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Auditor-General

Delivering Health *SMART* — Victoria's whole-of- health ICT strategy

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Victorian Auditor-General's Office
Auditing in the Public Interest

The Hon. Robert Smith MLC
President
Legislative Council
Parliament House
Melbourne

The Hon. Jenny Lindell MP
Speaker
Legislative Assembly
Parliament House
Melbourne

Dear Presiding Officers

Under the provisions of section 16AB of the *Audit Act 1994*, I transmit my report on
Delivering HealthSMART — Victoria's whole-of-health ICT strategy.

Yours faithfully

A handwritten signature in black ink, appearing to read "DDR Pearson".

DDR PEARSON
Auditor-General

16 April 2008

Foreword

When it was approved in 2003, the Government's HealthSMART strategy for information and communication technology in the Victorian public health sector promised a transformation in the use of technology for clinical outcomes.

Originally the HealthSMART strategy was expected to be fully implemented by June 2007. It is now nearly two years late, and the highest benefit clinical applications have yet to be delivered.

The Department of Human Services needs a concerted focus on outcomes and benefits, to ensure that the state's investment in process engineering by harnessing technology is realised as planned.

The original HealthSMART budget, involving health agency co-funding capacity, was not realistic. Lack of certainty across health agencies about costs and funding sources have inevitably led to delays in implementation.

Targets for implementation were also too ambitious. Had there been more realistic estimates of the capability of the sector to implement technological change in a compressed period and a better appreciation of the poor state of information technology assets in health services, the Department of Human Services would have more effectively managed expectations around the timing of the roll-out of the strategy.

Despite these issues, HealthSMART still has the potential to fulfil the original vision of a patient-centric model of healthcare, supporting public sector health clinicians with knowledge and technology. However, to date, that vision has yet to be fully realised.



DDR PEARSON
Auditor-General

16 April 2008

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1 Executive summary

1.1 Introduction

1.1.1 Background

In 2003 the Department of Human Services (DHS) established the Office of Health Information Systems (OHIS) to deliver the HealthSMART program. The program was approved by the Victorian Government to implement Victoria's *Whole-of-health Information and Communication Technology Strategic Plan 2003-2007*.

HealthSMART is currently a six-year, \$323 million technology program operating across the Victorian Public Health System (VPHS) and due for completion in June 2009. The program is large and complex, involving health services, rural information and communication technology (ICT) alliances and community-based health providers across the state. It is the most far-reaching ICT change program ever undertaken by the VPHS.

The HealthSMART program was funded by re-allocation of previously approved DHS funds (\$112.0 million), new funds (\$138.5 million), and agency contributions (equivalent to \$72.9 million).

DHS manages expenditure of the existing and new funds, and recently allocated a further \$34.8 million from its own resources to the program to meet additional costs related to longer implementation schedules and decreased agency funding.

The program aims to replace obsolete and unsupported applications in health care agencies with capable, industry-standard products. It plans to introduce new systems able to support the transformation of healthcare. At the same time, agency ICT infrastructure will be refreshed and developed.

1.1.2 Scope of the HealthSMART program

HealthSMART aims to improve patient care, reduce the administrative burden on health care professionals and ease the costs associated with updating technical infrastructure within the VPHS by adopting a more standardised approach to information systems.

Through the HealthSMART program and the strategic use of ICT DHS aims to:

- improve health care services and outcomes for the public
- make the provision of health care more efficient
- manage available resources better
- attract, retain and support a highly skilled health workforce.

There are five major initiatives associated with the HealthSMART program. While each focuses on different functional areas, the interdependencies between these initiatives are critical to achieving the required outcomes.

The scope of these initiatives includes:

- resource management systems across health services, rural ICT alliances and major health centres
- patient management systems across health services, rural ICT alliances, community health, ambulance and dental services
- clinical systems, supporting access to clinical services and their results (providing the structure and initial content of an electronic health record), as well as electronic medication ordering, across all health services and regional hospitals
- an appropriate governance and program management structure to facilitate the implementation of this strategy
- a shared services facility to support the HealthSMART applications installed across the VPHS.

1.2 Findings from this audit

1.2.1 Achievement against the approved plan

Original milestones were too ambitious

Our review of the program shows that the original milestones for the program have proven to be too ambitious, requiring OHIS to periodically revise them as the program proceeds.

Our analysis also indicates that the program will not be finalised by its planned completion date of June 2009, although DHS has not yet advised the government of the need to revise the expected completion date.

Implementation of clinical systems is most at risk

The ICT implementation most at risk is Clinical Systems, the application with highest potential benefit. It is also not clear how many agencies are within the scope of the HealthSMART clinical systems roll-out, requiring DHS to:

- clarify the total number of agencies implementing the clinical systems project, and
- devise a realistic schedule, with adequate contingency, to successfully implement the program.

Failure to implement clinical systems is a serious issue for DHS and the health sector in terms of delivering the expected outputs and benefits of the HealthSMART program.

Half the budget spent for a quarter of the planned installations

DHS had spent \$184 million of the approved HealthSMART project budget by December 2007. This is about 57 per cent of the original \$323 million allocation.

There has been significant planning, preparation and procurement activity and effort undertaken by OHIS. This effort has consumed \$91.3 million or about 50 per cent of the \$179 million budget allocated to implementation of the HealthSMART applications.

At present, 24 per cent of the planned application installations are complete, with the shared services environment and supporting ICT technical infrastructure fully operational.

Implementation delays have led to underspend against forecasts

Due to delays in the implementation of most of the planned HealthSMART installations, DHS has continually underspent its forecast annual budgets for the program.

This situation has caused unspent funds to be carried forward to subsequent years.

At the current rate of implementation, DHS will not be able to use all its allocated capital by the current planned program completion date of June 2009.

No reliable method to estimate agency implementation costs

We found that OHIS does not have a reliable basis for estimating agency expenses nor does it monitor agency expenses for the HealthSMART program. Therefore, there is doubt about the reliability of its cost to completion forecasts and reporting on sector-wide actual expenditure.

Furthermore, although it is unlikely that any final accounting of the program will be able to capture its full cost, it is clear that the additional contribution by DHS to the program is at least 14 per cent over budget.

Recommendations

DHS should:

- identify the agencies that are expected to implement clinical systems and devise a realistic schedule, with adequate contingency, to successfully implement the program.
- work with agencies to define a standard method to record agency costs related to the HealthSMART program.
- monitor, in collaboration with health agencies, agency costs for the HealthSMART program and report them to the Board of Health Information Systems.

- seek authorisation for the various changes it has made to system implementation and budget targets within the HealthSMART program through the defined central agency amendment processes.

RESPONSE provided by Secretary, Department of Human Services

Whilst the department acknowledges that the HealthSMART program is behind its initial schedule, the program has nevertheless been tightly managed with any changes to timeline approved by the peak governing body (Board of Health Information Systems) in a very transparent and accountable manner.

DHS also believes that funding for the project has been tightly managed and expects to keep within the operating cost budget estimate provided within the original budget case and the project funds provided by government. DHS has allocated some additional ICT funds available within the DHS base budget and varied the relative contributions between DHS and health service contributions but this is in the context of a complex set of funding and productivity arrangements between DHS and health services that varied after the original business case.

The department considers that the HealthSMART program has delivered significant benefit. The landscape of health ICT has changed significantly and positively as agencies have moved to industry standard products delivered through an enhanced service delivery model. This change would not have occurred without the centralised facilitation and coordination that HealthSMART has provided.

Specific comments on section 1.2.1 of the Executive Summary

Product selection and configuration has occurred for all HealthSMART applications; the underpinning infrastructure has been purchased and installed to support these.

Seventeen sites have been implemented, with some sites using multiple HealthSMART products; 10 sites are undertaking implementation activity and 21 sites are planning implementation activity.

The decision to implement any HealthSMART application within a participating agency is made by health service boards based on individual business cases. The remaining set of decisions on HealthSMART applications by health service boards is nearing finalisation.

Government through ERC and OCIO reporting have been regularly updated on the status of implementations and any implications for program targets.

DHS agrees with audit recommendations that implementation schedules should be finalised as soon as possible and appropriate approvals for any necessary revisions to time or budget should be sought at that time.

1.2.2 Realisation of benefits from the program

Strategy is based on a coherent vision

The HealthSMART strategy is based on a coherent vision which reflects global and national trends to increase ICT-enabled health service delivery. The strategy was designed to address immediate issues of obsolescence and to provide a basis for cost effective service delivery and improved patient outcomes.

The strategic plan was developed following stakeholder consultation to ensure that appropriate priorities were identified across the sector. A steering committee, composed of senior DHS and health agency representatives, oversaw its development.

Lack of detailed business case has been a key planning flaw

The lack of a whole-of-program business case has been a key flaw in the planning for the program. DHS had an inadequate baseline analysis or process to demonstrate that the program would be viable, and would provide value for money, with benefits from the program exceeding costs.

Due to this deficiency, a number of implementation issues that could have been forecast or analysed in a business case have now manifested themselves during the life of the program. A better business case may have avoided:

- implementation delays caused by procurement issues
- issues arising from unforeseen technical complexity and
- funding approval delays by health agency boards.

Furthermore, due to the absence of a state-wide clinical systems business case, health agencies and the state are now having difficulty committing to additional ICT investment, such as enabling works, which are prerequisite to the effective implementation of clinical systems.

Some benefits have been realised

Health agencies have been able to realise benefits from the implementation of the Financial Management Information Systems (FMIS), Human Resource Management Systems (HRMS) and Patient and Client Management Systems (PCMS) applications. Some obsolete systems have been replaced and others are being replaced. Many agencies have taken up the opportunity to improve the way they do business.

The FMIS portfolio has substantially delivered its planned outputs, with 8 of the 11 participating health agencies successfully implementing the FMIS product. The remaining 3 agencies are expected to finalise implementation by the end of April 2008. However, there are considerable delays in obtaining benefits from the implementation of clinical systems. The delay in implementing clinical systems is more than a project management and scheduling issue. Opportunities to realise benefits and reduce costs have also been delayed.

Budget revision means greater subsidy by DHS

DHS did not have a reliable basis for estimating ‘whole of life’ costs arising from the program, or for defining agency contributions.

It also did not seek to identify whether agencies were able to meet their anticipated contributions.

This means that DHS was in a position neither to accurately estimate the total cost of ownership of HealthSMART systems and infrastructure, nor to estimate what level of contribution should, or could, be made by health agencies.

Revisions to the program budget were made in June 2006, resulting in DHS contributing an additional \$35 million. This DHS cost escalation was made in recognition of the inability of agencies to meet the original DHS expectations of co-contributions.

No source of sustainable ICT investment for health agencies

The ability to plan and accommodate HealthSMART costs is dependent on the viability of individual health agencies. While some agencies have sufficient reserves to pay for their share of implementation expenses and ongoing costs, others have struggled.

Adequate funding of ICT infrastructure within health agencies is an ongoing challenge within the sector, as ICT competes for funds with general medical equipment, which is given priority due to its clinical ‘patient facing’ usage.

If the past patterns of ICT underinvestment continue, some agencies will not be able to keep their infrastructure up to date and are at risk of not fully benefiting from the investments made through the HealthSMART program.

Delays mean greater subsidy of shared services

Delays in implementation of applications will mean that the HealthSMART shared services arrangement will have to be subsidised by an extra \$61 million until enough agencies have implemented HealthSMART applications.

This could divert significant funds from DHS service delivery budgets and lead to underutilisation of a strategic whole-of-sector ICT asset.

Recommendations

- DTF and DHS should work with the VPHS implementing agencies to develop an evidence-based business case, in line with current better practice guidance, to better assure the effective delivery of the incomplete components of the HealthSMART program.

- DHS should adopt a whole-of-life asset management approach to ICT investment in the VPHS, so that agencies are able both to address obsolescence and to develop as appropriate their ICT capabilities and infrastructure with more certainty than the current funding models allow.

RESPONSE provided by Secretary, Department of Human Services

DHS acknowledges audit comment that HealthSMART was a coherent vision and benefits have been realised from implementations to date.

A business case for the project was developed and approved by government. Audit believes that a more detailed business case may have avoided some issues encountered. The department considers that this conclusion is a matter of opinion and that a different business case is unlikely to have prevented the issues raised.

Health Services are almost exclusively funded by DHS. The break up of DHS and health services contributions within the existing health budget has been refined over the life of the project.

The HealthSMART business case included a forecast of future operating costs for the shared service. DHS believes that operating costs will be managed within this original estimate.

DHS agrees with audit recommendations that business cases should be in line with current best practice and that a whole of life approach to ICT investment should be adopted. DHS also believes that current best practice cannot be applied retrospectively to the original HealthSMART submission.

