Ministerial Review of Victorian Health Sector Information and Communication Technology

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Chair’s foreword

The health care of most people in our society now depends, to a greater or lesser degree, on the use of information technology including computers and networks. Individual and social health benefits can accrue from the best use of these information systems provided that they are planned and resourced properly.

In late 2012 the Victorian Minister for Health, the Hon. David Davis MLC, convened a panel to review the current approach to Victorian health sector information and communication technology (ICT).

The Minister tasked the panel with providing practical and strategic advice on how health ICT should be governed and procured in the future, recognising that the Victorian health system will utilise e-health and communications technology to obtain the best possible healthcare and outcomes.

The panel consulted widely with health service provider executives and clinicians and representatives from key stakeholder groups. These interactions were positive and constructive, with considered and informed opinion provided for the panel’s consideration.

To ensure the panel looked forward with respect to health ICT it developed a set of strategic principles that informed its findings and recommendations. Complementing these principles was the panel’s commitment to align itself where practical with other public documents such as the Victorian Government ICT strategy 2013 to 2014.

This report recommends changes in the three major areas of governance, procurement and investment in health sector ICT. The panel believes that these recommendations build on the benefits already delivered while also planning for the future.

The panel would like to acknowledge the participation and assistance of all those who made themselves available to meet with us, those who attended the stakeholder forum and those who provided a written submission to the panel.

The panel also wishes to thank the Department of Health, which provided technical advice and data and also provided administrative resources and support.

Finally, the panel would like to thank the Minister for Health for his support, advice and guidance.

Dr Andrew Perrignon
Chair, Victorian Health Sector ICT Review Panel
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Executive summary

Purpose of this report

Technology plays an increasingly integral role in the effective and efficient functioning of Victoria’s health system. History demonstrates that technology project design, procurement and implementation is complex and difficult. This report is intended to:

• assess the impact and implementation of Victoria’s largest single health technology project, HealthSMART in order to extract lessons for the future
• develop an approach to guide future health ICT investment, procurement and governance including in relation to national e-health priorities.

The Minister for Health appointed the Victorian Health Sector ICT Review Panel to address the task of undertaking analysis, consulting with health stakeholders and developing responses to specified terms of reference.

The Victorian health system and technology in context

The Victorian health system is large and complex

The Victorian health sector is very large and complex. The public hospital system alone has a turnover of more than $10 billion per annum and employs more than 73,000 full-time equivalent (FTE) staff. It comprises 21 major health networks, 22 sub-regional health service providers and 43 small rural services. The community health program is provided by approximately 100 organisations in Victoria operating from more than 350 sites in every local government area. Governance of the sector is extremely intricate, with overlays principally from two levels of government, frequently operating with conflicting incentives.

Early ICT investment was designed to catalyse a modern health system

Concern about chronic underinvestment in health sector information and communication technology (ICT) relative to other industries is well known. In 2004 the HealthSMART program was approved. HealthSMART was the brand name given to a strategy to: adopt common core systems for Victorian health services and metropolitan community health service providers; operate these systems in a shared service arrangement; and fund an initial program of works to implement the strategy in approximately half of these agencies.

The program was introduced to speed up the introduction of new technology, to create a platform to improve interoperability and to provide more robust infrastructure with appropriate back-up and disaster recovery facilities.

The HealthSMART investment occurred at a time when there was limited knowledge of baseline capabilities, limited experience in large sophisticated ICT procurement and a less mature health technology sector. All exemplar clinical sites were overseas and products had not been configured for the local market.
The investment met with some successes and some failures

The HealthSMART investment has had both positive and negative outcomes. However, overall the sector is now better positioned than it would have been otherwise, which was to be expected given the quantum of funds expended. The greatest levels of functionality and usefulness from the HealthSMART program accrued to large, sophisticated metropolitan health service providers, which represent the majority of activity and investment across the system. The program has not consistently met the needs of smaller, rural or specialist health service providers. Additional functionality is required by many health service providers in order for them to achieve the full benefits of their applications. The fragmented reporting requirements faced by community health organisations have limited the capacity of the sector to take up HealthSMART applications and realise benefits.

Overall, the more successful products were those providing corporate functions. By contrast, the clinical application, inherently higher risk and requiring greater workflow adaptation, has yet to achieve the full anticipated benefits.

Future directions for ICT in health

The HealthSMART program is now 10 years old. The past decade has seen major changes in technology including the development of cloud services, the maturity of systems integration services, the proliferation of devices and mobile access to applications, and the dramatically enhanced capacity to collect and analyse massive datasets. Additionally, health service providers have become more capable with respect to ICT development and change management.

In late 2012 the Victorian Minister for Health convened a panel to examine the future of health sector ICT and make specific conclusions and recommendations to nominated terms of reference.

In order to guide its decision-making across the terms of reference of the review, the panel developed a set of strategic principles. These principles were developed to ensure a consistent approach to the panel’s deliberations; they should not be seen as standing in the place of a strategic plan. The agreed strategic principles are:

• ICT investment should be targeted to deliver health outcomes in line with Victorian Health Priorities Framework (VHPF) priorities.
• Local organisations must own solutions within a strategic framework and be accountable for achieving outcomes.
• ICT should be applied to address health professionals’ needs and practices.
• Decisions should be delegated to the most local level capable of effectively doing so, within a collaborative framework.
• Privacy will be respected and managed for the quality, care and safety of individuals whose data is stored in health ICT systems.
• Data structure and technical infrastructure should be in place to allow the progressive development of interoperable electronic health records.
• Health ICT investment should be based on specific business needs and the identification and demonstration of benefits.

The panel heard views from a range of stakeholders and found high levels of consistency in the views expressed. These informed the panel conclusions about what needed to change with regard to ICT design and implementation, expressed in Table 1.
Table 1

<table>
<thead>
<tr>
<th>From...</th>
<th>To...</th>
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<tbody>
<tr>
<td>Centrally controlled decisions about ICT project design and implementation</td>
<td>Greater devolution of decision making to health service provider boards, with central role focused on setting directions, support, monitoring and active, prudent scrutiny of major capital projects where required</td>
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<tr>
<td>No single overarching Victorian Health ICT Plan</td>
<td>A statewide health ICT plan, subordinate to the VHPF and incorporating a complementary approach to national e-health participation and the ongoing development of Victorian health service capability, particularly with respect to electronic medical records (EMR)</td>
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<td>Seeking to achieve fully integrated health record interoperability</td>
<td>Focusing on achieving critical business requirements and on improving patient safety</td>
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<tr>
<td>Specifying nominated products</td>
<td>Specifying interoperability standards and requirements</td>
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Major conclusions and recommendations arising from the review

The review was underpinned by specific terms of reference on factors deemed necessary for the effective functioning of ICT in the Victorian health system including costs and functionality, governance, interoperability and e-health, acquisition/procurement and investment. Figure 1 depicts the elements of the review, which are elaborated upon in this report.

Figure 1: Focus of the Victorian Health Sector ICT Review Panel
Term of reference: conclusions and recommendations

Functionality and cost

Term of reference 1: to conduct a high level review of the functionality and usefulness of the HealthSMART applications, as recommended by the Victorian Ombudsman

Conclusions

1. The greatest levels of functionality and usefulness from the HealthSMART program accrued to large, sophisticated metropolitan health service providers that represent the majority of activity and investment across the system.

2. The program has not consistently met the needs of smaller, rural or specialist health service providers. The fragmented reporting requirements faced by community health organisations have limited the capacity of the sector to take up HealthSMART applications and realise benefits.

3. In the majority of cases, evidence received by the panel indicated that implementing HealthSMART applications has disrupted existing workflows, which in some cases have not been resolved.

4. The more successful products are those providing corporate functions. By contrast, clinical applications are more complex and for example, medications management had not previously been configured and tested within an Australian environment. Clinical applications are higher risk, require greater workflow adaptation and consequently the fully anticipated benefits have not yet been achieved.

Term of reference 3: confirm the cost of the current program

Conclusions

1. The panel has only undertaken a high level review of program costs as costs have previously been reviewed by both the Victorian Auditor-General in 2008 and the Ombudsman in 2011.

2. The total capital expenditure incurred by the Victorian Department of Health was $329.4 million. It is important to note that the original scope was not fully delivered. In response to a short survey, health service providers reported capital expenditure of $27.8 million additional to departmental funding.

3. The government expended operating funds of $103.9 million on HSS over four years to the end of 2011–12. The department further provided additional total operating funding to the extent of $34 million from its own budget until Health Shared Services (HSS) reached a critical mass of services.

4. From 2012–13 $20 million in recurrent funding per annum is being provided by government to operate HSS. Health service providers are contributing approximately $16 million per annum in fees to HSS.

5. The panel also found that health service providers are incurring additional minimum costs of $7 million per annum to run HealthSMART applications, as reported by the survey.
Governance

Term of reference 2a: whether to continue with the participation policy and statewide footprint approach, and if not, what approach should be adopted

Recommendations

1. Health ICT decisions should be subject to normal business governance mechanisms within a health service provider that entail delegated accountabilities to health service provider boards, and that are guided by specified statewide health priorities.

2. Consistent with this principle and based on the adoption of a new governance structure (detail available under ToR 2d), it is recommended that the department abandon the mandate of the participation policy and the statewide footprint approach. The panel notes that the removal of the participation policy may result in a smaller number of health service providers utilising HSS. This is considered under ToR 2b (shared services)

Term of reference 2d: what governance approach should be used for future ICT investment?

Recommendations

1. The panel recommends a central Governance Council be established to oversee the role of ICT in supporting the achievement of statewide health priorities as expressed in the Victorian Health Priorities Framework (VHPF).

2. A statewide health ICT plan should be developed, building on the core strategic recommendations established by this review. A central priority is the development of electronic medical records (EMRs) across the Victorian health system. The plan should include a data and technical architecture encompassing public health services, community health primary care providers and private sector health providers as far as they are prepared to participate. The statewide health ICT plan should be developed as a matter of priority, ideally in Q4 2013.

3. Health service providers should have prime accountability and responsibility through their boards for the deployment of ICT to support service delivery. The panel recommends that governance arrangements recognise existing devolved accountabilities and responsibilities of health service providers, set against the requirement to obtain system benefits. System benefits that accrue at the system level (such as interoperability) beyond the level of the individual health service provider should be further delineated in the statewide health ICT plan.

4. Health service providers will be required to have an ICT strategic plan that includes the development of an EMR as a prerequisite for central ICT funding. These ICT strategic activities should be reflected in a health service’s Statement of Priorities (SoP).

5. An ICT strategic plan and business case should sit behind any ICT investment regardless of the source of funds. For strategic ICT projects initiated by health service providers, the ICT strategic plan and business case should be assessed by the Governance Council against transparent criteria around conformity with interoperability standards identified by the Council and consistency with the statewide health ICT plan.
Interoperability and national e-health

**Term of reference 2g: advice on interoperability within the public hospital system, community health and primary care settings in the light of national electronic health records**

**Recommendations**

1. The department should continue to develop and maintain an interoperability maturity model that is relevant to Victorian continuity-of-care and best practice ICT principles.
2. The department should engage with and influence the design of standards associated with national infrastructure supporting interoperability.
3. The department should develop guidelines and standards for the sector, updated annually, on priorities for interoperability including advice regarding procurement. The release of these guidelines and standards should be subject to and conditional on authorisation by the new governance structure referred to in ToR 2d.
4. Interoperability standards should focus on achieving critical business requirements and on improving patient safety. Immediate focus on health service interoperability should include:
   a) patient identification
   b) major alerts, such as allergies
   c) transmission of care documents, such as discharge summaries.

**Term of reference 2e: how a future strategy will allow Victoria to participate in national e-health initiatives**

**Recommendations**

1. Victorian participation in national e-health initiatives should be driven by specific objectives encompassed in the statewide health ICT plan, to be developed by the proposed Victorian Governance Council. It should consider the resolutions from the National E-Health Strategy Review and national e-health business case for their consistency with state health ICT priorities and ensure that sufficient benefits accrue to Victoria to justify any investments.
2. The statewide health ICT plan should reinforce Victoria’s leadership with respect to national e-health initiatives, within the following framework:
   a) patient-centric focus to support improvements in health outcomes
   b) standards-based approach to allow for interoperability and secure, reliable information exchange
   c) accepting of variation to ensure health service providers’ priorities can be targeted, reflective of the scale and scope and service types across the Victorian public health sector
   d) decisions linked to safety and quality to ensure the focus remains firmly on the patient
   e) activities sustainability funded, based on business cases and recognising the importance of measured steps to deliver real benefits to the system as a whole
   f) decisions recognise the state of maturity of the market while safeguarding the value of both future and past investments.
3. The panel accepts the benefits of the Healthcare Identifier Program and supports the individual healthcare identifier (IHI) incorporation onto the Medicare card.
4. The panel considers the policy with respect to the personally controlled electronic health record (PCEHR) should be revised to be ‘opt-out’ rather than ‘opt-in’ to achieve strategies formulated as part of this review - this recommendation is made subject to the satisfactory outcome of a review of the costs for such an amendment to the process.
5. The Governance Council should focus on the following e-health related initiatives:
   g) encourage Victoria to build upon its existing investment in research infrastructure by encouraging national planning for the creation of health and medical research ICT systems in conjunction with the rollout of e-health resources including but not limited to the PCEHR. This might be achieved through appropriate governance arrangements.
   h) promote greater awareness at the national level of health ICT quality and safety risks and issues that have so far been poorly addressed in the early foundation work on the creation of electronic health records.
   i) address the shared interest between the national e-health agenda and statewide health ICT plan in the development of a clinical and health informatics workforce.

Acquisition/procurement

Term of reference 2b: to what extent a central shared services bureau should be used to operate core health service system and infrastructure

Recommendations
1. The decision by a health service provider to use or continue to use a shared service bureau should be determined by that health service provider based on business needs.
2. HSS should be the subject of a review by external experts comparing the scope of services, structure of provision, costs and value-for-money with other possible future options. The review should also consider transitional arrangements, including the scenario in which some health service providers may wish to withdraw from HSS. Appropriate transitional arrangements should be considered to cover any increased costs against those costs anticipated in the original budget for health service providers utilising HSS to deliver applications. The review should be required to report its findings to the Minister for Health.
3. The future health shared service should be governed by its customers; in the interim, customers should be more closely involved in decisions about the operation of the existing shared services arrangement (HSS).

Term of reference 2c: what procurement methodology should be adopted for future ICT investment?

Recommendations
1. Each health service provider is accountable for its own ICT procurement based on sound business cases.
2. The role of the department is to stipulate priorities and objectives not mandate specific systems or products.
3. Health sector ICT procurement will be based on Victorian Information and Communications Technology Advisory Committee (VICTAC) guidelines:
   a) ICT-enabled projects are staged and focused on managing risks and delivering business benefits earlier
   b) competition is promoted to drive efficiency and innovation in ICT systems and services
   c) ICT services take advantage of industry capabilities
   d) ICT systems are interoperable, modular and reusable, with health sector ICT investment meeting approved interoperability standards
   e) technology will be trialled and adopted to promote better outcomes
   f) consider whether certain procurements (for example, desktops, mobile devices) can be appropriately centralised.
4. The health sector should consider purchasing ICT as complete services rather than as systems or separate components of systems (for example, software, hardware, integration engines, operations) as part of a holistic value-for-money business case assessment.

5. When health service providers are negotiating contracts for health ICT, consideration should be given to putting in place template contracts that other health service providers can access for the same services/systems.

6. The role HPV might play in future health sector ICT procurement should be more clearly articulated.

7. Consideration should be given to a central register of pre-approved vendors and providers from which health service providers can, but should not be obliged to source. Vendors should be able to have products expeditiously considered for inclusion on the register.

8. Tools, policies, frameworks and examples of best practice referred to in ToR 2d (future governance arrangements) should be provided in common to assist organisations that choose to draw on them.

Investment

**Term of reference 2f: broad priorities for new ICT investment**

**Recommendations**

1. Victoria’s health sector ICT investment, including priorities for capital expenditure, should be subordinate to the statewide health ICT plan.

