

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.

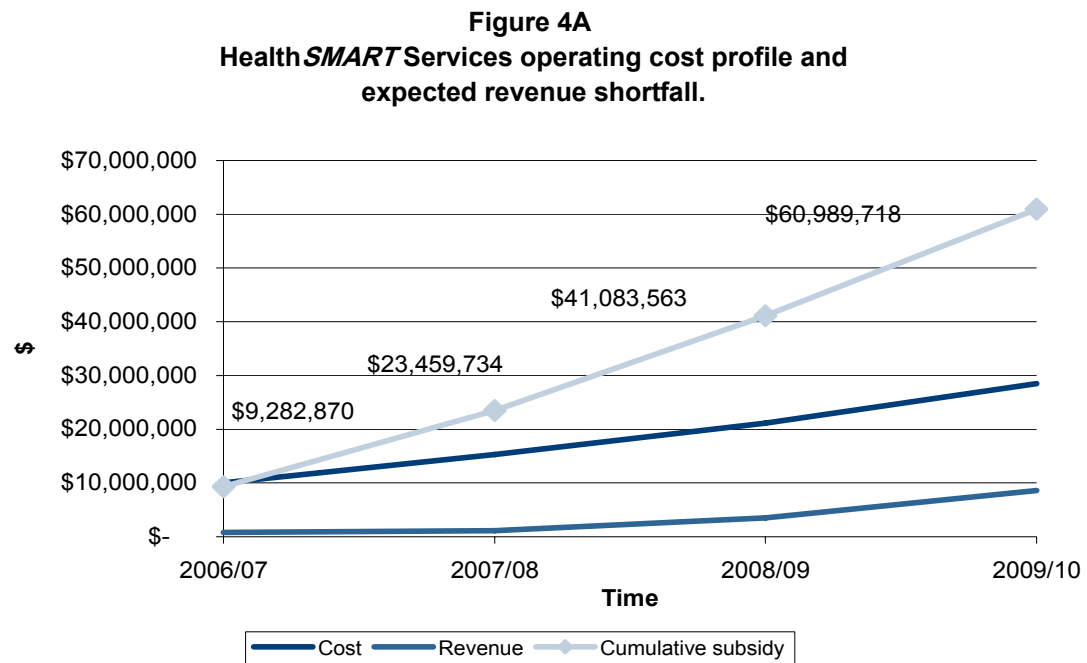
Delays in implementation of HealthSMART applications not only impact the ability to successfully implement the whole-of-health ICT strategy, they also affect the viability and costs of other components of the program.

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.
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