RESPONSE provided by Secretary, Department of Treasury and Finance

DTF understands that DHS is closely working with VPHS agencies to facilitate the implementation of incomplete components of the HealthSMART program. DTF will assist DHS, as required, in the successful completion of the program.

1.2.3 Program monitoring and review

Adequate governance structures established

In November 2003 the Board of Health Information Systems (BHIS) was formed to oversee the development and implementation of the *Whole-of-health Information and Communication Technology Strategic Plan 2003-2007* and to provide high-level direction for the HealthSMART program.

BHIS is comprised of senior representatives from DHS, DTF, primary and community health agencies, metropolitan health services, and rural and regional health ICT alliances. The Board has no executive powers, being in effect an advisory body within the broader governance environment of DHS.

The Secretary of DHS is the chair of BHIS and actively participates in decision-making concerning the HealthSMART program, and reports to the Minister for Health.

DHS has placed significant emphasis on the governance and management arrangements for HealthSMART. The governance structure and the presence of senior departmental and agency representatives has also enabled frank and open discussions on risks and deliverables.

Sound program/project management processes in place

Overall program management is sound and the Program Management Office (PMO) has adequate controls in place to coordinate their complex program.

The program has sound risk management processes. There is transparent reporting, monitoring and accountability for key risks and issues, ensuring that key risks are openly discussed and addressed.

The procurement selection and evaluation processes were adequate and while the successful tenderers did not comply completely with all user requirements, OHIS used effective processes to ensure that gaps in vendor functionality were addressed to meet user requirements.

However, OHIS has faced a number of program challenges such as:

- continuing to have difficulties attracting skilled and experienced ICT personnel and continuing to rely on contract staff and secondments from health agencies to fill key positions
- ensuring that all vendors perform and meet their contractual requirements. DHS has taken a proactive approach to managing its vendors and has deferred payments or required vendors to replace non performing managers.

Lack of required Gateway reviews and internal audit scrutiny

Although the endorsement of the HealthSMART funding submission was conditional on the program undergoing a series of Gateway reviews at key decision points, only one of the five reviews required in the funding approval has been conducted to date.

Further, there has not been any internal audit activity conducted or planned for the program by DHS.

Oversight of the program could be strengthened if regular independent assurance on the progress of the program was conducted.

Lack of benefit management studies

Although portfolio charters broadly describe the benefits to be obtained from a system implementation, no benefits 'baselining' had been done for the FMIS/HRMS or PCMS applications. Further we were not able to find any evidence of benefits planning or reviews at the agency level for these applications.

OHIS has developed a whole-of-program benefits management plan, however some of the KPIs in that plan are more akin to measures of activity and output rather than measures of benefit outcomes.

Recommendations

- DTF and DHS should ensure that the HealthSMART program and its component portfolio projects are subject to timely Gateway reviews, consistent with current policy on high expenditure/high risk projects and programs.
- DHS should ensure regular internal audits of aspects of the HealthSMART program, given the high levels of risk and expenditure involved.
- DHS, in collaboration with implementing agencies, should review the benefits received from the implementation of the HealthSMART program. This review should focus on whether:
 - the applications and ICT infrastructure are operating as planned
 - benefits are being realised
 - ICT systems and infrastructure are providing the expected functionality, without any negative impacts.

RESPONSE provided by Secretary, Department of Human Services

DHS believes that the Board of Health Information Systems, consisting of senior health service, DHS and central agency staff, is appropriate to govern the program.

DHS supports audit recommendations to further strengthen governance and benefits realisation.

RESPONSE provided by Secretary, Department of Treasury and Finance

DTF notes this recommendation.

Project assurance mechanisms, such as the Gateway Review Process, help provide strategic assessment of progress at key project phases, aiding in the successful completion of high risk projects and programs.

The current status of the HealthSMART program would dictate whether the conduct of Gateway program reviews could contribute to a successful completion of the program or derive lessons learned for future undertakings. DTF will liaise with DHS to assess the opportunities for future reviews of this program.

2 About the HealthSMART strategy

2.1 The HealthSMART program

2.1.1 Overview

The Department of Human Services (DHS) established the Office of Health Information Systems (OHIS) in July 2003. OHIS was set up to implement *Victoria's Whole-of-Health Information and Communication Technology Strategic Plan 2003-2007*, to be delivered by the HealthSMART program.

The strategic plan was developed with stakeholder consultation to ensure that appropriate priorities were identified across the sector. A steering committee, comprised of senior DHS and health agency representatives, oversaw its development.

It was endorsed by the Board of Health Information Systems (BHIS) at its inaugural meeting in November 2003. In December 2003, the Minister for Health formally launched the HealthSMART strategy.¹

The HealthSMART program is key to the realisation of this strategy. It was conceived as a four year, \$323 million information technology program to be delivered by June 2007 in selected agencies across the Victorian Public Health System (VPHS); including health services, rural Information and Communication Technology (ICT) alliances, and community-based health service providers.

It involves replacing obsolete, unsupported computer software applications with capable, industry-standard products; and introducing new software systems to support the transformation of health care. At the same time ICT infrastructure and hardware is being either replaced or developed to support the new applications and information systems.

It has since become a six year program, with a current estimated cost to completion of at least \$360 million² and is the most far-reaching ICT change program ever undertaken in the VPHS.

¹ Victorian Department of Human Services 2003, *Whole-of-health Information and Communication Technology Strategic Plan 2003-2007*, Department of Human Services, Melbourne.

² This is a DHS estimate and is discussed further in Part 3 of this report.

2.1.2 Program objectives

The aims of the HealthSMART program are to provide ICT as an enabler to:

- improve health care services and outcomes for the public
- make the provision of health care more efficient
- better manage available resources
- attract, retain and support a highly-skilled workforce.

HealthSMART is expected to improve patient care, reduce the administrative burden on health care professionals, and ease the costs associated with updating technical infrastructure within the VPHS by adopting standardised approaches to information systems.

2.1.3 Scope of the program

Original scope

In its 2003 funding submission to government, DHS committed to delivering a number of computer applications and a supporting 'shared services'³ infrastructure.

Specifically DHS, through OHIS, committed to:

- replacing obsolete and unsupported financial and materials management systems in 10 health agencies and rural ICT alliances
- replacing obsolete and unsupported patient administration systems in 10 health agencies and rural ICT alliances
- implementing clinical systems that allowed for 'e-Prescribing', electronic scheduling, clinical tests ordering, and results reporting systems across all major Victorian hospitals
- developing a shared services ICT arrangement to support and maintain core applications along with the supporting infrastructure.

Scope variations

In November 2004 the BHIS approved the implementation of a Human Resources Management System, with payroll to be implemented in seven agencies, and rostering and occupational health and safety functionality to be implemented in two agencies⁴.

³ The HealthSMART shared service is the centralisation of certain ICT functions that were once performed separately by individual health agencies. Shared services are designed to allow agencies to share infrastructure, support mechanisms and achieve quality benefits and cost savings. HealthSMART Services infrastructure covers the technology, communications and support services required to host and support HealthSMART applications.

⁴ A payroll system was not in the original scope of the HRMS project, but was added to address the risk of a vendor exiting the market.

BHIS also endorsed the implementation of the Patient and Client Management (PCMS) application in an additional five agencies.

Figure 2A sets out the current approved project components of the program and the aims of each.

Figure 2A
HealthSMART program components

Portfolio	Projects	Aims
Resource Management Systems	Human Resources Management Systems (HRMS).	Modernise and standardise business processes associated with human resource management systems across the public health sector.
	Financial and Supply Management Information Systems (FMIS).	Modernise and replace financial and supply management information systems.
Patient and Client Management Systems	Patient & Client Management System (PCMS)—Integrated system for metropolitan health services and rural and regional health ICT alliances.	Enable the efficient processing of patient access and discharge. Enable a better view of the future demand for resources. Provide a resource scheduling capability. Increase the quality and safety of care through reliable identification of patients and clients.
	Client Management System (CMS) - Stand-alone system for community health services.	Increasing the efficiency of ambulatory care provision by reducing the number of non-attendees not arriving to outpatient appointments.
Clinical Systems	Clinical Systems	Automate clinical care activities including prescribing, drug administration, investigation ordering and reviewing. Support clinical care to make informed decisions by providing efficient and effective access to patient data. Provide clinical information at the point of care and reduce the time spent by patients re-presenting to clinicians.
Technical services	Design, procure and implement technical and integration services HealthSMART central services	Provide ongoing central technical services to HealthSMART users.
Health Applications	Dental Health Services Victoria ICT Project	Focus on information systems that fall outside the current scope of the HealthSMART program, yet need to become aligned with its goals over time.
	Mental Health Systems	
	Victorian Ambulance Clinical Information System Project	Improve the use of information by the Victorian public health care agencies to support client care.
	Picture Archive Communication System Project	
Program Management Office	Program Management	Ensure that the activities of the project plan are delivered.

Source: VAGO based on OHIS information.

While each project component focuses on different functional areas, the interdependencies between each are critical to achieving the expected overall outcomes of the program.

2.1.4 Agencies participating in the program

The program was established as a partnership between DHS and the VPHS. Key to this approach was voluntary agency participation—whereby individual health agencies had the authority to decide whether and when they would participate in implementation of any of the applications procured for the program.

However, since there were a number of health agencies with obsolete FMIS and PCMS systems, it was expected that participation would be a matter of timing only—that is, *when* agencies would participate, not *whether* they would participate.

The voluntary participation policy was subsequently revised to ensure greater certainty around participation. From March 2006 the BHIS determined that any VPHS agency introducing a new or replacement application with functionality that could be delivered by one of the applications from the approved HealthSMART suite, was required to use the HealthSMART software application and the associated support services.

Figure 2B summarises the agencies currently participating in implementation of a HealthSMART program component.

Figure 2B
HealthSMART implementing agencies (as at December 2007)

Agency	FMIS	HRMIS	PCMS	CMS	CS
Metropolitan agencies					
Austin Health		●			
Eastern Health	●				
Northern Health	●		●		
Peninsula Health	●		●		
Southern Health	●	●			
Melbourne	●				
Peter MacCallum Cancer Institute	●				
St Vincent's Health		●			
Royal Women's Hospital		●	●		
Western Health	●				
Rural and regional ICT alliances					
Bendigo Health	●				
Gippsland Alliance			●		
Grampians Health		●			
Community Health Centres					
Western Region Health Centre				●	
Bendigo Community Health				●	

Source: VAGO based on analysis of OHIS data.

2.1.5 Program implementation timelines

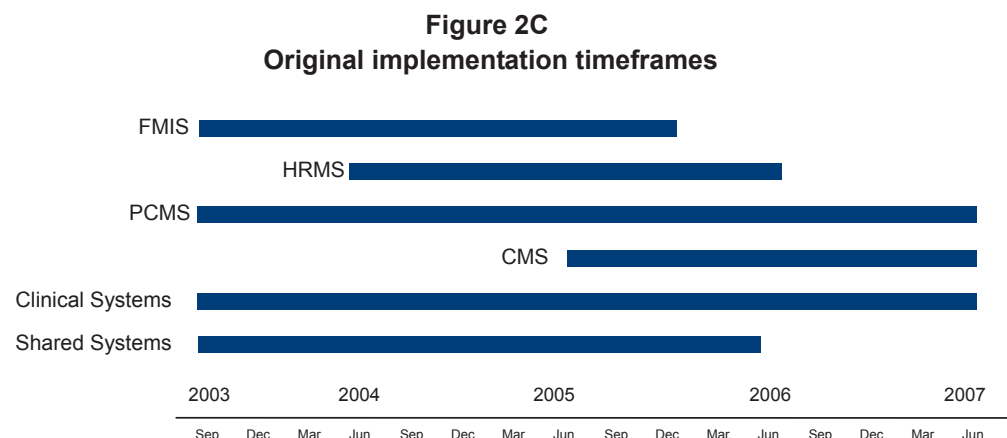
The HealthSMART strategy was originally planned to be implemented as a four-year program to be completed by June 2007.

OHIS has defined major milestones for the procurement, design and implementation phases for each application. Additional minor milestones are contained within these broad phases.

The approach taken to implementation was essentially to run parallel procurement processes for the identification and selection of software for each component. Once the procurement phase had been finalised for a particular project component, generally a parallel implementation was to be undertaken in the agencies that had elected to implement that software application.

At the same time the technical services component, particularly the shared services arrangements, had to be implemented in order to support the software.

Figure 2C shows the original timelines for each project component.



Source: VAGO based on OHIS data.