2. Victoria’s health sector ICT investment should:
   a) be directed towards building EMR capability that incorporates healthcare identifiers at all health service providers (private sector investments in healthcare identifiers should be further encouraged)
   b) be driven by a patient-centric focus that supports improvements in health outcomes
   c) emphasise the development of capability in health informatics, which has a crucial role to play in developing an electronic health records (EHRs) strategy, planning and management of EHRs inside the health service providers and across the sector. This particular capability is currently in short supply and the panel viewed its expansion as having the potential for a positive system-wide benefit.

**Term of reference 4: to provide advice on the approach to allocating the $100 million over four years**

**Recommendations**

1. The framework used to allocate the funds should be based on the VHPF and the statewide health ICT plan yet to be developed by the Governance Council.

2. Establishing and operating the Governance Council should be funded from within the $100 million allocated in the budget.

3. The panel recommends allocations from the *Innovation, E-Health and Communications Technology Fund* be made against the following three major categories:
   a) critical infrastructure refresh
   b) development of EMRs across the state
   c) innovation.

4. The panel recommends the highest priority against the development of EMRs across the state should be the broad utilisation of healthcare identifiers by health service providers in order to drive interoperability between agencies.
5. Expressions of interest (EOIs) should be sought from health service providers for critical infrastructure refresh and be subject to a risk matrix assessment by the department before allocations between the three categories are finalised.

6. The panel recommends that grants made from the fund should be on the basis that all ongoing management and maintenance costs will be met by the receiving health service provider and that consideration be given to prioritising initiatives that health service providers have volunteered to part-fund themselves.
Chapter 1: Background

This chapter sets out relevant background information on the Victorian health sector, details about the HealthSMART initiative, the rationale and terms of reference for the review and the methodology for its conduct.

Victorian public health sector

The Victorian health sector provides a range of services, prevention and primary health service providers (typically delivered in community settings), acute and emergency services (delivered through the hospital system), residential care services including aged care (delivered through public and private providers) and research and teaching services (delivered through hospitals and private institutions).

Services are delivered through a complex mix of public, non-government and private providers and funded by the federal government, state government and private funders.

The public hospital system alone employs more than 73,000 full-time equivalent (FTE) staff and with a turnover of more than $10 billion per annum. The public hospital system comprises 21 public health services (major health networks), 22 sub-regional health services and 43 small rural services. These health service providers are incorporated bodies established under the Victorian Health Services Act 1988 and governed by independent boards appointed by the Governor in Council on the recommendation of the Minister for Health.

The Minister for Health agrees a statement of priorities (SoP) annually with the board chairs of public health services, which sets out the key strategic objectives, accountability expectations and annual targets and funding.

The community health program is provided by approximately 100 organisations in Victoria operating from more than 350 sites in every local government area. The majority of these services are provided by community health services (CHS) that fall into two types: 38 are independently managed registered community health centres and the remaining 62 are delivered from public rural or metropolitan health services.

The Department of Health is the systems manager of the Victorian public health sector, with responsibilities including policy and standards development, planning, accountability and funding.

Health sector ICT

Until 2004 each public health service provider operated its own information and communication technology (ICT) systems independently, maintaining local computer hardware and choosing and implementing their own business application software. Prior to HealthSMART local decision-making on health ICT investment was taken within a very broad departmental framework, and choice at the health service provider level was not constrained in any practical way.

Most health service providers implemented a range of individual products to deal with corporate functions such as finance and payroll, administrative functions such as patient administration and some clinical systems such as theatre management, emergency, imaging, pathology and pharmacy.

In 2004 the HealthSMART program was approved. HealthSMART was the brand name given to a strategy to: adopt common core systems for Victorian funded agencies; operate these systems in a shared service arrangement; and fund an initial program of works to implement the strategy in approximately half of these agencies.

The program was introduced to speed up the introduction of new technology, to create a platform to improve interoperability and to provide more robust infrastructure with appropriate back-up and disaster recovery facilities.
Four major systems were chosen for standardisation, namely: Finance & Supply Management (FMIS), Patient Administration (PCMS), Client Management (Community Health, CMS), Clinicals (specifically medications management, pathology and radiology orders and results, decision support, alerts and standardised treatment protocols), and rostering. Selected smaller systems (payroll and PACS/Digital x-rays, financial and supply for rural agencies) were later included in the program. Systems for other clinical areas such as theatre, pathology and the emergency department were not part of the program.

The use of these business applications was later mandated in a decision known as the ‘participation policy’. The participation policy requires any health service introducing a new or replacement information application to adopt the mandated standard products and to have it delivered via the shared ICT service entity (Health Shared Services or HSS). Any exemption from use of the designated product needs the approval of the Secretary to the Department of Health.

The most recent survey of the public health sector’s ICT asset base (covering metropolitan and rural health services and community health services) was conducted in 2006, which estimated its value at $300 million. Health service providers are not funded for major capital expenditure within their annual budgets.

Rationale for the review

The Auditor-General reviewed and reported on the HealthSMART program in a report to the Victorian Parliament in April 2008.

In April 2011 the Ombudsman, with the assistance of the Victorian Auditor-General initiated an ‘own motion’ review of 10 high-risk, high-value projects across a range of departments and agencies in the Victorian public sector. In his view these projects represented a significant sample of government ICT-enabled projects. The HealthSMART project was one of the projects reviewed. The Ombudsman initiated his investigation to determine:

- whether the projects were over budget or delayed and the reasons for this
- whether the ICT systems met the needs for which they were designed and, if not, what went wrong
- who should take responsibility for project failures
- what are the lessons to be learned.

The Ombudsman also referred in his report to an objective of the investigation being to make recommendations for the future management of significant ICT-enabled projects in government.

In his report to the Victorian Parliament in November 2011, the Ombudsman recommended that, with regard to HealthSMART, the department:

- complete the four HealthSMART clinical implementations that it had commenced
- review the functionality and usefulness of all of the HealthSMART applications prior to committing any new funding to the project
- develop a strategy and plan for the future of health ICT in Victoria.

The Department of Health and the Victorian Government accepted these recommendations. In late 2012 the Victorian Health Sector ICT Review Panel was convened by the Minister ‘to review the current approach to Victorian Health Sector ICT and prepare a report on the findings and future options to the Minister for Health’.
In May 2011 the Victorian Government released its *Victorian Health Priorities Framework 2012–2022: Metropolitan Health Plan* (VHPF). A key priority within VHPF is ‘utilising e-health and communications technology’. The *Victorian Health Priorities Framework 2012–2022 Rural & Regional Health Plan* notes the importance of e-health in delivering services to rural and remote areas within Victoria.

Additionally, the Victorian Government has approved an innovation and ICT fund of $100 million over four years from 2012–13 (called the *Innovation, E-Health and Communications Technology Fund*).

It is in this context that the panel has undertaken its review.

**Terms of reference**

The Minister for Health charged the panel with developing responses to the following terms of reference:

1. to conduct a high-level review of the functionality and usefulness of all the HealthSMART applications as recommended by the Victorian Ombudsman
2. to provide advice on future directions for Victorian health sector ICT consistent with the *Victorian Health Priorities Framework 2012–2022* including:
   a) whether to continue with the participation policy and statewide footprint approach and, if not, what approach should be adopted
   b) to what extent a central shared services bureau should be used to operate core health service systems and infrastructure
   c) what procurement methodology should be adopted for future ICT investment
   d) what governance approach should be adopted for future ICT investment
   e) how a future strategy will allow Victoria to participate in national e-health initiatives
   f) broad priorities for new ICT investment
   g) advice on interoperability within the public hospital system, community health and primary care settings in the light of national electronic health records
3. to confirm the cost of the current program
4. to provide advice on the approach to allocating the $100 million over four years.

The full terms of reference for the review are shown in Appendix 1.

The biographies of panel members can be found at Appendix 2.

**Consultation**

In conducting the review, the panel was asked to consult with:

- a selection of executive, clinicians and users of public health services, rural health alliances and community health services that:
  - utilise systems designed, deployed and maintained under the HealthSMART program
  - have impending major ICT programs
  - have not closely participated in the HealthSMART program
- subject matter experts from the sector and Department of Health
- senior officers from the Department of Premier and Cabinet and the Department of Treasury
- representatives from other key stakeholder groups such as the Australian Medical Association, Royal Australian College of General Practitioners, General Practice Victoria and select Victorian Medicare Locals
- relevant staff of the Ombudsman.
The panel’s approach

The panel has consulted as broadly as possible with key stakeholders and other people/organisations to understand the current state of health sector ICT within Victoria and to hear views about what is working well and what improvements are needed and to seek ideas about future directions for health sector ICT. The panel also specifically sought direct comment and advice on its terms of reference.

This consultation took the form of face-to-face meetings between the panel and various stakeholders, a stakeholder forum (held on 27 March 2013), multiple site visits by panel members and written submissions from stakeholders. Details of these interactions can be found at Appendix 3.

Details on which organisations/stakeholders provided written submissions can be found at Appendix 4. Appendix 5 contains the list of stakeholder forum attendees.

Appendix 6 is the communiqué resulting from the stakeholder forum.

Appendix 7 details the documents made available and considered by the panel during its deliberations.

A number of health service providers undertaking large capital investment in ICT presented to the panel. However, the panel has had no formal role in their approval and has not sought to influence the decision-making associated with these initiatives.

Readers of the report will note quotations appear throughout. These contain views relating to the individual terms of reference, which were expressed by attendees at the March 2013 stakeholder forum.

Reading this report

Chapter 2 briefly sets out the strategic principles that were developed by the panel to guide the review.

Chapter 3 provides an assessment of the HealthSMART initiative, focusing on the functionality that was delivered and the costs that were incurred in doing so. It addresses terms of reference 1 and 3.

Chapter 4 sets out the challenges and issues in achieving a balance between devolved decision-making and appropriate system-wide matters such as interoperability, standards and efficiency. It addresses terms of reference 2a and 2d and provides recommendations about future governance arrangements.

Chapter 5 sets out the benefits from and potential approaches to achieving higher levels of interoperability in the Victorian health system, particularly in relation to electronic health records. The chapter also assesses how a future strategy might enable Victoria to participate in national e-health initiatives, and focuses on terms of reference 2g and 2e.

Chapter 6 sets out future procurement models and approaches, including the potential role of shared services. It references lessons learned from the HealthSMART initiative and more recent government procurement strategies. It focuses on terms of reference 2b and 2c.

Chapter 7 sets out the investment priorities for any future ICT investments in the Victorian health sector, and focuses on terms of reference 2f and 4.
Chapter 2: Strategic principles to guide the review

This chapter briefly sets out the strategic principles that were developed by the panel to guide the review.

Strategic principles

In undertaking the activities specified in its terms of reference, the panel was conscious that its predominant emphasis in the given terms of reference was forward-looking.

The panel noted that the original program was conceived at a time of relative market immaturity in terms of availability of applications and extent of uptake. It achieved both positive and negative outcomes; the sector as a whole is now better positioned than it would have been otherwise, as would be expected given the investment.

In order to guide its decision-making across the terms of reference of the review, the panel determined that it needed to develop a set of strategic principles. These principles were developed to ensure a consistent approach to the panel’s deliberations; they do not take the place of a strategic plan and should not be seen as a replacement. The agreed strategic principles are:

1. ICT investment should be targeted to deliver health outcomes in line with VHPF priorities.
2. Local organisations must own solutions within a strategic framework and be accountable for achieving outcomes.
3. ICT should be applied to address health professionals’ needs and practices.
4. Decisions should be delegated to the most local level capable of effectively doing so, within a collaborative framework.
5. Privacy will be respected and managed for the quality, care and safety of individuals whose data is stored in health ICT systems.
6. Data structure and technical infrastructure should be in place to allow the progressive development of interoperable electronic health records.
7. Health ICT investment should be based on specific business needs and the identification and demonstration of benefits.
Chapter 3: Functionality and costs

This chapter provides an assessment of the HealthSMART initiative, focusing on the functionality that was delivered and the costs that were incurred. It addresses terms of reference 1 and 3.

(a) TOR 1: to conduct a high-level view of the functionality and usefulness of the HealthSMART applications, as recommended by the Victorian Ombudsman

Background

In considering the question of application functionality and usefulness, the panel defined functionality as ‘how closely an ICT product meets its specifications’ while usefulness was defined as ‘how closely an ICT product meets its business needs’.

The original program focused on replacing three existing legacy business applications (finance/supply, patient management and client management) and introducing a new application (clinical decision support) within a subset of the Victorian health sector. The program was never resourced or tasked with implementing all procured applications into all metropolitan and rural health services and community health services. The majority of these agencies implemented at least one of the applications and none implemented them all.

The highly centralised procurement approach of HealthSMART was a major departure from previous practice

The original tenders conducted during 2004 and 2005, defined required functionality broadly and with an emphasis on metropolitan acute hospital requirements. At that time, the national and international marketplace for healthcare business applications was fairly immature, with limited product choice. Concurrently the community health sector underwent organisational changes (moving from Victorian statutory bodies to companies limited by guarantee) and this reality was not reflected in tender specifications.

‘Recognition for differences in capacity and maturity across organisations – no one size fits all…’

The tenders fitted a basic subset of requirements, leaving many other core functionalities unspecified for provision, such as theatre management, the emergency department and clinical documentation.

All stages of procurement (requirements definition, product evaluation and product suitability) had substantial involvement from health sector users, with the governance arrangements being managed by health sector executives and subject matter experts. Of note is that detailed clinical specifications were mostly worked up by relatively junior staff from the health services who did not necessarily have a clear overview of the whole system or the change management implications associated with implementation.
It was expected the program’s procurement processes would identify ‘panels of products’; however, the end result in each case was a ‘panel of one’. This has been contentious as no one solution fits the needs of each sector participant. Not all health services are the same. There are generalist and specialist services and significant scale differences between the larger metropolitan and smaller regional services. Some stakeholders reported that adopting common systems required too many compromises to be made.

The statewide footprint approach was designed to achieve greater consistency of treatment across the state

When an off-the-shelf product is selected by a business, the product is typically tailored to close the gap between the generic functionality it provides and the specific functionality required by the business. The end result is a product that more fully satisfies the business while retaining the characteristics of the standard product.

The selected off-the-shelf products (Oracle’s eBusiness Suite, CSC’s i.PM, Intersystems TrakCare and Cerner’s Millennium) were configured and implemented via a generic Victorian statewide footprint.

The statewide footprint approach moved away from individual health service provider needs and considered the Victorian health sector, looking to identify commonality in work processes and database configuration. This statewide footprint tailored selected products to meet defined health sector needs rather than those of individual health service providers. This approach impacted on work processes and workflows within individual health services.

Activity to define statewide footprints was managed centrally in consultation with participating health services. The process, however, was lengthy, complex and resource-intensive, resulting in delays to implementation and realisation of benefits.

A common complaint from stakeholders is that the statewide footprint approach cannot react to changing health service business needs as quickly as required and in some health services, has introduced unnecessarily complex workflows. A specific example of the latter is the implementation of the finance and supply application (also known as FMIS but with a modified statewide footprint) into small rural health services.

'Strategy needs to be clinically focused – patient driven rather than about replacing systems.'
Panel considerations

‘The HealthSMART program has left a legacy of reform – health services are at different stages of this reform.’

Usefulness and functionality of applications

Discussions with application users indicated a variety of views across the four products (Finance & Supply, Patient Management, Client Management and Clinical Decision Support). In addition a survey of all users of HealthSMART applications was conducted, requesting them to score their perceived ratings for functionality and usefulness (as defined in the glossary) on a five-point Likert scale.

