changes. Three of these changes related to minor maintenance, addressing a software problem, and system releases that included minor application revision. Two changes were significant, resulting from the implementation of e-Business projects funded through the department's IT committees.

5.14 The documentation supporting these changes indicated that the IT change control process described above was followed in most cases. There were however, some variations. In particular:

- one IT project did not use the standard change control process. Rather, it used an IT-based tool for all change requests and approvals specific to the system to which the project related, and
- one of the steps in the change control process[45] was not filled in and approved in three of the checklists examined. The ANAO notes that this step is of minimal risk given that there was other evidence that conditions for release of the changes were adequately assessed prior to the release of the system changes.

5.15 The IT change control processes have improved. However, as outlined in the previous paragraph, issues relating to the use of different change control processes across IT applications and missing authorisation, two of the issues that led to the original Recommendation 5, still remain.

DEEWR is piloting changes that will address the issues identified in the current audit

5.16 At the time of the audit, DEEWR was in the process of implementing an IT application to support its IT change control process. This application is part of a broader set of tools that DEEWR was implementing to support its IT

[45] This was the 'change endorsement' step whereby the responsible officer affirms that all conditions for release have been met and endorses the changes for delivery.

services.[46] Based on the application's design features, its implementation will meet the requirements to implement recommendation 5.

5.17 The application being implemented by DEEWR comprised two key databases:

- a configuration management database, which will record details of all DEEWR's significant IT software applications and systems, and their interrelationships; and
- a change management database, which will record all application change request and faults. The database, aimed at superseding all current change control processes, will track application changes through the change process and require approvals to be recorded by the authorising officer before the next step can be completed. Further, authorising officers would be required to acknowledge whether or not relevant documentation was updated, addressing the issue relating to the current process discussed in paragraph 5.12.

5.18 All interested stakeholders will be able to access the information in both planned databases, allowing them to assess any impacts early in the change control process.

5.19 The change management database is being progressively implemented across the groups with IT application responsibility. As at the beginning of April 2008, about a third of DEEWR's applications were using the database. Further implementations were being delayed until after the reorganisation of the IT areas following the formation of DEEWR, from the former DEST and DEWR.

5.20 Based on its design, the IT application being introduced to support DEEWR's IT change process is expected to address the requirements of the original Recommendation 5.

DEEWR's comments on findings on IT change control processes

5.21 Effective control is maintained over all application change requests including recording, tracking, authorisation, scheduling and exception management. While differences in the system tools used to support these

[46] DEEWR is implementing 'INFRA Toolsets'. This toolset is ITIL compliant. ITIL (Information Technology Infrastructure Library) is a set of concepts and techniques for managing IT infrastructure, development, and operations, which was developed in the United Kingdom by the Office of Government Commerce. The international standard on IT Service Management, ISO/IEC 20000, covers the service management elements of ITIL.

processes do not present a risk to the effectiveness of this control framework the department acknowledges the efficiencies to be gained by moving to a single computer-based system. Please note the department is in the process of implementing a single toolset to automate Change and Configuration Management, Incident Management and Service Desk functions.

Ian McPhee
Auditor-General

Canberra ACT
5 June 2008

Appendices

Appendix 1: DEEWR's IT Change Control Processes

1. In early 2005, DEEWR introduced a new IT change control process to 'ensure that a consistent approach to the assessment of change impact, consideration of risk to business continuity, resolution of resource demands and change endorsement is executed by application software development teams'.

2. A pivotal part of this change was identifying well defined roles for the following key players:

- IT Change Manager. The IT Change Manager:
  - establishes and maintains the schedule of IT system changes,
  - convenes and co-ordinates a weekly meeting of IT stakeholders (Change Group, see following dot point) for information and assessment of forthcoming changes,
  - endorses application software changes that meet the conditions for delivery,
  - records the completion of application change activities, and
  - captures and promulgates lessons learnt on delivering application changes; and
- Change Group. The Change Group comprises IT stakeholders with significant roles in the delivery of application software changes. The Group:
  - provides a forum to inform stakeholders of the changes allowing them to identify and resolve potential conflict between changes and impacts on other applications and platforms,
  - confirms the completion of all activities required to deliver the change, and
  - identifies lessons learnt on delivering application change activities.

3. Each application change requires the completion of the following steps, recorded manually on a template, the Application Release Readiness Checklist:

- change notification. Product developers notify the IT Change Manager by email on the ARRC of the application being changed, a description

of the extent of the change, and intended date of delivery for the change;

- change registration. The IT Change Manager revises the schedule of IT changes and liaises with the production developer to clarify details or to resolve potential conflicts with other software being revised at the same time;
- change monitoring. Throughout the development, the production developer and IT Change Manager liaise to keep up-to-date on any changes or conflicts that arise with the release;
- change confirmation. With the completion of the changes, the product developer confirms the delivery of the change to the IT Change Manager. The product developer confirms:
  - the priority and impact of the change,
  - contingency processes if delivery of the change is unsuccessful,
  - acceptance of the change by the product's business owner,
  - completion of appropriate software testing,
  - validation or testing of the contingency process,
  - completion of the pre-requisite activities, and
  - notification of the client/stakeholders of timing and impact of the change;
- change meeting. All confirmed changes are addressed through a weekly IT Change Control meeting that reaffirms that the conditions for the delivery of the change have been met, and provides an opportunity to confirm that cross-application and cross-platform impacts have been considered;
- change endorsement. The IT Change Manager affirms that all pre-conditions have been met and endorses changes for delivery on the ARRC; and
- change completion. The IT Change Manager reviews the circumstances of the changes and records the completion on the ARRC.

4. Emergency changes can be 'fast tracked' through the application software delivery process. An emergency change may be instigated as the result of a production defect which, if not corrected, could impact on DEEWR's reputation or its normal business operations.

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