In August 2006 the BHIS authorised a two year extension to the program (to June 2009). This was due to program delays resulting from:

- difficulties in concluding the procurement processes (such as protracted negotiation about contract terms, especially for clinical systems)
- OHIS being unable to recruit adequately qualified and experienced staff to the program or health agencies
- delays in agencies committing to the project, leading to vendors reallocating resources to other projects
- delayed delivery—or delivery of incomplete—products, requiring substantial re-work and re-testing.

2.1.6 Approved cost of the program

The original approved cost budget for the program was \$323.4 million. This budget was for the implementation of the systems and the supporting infrastructure, but not for ongoing operating, maintenance and support costs.

Figure 2D breaks down the total cost budget against each project component, giving both the original cost budget approved in 2003, and the approved revised budget at June 2006. The reduction in the overall budget from \$323.4 million to \$310.7 million reflects both the scope changes approved by the BHIS, and the forecast actual total cost expected at that time.

Figure 2D
HealthSMART program budget

Project component	2003 \$ m	2006 \$ m	Change \$ m
Applications			
FMIS	26.3	26.8	0.5
HRMS	4.0	4.0	0.0
PCMS	50.0	39.0	-11.0
CMS	13.5	13.1	-0.4
Clinical	79.0	96.2	17.2
	172.8	179.1	6.3
ICT support			
Integration Services	8.1	12.5	4.4
Technical Services (includes HealthSMART Services)	38.1	31.4	-6.7
Enabling	11.7	6.6	-5.1
	57.9	50.5	-7.4
ICT infrastructure			
Technical Refresh	66.7	48.7	-18.0
Program management			
Directorate	4.0	7.3	3.3
Program management office	3.2	5.1	1.9
	7.2	12.4	5.2
Related health applications			
Dental	4.0	3.0	-1.0
Mental Health	8.8	11.0	2.2
Ambulance	6.0	6.0	0.0
	18.8	20.0	1.2
Total HealthSMART program	323.4	310.7	-12.7

Source: VAGO, based on OHIS data.

2.1.7 How program costs were to be funded

The funding model for the HealthSMART program requires implementation costs to be shared between DHS and health agencies. This is consistent with the partnership approach adopted for the program in the strategic plan.

In setting the level of agency contribution, DHS required each agency to contribute 30 per cent of the implementation costs for clinical systems, and 20 per cent of the cost for all other systems. DHS expected health agencies to fund their contribution by reallocating internal funds currently used for ICT systems and infrastructure.

Under the 'co-contribution' funding model DHS provides the bulk of the implementation costs. Specifically, the department:

- funds the license costs, state-wide planning, state-wide design and required technology
- funds vendor costs for agency implementations
- contributes to local project costs (particularly through funding of a project manager)
- covers running costs for the first twelve months of each agency's use of the system
- subsidises ongoing running costs of HealthSMART Shared Services until there is adequate uptake of the system.

Implementation costs to be borne by the health agencies include:

- funding of a project team (excluding the DHS-funded project manager position)
- funding for staff training (largely backfilling of staff attending training)
- funding of the integration of HealthSMART applications with local systems.

In addition, health agencies were expected to bear the operating and maintenance costs of each system beyond the first year after going live. These costs include:

- fees paid to HealthSMART Shared Services for hosting and support of HealthSMART applications
- any required agency infrastructure upgrades and maintenance—to keep infrastructure such as computers and communication networks in an adequate condition to effectively operate HealthSMART applications.

In its 2003 funding submission to government, DHS budgeted for \$250.5 million to be expended by DHS on the program with the balance of \$72.9 million to be funded by the health agencies involved in the program.

In June 2006, DHS increased its budget contribution for HealthSMART by \$34.8 million to \$285.3 million. Budgeted contributions required from health agencies fell by \$47.5 million, from \$72.9 million to \$25.4 million.

Figure 2E shows the combined effect on the required level of agency contributions flowing from the overall cost savings anticipated in the revised budget, and the increased contribution by DHS.

Figure 2E
Sources of funds for the HealthSMART program

	Original	Revised	Change
	\$ m	\$ m	\$ m
Treasury (new funds)	138.5	138.5	0.0
DHS (existing funds)	112	146.8	34.8
Treasury/DHS subtotal	250.5	285.3	34.8
Agency contributions	72.9	25.4	-47.5
Total	323.4	310.7	-12.7

Source: 2003 DHS funding submission and the June 2006 BHIS Financial Report.

2.2 Audit objective and scope

The objective of this audit was to assess whether the HealthSMART program is being effectively managed by the Department of Human Services and if it will achieve its original objectives.

The audit examined:

- the extent of achievement of implementation, milestones and budgeted costs
- the extent of realisation of the expected benefits as set out in the ICT strategy
- the effectiveness of overall monitoring and review of the program
- the soundness of controls in place to assure the probity of procurement processes.

The focus of the audit was on implementation of the core HealthSMART applications. It did not extend to a review of the implementation of the other dental, mental health and ambulance applications.

This audit was performed in accordance with the Australian auditing standards, and included such tests and procedures considered necessary.

The cost of the audit was \$310 000. This cost includes staff time, contractor and specialist fees, overheads and printing.

3 Achievement against the approved program plan

At a glance

Key findings

- The original targets for the program have proven to be too ambitious. This has required the Office of Health Information Systems to revise milestones as the program proceeds.
- The program's original completion dates have been extended from four to six years. However, in our view, the program will not meet this revised delivery date.
- Delivery of the clinical systems, which is central to obtaining the original forecast benefits of the HealthSMART strategy, is already two years behind the original schedule, with no firm implementation dates.
- According to the original 2003 timelines approved by government, major acute hospitals in ten health agencies should by now, be using clinical systems.
- OHIS does not fully account for agency costs in its budgets for the program, nor does it monitor agency expenses. Therefore, OHIS is not able to robustly estimate budgets or understand the program's true cost.
- Although there has been significant activity and effort by OHIS resulting in the implementation of a number of HealthSMART applications, some 57 per cent of the original approved budget has been consumed, with 24 per cent of the expected installations complete, and the shared services environment and supporting ICT technical infrastructure fully operational.

Key recommendations

The Department of Human Services should:

- identify the agencies expected to implement clinical systems and devise a realistic schedule, with adequate contingency, to successfully implement the program
- work with agencies to define a standard method to record agency costs related to the HealthSMART program
- monitor in collaboration with agencies, agency costs for the HealthSMART program and report these to the Board of Health Information Systems
- seek authorisation for the various changes it has made to system implementation and budget targets in the HealthSMART program through the defined central agency amendment processes.

3.1 Introduction

In this part the progress of the HealthSMART program is charted against its key deliverables—that is:

- the number of applications implemented across VPHS agencies
- the timelines achieved
- the costs incurred.

3.2 What has been implemented and where?

3.2.1 Implementation of shared services

For HealthSMART to operate effectively, the technical services component of the program, including the shared services arrangements, needed to be implemented as a priority.

HealthSMART Services was established in December 2004 to manage and support the systems delivered through the HealthSMART program, including the interconnectivity of the various ICT systems.

HealthSMART Services is responsible for:

- key ICT infrastructure (located at data centres at Burwood and Ballarat)
- HealthNet—a ‘wide area network’¹ connecting the HealthSMART data centres with health agencies
- service management processes for shared services including change management, configuration management and user support.

HealthSMART Services is operating under service level agreements and is governed by the HealthSMART Services Council, set up by DHS, and comprised of senior health agency representatives.

The HealthSMART Services infrastructure and processes now support:

- eight agencies using FMIS
- four agencies using PCMS
- two community healthcare agencies using CMS
- 15 000 users across the above applications.

OHIS commissioned a review of HealthSMART Services capability in mid 2007. The review found opportunities for improvement in the arrangements, in particular that some HealthSMART Services processes need to be improved.

¹ A distributed communications and data network that enables geographically dispersed organisations to operate their ICT system as if they were co-located.

The review recommended that:

- reporting and data collection for the monthly service level agreement report should be standardised, integrated and automated
- HealthSMART Services management and staff should be made aware that the majority of service levels apply immediately when the agency signs the agreement and they are able to provide services to the level at that time
- tools used by the Service Desk should be improved
- issues relating to data corruption, replication and recovery should be clarified in an updated or supplemented agreement
- design issues in the new data replication system should be addressed, and the system more regularly monitored and tested.

OHIS has initiated an action plan in response to these recommendations, which has been supported by the HealthSMART Services Council, and is in the process of implementing the plan.

Figure 3A shows the review's assessment of the maturity of HealthSMART processes.

Figure 3A
Assessment of maturity of HealthSMART Services processes

Process	Existing and planned capability	Current maturity
Access and security management	Fair	The access and security management process is repeatable, but still mostly intuitive.
Change management	Good	The change management process is managed, but not measured.
Data backup and restoration	Good	The data backup and restoration process is repeatable, but still mostly intuitive.
Problem management	Good	The problem management process is managed, but not measured.
Incident management	Good	The incident management process is being managed and is measured.
Service availability Disaster recovery	Fair	The service availability and disaster recovery process is in its initial stages of development and is partly ad-hoc.
Service level reporting	Poor	The service level reporting process is in its initial definition and development phase.
System administration	Good	The system administration process is defined.
System performance	Good	The system performance process is defined and mostly measurable.

Source: HealthSMART Service Level Capability Review October 2007.

Some areas of under performance by the HealthSMART Services contractor have been identified. This underperformance had a 'knock-on' effect on the performance of the shared services environment, particularly in the areas of system availability, and technical capacity to support the implementation of clinical systems and new roll-outs of other HealthSMART applications.

Accountability arrangements for HealthSMART Services

The HealthSMART Services Council is responsible for approving any change to the scope or type of services provided by HealthSMART Services, including ensuring that the BHIS endorses the strategic alignment of any proposed changes to the scope of services.

The council oversees service level agreements for agencies and is required to monitor HealthSMART Services' performance.

The Service Level Agreements (SLAs) (which six of the fifteen participating VPHS agencies have executed) define standards of service (such as availability of support staff) to be provided and require monthly reporting on performance.

HealthSMART Services and the council is also there to ensure that an independent audit of HealthSMART Services and its operations is conducted on a regular basis—at least annually—with the report and recommendations provided to the Council for consideration.

Conclusion

HealthSMART Services is operating as planned and is providing a reasonably stable ICT environment using industry-standard processes.

However, the shared service environment is maturing gradually and being actively managed and monitored by the HealthSMART Services Council.

3.2.2 Implementation of HealthSMART applications

Under the HealthSMART program the present expectation is that seventy-eight installations of HealthSMART applications will be implemented by the agencies involved in the program². Figure 3B summarises the progress made in implementing applications, as at March 2008.

² An agency may have multiple instances of HealthSMART applications.

Figure 3B
Progress of application implementations

Component	No. of agency implementations		Not yet started	Purchase order contract	Planning	Implementing	Operating
	Original (a)	Current (b)					
FMIS	10	11	-	-	-	3	8
HRMS	0	16(d)	8	1	2	-	5
- rostering	0	2	-	-	1	1	-
PCMS	10	15	8	2	-	1	4
CMS	N/A	24	12	-	5	5	2
Clinicals	(c)	10	6	-	4	-	-
Totals		78	34	3	12	10	19

Note: (a) As per the original funding submission to government in 2003.

(b) As per the February 2008 implementation schedule, Board of Health Information Systems (BHIS).

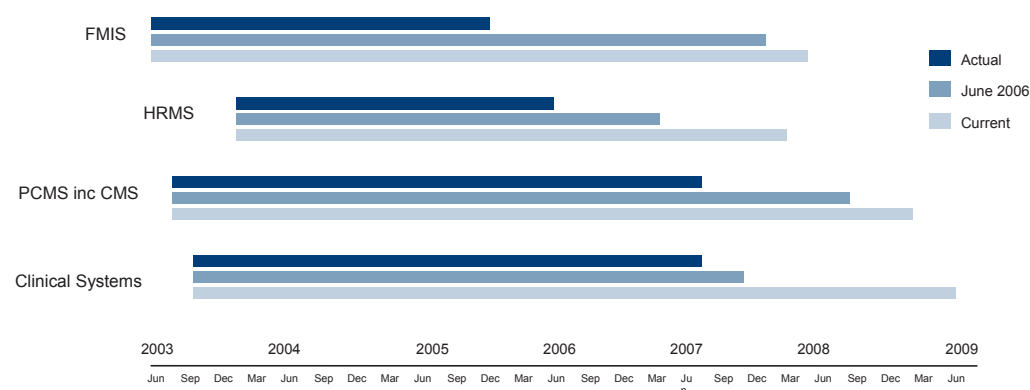
(c) According to the 2003 funding submission, 'all major hospitals across the State' were expected to have Clinical Systems implemented. DHS initially identified 42 major hospitals within 14 metropolitan health services and 5 rural ICT alliances that would be suitable for the implementation of Clinical Systems. DHS has subsequently confirmed that Clinical Systems will be implemented in 10 agencies (metropolitan health services and rural ICT alliances) across the VPHS.