In general, three of the applications (FMIS, PCMS and Clinicals) are considered by medium to large general hospitals to provide functionality that supports their business processes. The view from the remaining participants is more mixed (refer Table 2).
## Table 2: summary of health service providers’ survey responses

<table>
<thead>
<tr>
<th>Application</th>
<th>Health service provider ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FMIS</strong></td>
<td>In stakeholder feedback, larger health service providers expressed satisfaction with FMIS, whilst the small rural health service providers were less satisfied as they regarded the product as too sophisticated for their needs resulting in inefficient, complex workflows. FMIS was reported by survey respondents to have an average functionality rating of 3.2 and an average usefulness rating of 3.2, although the response rate was less than 50%.</td>
</tr>
<tr>
<td><strong>PCMS and CMS</strong></td>
<td>The community health sector was serviced by two applications depending primarily on their geographic location – stand-alone metropolitan community health services implemented Intersystems TrakCare while all rural community health services were to implement the integrated PCMS product, CSC’s i.Patient Manager (i.PM). Metropolitan community health services integrated with metropolitan hospitals also implemented i.PM. This decision has been unpopular with rural community health service providers so they have resisted taking it up. The stand-alone metropolitan community health service providers were not generally satisfied with the TrakCare product, and expressed criticism at HSS fees and the length of time for HSS to address system enhancement requests. Much of this dissatisfaction is because these health service providers have to use a number of computer systems to record activity depending on the funding agency involved. For example, Gamblers’ Help, which is funded by the Department of Justice (DoJ), requires community health services to use its version of the Intersystems product, TrakCare rather than the version provided by HealthSMART. Community health services may access up to 80 different programs from multiple levels of government and up to 14 different applications, storing client data to account for these programs. The panel was of the view that only significant reform of governance at the level of state and Commonwealth departments would be able to lighten the information management load on community health services and permit them to rationalise the applications they must use. Given community health services are now companies limited by guarantee, their ability to access government capital allocations for ICT investment has yet to be clarified.</td>
</tr>
<tr>
<td><strong>Clinicals</strong></td>
<td>The clinical system software includes medications management, decision support, alerts, results reporting, discharges summaries and e-prescribing. The objective of the clinical system deployment was to establish a foundation for an electronic medical record (EMR) and improve medications management (decision support, alerts and standardised treatment protocols). This required an extensive amount of work to embed Australian Medical Terminology (AMT) into the system and to ensure it would comply with the Pharmaceutical Benefits Scheme (PBS) rules. The complexity of this process was seriously underestimated and hence the work was delivered late. Three agencies are using the application and wish to retain it. The functionality has best suited the clinical needs of the large, general hospitals that have implemented it and consequently the views of the system are notably better and more consistent within the general hospitals. The application was not seen to have met the clinical priorities of the smaller, specialist hospital included in the deployment. Some consultant medical staff working in an outpatient environment were less comfortable with the application than more junior staff. The panel heard further concerns about business requirements that were not specified in tender documents and which agencies believe are needed to make products fully functional (for example, clinical functionality for client management and additional modules (the emergency department and clinical documentation) for the clinical system). The absence of this functionality has led to some broken workflows and the possibility of introducing clinical risk in some circumstances.</td>
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</tbody>
</table>

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Statewide footprint approach

The panel recognises the statewide footprint approach was an early attempt to standardise health sector data and thereby facilitate information flows between computer systems and eventually health service providers. The panel understands the philosophy behind this approach, but the result is an over-engineered product that is not agile enough to adapt to changing business needs and ignores the differences between health service providers, particularly in terms of health service size and health services delivered.

Conclusions

1. The greatest levels of functionality and usefulness from the HealthSMART program accrued to large, sophisticated metropolitan health service providers that represent the majority of activity and investment across the system.
2. The program has not consistently met the needs of smaller, rural or specialist health service providers. The fragmented reporting requirements faced by community health organisations have limited the capacity of the sector to take up HealthSMART applications and realise benefits.
3. In the majority of cases, evidence received by the panel indicated that implementing HealthSMART applications has disrupted existing workflows, which in some cases have not been resolved.
4. The more successful products are those providing corporate functions. By contrast, clinical applications are more complex and for example, medications management had not previously been configured and tested within an Australian environment. Clinical applications are higher risk, require greater workflow adaptation and consequently the fully anticipated benefits have not yet been achieved.

(a) TOR 3: confirm the cost of the current program

Background

The panel was asked under the terms of reference 3 to confirm the costs of the current program.

The costs of the HealthSMART program had been previously considered by the Victorian Auditor General in 2008 and the Ombudsman in 2011. The panel is also aware that the Victorian Auditor-General is undertaking a follow-up audit in 2013.

Given that costings have been evaluated by other reviewers, the panel contained its assessment to reviewing the costs published in other reviews and documents held by the department, understanding the differences in some costs presented and identifying whether there were any shortcomings that required further work.

In reviewing previously published costs the panel differentiated between:

1. project costs, which refers to the costs of purchasing computer systems from vendors, the cost of configuring these systems to requirements, the initial cost of computer hardware to operate these systems and the cost of staff training and other related items. These are capital expenditures incurred to have new systems ready for use.
2. operating costs, which refer to the cost of running a system once it is operational including licence fees for the system and staff costs and infrastructure costs involved in maintaining the system.

From the material reviewed the original project cost budget was $323.4 million¹

The project was closed at 30 June 2012 and the costs recorded by the Department of Health against the original project budget are $329.7 million.

Whilst this appears as only a small variation to forecast budget it is misleading given the original program scope was not fully delivered. The department advised the Ombudsman that it would have required an additional $95 million to complete the original scope of works. From the panel’s assessment this estimate appears reasonable.

Panel considerations

‘Health ICT is not a one-time investment. It’s continual and ongoing.’

In regard to operating costs, there was no allowance in the original program budget to cover additional operating costs. The panel is aware that the original material presented to government did indicate that there would be a requirement to fund additional operating costs and these funds would be bid for in a future budget. In the 2008-09 State Budget the department was funded $18.5 million in 2008-09 and $77 million over four years to meet higher operating costs and $6.7 million in 2008-09 and $26.9 million over four years to meet computer infrastructure requirements. This totalled $103.9 million over four years. $20 million of this funding was ongoing. This funding and fees charged to its clients, fund the operations of a shared service bureau (HSS).

In addition the Ombudsman noted that the department had also contributed $34 million to the shared service operations until it reached a critical mass of services. The panel has confirmed this expenditure.

Whilst reviewing these costs, the panel became aware that the figures included department costs but not costs that health service providers met from their own resources. It was not possible in the time available to undertake a thorough review of these additional costs but to provide an indicative estimate, the panel decided to survey the relevant health service providers.

The survey results indicated that participating health service providers incurred an additional $27.8 million in project costs and $7 million in operating costs from their own resources.

Conclusions

1. The panel has only undertaken a high level review of program costs as costs have previously been reviewed by both the Victorian Auditor-General in 2008 and the Ombudsman in 2011.
2. The total capital expenditure incurred by the Victorian Department of Health was $329.4 million. It is important to note that the original scope was not fully delivered. In response to a short survey, health service providers reported capital expenditure of $27.8 million additional to departmental funding.
3. The government expended operating funds of $103.9 million on HSS over four years to the end of 2011–12. The department further provided additional total of operating funding to the extent of $34 million from its own budget until HSS reached a critical mass of services.
4. From 2012–13 $20 million recurrent funding per annum is being provided by government to operate HSS. Health service providers are contributing approximately $16 million per annum in fees to HSS.
5. The panel also found that health service providers are incurring additional minimum costs of $7 million per annum to run HealthSMART applications, as reported by the survey.

Chapter 4: Governance

This chapter sets out the challenges and issues in achieving a balance between devolved decision-making and appropriate system-wide matters such as interoperability, standards and efficiency. It addresses terms of reference 2a and 2d and provides recommendations about future governance arrangements.

(a) TOR 2a: whether to continue with the participation policy and statewide footprint approach and, if not, what approach should be adopted

Background

HealthSMART was originally set up as a voluntary program with the expectation that health services would willingly opt-in given the benefits and incentives offered by the department. Central funding was provided for HealthSMART applications but generally health services self-funded non-HealthSMART applications.

The participation policy was introduced in 2006 after the HealthSMART program had been running for a number of years without achieving the anticipated levels of uptake. The policy and statewide footprint were established to provide consistency of implementation approach and interoperability of applications. The policy also sought to encourage greater take-up of HealthSMART systems in order to minimise costs through economies of scale. It states:

Any agency introducing a new (or replacement) information system with functionality of a product that is on the HealthSMART panel will implement the relevant HealthSMART solution, accessed through HealthSMART Services, unless the Secretary, [Department of Health], approves an exemption for an alternate product to be used.

Where an agency wants to implement a major upgrade or new release to an existing product this policy will also apply.

The participation policy works by specifying conditions under which agencies must implement a HealthSMART solution through HSS. Those conditions are that the functionality required is within the scope of a HealthSMART product, unless the following certain exemptions apply:

- Where the agency is part of a larger national organisation and the parent organisation has implemented an alternate system and requires the agency to utilise this (national) system;
- Where an agency demonstrates that their business needs differ significantly from the majority of other agencies of similar nature, particularly where the agency represents a sector whose needs were not explicitly represented in the requirements underpinning the selection of the relevant HealthSMART product; and
- In the situation of an agency experiencing an unexpected failure of their existing system and the HealthSMART program not being able to adjust implementation schedules to incorporate the implementation. Known ‘failures’ such as vendors providing reasonable notice of withdrawal of product, will not be included in this condition.
Panel considerations

Decisions about the participation policy and statewide footprint were taken at a time of relative immaturity of ICT adoption by health service providers. Establishing consistency of application and a critical mass of adoption were driving forces behind the participation policy and statewide footprint.

However, this prescriptive approach has proved, over time, to be unnecessarily constraining and in some cases has inhibited value-for-money decision-making. The participation policy states that health services will not receive an exemption to ‘implement a cheaper solution’. This means health service boards are conflicted between doing what is best for their service and using HealthSMART to optimise the benefits to the health sector, even when it may cost more to do so. In some cases, smaller health service providers were required or induced to move to a system with higher levels of functionality than were fit-for-purpose and that required higher levels of support than simpler systems (notably financial systems).

‘Participation policy is too restrictive.’

Under the statewide footprint approach, all health service providers participating in the program were required to develop and adopt identical workflows and implementation selections for HealthSMART systems. A common objection by health services is that this assumes ‘one size fits all’, despite the difference in governance and practice of health service providers. This is compounded by the fact the HealthSMART systems do not provide complete coverage of functional needs, even within the HealthSMART ‘footprint’. Missing functionality includes billing, clinical documentation, emergency department and decision support for a range of specialist areas. As an example, Austin Hospital is adding clinical documentation into the domain of Cerner its shares with Peninsula Health but not as part of the statewide ‘footprint’ because clinical documentation is not part of the HealthSMART suite.

Implementation of the policy was also constrained by shortcomings in formal governance for HealthSMART, as identified in the Auditor-General’s review of HealthSMART. This has led to some confusion and debate about HSS and agency roles and responsibilities.

Virtualisation and multi-tenanting are common strategies to enable multiple organisations to use the same applications and ICT infrastructure. HealthSMART extended this to sharing a common domain between two or more health services. For instance, Eastern Health and the Royal Victorian Eye and Ear Hospital (RVEEH) share a common clinicals domain, and Austin Health and Peninsula Health another. This reduces installation costs but at the expense of requiring more coordination between health services to adopt common practices.

‘Need flexibility to select based on need … flexibility should not lead to duplication of effort.’
Another unintended consequence of HealthSMART has been on useability for clinicians. This is particularly evident for RVEEH where clinicians only prescribe a limited subset of medications. However, RVEEH clinicians are required to select them from a much larger set of medications because they share a domain with Eastern Health. This has created problems in responding to the needs of RVEEH because focus is naturally given to the needs of the dominant health service. Over time, continuous compromise by smaller or specialist health services, makes it less likely that the application will suit their needs.

The panel does not believe that the costs of maintaining the participation policy and the statewide footprint approach are justified.

In the future greater flexibility and choice should prevail but should take account of the fact that separate tendering at the individual health service provider level is complex, costly and resource-intensive and requires expertise. The panel has considered this in its governance recommendations (ToR 2d). It should be recognised that if fewer health service providers use HSS, the costs will increase for those that remain. Hence the panel recommends recognition of transitional costs.

Recommendations

- Health ICT decisions should be subject to normal business governance mechanisms within a health service provider that entail delegated accountabilities to health service provider boards, and that are guided by specified statewide health priorities.
- Consistent with this principle and based on the adoption of a new governance structure (detail available under ToR 2d), it is recommended that the department abandon the mandate of the participation policy and the statewide footprint approach. The panel notes that the removal of the participation policy may result in a smaller number of health service providers utilising HSS. This is considered under ToR 2b (shared services).

(a) ToR 2d: what governance approach should be adopted for future ICT investment?

Background

Health services are public statutory bodies positioned at arm’s length from government with separate legal status, and are not part of the Crown. The objects of health services are specified in by-laws and these include ensuring the provision of high-quality healthcare and that services are efficiently managed and meet the needs of the community. They are governed by independent boards that oversee and manage the health service and ensure that the services provided comply with their statutory requirements.
An ICT governance framework to serve an environment as complex as the Victorian health sector has to be based on sound assumptions at the system and individual health service provider levels, such as:

- supporting health service providers’ business strategies and focusing on business service delivery
- supporting health service providers’ organisational strategies and imperatives, recognising the autonomy of individual health service providers
- obtaining benefits available from encouraging competition for the best solutions among health service providers
- clearly defined accountabilities
- ICT strategic planning for both statewide data management and health service process and data
- critical standards for planning and reporting that makes it relatively easy to manage for successful results
- engaging with national e-health initiatives
- awareness of statewide ICT assets.

Panel considerations

One of the first principles of governance is that delegation of responsibility to deliver an objective must be accompanied by the authority and resources to achieve it: accountability should be aligned with responsibility.

‘Central governance needs to add oversight, support and advocacy not necessarily available at local/regional levels but keep out of service delivery decisions.’

The Victorian health system is a devolved system and, consistent with that, the panel has been guided by the principle of subsidiarity, which states that decisions and actions should be taken at the most immediate or local level capable of effectively doing so, and that accordingly, the central authority takes a supporting role. In practice this means that individual health service providers develop ICT investment business cases for submission to their local board and are responsible for managing and implementing projects.

‘More than one level required – a centralised governance approach (across large and small organisations) to areas including standards and performance is useful for progress across the system.’
However, there are risks as well as potential inefficiencies and lost opportunities arising from health service providers all acting independently. Central governance should add system direction, oversight, support and advocacy that is not available at the local level. This should involve maintaining awareness and identifying implications of emergent trends at regional, national and international levels, for example, the work of jurisdictions such as the European Union, OECD, United States and Canada, and technology developments such as ‘mobile health’ (m-health) and device ubiquity, telehealth, video, big data and data analytics, and new software standards for security.

Consumer views should also inform governance. This is in line with government objectives to improve consumer access to and awareness of knowledge and tools that will help people make sound, healthy choices and better manage their own health needs.

In response to achieving a balance between ‘top down’ and ‘bottom up’ approaches in the highly complex environment of e-health, Professor Enrico Coiera advised the panel and has written on the concept of ‘middle out’ approach:

… which goes some distance toward bringing closer the needs of health providers, the IT industry, and government, by creating a common set of technical goals and underpinning standards that can sit between them.

This approach addresses concerns that any strategy that does not encourage local ownership alongside broader system benefits is not going to deliver postulated objectives. It builds in recognition that health practice will always be in a state of change, and helps mitigate the risk of big systems fossilising practice while enabling agility in applications-based development at the local level, presuming of course a framework for interoperability is agreed.

Similarly, the Office of the National Coordinator for Health IT has noted:

Enabling electronic health information exchange (HIE) requires consensus among multiple stakeholders. Often, complex technical and policy choices are required and, ultimately, governance is established to provide oversight and to hold accountable the parties responsible for exchanging electronic health information.

Coiera further notes:

This development of shared goals, standards development, and sometimes support for standards implementation, must be well resourced (ibid.)