(d) According to the February 2008 financial report to the BHIS, DHS consider the planned number of implementations was seven.

Source: February 2008 Financial Report (DHS).

Figure 3C shows the revisions to the original timeline for implementing the HealthSMART applications. It shows that all of the HealthSMART projects have experienced delays and that their timelines have consequently been revised.

Figure 3C
Original, revised and current timelines



Source: VAGO analysis of OHIS data.

Resource management systems

Based on the above data the HealthSMART program has made good progress implementing the Financial and Materials management Information Systems (FMIS) and Human Resource Management Systems (HRMS).

Originally, FMIS was to be implemented in ten agencies.

The FMIS project has substantially delivered its planned outputs, with eight of the now eleven participating health agencies successfully implementing the FMIS product (Oracle E-Business Suite). Three remaining agencies, the Royal Children's Hospital, the Royal Women's Hospital and the Royal Victorian Eye and Ear Hospital have completed planning and intend to complete implementation in April 2008.

Human Resource Management Systems (payroll, rostering and OH&S) is also progressing well. The payroll system (CHRIS 21) has been implemented in five of the original target of seven health agencies, and is operating as expected.

Figure 3B shows that DHS plans to increase the original implementation target for the payroll application of the HRMS to sixteen agencies. However, to date, no further agencies (beyond the five that have implemented) have committed to the application. This may trigger a revenue guarantee for the vendor (as the implementation contract pricing was based on a volume calculation of estimated payslips to be generated by the system).

The Kronos application has been procured to provide a rostering solution within the HRMS application, and is currently being trialled in two agencies.

Patient and client management systems

Replacement of the obsolete HOMER system was one of the main objectives of the HealthSMART strategy. The HOMER system provided both FMIS and Patient Management Systems (PMS) functionality to VPHS agencies.

OHIS completed the procurement and planning for implementation of the Patient and Client Management Systems (PCMS), and Client Management Systems (CMS) components during 2006.

PCMS implementation progress

An integrated PCMS, i.Patient Manager, was selected for major health services, to replace obsolete PCMS applications in ten agencies. Of these ten agencies, eight³ were using HOMER.

After the PCMS portfolio commenced, BHIS increased the number of target agencies to fifteen.

³ Northern Health, Melbourne Health, Western Health, Eastern Health, Southern Health, Bayside Health, Bendigo Health (Loddon Mallee), Echuca Regional Health (Loddon Mallee).

To date, four agencies have implemented acute functionality for the i.Patient Manager application. However, four years since the initiation of the strategy, only one of the eight agencies using HOMER (as the PCMS) have replaced it with the new PCMS. The remaining seven agencies are still awaiting implementation.

Due to the decision to increase the implementations of i.Patient Manager to fifteen potential agency implementations, the current roll-out schedule, if successfully completed, will over-deliver on the original PCMS portfolio objectives.

This outcome will result in removal of all the targeted obsolete patient administration systems within the VPHS.

PCMS implementation issues

Peninsula Health, one of the first four implementing agencies, is experiencing problems following the implementation of the new system, particularly in:

- the performance of the emergency department and billing functions
- printing of performance reports and
- systems integration.

The vendor and HealthSMART Services are working with that agency to resolve these issues.

In addition the same vendor has not delivered on the required functionality of the community health component of the i.Patient Manager application. This component of the application is critical for VPHS agencies that deliver both acute and community care. Consequently, community health centres integrated with acute hospitals are not able to access this product.

A remediation plan to manage the vendor has been put in place by OHIS, however, the vendor is continuing to under-perform.

The challenges relating to the implementation of the community care component of the PCMS application are placing the completion date of June 2009 at risk.

Client Management System implementations

A stand-alone Client Management System, TrakCare, was selected for implementation in twenty-four metropolitan community health services (of a total of forty-one⁴ standalone community health services within Victoria).

The remaining seventeen community health services are within rural ICT alliances and will implement the i.Patient Manager application.

The implementation of the TrakCare application is underway, with two agencies having implemented the system successfully. A further ten have nominated to implement the application. Further expressions of interest are being sought from twelve more community health centres.

⁴ According to DHS data found at:
http://www.health.vic.gov.au/communityhealth/downloads/community_health_funded_services.xls

Clinical Systems

OHIS completed procurement of the clinical systems in March 2006. The Cerner Millennium product will provide the following core clinical functions:

- e-Prescribing
- electronic scheduling
- diagnostic services
- results reporting.

OHIS, health agencies, and the vendor have invested significant effort in defining the requirements for the new system. This release will contain the Clinical Workbench and the e-Prescribing function. The former will allow clinicians to locate patients, view demographic data, record clinical information, review results and trends, and communicate with other practitioners. The e-Prescribing function will provide the ability to capture information about medications on admission, create discharge and outpatient prescriptions and communicate medication information to General Practitioners.

According to OHIS documents reviewed, the first release of the clinicals system has been tested by various user groups, and is ready for implementation into health services. However, to date, none of the four lead agencies (Ballarat Health, Goulburn Valley Health, Eastern Health, the Royal Victorian Eye and Ear Hospital) have committed to implementing the new system.

The OHIS implementation plans reviewed showed that for the ten potential agency installations slots, only four could be implemented by June 2009. However, our review of OHIS documents, as well as agency business cases for clinical systems showed that even if funding negotiations are concluded shortly, the four agencies expected to be lead implementers are unlikely to meet the June 2009 timelines.

There are no plans at this stage for the implementation of the other six potential agency installation slots or for any other installations at agencies that are not currently within the scope of the program.

3.2.3 Summary

OHIS has implemented a stable operating shared services arrangement as planned.

According to the current schedule, OHIS is likely to meet its revised completion dates for the FMIS and HRMS applications, as well as the community health client management systems.

However, by June 2009 the number of installations completed will be:

- PCMS—9 agencies, against the revised target of 15 agencies
- Client Management Systems—12 of the 24 targeted community health centres
- Clinical systems—none of the 10 planned installations.

Delivery of the clinical systems, which is central to obtaining the original forecast benefits of the HealthSMART strategy, is already two years behind the original schedule, with no firm implementation dates for six of the ten agency implementation slots.

According to the original 2003 timelines approved by Government, major acute hospitals in ten health agencies should all be using clinical systems now.

There have been no approvals of further extensions to the program beyond June 2009. OHIS management advised that while June 2009 is defined as the milestone completion date, it is not a realistic completion date, as they foresee that the implementation of clinical systems (and potentially PCMS) will extend beyond that date.

Conclusion

The original targets for the program have proven to be too ambitious which has required OHIS to revise milestones as the program proceeds.

Our analysis indicates that the program will not be finalised by its revised completion date of June 2009, although DHS continues to report to government that it will.

The implementation most at risk is Clinical Systems. DHS needs to clearly identify the total number of agencies implementing the clinical systems project and devise a realistic schedule, with adequate contingency to successfully implement the program.

Failure to implement clinical systems is a serious issue for DHS and the health sector in terms of delivering the expected outputs and benefits of the HealthSMART program.

Recommendation

- 3.1 DHS should identify the agencies expected to implement clinical systems and devise a realistic schedule, with adequate contingency, to successfully implement the program.

3.3 Performance against the approved budget

In May 2003 the government approved a total HealthSMART budget of \$323 million. In June 2006 OHIS (after Board endorsement) reduced the budget to \$310 million.

Figure 3D summarises the amounts that DHS advised it expects to spend on each project component, and the amount spent, as at December 2007.

Figure 3D
HealthSMART budget actuals and forecast

Project component	Approved Budget Total	(Agency)	(DHS)	Actual (DHS only) (as at Dec 07)	Forecast Budget Total
	\$ m	\$ m	\$ m	\$ m	\$ m
Applications					
FMIS	26.8	1.5	25.3	24.3	26.8
HRMS	4.0	0	4.0	4.1	4.4
PCMS	39.0	2.5	36.5	22.7	39.1
CMS	13.1	0.4	12.7	8.6	14.3
Clinical	96.2	5.0	91.2	33.2	96.2
	179.1	9.4	169.7	92.9	180.8
ICT support					
Integration Services	12.5	1.0	11.5	10.2	12.8
Technical Services (including HealthSMART services)	31.4	0	31.4	24.1	32.9
Enabling	6.6	0	6.6	5.6	8.5
	50.5	1.0	49.5	39.9	54.2
ICT infrastructure					
Technical Refresh	48.7	15.0	33.7	31.8	48.7
Program management					
Directorate	7.3	0	7.3	4.3	7.1
Program management office	5.1	0	5.1	2.6	4.6
	12.4	0	12.4	6.9	11.7
Related health applications					
Dental	3.0	0	3.0	2.9	3.2
Mental Health	11.0	0	11.0	5.5	7.5
Ambulance	6.0	0	6.0	4.8	6.0
	20.0	0	20.0	13.2	16.7
Total HealthSMART program	310.7	25.4	285.3	184.7	312.1
HSS Expenditure				15.0	53.8
HSS Revenue				-1.2	-5.5
Total Net Expenditure				198.5	360.4

Source: VAGO based on OHIS data.

The above data shows that HealthSMART will essentially meet its approved overall cost budgets. However, a number of factors need to be taken into account, when analysing this outcome.

First, based on our earlier analysis of implementation status, it is not clear that all applications will be implemented as originally planned and approved. To the extent that the original target number of applications for a component is not implemented there should be cost savings. To the extent that additional applications are delivered, an allowance for the additional cost of these needs to be made.

The final determination of whether the program was implemented in accordance with the approved budget will need to make these adjustments, taking into account the final number of implementations of each system by June 2009.

Second, the estimates of agency contributions reported in the above table are only notional—their actual costs are not tracked centrally by OHIS, nor are they necessarily separately tracked and monitored by each health agency. The real cost of agency implementation may therefore vary significantly from the notional costs allowed in the budget.

For example, through discussions with DHS and health agency staff, our review of agency business cases for clinical systems confirmed that agency costs are much higher than the 30 per cent target assumed by DHS.

The four lead agencies for clinical systems are proposing various ‘enabling works’⁵ to be carried out as part of the system roll-out.

Due to the patient focus of the clinical system, lead agencies are seeking new and/or upgraded ICT devices that can be used at ‘point-of-care’ so that clinicians will be encouraged to fully adopt the new technology, and not revert to manual or paper-based systems after roll-out.

In addition, costs being incurred for training, data migration, change management and project management are higher than forecast by DHS.

These extra, unforeseen components of the system roll-out are leading to higher than expected capital and recurrent costs for agencies, which is causing funding pressures, and hence approval delay.

Further, the lead agency business cases are unable to demonstrate sufficient direct benefits to their Board from higher investment in clinical systems. This is because most of the expected benefits such as a reduction in adverse events for patients and the development of infrastructure for a future state-wide electronic health record accrue sector-wide, rather than at the individual agency level.

Although the implementation of clinical systems is likely to extend beyond 2009, at present OHIS has no budgeted figures beyond June 2009. OHIS has advised that it may need extra funds to complete the full scope of clinical systems implementation.

DHS is currently modelling how much an agency implementation of a HealthSMART application should cost on a ‘standardised’ basis. This work needs to be completed quickly to allow the costs of the implementation program to be managed in a predictable manner by participating agencies.

The final consideration when analysing the cost of the program to date is to determine its additional net cost to the state budget.

⁵ Enabling works include updating telecommunication and network infrastructure, purchasing point of care devices and in some agencies building a single patient master index to integrate multiple patient administration systems.

As set out in Part 2 of this report, in arriving at the original cost budget of \$323 million in its 2003 funding submission, DHS estimated that participating VPHS agencies would contribute \$73 million, subsequently adjusted to \$25.4 million.

OHIS advised that the downward adjustment to agency co-contributions was made because of the inability of agencies to meet the original DHS expectations. Most agency contributions were to be 'in kind' (such as releasing staff for training or for project management activities), with a smaller proportion in direct cash outflows. Agencies were expected to internally fund these costs, without recourse to additional new funding.

The increase of \$34.8 million in DHS's contribution to the funding of the program represents new, unbudgeted costs to the government. From this perspective it represents a cost increase of 13.8 per cent.

There is no evidence that this increase in the program budget has been authorised by government, however DHS consider that because the total program costs are within the 'approved funding envelope' there is no requirement for reference to government for approval.