‘Must ensure strong clinical representation in both implementation and broader governance to ensure setting of measureable health outcome priorities’
A commonly expressed view of health service providers was that the role of the department on occasion restricted innovation and making value-for-money decisions. This view was also replicated in industry and stakeholder forum feedback. The Victorian eHealth Network (VeHN), operating under the auspices of the Victorian industry department, provided the following summary view on the centralised role of the department, based on a survey of its membership \( (n = 46) \):\(^5\)

![Figure 2: The centralised role of the department according to a VeHN survey](image)

The panel believes a central Governance Council with broad expertise should be established to oversee the role of ICT in supporting the achievement of statewide health priorities as expressed in the VHPF. The body would play a complementary governance role to health service providers and provide advice to the Minister for Health and Secretary, Department of Health. Its role would encompass:

- overseeing the developing of a statewide health ICT plan to underpin the delivery of the VHPF
- developing a data structure and technical architecture for the health sector
- establishing a baseline of Healthcare Information and Management Systems Society (HIMMS)-level achievement across all health service providers
- setting and in some cases mandating minimum standards for health sector ICT investment – these should be standards that create enough interoperability to ensure engagement of systems while being careful not to impose structural standards that inhibit responsive progress
- setting expectations about achievement and roles and responsibilities of health service providers and the department, and monitoring achievement against outcomes including progress against HIMMS levels and towards EMRs statewide, health information management and workforce planning; the progress assessment role should entail greater rigor around benefits realisation in line with global best practice
- defining which projects are considered strategic for the purposes of assessment by the Council
- assessing these strategic ICT projects and providing advice to the Minister

\(^5\) The Victorian eHealth Network’s members include ICT companies that offer e-health solutions as well as health health service providers and other organisations seeking to understand the e-health capabilities of the Victorian ICT industry. The VeHN operates as an industry cluster with support from Multimedia Victoria and became an incorporated association in August 2011. The VeHN kindly agreed to the publication of the survey results set out below.
• overseeing the provision of a set of tools, policies, frameworks and examples of best practice to be drawn upon as required by health service providers – examples include the provision of governance standards, strategic planning frameworks, standards information, project management tools, research, procurement tendering and contract templates and other information that would promote a more consistent approach to ICT projects by the department and health service providers
• identifying opportunities to add value through coordination and collaboration as health service providers develop and implement their ICT strategies
• considering how best to engage with consumers and consumer perspectives
• providing advice to the Minister and to the sector on negotiated outcomes between the states and the Commonwealth on the national e-health business case in the context of the health sector ICT strategic framework.

From an operational perspective, the Governance Council would:

• have an independent chair and be comprised of members selected on the basis of expertise rather than representative roles. The membership of the council should be kept reasonably tight but include expertise such as health service leadership, clinical leadership, health informatics and ICT expertise outside the health sector in order to ensure diversity. Expertise should also encompass strategic, operational and financial skills. The council may choose to establish subcommittees that are more representative in nature. In order to establish independence, the council should have or be linked to a body with statutory status
• engage in collaborative development and assessment with the department, health service providers and consumer interests regarding ICT strategy. The council should be served by a departmental secretariat in order to ensure strong ongoing linkages
• not be a funding body or have the authority to approve health sector ICT projects
• be aligned with the emerging national e-health governance structures
• be resourced to achieve its functions.

Health service providers should engage with the Governance Council on sector-wide ICT issues. Governance of health sector ICT follow the good governance principles set out in The Victorian health services governance handbook.

The proposed Governance Council will assume oversight of a number of matters currently managed by the Office of the Chief Information Officer (OCIO). The panel envisages that the OCIO will continue to maintain functions not held within the Governance Council’s terms of reference. Further, it recommends that the OCIO provide the secretariat for the Governance Council. The panel envisages that the department will consider optimal arrangements for the OCIO should the creation of the proposed Governance Council proceed.

The development of the statewide health ICT plan will be driven by the priorities of the VHPF and by the e-enablement of system-level priorities around lowering rates of hospitalisation, decreasing the incidence of adverse events and improving communication across clinical boundaries (that is, information moving with the patient as needed for their effective care). E-enablement should take the patient as its starting point, determining what is required across workflows and giving benefits to the participants delivering services, thus encouraging working with enabling technologies and processes rather than taking the system level as the starting point

With specific reference to HealthSMART, specified standards should underpin future product selection, allowing for product choice aligned to health service provider business need while ensuring that the principles of information flow and a patient-centric healthcare model are maintained. Specific products should not be mandated.
Governance of national e-health initiatives

In considering the links to the national e-health agenda, considered in detail in the following chapter, the panel noted that this work program is not limited to that of the National E-Health Transition Authority (NEHTA). As indicated by the complexity of the governance relationships brought to the panel’s attention through the department, the broader context is informed by the Council of Australian Government’s (COAG’s) health deliberations.

In considering e-health, the panel believes the proposed Governance Council needs, ahead of developing its strategy, to be informed across the following areas:

- technical architecture and interoperability standards development
- information and data management work programs
- workforce planning
- safety and quality
- health funding reform
- models of care and service delivery planning.

Recommendations

1. The panel recommends a central Governance Council be established to oversee the role of ICT in supporting the achievement of statewide health priorities as expressed in the Victorian Health Priorities Framework (VHPF).

2. A statewide health ICT plan should be developed, building on the core strategic recommendations established by this review. A central priority is the development of electronic medical records (EMRs) across the Victorian public health system. The plan should include a data and technical architecture encompassing public health services, community health primary care providers and private sector health providers as far as they are prepared to participate. The statewide health ICT plan should be developed as a matter of priority, ideally in Q4 2013.

3. Health service providers should have prime accountability and responsibility through their boards for the deployment of ICT to support service delivery. The panel recommends that governance arrangements recognise existing devolved accountabilities and responsibilities of health service providers, set against the requirement to obtain system benefits. System benefits that accrue at the system level (such as interoperability) beyond the level of the individual health service provider should be further delineated in the statewide health ICT plan.

4. Health service providers will be required to have an ICT strategic plan that includes the development of an EMR as a prerequisite for central ICT funding. These ICT strategic activities should be reflected in a health service’s Statement of Priorities (SoP).

5. An ICT strategic plan and business case should sit behind any ICT investment regardless of the source of funds. For strategic ICT projects initiated by health service providers, the ICT strategic plan and business case should be assessed by the Governance Council against transparent criteria around conformity with interoperability standards identified by the Council and consistency with the statewide health ICT plan.
Chapter 5: Interoperability and national e-health

This chapter sets out the benefits of and potential approaches to achieving higher levels of interoperability in the Victorian health system, particularly in relation to electronic health records. The chapter also assesses how a future strategy might enable Victoria to participate in national e-health initiatives, and focuses on terms of reference 2g and 2e.

(a) ToR 2g: advice on the interoperability within the Victorian public hospital system, community health and primary care settings in the light of national electronic health records

Background

Interoperability

The panel used the term ‘interoperability’ to refer to the ability for applications to receive or send information and for that information to be capable of meaningful use at both ends of the transmission system.

The panel also considered that interoperability does not depend on product selection per se but on the adherence of products to agreed technical standards and on the evolution of standard catalogues (for example, pharmacy and dispensing, AMT, National Product Catalogue, healthcare identifiers) and standard nomenclature or terminology in controlled medical vocabularies.

‘(Interoperability) means different things to different people – need to unpack what it needs to be.’

Interoperability today

Semantic and syntactical standards have been developed internationally and some of these have already been chosen for Australian use by NEHTA, the Commonwealth body charged with their selection. These standards include HL7 for messaging, Systematized Nomenclature of Medicine Clinical Terms – Australia (SNOMED CT–AU) for controlled medical vocabulary and clinical document architecture (CDA) for document architecture.

These choices have been supported by Victoria, with the state having already committed to the implementation of individual healthcare identifiers (IHIs).

Many existing health ICT systems are able to meet some, if not all, of the requirements to generate messages using these basic interoperability standards, which are now being specified in health ICT tenders around the country.
Victoria has been a lead adopter and contributor to national interoperability tools such as AMT, SNOMED-CT-AU, the identifiers and standardised discharge summaries. Victoria has also developed other contributions including the Human Services Directory (HSD) which now forms part of the national architecture, and resources such as results/order catalogues for pathology and radiology that can be downloaded from the department’s website.

Panel considerations

Interoperability is desirable because:

- it enables disparate organisations to more easily share data
- it implies the existence of standards that all products in a market will meet, which may in turn provide a basis for robust competition and a capacity for organisations to transition from one product to another.

Interoperability necessitates:

- a common information transfer protocol (currently HL7 2.4)
- a common understanding of the data terms used.

Interoperability is a dynamic concept that varies with the type of healthcare organisation under consideration, their targets for improved care and evolving technical standards for interoperability. Comprehensive interoperability between organisations (as distinct from within an organisation) will only emerge with the widespread adoption of messaging, syntactical, semantic and workflow standards. For example, such adoption will allow for the improved management of chronic disease, an issue of major significance due to the costs it imposes on our society.

A critical aspect of interoperability is synchronising the workflows and business processes of different parts within the health service provider that are transmitting and receiving messages. This is relevant when discussing intra-organisational interoperability. For example, the transmission of urgent pathology system results to a ward’s clinical information system in circumstances where there is no available doctor or nurse to receive and act on those results.
Similarly, for inter-organisational interoperability the capacity to transmit a discharge summary following a patient’s stay in hospital to a general practitioner is potentially of great value in avoiding post-discharge adverse events. This transmission is not considered ‘interoperable’ if the workflows of the hospital do not allow the production of that discharge summary (for whatever reason) until three weeks after the patient has been discharged. These circumstances will often result in a patient attending their general practitioner in the week following discharge with a completely altered medication list but no documents to explain the changes. There will often be an uninterpretable version of events surrounding their hospitalisation that may compromise the capacity of the general practitioner to provide the best possible care.

The panel noted one important functionality issue, known as the encounter issue related to the fact that in some health jurisdictions, including in Victoria, hospital systems “discharge” patients from emergency departments even when they are being immediately transferred to an inpatient ward in the same hospital. When hospitals trigger a discharge from ED followed by a new admission and electronic record in the ward, tasks in the system that are done on a per-admission basis are recommenced. An example of this is setting up the medication chart.

While information such as medications can be copied across to the new admission, a smoother workflow would allow the same episode (encounter) to simply be continued when a patient is being transferred - with full, immediate visibility of the emergency record and unrestricted availability of all clinical information in one computer application to ward-based clinicians.

Workarounds in the form of printed medication charts, transferred to the wards with the patient, are being used at one hospital to ensure continuity of medication administration following admission from the ED. Also, if the initial ED clinical record is accessed by medical staff on the wards within a matter of hours prior to final closure by the ED system or PAS of the ED record, a “cut and paste” technique may be used by ward staff to reproduce medication records or ED histories in the inpatient notes. Beyond that point other, more complex software workaround techniques may be used by medical staff to extract medication and inpatient histories from the emergency record for placement in the inpatient notes.

It should specifically be noted that no part of the patient record that is required to be retained is deleted but the need for double handling of electronic and in some instances, paper information creates unnecessary complexity in the electronic medical record.

The panel has had reports from system users of a potential clinical hazard with the termination of the activity associated with the ED admission followed by re-establishment of the activity for inpatient activity. Users reported that the process of electronically transferring the care of a patient from emergency department to ward, or ward to subacute, was complicated, lengthy and, without the above described workarounds both in place and also carefully observed by clinicians, could potentially introduce clinical risk. This arises because patient encounters in the Victorian hospital system are determined by funding criteria and so recorded separately for emergency department attendances, outpatient attendances, acute inpatient admissions, sub-acute admissions and mental health admissions. In order to meet the business rules for episode management (referred to as VAED or Victorian Admitted Episodes Database), hospital patient management systems discharge patients from one care type and admit them to another.

A similar issue arises when any EMR system receives a discharge notification in that it must, at that point, automatically discontinue the current medication chart and commence a new chart for the next admission. This means that when the patient is subsequently re-admitted from ward-based care into a different category, all previous medications will need to be reviewed and rewritten or copied across by the treating doctor or pharmacist. Clinicians have expressed concern to the panel regarding the handling by current EMR systems of these points of transition for care arrangements.

The panel understands that concerned hospitals, the department, the clinical system vendor and other software vendors are in discussion regarding how best to improve the current processes by developing software solutions to decrease these ‘points of hazard’.
Encouraging the use of unique healthcare identifiers across the sector was viewed by the panel as a priority. Unique identifiers open the way for new generations of clinical decision support tools to be developed, as well as offering a useful and efficient resource for medical research. Given the architecture for IHIs has already been developed by NEHTA and there are trial sites active in Victoria, the panel agreed that building upon this base was the most appropriate way to build interoperability across the Victorian health sector.

In addition to implementing national identifiers, the panel believes that concurrent with the cessation of the participation policy, the proposed Governance Council should consider mandating the adoption of basic standards. Examples might include HL7, AMT, National Product Catalogue and CDA for health service providers making new ICT investment. The rate of technology development means that many of these standards are fluid, and there is a need to continuously review and update requirements. Useful guidance on interoperability standards is available from the United States, the world’s largest market for health ICT, with its heavy investment in meaningful use standards.

Although outside its terms of reference, the panel believes that the private sector must be included in development of interoperability standards and strategy, given that the vast majority of patient pathways are initiated with privatised primary care. The panel considers this participation necessary to achieve maximal benefit for the patient and for the investment made by the state in the health of its population. Standards bodies will also have a role to play in this process.

The panel considered interoperability and its further development to be a vital enabler of the linkage between primary care, private specialists and hospitals. Not only will these links be apparent in electronic discharge summaries but also in e-referral interactions. In the e-referral area, the potential linkage of the Victorian Ambulance system through its VACIS application directly into hospital emergency departments and coronary care or intensive care units was viewed as an important component of the continuum of care for Victorian patients and worthy of early attention in health sector planning.

A number of factors should be in place in order to achieve a high degree of interoperability – HL7 compliance, clarity around privacy laws and consensus of the syntactic and semantic meanings within transferred data (resolving this universally to very detailed parts of a patient record will take decades).

The panel noted that the costs of integration between systems are high and sought to bring a pragmatic focus to future investment. It observed that the basic needs of a health service provider are predominantly internal (for example, clinical safety, financial sustainability and efficiency). By compelling an early outward focus that is hard and expensive, the capacity to achieve earlier benefits is diminished.
The immediate focus on interoperability should be on achieving critical business requirements such as providing external referring/receiving clinicians with portal or viewing access to relevant parts of a patient’s record held by another agency rather than seeking a fully integrated solution. The panel recommends that priority business needs enabled by interoperability include:

1. **patient identification**
2. **major alerts, such as allergies**
3. **transmission of care documents, such as discharge summaries.**

The immediate clinical benefits of this focus arise from timely, accurate and sufficiently detailed information being transmitted between healthcare providers.

Of primary importance is the rollout of national identifiers, but the panel was not able to obtain accurate estimates of the cost of rollout of the IHI for Victoria. Scoping studies for such costs are urgently needed. The panel understands that the national e-health business case currently being prepared may assist.

> ‘Take a minimalist approach … getting started will assist in acceptance of change across system over time.’

**Recommendations**

1. The department should continue to develop and maintain an interoperability maturity model that is relevant to Victorian continuity-of-care and best practice ICT principles.
2. The department should engage with and influence the design of and standards associated with national infrastructure supporting interoperability.
3. The department should develop guidelines and standards for the sector, updated annually, on priorities for interoperability including advice regarding procurement. The release of these guidelines and standards should be subject to and conditional on authorisation by the new governance structure referred to in ToR 2d.
4. Interoperability standards should focus on achieving critical business requirements and on improving patient safety. Immediate focus on health service interoperability should include:
   a) patient identification
   b) major alerts, such as allergies
   c) transmission of care documents, such as discharge summaries.
Background

National e-health

The panel during its deliberations considered the various national governance committees, authorities, working groups, reviews and other structures looking at e-health. In summary, these comprise:

- Council of Australian Governments (COAG)
- Standing Committee of Health (SCoH)
- Australian Health Ministers’ Advisory Committee (AHMAC)
- National Health Information and Performance Principal Committee (NHIPPC)
- E-Health Working Group (EHWG)
- Jurisdictional Advisory Committee (JAC)
- Independent Health Pricing Authority (IHPA)
- National Health Performance Authority (NHPA)
- Australian Commission for Safety and Quality in Health Care (ACSQHC)
- Standards Australia
- National E-Health Transition Authority (NEHTA)
- National Authentication Service for Health (NASH)
- National Health Call Centre Network (NHCCN)
- Health Identifier Service Review (HISR)
- National Health Information Standards and Statistics Committee (NHISSC)
- Standing Committee on Performance and Reporting (SCPR)
- National Advisory Group on Aboriginal and Torres Strait Islander Health Information and Data (NAGATSIHID)
- National Health Chief Information Officers Forum (NHCIOF)
- Joint Standing Committee on Health Informatics Standards (JSCHIS)
- Health Workforce Principal Committee (HWPC)
- National EHealth Strategy and Business Case
- National Health Information Agreement
- Health Identifier Service Review.

There is a national e-health governance structure reporting through to the SCoH via AHMAC, managed through the NHIPPC. The NHIPPC has a very broad remit to deal with all health information, reporting, standards and technology issues supported by a number of subcommittees.

A time-limited e-health working group has also been established, reporting directly to AHMAC, to advise on legislative and regulatory matters affecting e-health, including the review of the national Healthcare Identifier Service and the review and update of the 2008 National E-Health Strategy supported by a national e-health business case, which extends beyond the PCEHR. When these tasks are completed, the ongoing responsibility will be taken over by NHIPPC.

The other key national body is NEHTA, which is a private company jointly funded by the jurisdictions. The NEHTA board comprises all of the AHMAC chief executives plus one independent member and an independent chair.
NEHTA is responsible for working with jurisdictions to implement the core elements of the national e-health strategy including the Clinical Terminology Service, National Authentication Service for Health (NASH), National Product Catalogue and e-health standards and specifications development. NEHTA also supports the Department of Health and Ageing (DoHA) as the managing agent for the Commonwealth’s PCEHR implementation. NEHTA contracts the Commonwealth Department of Human Services (DHS) to run the Healthcare Identifiers Service as the service operator.

Within this governance framework, a number of important reviews and decisions are due to complete in 2013, including:

- the SCoH development of a memorandum of understanding (MOU) in relation to developing an effective national e-health capability between all states and territories and DoHA
- the SCoH-sponsored review and update of the 2008 National E-Health Strategy and an associated national business case for potential consideration by COAG
- the SCoH-sponsored review and renewal of the National Health Information Agreement (NHIA) between the states and territories and DoHA and other Commonwealth agencies, including the Australian Institute of Health and Welfare (AIHW) and the Australian Bureau of Statistics (ABS)
- the independent review of the regulation and operation of the national Healthcare Identifiers Service that is required under the Commonwealth Healthcare Identifiers Act 2010.

The MOU with respect to developing an effective national e-health capability is the most advanced and documents existing arrangements and agreed financial commitments. These scheduled reviews provide an opportunity for Victoria to influence the future national e-health agenda and its governance structures as well as to question the validity of assumptions on, for example, the consent model for the PCEHR.

The review of the National E-Health Strategy and the associated business case (for which Victorian participation has been endorsed by the government) will have the greatest potential impact. Its terms of reference include making recommendations on the overall national governance of e-health for the next decade.

‘Victoria should take a leadership role in operationalising the key elements of the National E-Health Strategy that are fit for its purpose, for example, implementation of identifiers, data storage, health informatics workforce development (across both clinical and data analytic streams).’

The national business case will cover the costs and benefits for each jurisdiction of future investment in national e-health. It will address the level of recurrent funding required for ‘national infrastructure’ and address the issue of what programs and initiatives should be nationally coordinated, including but not limited to the PCEHR.

Further detail on the key national committee and agencies involved in national e-health policy deliberations is contained in Appendix 9.
Panel considerations

Opportunities for greater progress on national issues

The panel has examined the multiple committee structures and reporting arrangements across both the Commonwealth and state governments and found difficulty in ascertaining with clarity the role of the multiple committees, authorities, initiatives and working groups in achieving the stated objectives of the 2008 National E-Health Strategy. That strategy aimed to:

- establish core foundations for electronic information exchange across the health sector
- stimulate investment in high-priority computer systems and tools
- encourage health sector participants to adopt and use the above systems and tools, and to establish appropriate and interoperable e-health mechanisms, and appropriate governance structures.

The relationships between the work programs of these many bodies with respect to clearly defined timelines and outputs to achieve the objectives of the 2008 strategy were generally difficult for the panel to determine. Stakeholder feedback to the panel was that the PCEHR had, at the time of this review, only achieved very limited penetration into the Australian health marketplace. Reasons cited for this slow adoption included widespread lack of education and appropriately linked software for providers, remaining unresolved issues with the National Health Identifiers, consumer suspicion and lack of perceived incentives, and poorly developed hospital EMRs and electronic discharge summaries.

The panel heard from multiple sources that the Commonwealth-led PCEHR program has not had the full support of stakeholders. For example, issues associated with the inclusion of the IHI on the Medicare card and the PCEHR opt-in consent model were brought to the panel’s attention.

A limited review of discussions in the public domain both within Australia and internationally demonstrated that the ‘opt-in issue’ is still open to debate from multiple perspectives including clinical safety. The panel looked at PCEHR public submission processes and noted that the Australian Privacy Commissioner supports an express consent approach. However, the Australian Medical Association indicates the opt-in design will undermine the objective of reducing adverse medical events and treatment duplication. The Consumer Health Forum indicates that it now supports an opt-out approach.

In the United States, there appear to be differing views across state jurisdictions but its national eHealth governing body, the ONC is looking to create national consistency.

A review of moving from opt-in to opt-out was foreshadowed in the original PCEHR Concept of Operations.

The panel has noted with concern that the proposed National Disability Insurance Scheme does not make use of the IHI but proposes a separate identifier. The potential loss of ability for communication between disability management and health management will undermine useful individual and population-based healthcare and impose additional costs.
In the absence of effective governance for national health ICT the panel believes that Victoria, via the SCoH, should ensure Victoria’s statewide health ICT plan and health service provider ICT plans effectively interact with the national agenda. Simplification and clarification of roles should be guiding priorities.

The panel noted there are significant opportunities for Victoria to be both an active participant and, where aligned with its strategic priorities, a vocal leader in the national agenda. These opportunities include:

- economies associated with shared costs and scalable solutions, for example, sharing the cost of Victorian experience in utilising and improving AMT as is being currently explored
- standards development that are fit for Victoria’s purpose
- leverage of collective effort, for example, the work done in Victoria on the National Product Catalogue
- sharing and harnessing of lessons learned
- faster time to develop and broader test-beds mitigating risks
- innovation and research opportunities
- leadership and influence extending to clinical and consumer engagement
- influence on policy and governance relationships to ensure the role of technology is understood within the broader vision of Australia’s healthcare system.

"Victoria should adopt relevant guidelines and standards where they exist and help shape/lead the national agenda where they don’t …”

Lessons for Victoria and Australia from other national efforts

The panel viewed the recent Governance Framework for Trusted Electronic Health Information Exchange, published by the US Office of the National Coordinator for Health IT (ONC) as relevant and useful, and strongly supports the principles laid out by that body, namely the organisational, business and technical principles. Of particular value and relevance to the proposed Governance Council is the organisational principles laid out by the ONC:

1. Operate with transparency and openess.
2. Establish mechanisms to ensure that the entity’s policies and practices and applicable federal and state laws and regulations are adhered to. Promote inclusive participation and adequate stakeholder representation (especially among patients and patient advocates) in the development of policies and practices.
3. Ensure its oversight is consistent and equitable
4. Provide due process to the stakeholders to which it provides oversight.

The panel believes that this two-tiered approach to governance recognises the autonomy of a health service provider and the need to achieve a system-wide view of health ICT as it:

- allows decisions to reflect individual health service provider need
- aligns responsibility and accountability for investment
- maximises the opportunity to achieve interoperability and information exchange by specifying standards and policies to which products need to adhere.
A number of stakeholders informed the panel of the importance of ICT in enabling patients to better manage their own care. An example of an American cancer treatment organisation that has created a web portal for patients to view their own results and to make outpatient appointments was cited to the panel. This view regarding self-management of healthcare also accords with VHPF priorities and outcomes.

In time the PCEHR may allow patients to view their own results and hospital discharge summaries as well as provider clinical records. However, the PCEHR may yet be overtaken by other ICT developments including the described trend to m-health and personal computer-based healthcare. Many consumers of health services around the world are taking custody of their own health information using applications freely or cheaply provided by many large ICT vendors. Cloud-based electronic health records are also available directly to consumers as they are to providers of health services. There is a potential danger to the achievement of information quality standards and interoperability should these offerings supplant the PCEHR.

The use of ‘big data’ is a major trend in ICT around the globe and is noted in the VICTAC strategy. This concept was referred to by a number of stakeholders, including the Victorian Comprehensive Cancer Centre (VCCC). The panel found little evidence at the Commonwealth level of any committee linked to the National E-Health Strategy taking an active role in the development of this type of research capacity in association with the e-health rollout.

Implications for the statewide health ICT plan

The panel has proposed the development of a statewide health ICT plan under the guidance of the recommended Governance Council (more fully described under ToR 2d). That statewide health ICT plan should establish the strategic principles and goals to support Victoria’s participation in national e-health initiatives. After it is more comprehensively formulated, Victoria’s future health ICT plan should coordinate with national e-health initiatives. The panel recommends the proposed Governance Council undertake the following.

1. Evaluate the results of the business case discussion between the Commonwealth and states, with any emerging resource commitment to be balanced against the capacity of Victoria to further develop statewide EMRs and interoperability across the Victorian health system. This business case is reported as due for completion by September 2013.

2. Ensure any investment in PCEHR capability also supports the refinement of health service provider ICT systems that will improve health services consistent with the VHPF priorities regardless of the success or uptake of the PCEHR over time. The panel viewed the development of PCEHR as dependent on the implementation of healthcare identifiers. The IHI has a utility beyond PCEHR and therefore is a priority for the development of EHRs regardless of the final form of these records. While current and potentially future work will be required to verify initial estimates, the costs are expected to run into the tens of millions of dollars. The statewide health ICT plan might well be formulated to achieve greater connectivity and transferability of health information regardless of the final state of development of the national e-health initiatives. The Victorian Department of Health should independently assess the progress of the planned rollout of the PCEHR against milestones. Based upon objectively reported uptake and utilisation of the PCEHR, it should plan progressive implementation of agreed ICT systems across the state to contribute to the PCEHR.

3. Carefully consider resolutions arising from the national e-health strategy refresh with respect to their consistency with state priorities.

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6 These applications are available for monitoring and management of hypertension, diabetes, weight loss, fitness, neonatal care, pregnancy and mental health – to name merely a few areas – and their numbers are growing rapidly. The potential extends beyond health-specific applications. See, for example, [http://www.nejm.org/doi/full/10.1056/NEJMp1203102#ref5](http://www.nejm.org/doi/full/10.1056/NEJMp1203102#ref5)
4. Encourage Victoria to build upon its existing investment in research infrastructure by encouraging national planning for the creation of health and medical research ICT systems in conjunction with the rollout of e-health resources including but not limited to the PCEHR. This might be achieved through appropriate governance arrangements.

5. Promote greater awareness at the national level of health ICT quality and safety risks and issues that have so far been poorly addressed in the early foundation work on the creation of electronic health records.

6. Continue to plan for and support the activities listed in the schedule to the national MOU to develop an effective national e-health capability as agreed by the Commonwealth and the state in 2012.

7. Address the shared interest between the national e-health agenda and statewide health ICT plan in the development of a clinical and health informatics workforce. This means the joint allocation of sufficient funding to tertiary educational institutions to create and sustain health informatics courses and sufficient funding to the health sector to create meaningful employment for graduates of such courses who should be leading the implementation and development of EMRs and EHRs.

**Recommendations**

1. Victorian participation in national e-health initiatives should be driven by specific objectives encompassed in the statewide health ICT plan, to be developed by the proposed Victorian Governance Council. It should consider the resolutions from the National E-Health Strategy Review and national e-health business case for their consistency with state health ICT priorities and ensure that sufficient benefits accrue to Victoria to justify any investments.

2. The statewide health ICT plan should reinforce Victoria’s leadership with respect to national e-health initiatives, within the following framework:
   a) patient-centric focus to support improvements in health outcomes
   b) standards-based approach to allow for interoperability and secure, reliable information exchange
   c) accepting of variation to ensure health service providers’ priorities can be targeted, reflective of the scale and scope and service types across the Victorian public health sector
   d) decisions linked to safety and quality to ensure the focus remains firmly on the patient
   e) activities sustainability funded, based on business cases and recognising the importance of measured steps to deliver real benefits to the system as a whole
   f) decisions recognise the state of maturity of the market while safeguarding the value of both future and past investments.

3. The panel accepts the benefits of the Healthcare Identifier Program and supports the individual healthcare identifier (IHI) incorporation onto the Medicare card.

4. The panel considers the policy with respect to the personally controlled electronic health record (PCEHR) should be revised to be ‘opt-out’ rather than ‘opt-in’ to achieve strategies formulated as part of this review - this recommendation is made subject to the satisfactory outcome of a review of the costs for such an amendment to the process.

5. The Governance Council should focus on the following e-health related initiatives:
   a) encourage Victoria to build upon its existing investment in research infrastructure by encouraging national planning for the creation of health and medical research ICT systems in conjunction with the rollout of e-health resources including but not limited to the PCEHR. This might be achieved through appropriate governance arrangements
   b) promote greater awareness at the national level of health ICT quality and safety risks and issues that have so far been poorly addressed in the early foundation work on the creation of electronic health records.
   c) address the shared interest between the national e-health agenda and statewide health ICT plan in the development of a clinical and health informatics workforce.
Chapter 6: Acquisition/procurement

This chapter sets out future procurement models and approaches, including the potential role of shared services. It references lessons learned from the HealthSMART initiative and more recent government procurement strategies. It focuses on terms of reference 2b and 2c.

(a) ToR 2b: to what extent should a central shared services bureau be used to operate core health service systems and infrastructure?

Background

Central shared services are commonly used to reduce the service cost by exploiting economies of scale across multiple organisations (or business units within an organisation). Typically they are used to provide a common service for support functions (such as HR, payroll and accounting) but can be applied to any function if carefully planned and implemented.

‘Provides capacity for hardware, back-up and people with expertise that is generally very difficult to find/costly to maintain at individual organisation level.’

The success of central shared services relies on two key factors:

- governance – the objectives, funding, value-for-money expectations and resources set for the shared service need to be clearly defined so that each participating organisation accepts and knows how it participates and what is demanded of it
- service delivery approach – the way services are delivered needs to optimise the benefits for all participating organisations.

There are a range of drivers that lead to establishing central shared ICT services including:

- sharing a relatively low-value function that is performed across participating organisations, for example, help desk
- accessing a high investment asset that can be shared across participating organisations, for example, network, data centre
- joint working to leverage economies of scale, for example, ICT procurement
- gaining access to specialist resources that would otherwise be difficult for an individual agency to procure
- leveraging previous investment through re-use, for example, adopting the same software as another similar agency.
HSS is a large organisation operating 24/7, supporting more than 72,000 users across 39 of the possible 41 health service providers (14 metropolitan health services, 22 stand-alone metropolitan community health services, five rural health ICT alliances). HSS has responsibility for the operational support and maintenance of the standard applications and technical infrastructure. It operates on a fee-for-service basis. HSS service fees do not include delivery of application changes requested by users.

HSS charges client agencies for services delivered. However, HSS has not reached self-sufficiency as the expected economies of scale have not been achieved. The major reason for this is that only four of the 10 expected clinical implementations were funded and executed. The practical impact for HSS is the need for an ongoing subsidy by the department.

Panel considerations
The panel considered a range of arrangements and approaches to leveraging the benefits of commonality across the Victorian public health system including:

- virtualisation – where a vendor offers private, secure use of their ICT infrastructure ‘as if it was yours’; this has been a common method of offering networks (virtual private networks) for many years, but is now offered more broadly as ‘private cloud’ services (infrastructure, platform and software-as-a-service)
- multi-tenanting – a variation on virtualisation where the solution can be configured to each organisation’s business needs
- joint shared service – the participating organisations agree to establish a joint operation
- common service from a single provider – the participating organisations jointly acquire (as a single entity) an ICT capability from a single provider
- similar service from a single provider – the participating organisations agree to separately acquire a common ICT capability from a single provider (leveraging skills, knowledge and experience, but not the same instance)
- approved providers – the participating organisations acquire an ICT capability from a shortlist of approved vendors
- market standardisation – each organisation acts independently in a market that has standardised on a few preferred products.

Almost all stakeholders interviewed expressed concern that the HSS arrangement separates the health service provider as client from the vendor, resulting in a dysfunctional relationship between parties.

The panel also considered feedback on HSS by its customers who, while acknowledging some benefits from HSS, raised concerns about the lack of flexibility of current arrangements, which were seen as too bureaucratic and not driving innovation.