This argument is flawed, as DHS do not monitor agency-level costs (which are part of the approved funding envelope) so they are therefore not in a position to know the quantum of funds that have been spent on HealthSMART. A more certain course of action would be for DHS to seek amendment of the original program funding approval via the defined central agency budget amendment processes.

3.3.2 Conclusion on how the program is performing against the approved budget

OHIS had spent \$184 million of the approved HealthSMART project (as at December 2007), representing about 57 per cent of the original \$323 million budget allocation.

Although there has been significant activity and effort by OHIS resulting in the implementation of a number of HealthSMART applications, some 57 per cent of the original approved budget has been consumed, with 24 per cent of the expected installations operational and the shared services environment and supporting ICT technical infrastructure fully operational.

Due to delays in the implementation of most core systems, DHS has continually underspent its planned annual budgets, with these amounts carried forward to subsequent years. At the current rate of expenditure, DHS will not be able to spend all its allocated capital by the current planned program completion date of June 2009.

Further, OHIS does not have a robust basis for estimating agency expenses nor does it monitor agency expenses for the HealthSMART program. This brings into doubt the reliability of its forecasts of cost to completion and reporting on actual system-wide expenditure.

It is therefore unlikely that any final accounting of the program will be able to capture its full cost. However, it is clear that the additional contribution by DHS to the program represents a minimum 13.8 per cent cost over-run in terms of impact on the state's budget.

Recommendation

3.2 DHS should:

- work with agencies to define a standard method to record agency costs related to the HealthSMART program
 - monitor, in collaboration with agencies, agency costs for the HealthSMART program and report these to the Board of Health Information Systems
 - seek authorisation for the various changes it has made to system implementation and budget targets within the HealthSMART program, through the defined central agency amendment processes.
-

4 Realisation of benefits from the HealthSMART program

At a glance

Key findings

- The HealthSMART strategy is based on a coherent vision which reflects global and national trends to increase ICT-enabled health service delivery.
- The approved funding submission to government for HealthSMART is not a substitute for a detailed business case.
- The lack of a whole-of-program business case was a key flaw in the planning for the program, as the Department of Human Services (DHS) had no baseline analysis or process to demonstrate that the program would be viable and that benefits would exceed costs and provide value-for-money.
- DHS did not have a reliable basis for estimating or defining agency contributions and whole-of-life costs. DHS was not in a position to accurately estimate the total cost of ownership of HealthSMART systems and infrastructure, nor what level of contribution should, or could, be made by health agencies.
- If the past patterns of ICT underinvestment continue, some agencies will not be able to keep their infrastructure up to date and are at risk of not fully benefiting from the investments made through the HealthSMART program.

Key recommendations

- That DTF and DHS work with the VPHS implementing agencies to develop an evidence-based business case, in line with current better practice guidance, to help achieve effective delivery of the incomplete components of the HealthSMART program.
- DHS should adopt a whole-of-life asset management approach to ICT investment in the VPHS, so that agencies are able both to address obsolescence, and to develop as appropriate their ICT capabilities and infrastructure with more certainty than the current funding models allow.

4.1 Introduction

In this section we assess the extent to which the benefits of the HealthSMART program have been realised to date, or whether they are likely to be realised within the program timelines and beyond.

We commence with consideration of the business case within which the expected benefits were determined.

We then analyse the impact of the delays in implementation and the increased agency costs on the extent of realisation of benefits.

4.2 The business case for HealthSMART

Analysis of the extent of achievement of expected benefits first requires consideration of whether the expected benefits were clearly articulated and realistic. The business case¹ for a major IT infrastructure investment like this is the starting point for this analysis.

A business case should be built upon a strategic assessment to determine the service need, and a rigorous analysis of the options available to address that need. Once approved, a business case should be regularly reviewed to ensure it maintains ongoing alignment with the program's strategic intent.

4.2.1 Current DTF better practice guidance

Better practice guidance has been issued by the Department of Treasury and Finance (DTF) on the development of business cases.² That guidance material, first promulgated in December 2006, provides best practice benchmarks for agencies involved in asset investment decisions.

The guidance recommends that a business case develop progressively over three stages:

- strategic assessment: to confirm strategic fit and service need
- options analysis: with indicative assumptions about the way forward
- formalised business case: to validate and confirm assumptions with detailed evaluation of costs, benefits, risks and opportunities.

4.2.2 Strategic assessment

In February 2003, DHS submitted a funding proposal for the program (*Whole-of-health ICT Strategic Plan Implementation Initiatives*) to the government.

¹ In Victoria, business cases are required to be prepared and submitted in support of all asset or capital proposals costing \$5 million or more.

² The guidance material can be found at <<http://www.gatewayreview.dtf.vic.gov.au/>>.

The funding submission contained a HealthSMART strategy—*Victoria's Whole-of-health Information and Communication Technology Strategic Plan 2003-2007*. The strategy outlined the initiatives needed to achieve desired outcomes, outlining the program's strategic directions for change.

The strategy reflects global and national trends in the increasing use of ICT in health agencies to enable cost effective service delivery and improve patient outcomes.³ The strategy:

- described the challenges facing the Victorian public health system (VPHS) and the crucial role of ICT in responding to these challenges
- identified the problems and limitations of the ICT systems and supporting infrastructure
- described the systemic funding problems for ICT systems and supporting infrastructure
- proposed a series of ICT initiatives to address the current limitation of technology and to leverage ICT to improve the efficiency and effectiveness of health care with the VPHS.

The strategy recognised the following ICT-related challenges faced by the VPHS:

- a growth in demand and expectations about modern clinical techniques supported by ICT
- a shortage of clinical staff, and the need to attract and retain these by providing them with a technology-enabled workplace
- an historic and chronic underinvestment in ICT across the health sector which has led to a lack of capacity and therefore obsolescence in basic administrative systems
- varied investment in ICT across the VPHS, with the majority of investment concentrated on basic administrative systems
- health agencies' heavy dependence on patient and administrative systems which have no back-up or redundancy
- health organisations running obsolete systems are at significant risk, as the products are not technically capable of meeting current business needs or supporting the level of integration required with other systems.

The strategy also recognised that, although the VPHS is an information dependent industry which will have a continued dependence on ICT, it will not be able to meet future challenges and demands without a more strategic and active adoption of technology.

The strategy recognised that there are no defined capital or recurrent funding sources for ICT within the existing health funding arrangements. Within agencies, ICT is forced to compete for funds against medical equipment items, which also require substantial and regular investment.

³ Price Waterhouse Coopers 2005, *Reactive to Adaptive Transforming Hospitals with Digital Technology*, Global Technology Centre, Health Research Institute.

Although DHS had provided some additional funding (\$12.5 million annually) to hospitals for the development of ICT prior to the establishment of the HealthSMART program, this funding only allowed agencies to undertake basic maintenance and limited development of systems.

According to the 2003 funding submission by DHS, current funding allocations were not enough to support the major developments required to replace high-risk legacy systems or to progress the implementation of clinical systems. Additional funding was also required to address ICT 'backlogs' and bring the health system up to an acceptable level and then maintain it.

The chosen strategy anticipated that HealthSMART would:

- replace outdated administrative systems
- provide centralised infrastructure, and support for applications and shared communications
- enable the transformation of health care delivery and
- establish the groundwork for an electronic care record for each patient in Victoria and prepare Victoria for participation in the emerging national e-health vision.⁴

4.2.3 Formalised business case

A formal business case was not prepared for the HealthSMART program. A funding proposal was submitted by DHS to the Government in February 2003 and approved in the 2003-04 budget.

Our review of the funding proposal showed that it contained:

- analysis of the service need
- two high-level options and an associated risk/benefits analysis of these options
- an assessment of the funding required
- a commitment to a four year implementation timeline
- description of the technical and business architecture
- an assessment of the shared services design and benefits of centralisation.

However, our analysis of the funding proposal identified a number of shortcomings such as:

- DHS did not conduct an investment appraisal of the program nor did it seek to demonstrate that the program's benefits outweighed the costs.
- DHS did not gather enough evidence to accurately estimate the budget for a program of this size and complexity, increasing the risk of cost over-runs.
- There were no project timelines or milestones developed at that time, and critical dependencies and activities were not defined.
- There was no review of the capacity and capability of the wider health sector to participate in and manage the effects of the significant change posed by HealthSMART.

⁴ The National e-Health Transition Authority is responsible for setting the national agenda for e-health. See <http://www.nehta.gov.au>

- There was no review of capacity or capability of the health ICT industry to deliver the ambitions of the proposed reforms.
- The funding submission did not consider alternative procurement options for the centralised ICT services model such as outsourcing all central ICT services. However, DHS did engage consultants to evaluate the proposed central ICT shared service model and to analyse associated costs and benefits.

4.2.4 Conclusion on business case

The HealthSMART strategy is based on a coherent vision which reflects global and national trends to increase ICT-enabled health service delivery. The strategy was aimed at addressing immediate issues of obsolescence and providing a basis for cost effective service delivery and improved patient outcomes.

However, the approved 2003 funding submission for HealthSMART is not a substitute for a detailed business case.

While there was a high-level options and risk analysis and commitment to a timeline, we found no evidence of a detailed appraisal of the investment, detailed implementation planning or any evidence that the funding being sought from health services would be actually available.

The lack of a whole-of-program business case represents a key flaw in the planning for the program, as DHS had no baseline analysis or process to demonstrate that the program would be viable and that benefits would exceed costs and provide value-for-money.

Due to this deficiency, a number of implementation issues that should have been forecast or analysed in a business case appear now to have manifested during the life of the program. In particular, implementation delays caused by procurement issues, technical complexity and lack of funding approval by agency boards have been experienced.

For the same reason, health agencies and the State are now having difficulty committing to related ICT investment, such as enabling works, which are required to effectively implement clinical systems.

Recommendation

- 4.1 That DTF and DHS work with the VPHS implementing agencies to develop an evidence-based business case, in line with current better practice guidance, to help ensure effective delivery of the incomplete components of the HealthSMART program.

RESPONSE provided by Secretary, Department of Treasury and Finance

DTF understands that DHS is closely working with VPHS agencies to facilitate the implementation of incomplete components of the HealthSMART program.

DTF will assist DHS, as required, in the successful completion of the program.

4.3 Benefits realisation

Some of the planned benefits from the HealthSMART program have been, or are expected to be, realised by the program end date.

4.3.1 Replacement of obsolete systems

An obsolete system is one that is no longer supported by the vendor, because it is considered to be too old. Risks from obsolescence include:

- vendors no longer offering updates or technical help if the user has problems
- the system being too inflexible to contribute to business process changes, or to accommodate business process changes
- rapid advances in technology restricting future opportunities to migrate data to newer systems.

The HOMER financial and patient administration system has been widely used in the VPHS for many years. HOMER provides both a finance management information system (FMIS) and a patient management system (PMS).

The system vendor advised users in March 2001 that it would stop support and maintenance of HOMER from 31 December 2002, due to difficulties it faced in supporting the old technology. An extension was negotiated between DHS and the vendor to extend this deadline to completion of the PCMS implementations.

HOMER was used in eight health agencies as their PCMS. To date, only one of these agencies has replaced HOMER with the new PCMS application.

The HOMER finance management information system component was also used in 3 metropolitan health agencies and two regional health agencies. All agencies that used HOMER for their FMIS are now using the Oracle e-business suite, except for Bayside Health which has implemented a non-HealthSMART FMIS application.

4.3.2 Business transformation via technology upgrades

Implementation of new ICT systems offers an opportunity to improve and re-engineer existing business processes, rather than merely replace obsolete systems. While the replacement of HOMER across so many agencies was a primary imperative for the initiation of the project, it was always intended that the capability within new systems would be significantly greater than that provided by the legacy system.

All agencies that have implemented FMIS have removed the risk of obsolescence. Some agencies have also taken the opportunity to improve their business processes by:

- standardising catalogues and improving ordering of supplies
- improving management of inventory and stock
- implementing facilities for electronic fund transfer.

The new FMIS uses a standardised chart of accounts. This has enabled DHS to consistently report financial performance and benchmark costs across the hospital sector.

The gains from these enhancements have not been quantified as DHS is yet to conduct a post-implementation review of benefits.

4.3.3 Benefits yet to be realised

The most significant benefits from the HealthSMART program have yet to be realised due to delays in implementing clinical systems.

Clinical systems are the single, largest investment with the HealthSMART program accounting for \$96 million (30 per cent) of the \$323 million budget. However, after more than four years there have been no implementations of clinical systems in Victoria.

Adverse events and medical error in the health care sector are an important public health problem. They contribute significantly to patient morbidity and mortality, and to the cost of health care due to over-treatment and rectification arising from mis-diagnosis or incorrect prescribing or procedures.

Expected outcomes of the HealthSMART clinical systems project include:

- reduced medication errors
- reduced pathology and radiology tests
- reduced clinician administrative tasks, resulting in more time spent with patients
- improvements in turnaround times for medication orders
- increased use of less expensive drugs and tests
- reduced delays in patient discharge from speedy availability of test results
- reduction in additional bed-days associated with adverse events.

Medication error is a leading cause of adverse events in Australia, with 10-20 per cent of adverse events being drug related, and up to half of these preventable. In addition, it is estimated that some 140 000 admissions to hospital are due to a medication-related adverse event.

According to DHS, the estimated annual cost of adverse events in Victoria was \$378 million in the year 2000.⁵ Other more recent research shows that in 2003-04, adverse events cost \$460 million, with up to half of these events characterised as 'preventable'.⁶

Implementation of HealthSMART clinical systems has the potential to provide the most significant realisable benefits from the government's \$323 million investment in the HealthSMART program.

4.3.4 Conclusion

Health agencies have been able to harvest benefits from the implementation of the FMIS, HRMS and PCMS applications. Some obsolete systems have been replaced and others are being replaced. Many agencies have taken up the opportunity to improve the way they do business.

However, there are considerable delays in obtaining benefits from the implementation of clinical systems. Delays in implementing clinical systems is not simply a project management issue. Opportunities to realise benefits and reduce costs have also been lost.

4.4 Future cost implications

In its 2003 funding submission, DHS assumed that individual health agencies would meet the ongoing costs of HealthSMART systems once the applications were operational. The 2003 funding submission indicated that an additional \$43 million would be required after the current program expires.

This amount included:

- funding for centralised ICT services or shared support services (\$17 million)
- the program management team (\$11 million)
- refreshed server technology (\$10 million)
- communication links (\$5 million).

The ability to plan and accommodate HealthSMART costs is dependent on the viability of individual agencies. While some agencies have sufficient reserves to pay for their share of implementation expenses and ongoing costs, other agencies have struggled.

⁵ Department of Human Services, *Improving Patient Safety in Victorian Hospitals*. September, 2000.

⁶ J Ehsani, T Jackson and S Duckett, 'The incidence and cost of adverse events in Victorian hospitals 2003-04', *The Medical Journal of Australia*, Volume 184, Number 11, 2006, pp 551-555

4.4.1 Funding of ICT infrastructure within health agencies

Adequate funding of ICT infrastructure within health agencies is an ongoing challenge within the sector. ICT competes for funds with general medical equipment which are often given greater priority due to their clinical 'patient-facing' usage.

There is no specific capital or recurrent funding source for ICT within the existing health funding arrangements and some agencies are not able to fund the recurrent ongoing costs of HealthSMART applications. These costs include infrastructure upgrades and ongoing recurring HealthSMART Services fees.

DHS has agreed to provide interest free loans to agencies to pay for these shortfalls; however, we observed during the audit that many health agencies are reluctant to accept these loans due to their adverse budget situations and ongoing viability concerns. To date only two health agencies (The Women's and Western Hospital) have accepted the loan offer.

If the past patterns of ICT under-investment continue, there is a risk that some agencies will not be able to keep their infrastructure up to date and may not fully benefit from the investments made through the HealthSMART program.

4.4.2 Ongoing costs to health agencies of central ICT support services

OHIS has developed a model to cost the provision of central ICT support services to health agencies for the next five years.

This model uses parameters such as agencies' activity,⁷ their gross operating revenue, and number of staff, to apportion costs. The model uses estimates of costs for maintaining and supporting the applications, for shared hardware and for refreshing agency technology. Under the service level agreements in place for HealthSMART Services, agencies are responsible for the maintenance of their ICT environment to defined minimum standards.

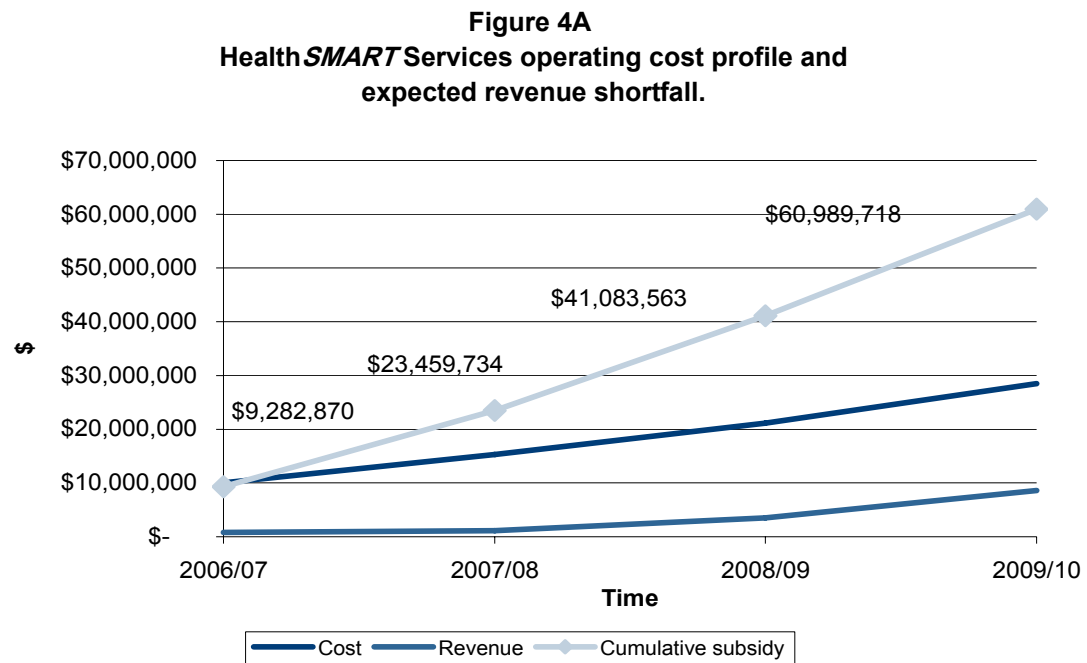
Delays in implementation of HealthSMART applications not only impact the ability to successfully implement the whole-of-health ICT strategy, they also affect the viability and costs of other components of the program.

The most significant impact will be on the ongoing viability of HealthSMART Services. The HealthSMART Services model is only financially viable if a sufficient number of agencies implement HealthSMART applications.

Due to the delays in implementing the various HealthSMART applications, our analysis indicates that HealthSMART Services will need to be subsidised by DHS beyond 2008-09.

⁷ Calculated using the Weighted Inlier Equivalent Separations, which is a financial measure of allocating hospital activity.

Figure 4A explains the HealthSMART Services operating cost profile and expected revenue shortfall.



Source: VAGO analysis, based on OHIS projections.

Currently, HealthSMART Services is expected to incur expenses of about \$75 million during the period 2006-10.

Taking into account projected revenue from health agencies of about \$8 million per year, the impact of this funding shortfall is that HealthSMART Services will require an additional \$61 million (i.e., additional funding) to subsidise the arrangement until it reaches a viable scale.

As for the situation with agency ICT infrastructure, there is no identified long-term funding source to sustain HealthSMART Services. This risks the ability to maintain a consistent and industry-standard service to the health sector.

4.4.3 Conclusion

DHS did not have a reliable basis for estimating or defining agency contributions and whole-of-life costs. This means that DHS was not in a position to accurately estimate the total cost of ownership of HealthSMART systems and infrastructure, nor what level of contribution should, or could, be made by health agencies.

The June 2006 program budget revisions resulted in DHS contributing an additional \$35 million. This cost escalation was made in recognition of the inability of agencies to meet the original DHS expectations of co-contributions.

If past patterns of ICT under-investment continue, some agencies risk not being able to keep their infrastructure up to date, and not fully benefiting from the investments made through the HealthSMART program.

Delays in implementation of applications will mean that the HealthSMART shared services arrangement will have to be subsidised by an extra \$61 million until enough agencies have implemented HealthSMART applications. This could divert significant funds from DHS service delivery and lead to under-utilisation of a strategic whole-of-sector ICT asset.

Recommendation

- 4.2 DHS should adopt a whole-of-life asset management approach to ICT investment in the VPHS, so that agencies are able both to address obsolescence and to develop as appropriate their ICT capabilities and infrastructure with more certainty than the current funding models allow.

5 Monitoring and review of the program

At a glance

Key findings

- The HealthSMART program has established robust governance structures, with the presence of senior departmental and agency representatives enabling frank and open discussions of program risks and deliverables.
- Oversight of the program could be strengthened if regular independent assurance on the progress of the program was conducted. Only one of the five Gateway reviews required in the funding approval has been conducted.
- Overall program management processes are sound and adequate controls are in place to coordinate the complex program.
- DHS has faced challenges in ensuring that vendors perform to their contractual requirements. DHS has taken a proactive approach to managing its vendors.
- OHIS continues to have difficulties attracting skilled and experienced ICT personnel and continues to rely on contract staff and secondments from health agencies to fill key positions.
- Although portfolio charters broadly describe the benefits to be obtained from a system implementation, no benefits 'baselining' had been done for the FMIS/HRMS or PCMS applications. Audit was not able to find evidence of benefits planning or reviews at the agency level for these applications.

Key recommendations

- DTF and DHS should ensure that the HealthSMART program and its component portfolio projects are subject to timely Gateway reviews, consistent with current policy on high expenditure/high risk projects and programs.
- DHS should ensure regular internal audits of aspects of the HealthSMART program, given the high levels of risk and expenditure involved.
- DHS, in collaboration with implementing agencies, should review the benefits received from the implementation of the HealthSMART program. This should focus on whether:
 - the applications and ICT infrastructure are operating as planned
 - benefits are being realised
 - ICT systems and infrastructure are providing the expected functionality, without any negative impacts.

5.1 Governance and management

5.1.1 Introduction

Sound program governance and management ensure business objectives are delivered in an efficient and effective manner.

The Victorian Government's Gateway Review Process¹ and the UK Office of Government Commerce have identified that adequate and robust management systems and processes are central factors for project success.²

5.1.2 Governance of HealthSMART

Board of Health Information Systems

In November 2003 the Board of Health Information Systems (BHIS) was formed to oversee the development and implementation of the *Whole-of-health Information and Communication Technology Strategic Plan 2003-2007* and to provide high-level direction for the HealthSMART program.

BHIS is comprised of senior representatives from DHS, DTF, primary and community health agencies, metropolitan health services, and rural and regional health ICT alliances. It should be noted that the board does not have any executive powers—it is an advisory body within the broader governance environment of DHS.

The Secretary of DHS is the chair of BHIS and actively participates in decision-making in relation to the HealthSMART program, reporting to the Minister for Health.

The OHIS program director and executive officer also attend board meetings which are held every two months.

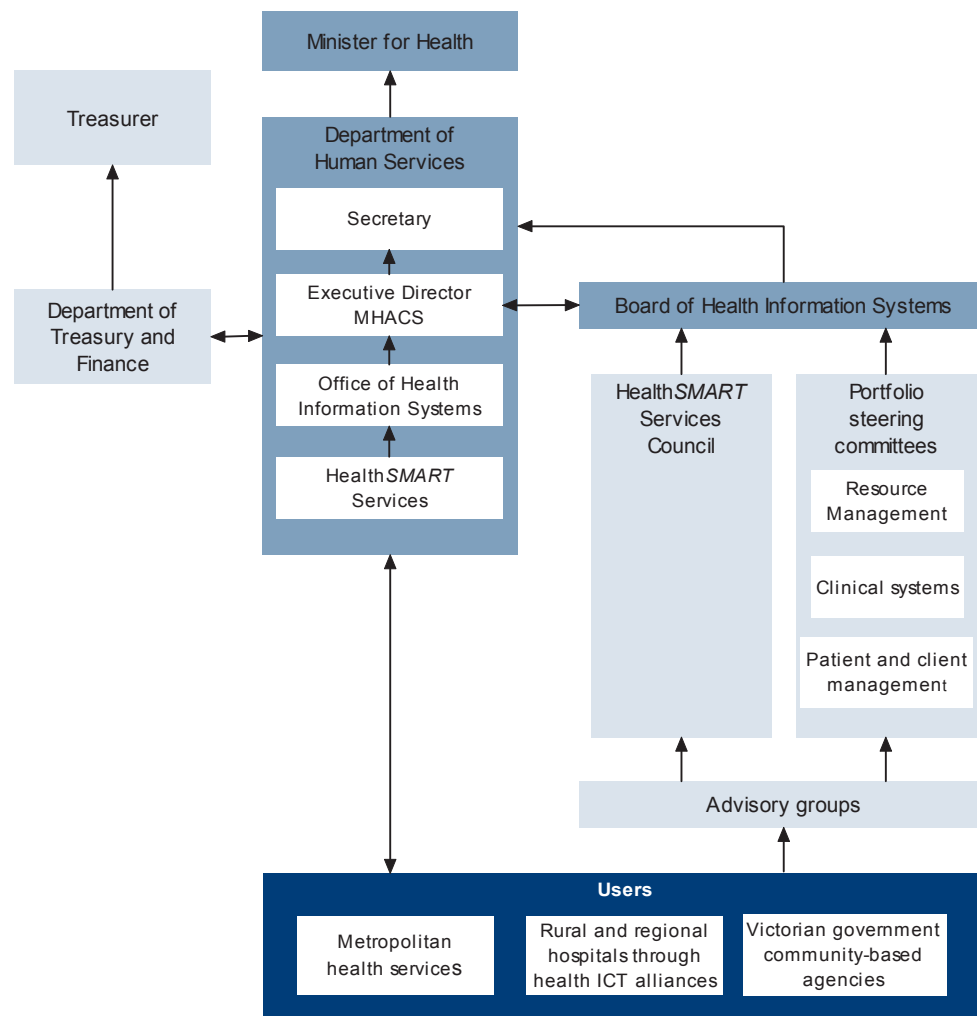
BHIS is supported by OHIS and has four steering committees, one for each of the program's four portfolios (Resource Management Systems, Patient & Client Management Systems, Clinical Systems and HealthSMART services).