There has been no market testing to determine the commercial competitiveness of HSS and in the time available to conduct the review, the panel was unable to determine the cost-effectiveness of HSS.

‘Currently runs too much like a bureaucracy … does not drive innovation.’
‘Uneven balance of power in decisions which are skewed to larger organisations’ needs’
Developments in technology, including the delivery of infrastructure and software as services, mobility and device ubiquity, as well as evolutions in partnering and procurement methodologies, are outstripping the capacity of government-controlled centralised provision to respond. Pressures on state finances make it all the more pressing to ensure competitive, value-for-money provision.

Some stakeholders suggested that in a future shared services model, infrastructure and application components should be considered separately to recognise their different risk profiles.

Smaller HSS clients noted the current model provided capacity for expertise, procurement and data warehousing support that is very difficult and costly to maintain at an individual organisation level.

The panel considers the decision to use a shared service bureau by a health service provider should be determined by the health service provider, based on an associated business case. The extent to which a central shared services bureau should be used to operate core health service systems and infrastructure should be solely determined by its customers.

The panel is of the view that urgent and careful planning would be required in order to maintain necessary support during any transition.

Recommendations

1. The decision by a health service provider to use or continue to use a shared service bureau should be determined by that health service provider and based on business needs.

2. HSS should be the subject of a review by external experts comparing the scope of services, structure of provision, costs and value-for-money with other possible future options. The review should also consider transitional arrangements, including the scenario in which some health service providers may wish to withdraw from HSS. Appropriate transitional arrangements should be considered to cover any increased costs against those costs anticipated in the original budget for health service providers utilising HSS to deliver applications. The review should be required to report its findings to the Minister for Health.

3. The future health shared service should be governed by its customers; in the interim, customers should be more closely involved in decisions about the operation of the existing shared services arrangement (HSS).
Background

In delivering its health agenda, the Department of Health is responsible for the design and management of a system involving the selection, implementation and management of a range of processes, infrastructure and people. Health service provider technology systems are mostly delivered for government by the private sector.

ICT procurement in the Victorian health sector is carried out at both the individual health service provider level and centrally via the Victorian Government and the department.

Health Purchasing Victoria (HPV) is a procurement authority for health-related goods, services and equipment. HPV works in partnership with public health services to facilitate large-scale collective tenders and manage common-use contracts on behalf of the state.

Recommendations relating to ToRs 2a (participation policy/statewide footprint), 2c (future procurement methodology) and 2d (future governance arrangements) would alter the current balance away from a mandated approach and standardised products to a standards-based approach with more devolved decision making.

Panel considerations

ICT investment is considerable and, if undertaken poorly, can create costs well in excess of the investment made. Sound procurement expertise is essential if the state is to receive a return on its ICT investments.

(a) ToR 2c: what procurement methodology should be adopted for future ICT investment?

‘Balance process responsibility with need for agility …’

‘… preference is for agencies to be able to select the solution most appropriate for their needs.’
The panel considered that the tenets of a sound procurement process should include:

- a procurement model that reflects the problem being solved or capability being sought (for example, procurement of commodity goods or services may require one model and procurement of highly complex services may require another)
- evaluation criteria that address the heart of the problem being solved
- specification of outcomes rather than inputs – this helps mitigate purchaser risk, especially in the context of a rapidly evolving technology environment
- transparency of both the process and evaluation criteria to relevant parties
- meaningful dialogue with potential suppliers in advance of tenders being issued and awarded (competitive dialogue)
- robust management, accountability and governance frameworks and mechanisms
- effective risk management overlays
  - financial risk, for example, would take into account the capital and recurrent funding available to the purchaser over time
  - technical risk, for example, would take into account the maturity and track record of fully integrated suites versus a more modular approach
  - operational risk would take into account the change readiness of the implementation environment.

If operating effectively, the procurement process provides the purchaser, whether government or a health service with:

- a solution to the opportunity it is addressing or problem it is solving (policy, operational, strategic)
- value-for-money (that is, a solution that reaches a particular standard at the lowest feasible price)
- capacity to mitigate risks beyond the contract (commercial and other risks).

A sound procurement process should provide suppliers with:

- clarity about the opportunity being addressed or problem being solved
- capacity to make a reasonable commercial return
- capacity to reasonably anticipate and mitigate risks.

‘... open and controlled market will stimulate vendor investment.’

An outcome where the government gets the solution it wants but where the supplier does not make a commercial return is not necessarily optimal for the long-term health of a market.

Through the VICTAC strategy, the Victorian Government has adopted a number of principles and recommended approaches that take such issues into account in order to improve the way the government invests in ICT. The shifts in direction articulated in the VICTAC strategy are endorsed by the panel (see Table 3).
Table 3: Panel-endorsed shifts in direction articulated in the VICTAC strategy

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<th>Investment – Victoria’s direction</th>
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<td><strong>From…</strong></td>
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<td>Large, complex ICT projects resulting in highly customised, expensive</td>
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<td>systems that do not always realise benefits</td>
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<td>Uncoordinated investment that does not leverage or build on existing</td>
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<td>Procurement activities with a limited focus that do not take into</td>
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<td>account market capabilities</td>
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<td><strong>To…</strong></td>
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<tr>
<td>A focus on clearly identified business outcomes, early industry</td>
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<td>engagement, staged projects and adapting processes to make best use</td>
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<tr>
<td>of existing market offerings</td>
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<tr>
<td>Reusing and sharing solutions across government where possible⁷</td>
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<tr>
<td>Enabling and harnessing competition and market capabilities to</td>
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<tr>
<td>deliver innovation, efficiency and productivity</td>
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The panel endorses VICTAC’s outline of the ways in which the government has committed to improve the way it invests in ICT, namely by:

*Improving the clarity of scope and outcomes of ICT-enabled project business cases*

*Engaging with the ICT industry to establish the feasibility, risk and most cost-effective technology solution options*

*Looking first to ICT options government already owns or has access to, to provide the required benefits*

*Improving project delivery by adopting sound project management methodologies, improving the skills and capabilities of project management staff; and*

*Continuing to refine the delivery of common ICT services across government⁸*

The panel has been cognisant of common procurement mistakes, ranging from specific project reviews highlighted by the Ombudsman to wide-ranging Victorian Auditor-General reports; the issues range from governance, to poor problem definition and poor execution, including change management. Figure 3 captures some of the decisions that are regularly cited in procurement reviews as misguided, resulting in poor procurement outcomes.

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⁷ By way of an example, a large health service recently sought to replace a local application. Rather than approaching the marketplace solely on its own behalf, the agency acted as an agent of HPV, allowing other health services to buy against this agreement without need for further procurement processes.

⁸ VICTAC strategy, page 16
Many of the issues of poor ICT procurement that were considered as part of the VICTAC strategy are true in health. Industry and vendors supplying the Victorian public health sector expressed a strong view that current arrangements are not working. For instance, the VeHN, operating under the auspices of the Victorian industry department, conducted a survey of its members on several of the panel’s terms of reference including seeking industry feedback on procurement, where 57% of 46 respondents held that procurement is ‘poor, disorganised or otherwise impacting on my ability to respond’, while 17% responded that procurement was ‘adequately organised thus permitting a fair response on my part’ and 2% that it was ‘very well organised, applicable to my products and services’.

Industry groups supported the VICTAC approach of breaking large projects into smaller component parts that are logistically more manageable and help mitigate risk, and held that a more nimble, less centralised procurement approach should be adopted. One suggestion, echoed in the stakeholder forum, was to adopt an endorsed panel or register of providers/systems to allow a flexible, standards-based approach while mitigating the risk of excessive system fragmentation and potential inefficiencies.

9 The Victorian eHealth Network’s members include ICT companies that offer e-health solutions as well as health service providers and other organisations seeking to understand the e-health capabilities of the Victorian ICT industry. VeHN operates as an ‘industry cluster’ with support from Multimedia Victoria and became an incorporated association in August 2011.
It is difficult in some cases to separate the issues of procurement and implementation because some issues that reveal themselves at the implementation phase have been seeded in the design/procurement phase. Procurement of health ICT is often seen to be especially difficult and complex and can readily lead to costly acquisitions and costly implementations that go well beyond the `fit for purpose' test. Kenneth Mandl and Isaac Kohane, in a 2012 article in The New England Journal of Medicine, Escaping the EHR Trap — The Future of Health IT, make an observation that has some resonance beyond EHRs:

A healthy IT marketplace would favor disruptive innovations (simple products and services that initially serve the bottom of a market and then move up to displace established competitors) for improving patient engagement, communication, and care coordination. Improved population health obtained at a lower cost would result. Just as consumers select and manage myriad technologies — Facebook for social networking, Twitter for microblogging, Google for search, iTunes for music — so should physicians. Only a small subset of loosely coupled information technologies need to be highly specific to health care. Many components can be generic…. Health IT’s unique features include the content of medical rules and clinical decision-support systems. Nevertheless, software for rule-based systems is generic and commercially available.10

The implications of sub-optimal procurement and implementation include projects not:

• being delivered on time
• being delivered on budget
• being delivering anticipated value to users/stakeholders
• realising intended savings/contributing to additional costs beyond the project.

Given the range of capabilities across the Victorian public health system, the panel concluded that while each health service provider is responsible for its own procurement:

• Procurement processes should conform to VICTAC principles and guidance.
• Procurement should be driven by standards rather than by standardisation of products and services.
• Consideration should be given to a central register of pre-approved vendors and providers from which health service providers can, but not be obliged to select appropriate solutions (vendors should be able to have products expeditiously included on the register).
• Tools, policies, frameworks and examples of best practice referred to in ToR 2d (future governance arrangements) should be provided in common to assist organisations that choose to draw on them.

The panel noted that there are two possible candidates to provide such a register — HPV and the Victorian Government e-services register.

**Recommendations**

1. Each health service provider is accountable for its own ICT procurement based on sound business cases.

2. The role of the department is to stipulate priorities and objectives not mandate specific systems.

3. Health sector ICT procurement will be based on Victorian Information and Communications Technology Advisory Committee (VICTAC) guidelines:
   a) ICT-enabled projects are staged and focused on managing risks and delivering business benefits earlier.
   b) competition is promoted to drive efficiency and innovation in ICT systems and services
   c) ICT services take advantage of industry capabilities
   d) ICT systems are interoperable, modular and reusable, with health sector ICT investment meeting approved interoperability standards
   e) technology will be trialled and adopted to promote better outcomes
   f) consider whether certain procurements (for example, desktops, mobile devices) can be appropriately centralised.

4. The health sector should consider purchasing ICT as complete services rather than as systems or separate components of systems (for example, software, hardware, integration engines, operations) as part of a holistic value-for-money business case assessment.

5. When health service providers are negotiating contracts for health ICT, consideration should be given to putting in place template contracts that other health service providers can access for the same services/systems.

6. The role HPV might play in future health sector ICT procurement should be more clearly articulated.

7. Consideration should be given to a central register of pre-approved vendors and providers from which health service providers can, but should not be obliged to source. Vendors should be able to have products expeditiously considered for inclusion on the register.

8. Tools, policies, frameworks and examples of best practice referred to in ToR 2d (future governance arrangements) should be provided in common to assist organisations that choose to draw on them.
Chapter 7: Investment

This chapter sets out the investment priorities for any future ICT investments in the Victorian health sector, and focuses on terms of reference 2f and 4.

(a) ToR 2f: broad priorities for new ICT investment

Background

Health ICT investment occurs through a competitive capital allocation process. ICT projects compete for financing with large capital projects such as new hospital builds.

Recent reviews of public sector ICT investment in Victoria have raised concerns about how ICT projects have been established, governed and funded and how returns on investment are realised.

Investments where there is diffused accountability for achieving desired outcomes and benefits are inherently high risk. This can apply to health ICT investments, in particular where the duration of a project such as the implementation of an EMR can be far longer than the tenure of commissioning personnel. The expense and hazard of constructing and deploying EMR system(s) is substantial. The deployed HealthSMART clinical system required extensive building and modification to reflect the Australian public health environment. It also required substantial compromise by health service providers to modify their workflows.

Some clinical systems with a narrow focus are justifiably constructed for use in Victorian health services. For example, the panel heard of oncology, pharmacy and obstetric systems constructed in Australia, which were viewed as adequate or good by those using them in various Australian hospitals.

Panel considerations

Based on the information it considered, the panel is of the view that:

• There is not yet sufficient evidence to demonstrate a positive financial return-on-investment for large-scale EMR systems that are specified and built to a high level of functionality. This should change over time as the industry matures and becomes more competitive.

• Quantification of benefits is missing from many health ICT benefits realisation reports. Studies tend to report benefits in qualitative rather than quantitative terms. Many studies do not balance either initial acquisition or project lifetime costs against quantified benefits to derive proper cost-benefit assessments, either in financial or in quality terms.

• While the difficulty of conducting benefits realisation studies is acknowledged, these studies continue to be an important part of project risk management and in ensuring that returns on investment occur as predicted and deliver the evidence to support further investment.

‘Recognise the world has changed – ICT is now essential to healthcare – it needs to be funded as such.’
While many business cases are prepared for the acquisition of EMR systems, these business cases generally project returns over 10–15 years. In periods of this length, technology changes drastically, making specification of systems difficult. This hazard is often further magnified with the size of the proposed investment. In addition, it is likely that health service provider management and governance will change considerably over this period. Subsequent accountability for the acquisition and implementation of complex systems is often hard to track and is diffused across the whole health system.

- Evidence of demonstrable returns on investment is generally missing from established vendors. As part of the tender process, vendors are usually required to prove the existence of operational EMR systems in hospital groups in other parts of the world, including hospitals in the United States, United Kingdom, Europe and Asia. While tender bids refer to the product’s existence, the panel considered that there was a general lack of objectively studied and proven return-on-investment for their systems. This points to the complexity of assessing the costs and benefits from acquiring such products.

- Business cases for system acquisition should not generally be developed with vendor assistance. However, external objective ICT consulting expertise should be sought from health service providers preparing such business cases. In addition, business cases should always consider and report on the costs of maintenance of legacy systems and consider alternative approaches to the investment, such as incremental system builds.

- Linking and building bigger ICT systems from individual application modules using systems integration techniques has merit. Capital costs of approximately 10% of larger vendors for systems of broadly compatible functionality were indicated to the panel by health service providers that had taken a systems integration or modular build path and by those that were proposing such a strategy. Other benefits include reduced ongoing costs and the encouragement of local vendors. Sophisticated capabilities, such as medications management, may be more difficult to achieve with the systems integration approach. The panel received advice from academic ‘clinical informaticians’ on the systems integration approach, which they support and term ‘middle-out’. This refers to a combined ‘top-down’ approach from executive and management and ‘bottom-up’ approach from clinicians and users.

- Leadership in system specification and implementation by clinical informaticians is important to ensure that intended benefits are realised.

- Single applications rarely, if ever, will be appropriate for use across the broad range of sizes and operational mix of health service providers in Victoria.

- The development of cloud-based (remote application service provision) health ICT services including EMR systems merits closer attention from the perspectives of cost and effectiveness.

‘Needs to be guided by strategy that recognises both longer term goals and smaller projects that are do-able given current workforce capacity and affordable given current funding opportunities’
Recommendations

1. Victoria’s health sector ICT investment, including priorities for capital expenditure, should be subordinate to the statewide health ICT plan.

2. Victoria’s health sector ICT investment should:
   a) be directed towards building EMR capability that incorporates the healthcare identifiers at all health service providers (private sector investments in healthcare identifiers should be further encouraged)
   b) be driven by a patient-centric approach that supports improvements in health outcomes
   c) emphasise the development of capability in health informatics, which has a crucial role in developing an electronic health records (EHRs) strategy, planning and management of EHRs inside the health service providers and across the sector. This particular capability is currently in short supply and the panel viewed its expansion as having the potential for a positive system-wide benefit.

(a) ToR 4: to provide advice on the approach to allocating the $100 million over four years

Background

Critical infrastructure refresh

Concern about chronic underinvestment in health sector ICT relative to other industries is well known. In Victoria this has been variously attributed to factors such as health service providers giving greater funding priority to meet other demands, software and hardware applications have not met requirements sufficiently to warrant investment, and because there has been inadequate expertise to research, procure and implement needed infrastructure and applications.