The chairs of the portfolio steering committee (who are usually senior agency executives) are also members of the board. This cross representation ensures that information flows between the board and its supporting committees.

¹ According to the Gateway Review Process (GRP) website <<http://www.gatewayreview.dtf.vic.gov.au>>, the GRP is part of the Victorian Government's Gateway Initiative to improve infrastructure and Information Communication Technology project development and delivery across government. The aim of the GRP is to help government departments and agencies ensure that their investment is well spent, meets business and the government's strategic objectives, and achieves value-for-money outcomes.

² Good practice criteria are based on 'Managing Successful Programmes' 2007, Office of Government Commerce, United Kingdom.

Figure 5A
HealthSMART program governance and management framework



Source: Victorian Auditor-General's Office

Review of board minutes and interviews with 9 of the 13 current board members (including the four chairs of the supporting committees) showed that discussions about the program were open and frank and that there was clear reporting of risks.

Examples of key issues and risks discussed and actioned by the board include:

- HealthSMART participation policy and issues that have arisen from it
- vendor performance and viability issues—in particular the board has sought and received regular updates on the viability of the PCMS vendor

- changes to program scope review of crisis events such as the May 2005 failure of the FMIS system³
- endorsement of all major revisions to program timelines and budgets.

Operational leadership of HealthSMART

At the program level, the program director, portfolio managers, and the manager of the program management office (PMO) provide operational leadership in the HealthSMART program. Portfolio managers report regularly to portfolio steering committees, with the OHIS program director informing the board about the status of the program at each board meeting.

The BHIS and its supporting steering committees have adequate stakeholder representation, and have been provided with regular reports by the OHIS director. Reports cover the program's progress including financial, change, quality, risk and contract management issues. The Board has also received further reporting by key contractors on achievement of their expected deliverables.

DHS has placed significant emphasis on the governance and management arrangements for HealthSMART since its inception and we found that these arrangements met our expectations.

The board has assessed and vetted additions to the program—(such as payroll systems) using a robust business case approach and has rejected other additions (such as the implementation of a billing system) where the benefits do not outweigh the costs or are not aligned with the strategic intent of the program.

On the whole, our analysis showed that BHIS leadership has ensured that the program and its outputs are aligned with the original HealthSMART strategic vision.

External scrutiny and independent assurance and advice

Each quarter, OHIS reports through DHS to the government via DTF quarterly asset investment management reports.

The approval of the HealthSMART program required that it would be subject to the requirements of the Gateway Review Process. This process calls for independent reviews at key decision points for high- and medium-risk projects.

During the four-year life of the program, only one of the five Gateway reviews required for the HealthSMART program have been conducted (Gateway 3: Procurement Strategy Review, which was conducted in July 2004 on the Patient and Client Management System).

³ A significant outage of the FMIS production system occurred on 15 May 2005, with an adverse impact upon agencies. The incident resulted in the loss of approximately 4 hours of FMIS production data and 2 days of system unavailability.

DHS has liaised with the Gateway Unit and prepared a forward plan for Gateway reviews, however, to date, there have been no further Gateway reviews confirmed for the program.

No internal audits have been conducted by DHS, which also advised that, at this stage, there is no internal audit activity planned for the HealthSMART program.

Conclusion on governance of HealthSMART

The HealthSMART program has established adequate governance structures and processes. The presence of senior departmental and agency representatives enables frank and open discussion of program risks and deliverables.

However, the mandated Gateway Reviews have not been conducted at key decision points. There has not been any internal audit activity—conducted or planned.

Oversight of the program would be strengthened if regular independent assurance on the progress of the program was conducted.

Recommendations

- 5.1 DTF and DHS should ensure that the HealthSMART program and its component portfolio projects are subject to timely Gateway reviews, consistent with current policy on high expenditure/high risk projects and programs.

RESPONSE provided by Secretary, Department of Treasury and Finance

DTF notes this recommendation.

Project assurance mechanisms, such as the Gateway Review Process, help provide strategic assessment of progress at key project phases, aiding in the successful completion of high risk projects and programs.

The current status of the HealthSMART program would dictate whether the conduct of Gateway program reviews could contribute to a successful completion of the program or derive lessons learned for future undertakings. DTF will liaise with DHS to assess the opportunities for future reviews of this program.

- 5.2 DHS should ensure regular internal audits of aspects of the HealthSMART program, given the high levels of risk and expenditure involved.

5.1.3 Program/project management

In July 2003, OHIS established a team to manage the HealthSMART program. It comprised a Program Management Office (PMO), four portfolio managers and a technical services manager.

The PMO is responsible for formulating and promoting a consistent project management methodology for management of HealthSMART portfolios and implementation within individual agencies. The HealthSMART approach to project management is loosely based on PRINCE2.⁴

The PMO is also responsible for monitoring whole-of-program dependencies, milestones, costs program risks, issues and benefits. This is done through a series of master plans and registers that aggregate information from portfolios and provide a central point for coordination of information across multiple portfolios.

A HealthSMART program funding condition requires agencies to implement specified project governance arrangements (including the appointment of a project manager to manage their involvement) and regularly report project progress to OHIS. They must also collaborate with the HealthSMART portfolio managers and develop project plans.

OHIS has prepared a change management strategy in the form of a transition and contingency plan. OHIS has provided agencies with the tools to manage implementation of the HealthSMART systems, but are concerned that some agencies may not have adequate project management experience.

Human resource pressures

There has been continuity in the leadership of the central elements of the program. The director of OHIS and the manager of the PMO have been in these roles since the inception of the program in 2003.

OHIS has found it difficult to recruit people with sufficient experience and skill for several of the ICT technical specialist and senior project management positions, due to salary band and headcount restrictions within the DHS branch and division structure. To address this, OHIS has had to rely heavily on contract staff and secondments from health agencies to fill key positions.

Not having access to technical expertise and project managers experienced in large ICT projects has caused delays in the procurement and implementation of HealthSMART applications and HealthSMART Shared Services.

Key positions, such as the portfolio manager and account manager for clinical systems, are currently vacant. This capability gap exposes the program to further risks of delay to the implementation and delivery of its largest and most significant application.

Conclusion on program/project management

Program and project management processes are sound.

⁴ See <http://www.ogc.gov.uk>.

However, OHIS will continue to have difficulties attracting skilled and experienced ICT personnel if they do not have access to ICT technical specialist salary bands as part of their human resource needs for the program.

If this is not achieved, OHIS will have to rely on contracting staff and secondments from health agencies to fill these key positions.

5.1.4 Cost/budget management

OHIS provides the board with regular financial reports that report actual expenditure against budget for the current financial year and for the life of the program. The financial reports only include expenses of OHIS, but not agency contributions.⁵

Although OHIS is responsible for the budget, it does not collect, collate or report on agency contributions and the board does not receive financial reports about agency contributions.

OHIS advises that the accurate collection of agencies contributions is made more difficult as they include both 'in-kind' (such as staff resourcing) and cash contribution (asset improvement).

Conclusion on cost/budget management

OHIS does not collect information about, nor monitor, agencies' contributions to the total project budget, which means that they do not have a complete picture of the 'full costs' of the HealthSMART program.

Without this information, OHIS is not able to accurately report against the total program funding envelope approved by the government.

Recommendations on this issue are in part 3 of this report.

5.1.5 Risk and issue management

Successful program management requires the need to both manage and tolerate uncertainty, complexity and ambiguity. Risk management and issues resolution systems are the vehicles to achieve this.

The Australian and New Zealand Risk Management Standard, AS/NZS 4360:2004, defines risk as the chance of something happening that will have an impact on planned achievements. Risk management is a comprehensive process, supported by appropriate strategies and frameworks that are designed to identify, analyse, evaluate, treat and monitor those risks that could prevent a department or agency from achieving its objectives.

⁵ As explained elsewhere in this report, agencies will make a contribution equivalent to \$25 million of the \$310 million HealthSMART budget. OHIS will provide the other \$285 million. The financial reports presented to the board only include costs relating to the \$285 million.

Issues are events that have happened, were not planned, and are currently affecting the program in some way and need to be actively resolved.

Program wide risk and issues register

A program-wide risk and issues register has been developed and is maintained by the project director/PMO manager with input from project managers, suppliers and stakeholder representatives who are encouraged to monitor, identify and manage risks.

The risk and issues register includes the most significant risks to the HealthSMART program, the ranking of the risks with the likelihood of the risk occurring and the controls or mitigation strategies to reduce the likelihood of the risk occurring. Key risks are reported by the project director at each board meeting.

OHIS maintains a risk and issues register including mitigation actions for each portfolio. Steering committees monitor the register and report to the board. Cascading risk and issues registers have been used by the PMO and project managers and transparently reported.

Conclusion

The program has robust risk management processes in place.

There is transparent reporting, monitoring and accountability for key risks and issues, ensuring that key risks are openly discussed and addressed.

5.1.6 Benefits management

A focus on benefits management enables those delivering and governing ICT programs to focus on business outcomes, not just the implementation of technology. Benefits management processes require identification, delivery and monitoring of both tangible and intangible benefits.

DHS did not develop a whole-of-program benefits management plan until May 2007 (3 years into the program), but is now reporting every quarter to DTF against this plan. The benefit reports are also presented regularly to the BHIS.

The key performance indicators (KPI) supporting the current benefits management plan are indicators of outputs rather than outcomes or benefits. For example, the KPI measuring whether the benefit—‘Drive the transformation of Victoria’s health services’—has been realised is ‘the number of implementations of clinical systems’. A more appropriate measurement of benefits of clinical systems could be ‘the reduction of adverse outcomes for patients’.

The OHIS program implementation methodology requires benefits to be ‘baselined’ to enable comparison with current and future states. The methodology also requires that benefit plans be prepared by each agency as part of the implementation.

To date, neither DHS nor any of the agencies covered by this audit have undertaken any benefits studies for the implemented systems.

We observed that although portfolio charters broadly describe the benefits to be obtained from a system implementation, no benefits 'baselining' had been done for the FMIS/HRMS or PCMS applications. Further, we were not able to find any evidence of benefits planning at the agency level for these applications.

A benefits realisation plan was developed by DHS during planning for clinical systems to identify potential benefits to be derived from implementation. Studies were conducted at three Victorian pilot agencies to form state baseline results. The approach used included interviews, literature review, surveys, time and motion studies and statistical analysis.

After baseline measures were completed, anticipated savings/efficiencies were calculated to produce measurable and objective key performance indicators (KPIs) for the clinical system project.

Conclusion

OHIS did not develop benefit management plans for the FMIS, payroll or PCMS systems. There is no evidence of any benefit studies being conducted for these systems at the agency level.

OHIS has developed a whole-of-program benefits management plan, however, some of the KPIs in that plan are measures of activity and output rather than measurable outcomes or benefits.

Recommendation

5.3 DHS, in collaboration with implementing agencies, should review the benefits received from the implementation of the HealthSMART program. This should focus on whether:

- the applications and ICT infrastructure are operating as planned
- benefits are being realised
- ICT systems and infrastructure are providing the expected functionality, without any negative impacts.

5.1.7 Stakeholder engagement

Stakeholder engagement within programs is crucial to ensure that those who have an impact on the achievement of the program, or may benefit from its implementation, will buy into its vision.

It is a way of achieving influence and outcomes through effective management of relationships.

Involvement of key stakeholders helps to ensure broad support for change and increases the likelihood of successful implementation. Transparent communication about progress between system developers, implementers and service users is vital to maintain users' confidence in what is being delivered.

OHIS communication with stakeholders

OHIS engages with key stakeholders in a number of ways. Communication activities are aimed at:

- upper levels of health agency management—such as chief executive officers, chief information officers, chief financial officers—as well as chairs of healthcare agency boards
- HealthSMART program and local steering committee members
- senior members of rural health ICT alliances
- primary and community healthcare agencies.

OHIS' communication initiatives include:

- the HealthSMART website⁶—the website is a principal communication mechanism and is regularly revised and updated
- a quarterly newsletter cycle has been established for each portfolio area
- a fortnightly eBulletin—emailed to more than 400 stakeholders
- regular HealthSMART contributions—published in the Primary and Community Health Weekly Bulletin⁷
- the HealthSMART Roadmap⁸—updated on a quarterly update cycle
- the HealthSMART QuickPlace—a secure internet site used to manage communications for several groups across the project, including lead agency project managers
- organisation of technical symposiums and application demonstrations to engage with staff responsible for implementation
- meetings with CEOs, CIOs and staff across the VPHS.

Our analysis showed that communication between HealthSMART and upper levels of management within healthcare agencies is satisfactory. We saw evidence that senior OHIS staff meet regularly with agency Chief Executive officers (CEOs) and Chief Information Officers (CIOs) to discuss the program and manage emerging issues.

However, communication with other stakeholders, such as clinicians and primary and community health care professionals, has not always been as regular or targeted.

OHIS considers change management and communication of progress to be health agency responsibilities. We observed that agencies have had variable success in communicating and informing their staff of HealthSMART related changes.

⁶ <<http://www.health.vic.gov.au/Healthsmart>>

⁷ <<http://www.health.vic.gov.au/pchtopics/>>

⁸ <<http://www.health.vic.gov.au/Healthsmart/documents/driveguideaug07.pdf>>

At the time of the audit, neither OHIS nor the health agencies we audited have any way of ascertaining if they were effectively communicating with their key stakeholders

Agency participation

Some agencies have been enthusiastic supporters of the program and have made a strategic decision to align with the strategy. Other agencies have been more reluctant and difficult to convince.

Obtaining agency participation and getting participating agencies to agree to the implementation has been a challenge for the program. Agencies explained these delays in terms of their view that:

- OHIS had not provided them with reliable information on system implementation and/or ongoing costs which would be sufficient for their boards to approve
- there were cheaper solutions in the market
- there could be a loss of functionality after implementation of HealthSMART applications.

As discussed in part 2 of this report, poor early buy-in by agencies has led to an enforced participation policy, which was developed in February 2006 and promulgated by the Secretary of DHS to health agencies. This policy requires agencies which intend to introduce or replace ICT systems to implement the relevant HealthSMART system.

An agency will be granted an exemption from this policy if it is part of a larger national organisation and is required to use its system, or if the agency's needs differ significantly from the HealthSMART system. The Secretary of DHS must approve any exemptions. Exempt agencies will be required to pay the full cost of implementing an application and integrating it with the HealthSMART systems. Agencies will not be granted an exemption merely because their preferred solution has the same or reduced functionality, or is cheaper than the equivalent HealthSMART system.

To date the sole application for exemption has been approved. The Loddon Mallee Health ICT Alliance was granted an exemption to upgrade a non-HealthSMART PCMS. This exemption was granted as the PCMS at Bendigo Health and Echuca Health was obsolete and OHIS was not able to accommodate an additional implementation at that point in time.

Conclusion

The HealthSMART PMO has attempted to manage stakeholders effectively in a difficult environment. However, due to various pressures faced by health agencies, some stakeholders have been resistant to the implementation approach used by OHIS.

OHIS could assist agencies to improve communication with staff and assist agencies to better inform staff about the progress and expected benefits of the program after implementation.

A survey of current and future users would allow DHS and agencies to identify gaps in understanding of the program among agency staff and to target their communications efforts more effectively.

5.1.8 Procurement management

Selection and evaluation process for tenders

In assessing whether the selection and evaluation process for tenders was adequate, we examined if:

- the selection process was conducted with probity
- there were detailed evaluation criteria
- a comprehensive report on the tendering process was prepared, and if it concluded that the process was fair and timely
- the evaluation considered whether tenders adequately addressed users' requirements.

DHS has established an Accredited Purchasing Unit to oversee tendering arrangements and to ensure that its purchasing procedures for goods and services are in line with Victorian Government Purchasing Board (VGPB) guidelines. The unit approves contracts between \$100 000 and \$500 000. Contracts over \$500 000 must be endorsed by the unit and then submitted to the OHIS board for approval.

DHS sought expressions of interest for the supply and implementation of HealthSMART projects through a 'request for tender' (RFT) process. The RFT documents included tender specifications, evaluation criteria (such as value for money) and general tender conditions. Documents for each tender were approved by the relevant portfolio steering committee and by the minister before being issued.

To evaluate responses to the RFT, DHS brought experts from health agencies to sit on evaluation teams. The teams were required to evaluate the responses in line with the endorsed RFT evaluation methodology (which had been prepared in conjunction with the RFT documentation). The methodology included a shortlisting process (to determine whether mandatory requirements had been met) and two or three evaluation stages, depending on the system being procured. Evaluation committees comprising health agency representatives were formed to assess the tender responses.

Figure 5B below shows the stages of the evaluation, and the number of tenders that successfully passed from one stage to the next.

Figure 5B
HealthSMART evaluation stages and numbers of tenders for each system

Evaluation stages	FMIS	HRMS (Payroll)	P&CMS	CMS	PMS	CS
1. Mandatory requirements	19	6	5	3	2	9
2. Evaluation of the technical and functional responses included in tenders	3	3	1	2	2	5
3. Testing of proposed functions, assessment of tenderers' capability, commercial evaluation ^(a)	1	1	1	1	0	2
4. Final analysis (only applicable to HRMS and CS)	n/a	1	n/a	n/a	n/a	1

Note: (a) The evaluation stages for HealthSMART products were: mandatory compliance assessment; paper based evaluation of responses against technical and business selection criteria; demonstration by vendors via evaluation team (which included representatives from health agencies) developed scripts of technical and business selection criteria; reference checks, including site visits of products in use. VFM assessment(s) were then conducted after the completion of these four stages.

Source: OHIS.

At the time of the audit, tenders for all five systems had been evaluated and awarded. The evaluation committees had prepared comprehensive reports with recommendations to the relevant portfolio steering committee.

Independent probity auditors conducted probity audits of all projects at each evaluation stage to ensure that government tendering policies were followed and Victorian Government Purchasing Board probity requirements met.

For all of the key procurements conducted, the probity auditors concluded that a fair and proper evaluation process had been conducted.

After the conclusion of the procurement process for the PCMS application, a complaint was made by an unsuccessful tenderer alleging a number of process breaches, as well as a conflict of interest between a staff member of OHIS and the successful tenderer.

These complaints were escalated to the VGPB for investigation. After investigating the claims, the Chair of the VGPB wrote to DHS on 28 November 2005 stating the Board's findings, which were *inter alia*:

- A working document was provided to a tenderer prior to the release of the RFT, which was a breach of the tendering rules. The VGPB found that the source of this document was not able to be discovered, however, it also found that the nature of the document was not likely to have had an effect on the outcome of the tender.

- An unsuccessful tenderer was given incorrect advice on the timing of production to DHS of a Victorian Industry Participation Policy statement, which was a technical breach of the tendering rules. However, the VGPB found that this technical breach did not affect the outcome of the tender.
- The conflict-of-interest complaint was found to be substantiated by the VGPB due to the fact that an OHIS employee had inappropriate social contact with a tenderer during the bidding phase. Nevertheless, the VGPB's investigation also found that because the employee had no role in decision-making about tenderers beyond an initial recommendation (which was not accepted by the steering committee and BHIS), his inappropriate social contact did not have any impact on the outcome of the tender.

Revisions to some RFTs to meet user requirements

At two stages during the evaluation process, work was undertaken to define the difference between what tenderers were offering and what users required from the systems. A preliminary 'gap analysis' was conducted as part of the second evaluation stage and a comprehensive analysis conducted during contract negotiations.

For the comprehensive analysis, experts and project managers from HealthSMART lead agencies and tenderers met in workshops to assess the systems being offered against the user requirements in the RFTs.

Gaps identified were either resolved or referred to the State-wide Footprint Committee⁹. The committee prioritised gaps in user needs and advised portfolio steering committees about priorities for addressing gaps. This information was used during contract negotiations.

The total value of the revisions to the user requirements in the RFT as requested by the portfolio steering committees was \$299 000 for the FMIS and \$700 000 for the PCMS.

The workshops identified no gaps for the payroll system, although some agencies maintained that the system may not completely meet their needs without further modifications.

Conclusion

The selection and evaluation processes conformed to government requirements, including independent probity reviews.

Lapses in the application of the tendering process for the PCMS application were identified by the VGPB, however, they concluded there was no evidence that these lapses breached the probity of the procurement process.

⁹ The State-wide Footprint committee ensures that all changes to the state-wide footprint or design for an application are authorised. Membership consists of participating agencies and DHS staff.

Although the successful tenderers did not comply completely with all user requirements, OHIS had effective processes in place to identify and ensure that gaps in vendor offerings were addressed to meet user needs.

5.1.9 Vendor/contractor management

While most of the vendors are performing adequately, some are not delivering on their contractual obligations in a timely manner and not meeting pre-defined service levels.

OHIS is actively managing this non-performance by:

- revising payment schedules and milestones
- establishing remediation plans for vendors
- lobbying for the replacement non-performing vendor project managers/executives.

OHIS hold regular meetings between OHIS portfolio managers and the key vendors.

Conclusion

DHS has faced challenges in ensuring that all vendors perform and meet their contractual requirements.

DHS has taken a proactive approach to manage its vendors and has required vendors to accept deferred payments and replace non-performing managers.

5.1.10 Conclusion on whether the HealthSMART program has been effectively governed and managed

Overall program management processes are sound and the PMO has adequate controls in place to coordinate the complex program.

However, OHIS continues to have difficulties attracting skilled and experienced ICT personnel and continues to rely on contract staff and secondments from health agencies to fill key positions.

The program has robust risk management processes. There is transparent reporting, monitoring and accountability for key risks and issues, ensuring that key risks are openly discussed and addressed.

The procurement selection and evaluation processes were sound and while the successful tenderers did not comply completely with all user requirements, OHIS used effective processes to identify and ensure that gaps in vendor functionality were addressed to meet user requirements.

DHS has faced challenges in ensuring that all vendors perform and meet their contractual requirements. DHS has taken a proactive approach to managing its vendors and has required vendors to replace non-performing managers or deferred payments.

Monitoring and review of the program

The governance structure set up by DHS, as well as the presence of senior departmental and agency representatives has enabled frank and open discussions on risks and deliverables for the program.

However, the program's inconsistent achievement against implementation dates and targets means that the exercise of program management and governance needs to be more effective.

Auditor-General's reports

Reports tabled during 2007-08

Report title	Date tabled
Program for Students with Disabilities: Program Accountability (2007-08:1)	September 2007
Improving our Schools: Monitoring and Support (2007-08:2)	October 2007
Management of Specific Purpose Funds by Public Health Services (2007-08:3)	October 2007
New Ticketing System Tender (2007-08:4)	October 2007
Public Sector Procurement: Turning Principles into Practice (2007-08:5)	October 2007
Discovering Bendigo Project (2007-08:6)	November 2007
Audits of 2 Major Partnership Victoria Projects (2007-08:7)	November 2007
Parliamentary Appropriations: Output Measures (2007-08:8)	November 2007
Auditor General's Report on the Annual Financial Report of the State of Victoria, 2006-07 (2007-08:9)	November 2007
Funding and Delivery of Two Freeway Upgrade Projects (2007-08:10)	December 2007
Results of Financial Statement Audits for Agencies with 30 June 2007 Balance Dates (2007-08:11)	December 2007
Local Government: Results of the 2006-07 Audits (2007-08:12)	February 2008
Agricultural Research Investment, Monitoring and Review (2007-08:13)	February 2008
Accommodation for People with a Disability (2007-08:14)	March 2008
Records Management in the Victorian Public Sector (2007-08:15)	March 2008
Planning for Water Infrastructure in Victoria (2007-08:16)	April 2008

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