‘Funding strategy needs to recognise capital, refresh, operations and innovation.’

Over the past decade there has been considerable new ICT investment into some parts of the health system, improvement in the types of offerings available, and better capability and support within the system to manage these projects.

- There are three identified streams of funding within health service providers that drive ICT investment:
  - major capital grants (for example, hospital redevelopment)
  - health-service-driven initiatives, funded locally
  - ‘loan’ arrangements between the department and health services where operating revenue is brought forward.

As health service providers have transitioned more of their business and clinical processes into an electronic environment, the requirement to maintain integrity and currency of these systems is increasingly critical. Most hardware operates on a seven-year life cycle, and in addition to basic maintenance, software requires periodic upgrade to retain vendor support.
There is no centrally maintained register of the hardware and applications used by health service providers, and consequently it is unknown how much is obsolete or at high risk of failure. The asset base was estimated in 2006 at around $300 million, and since then a further $40 million has been purchased by HSS.

Preliminary investigation together with anecdotal evidence indicates some health service providers are dependent on legacy applications to run critical tasks, or are running services at risk of hardware failure without adequate disaster recovery capabilities in place.

National E-Health Strategy

The National E-Health Strategy has as one of its four major streams of activity the establishment of the core foundations for electronic information exchange. This will enable disparate healthcare providers to share patient data. Practically this means all members of the population will have a unique identifier that can be used across organisations to reliably link different parts of their health record together. As detailed in Chapter 5, this functionality is a prerequisite for the most basic level of interoperability between different parts of the VPHS.

Innovation

Victoria’s independent health services have a long history of developing innovative ideas and utilising government grants effectively to implement and evaluate outcomes. The VHPF offers effective guidance on many of the areas that could be supported by the Innovation, E-Health and Communications Technology Fund, and the statewide health ICT plan to be developed by the proposed Governance Council will provide further direction.

Panel considerations

The panel considered that there is a critical need to refresh ICT infrastructure and applications deemed to be both at high risk of failure and essential for the delivery of effective and efficient care. Because the scale of this problem is unknown, assigning a specific portion of the $100 million to this task immediately carries risk.

Encouraging the use of unique healthcare identifiers across the sector was viewed by the panel as opening the way for new generations of clinical decision support tools to be developed, as well as offering a useful and efficient resource for medical research. Given the architecture for IHIs has already been developed and there are trial sites active in Victoria, the panel agreed that building upon this base was the most appropriate way to build interoperability across the Victorian health sector.

Useful innovation is typically the product of critical need coupled with capable management and leadership. The panel viewed health service providers as the organisations most capable of identifying these needs and most interested in achieving a lasting outcome. It also recognised that health service providers do not always have the resources to achieve these goals, and may not yet carry sufficient expertise to design and navigate projects that include substantial new technology components.

The panel was of the view that to maximise the enduring impact of the $100 million, the majority of funds should be allocated to e-health enablement and innovation. However, it also recognised that early allocations over the four-year period might disproportionately fund a critical infrastructure refresh.
Recommendations

1. The framework used to allocate the funds should be based on the VHPF and the statewide health ICT plan yet to be developed by the Governance Council.

2. Establishing and operating the Governance Council should be funded from within the $100 million allocated in the budget.

3. The panel recommends allocations from the Innovation, E-Health and Communications Technology Fund be made against the following three major categories:
   a) critical infrastructure refresh
   b) development of EMRs across the state
   c) innovation

4. The panel recommends the highest priority against the development of EMRs across the state should be the broad utilisation of healthcare identifiers by health service providers in order to drive interoperability between agencies.

5. Expressions of interest (EOIs) should be sought from health service providers for a critical infrastructure refresh and be subject to a risk matrix assessment by the department before allocations between the three categories are finalised.

6. The panel recommends that grants made from the fund should be on the basis that all ongoing management and maintenance costs will be met by the receiving health service provider and that consideration be given to prioritising initiatives that health service providers have volunteered to part-fund themselves.

‘Investment needs to recognise the people aspects including training and change management.’
Appendix 1: Terms of reference

Terms of reference: Victorian Health Sector ICT Review Panel

Purpose:
To review the current approach to Victorian health sector ICT and prepare a report on the findings and future options to the Minister for Health.

Background:
In 2003 the Department of Health decided to standardise core hospital and community health computer systems. Major systems were chosen for standardisation: Finance, Patient Administration, Client Management (Community Health) and EMR foundation (or Clinicals) and selected smaller systems (rostering, payroll and PACS/Digital x-rays) were also included in the program. Other systems, such as theatre, pathology, the emergency department, were not standardised.

These systems were mandated in a decision known as the participation policy. It requires health services that replace systems to use a specific product and specific configuration for the mandated systems. On implementation these new systems are also required to shift from being locally run to being provided through a statewide shared service bureau.

This policy has been contentious. It intended to provide a standardised approach to reduce costs and enable health information to be better connected including over time to a national e-health record. But it has also limited individual choice for health services and some would argue has not recognised the significant differences in health service scale and service mix.

Funding for the 2003 strategy has been exhausted and the government has recently approved a new innovation and ICT fund of $100 million over four years.

Scope of the review:
1. To conduct a high-level review of the functionality and usefulness of all the HealthSMART applications as recommended by the Victorian Ombudsman.
2. To provide advice on future directions for Victorian health sector ICT consistent with the Victorian Health Priorities Framework 2012–2022 including:
   a) whether to continue participation policy and statewide footprint approach and if not what approach should be adopted
   b) to what extent a central shared services bureau should be used to operate core health service systems and infrastructure
   c) what procurement methodology should be adopted for future ICT investment
   d) what governance approach should be adopted for future ICT investment
   e) how a future strategy will allow Victoria to participate in national e-health initiatives
   f) broad priorities for new ICT investment
   g) advice on interoperability within the public hospital system, community health and primary care settings in the light of national electronic health records.
3. Confirm the cost of the current program.
4. To provide advice on the approach to allocating the $100 million over four years.
Consultation:

1. A selection of executive, clinicians and users of public health services, rural health alliances and community health services that:
   a) utilise systems designed, deployed and maintained under the HealthSMART program
   b) have impending major ICT programs
   c) have not closely participated in the HealthSMART program

2. Subject matter experts from the sector and Department of Health

3. Senior officers from the Department of Premier and Cabinet and the Department of Treasury

4. Representatives from other key stakeholder groups such as the Australian Medical Association, Royal Australian College of General Practitioners, General Practice Victoria and select Victorian Medicare Locals

5. Relevant staff of the Ombudsman

The panel is requested to hold a user forum which the Minister will also attend.

External advice

The panel may commission external expert advice as required.
Appendix 2: Panel member biographies

Dr Andrew Perrignon (Chair)
MBBS (Syd), BSc (UNE), FACRRM, FRACMA
Andrew is tertiary trained in medicine, statistics and computer science and holds dual Fellowships of the Australian College of Rural and Remote Medicine and the Royal Australian College of Medical Administrators. His career has been equally divided between health administration and clinical practice. Formerly chief executive officer of Northern Health, he now works in general practice and as a health management consultant. Andrew has previously worked in indigenous health and has chaired both Health Purchasing Victoria and the Australian Resource Centre for Healthcare Innovation – in addition to membership of state and federal health ICT committees.

Dr Bronte Adams
DPhil (Oxon), BA (Hons), Mini MBA (McKinsey & Co), GAICD
Bronte, principal and founder of dandolopartners, is a former McKinsey consultant who has worked in senior positions in both the public and private sectors. Bronte has led and managed public sector policy development and implementation and consulted to a wide range of clients in the telecommunications, information technology, biotechnology, tourism, health, energy, education and arts sectors.

Bronte brings direct experience from previous governmental roles in a range of areas including ICT policy, e-government, telecommunications purchasing, recruiting ICT investment into the state, developing and implementing industry policy and initiatives, designing strategies and programs for skills development, promoting e-commerce and public access to ICT and leading the development of ICT policy including legislation (privacy, electronic signatures and others). Bronte is currently a member of the Victorian Government’s Health Innovation and Reform Council (HIRC) and the Victorian Information and Communications Technology Advisory Committee (VICTAC).

Prof. David Ashbridge
MB BS, Master Pub. Hlth, Dpl Child Hlth, Dpl Trop Med, GAICD, Member RACGP
David is the chief executive officer of Barwon Health. Prior to taking up this position in 2010, David worked for 22 years in the Northern Territory, initially as a remote area medical officer in Aboriginal communities. This was followed by a range of executive roles, culminating in his appointment to chief executive officer of the Northern Territory Department of Health and Families. David was a board member of the National E-Health Transition Authority.

David is a member of the Victorian Ministerial Health Innovation and Reform Council (HIRC) and is actively involved with the Victorian Department of Health, being part of the Intensive Care Advisory Council, Board of Health Information Systems and various governance groups. David is a member of the Deakin University Council.

Mr Trevor Carr
MBA (Exec) (AGSM), BHA (NSW), GAICD, AFCHSM
Trevor is chief executive of the Victorian Healthcare Association – the peak industry association representing the public and not-for-profit healthcare sector in Victoria. Trevor is a member of the Victorian Government’s Health Innovation and Reform Council, and was on the ministerial advisory committee for the Victorian Health Priorities Framework 2012–2022. He has worked directly with health service boards for more than 25 years, and has led rural health agencies in the delivery of acute, aged and community health services. Trevor is also a director on the board of First State Super Trustee Corporation.
Mr David Lau
BPharm, MClinPharm, GradCertHealthSysMgt, FSHP
David is executive director of Ophthalmology Services at the Royal Victorian Eye and Ear Hospital, a role that has included local sponsorship of the HealthSMART Clinicals project. A hospital pharmacist by training, David has previously held a number of senior hospital pharmacy positions in both public and private sectors, has been past chair of the Victorian Pharmacy Authority and also of the Pharmacy Board of Victoria.

Dr Ross Lowrey
BSc, PhD (physics)
Ross is a highly experienced ICT consultant with BearingPoint Pty Ltd. he specialises in ICT-enabled business strategy and transformation. He has had wide experience in the health sector, participating in the development of ICT strategies for Victorian hospitals, the Victorian primary healthcare sector, hospital supply chains, and the funded agencies relationship for the previous Department of Human Services.

Mr Brian Meadows
Brian has a wealth of experience developing and implementing new systems in industry and the public sector locally and internationally as the leading change executive and in mentoring and consulting roles in large corporations. He has developed and implemented many strategic plans, being able to view breadth and depth. Brian has extensive outsource experience including tender preparation with service-level agreements (SLAs), contract preparation and administration. He has managed large and complex projects, usually breaking new ground and often with new groups of people. He has extensive and continuous experience with systems, organisation and SLAs for state, national and international ICT services over the past 30 years including favourable international best practice comparisons.
## Appendix 3: Summary of stakeholder consultation

### Panel stakeholder interviews

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<thead>
<tr>
<th>Organisation</th>
<th>Contact</th>
<th>Role</th>
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<tbody>
<tr>
<td>ACCRM</td>
<td>Jeff Ayton</td>
<td>Immediate Past President</td>
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<tr>
<td>AIIA / VeHN</td>
<td>Paul Cooper</td>
<td>Chair, AIIA Health SIG</td>
</tr>
<tr>
<td>Austin Health</td>
<td>Brendan Murphy</td>
<td>CEO</td>
</tr>
<tr>
<td>Barwon Health</td>
<td>David Ashbridge</td>
<td>CEO</td>
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<td>Barwon Medicare Local</td>
<td>Jason Trethowan</td>
<td>CEO</td>
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<tr>
<td>Bendigo Health Care Group</td>
<td>John Mulder</td>
<td>CEO</td>
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<tr>
<td>Cabrini Health</td>
<td>Michael Walsh</td>
<td>CEO</td>
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<tr>
<td>Cerner</td>
<td>Cameron Burt</td>
<td>Managing Director</td>
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<tr>
<td>Clinical System</td>
<td>Fiona Webster</td>
<td>Chair</td>
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<tr>
<td>CMS</td>
<td>Terry O'Bryan</td>
<td>Chair</td>
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<tr>
<td>CSC</td>
<td>Braden Hair</td>
<td>Industry General Manager, Global Healthcare</td>
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<tr>
<td>Epworth</td>
<td>Jenny O'Brien</td>
<td>Chief Clinical Information Officer</td>
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<tr>
<td>Flinders University</td>
<td>Michael Kidd</td>
<td>Executive Dean of Health Services</td>
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<tr>
<td>FMIS</td>
<td>Sam Costanza</td>
<td>Chair</td>
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<td>Gippsland</td>
<td>Peter Craighead</td>
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<td>GP Victoria</td>
<td>John Rasa</td>
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<td>Grampians</td>
<td>Chris Scott</td>
<td>Chair</td>
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<td>Inner East Medical Local</td>
<td>Adam McLeod</td>
<td>Director, Strategy &amp; eHealth</td>
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<td>Intersystems</td>
<td>Darren Jones</td>
<td>Regional Managing Director</td>
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<td>ISIS Primary Care Ltd</td>
<td>Terry O'Bryan</td>
<td>CEO</td>
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<td>Latrobe Community Health Service</td>
<td>Ben Leigh</td>
<td>CEO</td>
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<td>Melbourne Health</td>
<td>Gareth Goodier</td>
<td>CEO</td>
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<tr>
<td>Merri Community Health Services</td>
<td>Nigel Fidgeon</td>
<td>CEO</td>
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<tr>
<td>NEHTA</td>
<td>Alby Creevey</td>
<td>Vendor Engagement Lead</td>
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<td>Oracle</td>
<td>Graham Wright</td>
<td>Delivery Manager, ERP</td>
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<td>PCMS</td>
<td>Tony Goad</td>
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<td>Peter MacCallum cancer Centre</td>
<td>Robert Thomas</td>
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<td>RACGP</td>
<td>Morton Rawlin</td>
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<td>Southern Health</td>
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<td>SWARH</td>
<td>Garry Druitt</td>
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<td>The Royal Children's Hospital</td>
<td>Christine Kirkpatrick</td>
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<td>The Royal Women's Hospital</td>
<td>Dale Fisher</td>
<td>CEO</td>
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<tr>
<td>The University of Melbourne</td>
<td>Fernando Martin Sanchez</td>
<td>Professor, Chair of Health Informatics</td>
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<tr>
<td>UNSW</td>
<td>Enrico Coiera</td>
<td>Director, Centre for Health Informatics</td>
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<tr>
<td>Eastern Health</td>
<td>Alan Lilly</td>
<td>CEO</td>
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<tr>
<td>Peninsula Health</td>
<td>Sherene Devanesen</td>
<td>CEO</td>
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### Site visits

<table>
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<tr>
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<tr>
<td>La Trobe Community Health Service</td>
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<td>Andrew Perrignon and Ross Lowrey</td>
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<td>RVEEH</td>
<td>All</td>
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<td>Eastern</td>
<td>Brian Meadows</td>
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<tr>
<td>Barwon Health and SWARH</td>
<td>David Lau and Brian Meadows</td>
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<td>Austin Health</td>
<td>David Lau and Brian Meadows</td>
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<td>Peninsula Health</td>
<td>Andrew Perrignon and Ross Lowrey</td>
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### Government representatives

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<thead>
<tr>
<th>Organisation</th>
<th>Name</th>
<th>Title</th>
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<tbody>
<tr>
<td>Department of Health</td>
<td>Frances Diver</td>
<td>ED, Hospital &amp; Health Service Improvement</td>
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<td></td>
<td>Karleen Edwards</td>
<td>Commission for Hospital Improvement</td>
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<tr>
<td></td>
<td>Leanne Moore</td>
<td>Director, Mental Health, Drugs &amp; Regions</td>
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<td>Victorian Auditor-General’s Office (VAGO)</td>
<td>Paul O’Connor</td>
<td>Sector Director, Performance Audit</td>
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Appendix 4: Stakeholder written submissions

Alexandra District Hospital
Alfred Health
Allied Health Professionals Australia (AHPA)
Austin Health
Australian Commission on Safety and Quality in Health Care (ACSQHC)
Australian Information Industry Association (AIIA)
Barwon Health
Bendigo Health
Cerner
CMS Product Planning Group
Fujitsu
GP Victoria
Grampians Rural Health Alliance
Health Issues Centre
Knox Community Health Service
Inner South Community Health Service (ISCHS)
Peninsula Health
The Royal Children's Hospital (RCH)
The University of Melbourne, Health and Biomedical Informatics Centre
Victorian eHealth Network (VeHN)
Victorian eResearch Strategic Initiative (VeRSI)
Western Health
## Appendix 5: Stakeholder forum attendees

<table>
<thead>
<tr>
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<td>Ms</td>
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<td>Barclay</td>
<td>FujiFilm</td>
<td>Clinical Product Sales Specialist-Informatics, Medical Systems</td>
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<tr>
<td>Ms</td>
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<td>Bennett</td>
<td>Northeast Health Wangaratta</td>
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</tr>
<tr>
<td>Mr</td>
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<td>Dental Health Services Victoria (DHSV)</td>
<td>DHSV, Manager ICT</td>
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<tr>
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<td>Boston</td>
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<tr>
<td>Ms</td>
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<td>Cameron</td>
<td>Latrobe Regional Hospital</td>
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<tr>
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<tr>
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<tr>
<td>Ms</td>
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<td>Upper Hume PCP</td>
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<tr>
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<td>National E-Health Transition Authority</td>
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<td>Nigel</td>
<td>Fidgeon</td>
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<td>Delivery Manager, ERP</td>
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Appendix 6: Stakeholder communiqué

Stakeholder Forum: 27 March 2013

In late 2012 the Minister for Health, the Hon. David Davis MLC, established an expert panel to undertake a review of Victorian health ICT. As part of its terms of reference, the review panel, chaired by Dr Andrew Perrignon, was asked to consult broadly with stakeholders, including holding a stakeholder forum.

Following a series of interviews with selected stakeholders during February and March 2013, a stakeholder forum was held on 27 March 2013. The forum provided an opportunity for a broader range of stakeholders to discuss the terms of reference and present their views to the panel.

Stakeholders attending the forum represented a wide range of Victorian public health organisations drawn from large and small services across metropolitan and rural areas, government bodies, private health services, professional associations and industry bodies. The Minister for Health also attended the forum to hear stakeholders’ views.

In addition to views relating to specific terms of reference, a number of broad collective themes emerged. These themes are outlined below.

Confirming strategy

One theme that gained collective stakeholder support across the forum is the importance of a clear strategy to guide Victoria’s future health ICT planning.

Stakeholders indicated the strategy should extend beyond technology considerations to embrace the information requirements across people and processes. Stakeholders called for the strategy to be collaboratively developed, and indicated that it should be:

- patient-centric in its focus to support improvements in health outcomes
- standards-based to allow for interoperability and secure, reliable information exchange
- accepting of variation to ensure organisations’ priorities could be targeted, reflective of the scale and scope and service types across the health sector
- linked to safety and quality to ensure the focus is firmly on the patient
- sustainably funded, recognising the importance of measured steps that deliver real benefits to the system.

Establishing appropriate governance

Stakeholders acknowledged the need for strong governance across health ICT investments and implementation to ensure whole-of-system goals were addressed alongside those of individual organisations. Establishing appropriate governance and effective leadership support at various levels was seen as key to supporting this objective.

Recognising capacity

Stakeholders acknowledged health ICT had traditionally been too heavily focused on technology as the driver rather than its supporting role for improved patient outcomes. There was a strong call for change management, health informatics and data analytics to be embedded in future Victorian e-health projects. Stakeholders indicated that achieving this goal would require investment in these skills as well as development of appropriate information and workforce capacity strategies.
Building on lessons learned

While stakeholders provided a range on views of the previous HealthSMART program, they were strongly supportive of taking a continuous learning approach to health ICT progress. Stakeholders were also keen to establish ongoing communication forums to ensure broad dissemination of key information and emerging trends from local and statewide to national and international levels and vice versa.

Insights

Each table of stakeholders attending the forum was invited to make summative comments from their discussions. Here are some insights gathered from scribe notes:

Foster collaboration between like organisations, between large and small services – invest in both bringing up the minimum capabilities required for data exchange and in the leaders to ensure lessons are available to enhance future system progress.

Be confident Victoria is a national leader – make sure this continues in areas where e-health supports our policy/implementation priorities.

Victoria should take a leadership role in operationalising the key elements of the national e-health strategy that are fit for its purpose – for example, implementation of identifiers, data strategy and health informatics workforce development (across both clinical and data analytic streams).

The current environment calls for coordination not decree.

Agencies require a degree of autonomy with central support and governance that allows strategic links and leverage of national agendas.

Take a step-change approach to improvements in patient outcomes and productivity improvements enabled through ICT investments.

Create a common pathway, aim towards it over a number of years, drive it through the Safety and Quality agenda and ensure a culture of feedback and continuous improvement.

Agree that Victoria will invest in an integrated care record, acknowledging that significant flow of benefits is relatively latent until HIMMS Levels 5 and 6 are achieved.

Don’t underestimate the work, but just do it.

There has been great work and implementations both inside and outside of HealthSMART that should be leveraged going forward.

Rather than the HealthSMART Participation Policy, need to mandate standards to enhance interoperability and harmonise with work at national level.

‘How standard can we go?’ To help Australia take advantage of the future offered by ‘e’, look at, and beyond, national standards.

Central shared services bureau should be considered separately at infrastructure and application layers and tested against the market.

To achieve interoperability use standards not standardisation [of systems], with the focus on information flows required to ensure patient safety and underpin good business decisions.

The statewide footprint should reflect a tiered system banded to reflect required information flows.

Levels of investment and distribution of funding should recognise ICT as core but be tagged to reward quality improvements and achievement of agreed outcomes to ensure progressive return on investment across the health system.

Invest in health informatics workforce capability development and ‘big data’ analytics to ensure we know what benefits are sought and realised for effective care for all Victorians.
Next steps

In closing the stakeholder forum, the panel chair thanked participants for their feedback and noted that scribe recordings of table discussions would be provided to the panel. The chair invited participants to provide written responses to its terms of reference through the department.

The chair reiterated that the panel had heard from many stakeholders since the review began. He noted the panel would now be reflecting on the wealth of information and reference materials brought to it to develop its report to the Minister.
Appendix 7: Bibliography

References viewed by Victorian Health Sector ICT Review Panel


43. Marsolo K 2012, ‘In search of a data-in-once, electronic health record linked, multicenter registry – how far have we come and how far have we still to go’. eGEMS (*Generating Evidence and Methods to improve patient outcomes*), vol. 1, no. 1, article 3. Viewed 3 May 2013, [http://repository.academyhealth.org/egems/vol1/iss1/3/](http://repository.academyhealth.org/egems/vol1/iss1/3/)


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Appendix 8: HealthSMART

In 2004 the HealthSMART program was approved. HealthSMART was the brand name given to a strategy to: adopt common core systems for Victorian public hospitals; operate these systems in a shared service arrangement; and fund an initial program of works to implement the strategy in approximately half of the health services.

Four major systems were chosen for standardisation namely: Finance & Supply Management (FMIS), Patient Administration (PCMS), Client Management (Community Health, CMS), Clinical Decision Support (specifically, medications management, decision support, alerts and standardised treatment protocols and rostering). Selected smaller systems (payroll and PACS/Digital x-rays, financial and supply for rural agencies) were later included in the program and were self-funded by the Department of Health.

Finance and Materials Management Information System (FMIS) – includes rural and regional FMIS users

1. Eastern Health (seven campuses)
2. Western Health (three campuses)
3. Monash Health (eight campuses)
4. Peter MacCallum Cancer Institute (one hospital)
5. Peninsula Health (five campuses)
6. Northern Health (four campuses)
7. Melbourne Health (two campuses)
8. Gippsland Health Alliance
9. Loddon Mallee Rural Health Alliance
10. Hume Regional Health Alliance (including Albury/Wodonga)
11. South West Alliance of Rural Health
12. Grampians Rural Health Alliance

Patient and Client Management System (PCMS)

1. Gippsland Health Alliance (ten hospitals)
2. The Royal Women’s Hospital (one hospital)
3. Northern Health (four campuses)
4. Peninsula Health (five campuses)
5. Mercy Health (three campuses)
6. Western Health (three hospitals)
7. Grampians Rural Health Alliance (ten hospitals)
8. Melbourne Health (two hospitals)
9. Monash Health (six hospitals)
10. Loddon Mallee Rural Health Alliance (eighteen hospitals)
Client Management System (CMS)
1. Western Region Health Centre
2. Bendigo Community Health Service
3. MonashLink Community Health Service
4. Inner South Community Health Service
5. ISIS Community Health Service
6. Darebin Community Health Service
7. Nillumbik Community Health Service
8. Banyule Community Health Service
9. Plenty Valley Community Health Service
10. Knox Community Health Service
11. Whitehorse Community Health Service
12. Eastern Access Community Health Service
13. Inner East Community Health Service
14. North Yarra Community Health Service
15. Bentleigh/Bayside Community Health Service
16. Central Bayside Community Health Service
17. Dianella Community Health Service
18. Manningham Community Health Service
19. Sunbury Community Health Service
20. Ranges Community Health Service
21. Doutta Galla Community Health Service

Clinical System
1. Eastern Health (seven campuses)
2. Royal Victorian Eye and Ear Hospital (one hospital)
3. Austin Health (three campuses)
4. Peninsula Health (eight campuses)

Human Resource Management System (rostering)
1. Austin Health
2. Monash Health
3. Gippsland Health Alliance

Picture Archive Communications System (PACS)
1. Barwon Health
2. Melbourne Health
3. The Royal Children’s Hospital
4. Western Health
5. Bendigo Healthcare Group
6. Peninsula Health
7. Northern Health
8. The Royal Women’s Hospital
Payroll

1. Austin Health
2. St Vincent’s Health
3. The Royal Women’s Hospital
4. Southern Health
5. Grampians Health
6. The Royal Children’s Hospital
7. South West Alliance of Rural Health (Warrnambool)
8. Loddon Mallee Rural Health Service (Sunraysia, Robinvale and Ouyen)
Appendix 9: Key national committees and agencies

The following describes those national e-health initiatives as they appeared to the panel at the time of this review.

A national e-health memorandum of understanding has been agreed in principle by the Standing Council on Health (SCoH) and endorsed by the Victorian Government. It is currently undergoing the process of formal ratification by all jurisdictions, including Victoria. Some priorities are to:

- develop a business case for the national e-health infrastructure and services, including the PCEHR
- harmonise reporting to the government
- implement national health identifiers for people and providers
- roll out a national information and data standards, to be adopted by all ICT vendors.

National E-Health Transition Authority

In July 2004 Australian health ministers recognised the pivotal role e-health plays in improving the safety and quality of healthcare services and controlling healthcare costs. They noted the need for cooperation on significant national e-health programs and established the National E-Health Transition Authority (NEHTA) in July 2005. NEHTA is funded on a cost-share basis as agreed by the Council of Australian Governments (COAG) and is a private company limited by guarantee. The NEHTA board comprises all of the jurisdictional health chief executives plus one independent member and an independent chair.

In 2006 initial funding was endorsed by COAG for three years to develop national identifiers, for both providers and individuals, and standard clinical terminology for use in health applications, recognising that these are key dependencies to be able to achieve accurate and timely identification of patients and providers.

In 2008 COAG endorsed the allocation of a further three years' funding to continue its existing work program, commence operation of the Identification and Authentication Services and to establish an Individual Electronic Healthcare Record (IEHR) Project Taskforce to progress related components of other national programs into the IEHR work plan. The IEHR was initially a COAG initiative but the subsequent personally controlled electronic health record (PCEHR) program was a 2010 Budget initiative of the Australian Government administered by the Department of Health and Ageing (DoHA).

Following the cessation of COAG funding in June 2012, the SCoH agreed to a reduced funding program for NEHTA to manage its core operations until June 2014. These core services comprise the Healthcare Identifier (HI) Service, Clinical Terminology Service, National Authentication Service for Health (NASH), National Product Catalogue and e-health standards and specifications development. The HI Service and NASH are operated by the Commonwealth Department of Human Services under contract to NEHTA. To date Victoria has contributed over $50 million as its cost-shared contribution with other jurisdictions to the NEHTA work program.

The ongoing governance and funding of NEHTA beyond 2014–15 will be an important matter for consideration by the Australian Health Ministers’ Advisory Council (AHMAC) E-Health Working Group, which is due to report to SCoH by September 2013 for possible later consideration by COAG.
From 2009–10 to the present NEHTA has also received funding to assist DoHA in managing the progress of the PCEHR. Specifically this was for the development of the large volume of technical specifications and standards required for the PCEHR and to act as the managing agent to oversee DoHA’s industry partners and the three ‘Wave 1’ lead implementation sites and nine ‘Wave 2’ implementation sites funded to test and validate planned processes and technical foundations for the PCEHR that would inform the design and implementation approach.

The three Wave 1 sites tested three common information exchange mechanisms (discharge summaries, electronic referrals and shared health summaries) required to support the PCEHR and their ability to incorporate national identification and data standards. The nine Wave 2 sites were focused on more PCEHR components, for example, medications and consumer portals.

The role of the Victorian Department of Health’s Secretary on the NEHTA board is as a director of a private company, albeit nominated under its constitution as the member’s (i.e. Victoria’s) representative. Consequently the position includes specific fiduciary obligations and liabilities with respect to the company. Departmental briefings are provided with respect to board matters but it remains the director’s responsibility for actions taken by the board.

NEHTA executives including the CEO also meet regularly with the National Health Chief Information Officers’ Forum (NHCIOF) to identify any issues arising from their work program and to draw on the available expertise to aid resolution. NEHTA also has recently established a Statewide Product Consultation Group, with clinical, consumer, industry and informatics representation.

National eHealth Information Policy

Governance over national e-health and information policy is complex. The national environment is presently in a volatile and dynamic state. A number of important reviews and decisions, each at a different stage of development but all due to complete in 2013, are currently underway, including:

- the SCoH development of a memorandum of understanding (MOU) in relation to developing an effective national e-health capability between all states and territories and DoHA
- the SCoH-sponsored review and update of the 2008 National E-Health Strategy and an associated national business case for potential consideration by COAG
- the SCoH-sponsored review and renewal of the National Health Information Agreement (NHIA) between the states and territories and DoHA and other Commonwealth agencies, including the Australian Institute of Health and Welfare (AIHW) and the Australian Bureau of Statistics (ABS)
- the independent review of the regulation and operation of the national HI Service that is required under the Commonwealth Healthcare Identifiers Act 2010.

The MOU, with respect to developing an effective national e-health capability, is the most advanced and documents existing arrangements and agreed financial commitments.

The review of the National E-Health Strategy and the associated business case will have the greatest potential impact. Its terms of reference include making recommendations on the overall national governance of e-health for the next decade. The business case will potential run to billions of dollars, although the terms of reference need to take account of the current fiscal constraints of all governments.
Beyond these policy and machinery-of-government changes there are operational factors that are driving a high level of need for collaboration between jurisdictions. Some of these include:

- the complex integration needs of modern hospital clinical systems environments to enable decision support, medications management and enterprise scheduling
- the increasing demand for solutions to support continuity of care across settings, requiring more rigorous and comprehensive standards for interoperability
- the introduction of new national reporting requirements by recently established bodies such as the Independent Hospital Pricing Authority (IHPA), National Health Performance Authority (NHPA), National Health Funding Body (NHFB) and the Australian Commission for Safety and Quality in Healthcare (ACSQC) – these requirements include reporting for activity-based funding and on national performance indicators
- the Commonwealth’s program for implementation of the PCEHR and associated legislation, which has impacted on the design and operation of information exchange between providers for all purposes
- an Australia-wide shortage of both clinicians and information specialists with health informatics expertise, as highlighted by Health Workforce Australia in a recent publication on the state of the health information workforce.

Memorandum of understanding

The MOU to develop a national e-health strategy and business case was agreed in principle by SCoH at its 9 November 2012 meeting.

The MOU provides an interim arrangement pending consideration of longer term national governance and future investments beyond 30 June 2014, which will be framed in the national e-health business case currently being developed, for consideration by SCoH in 2013 and possible subsequent consideration by COAG. The MOU does not propose any new funding beyond existing commitments for national e-health projects.

A schedule to the MOU describes the roles and responsibilities of the states and territories, which includes the following interim goals (current status shown in italics):

- compliance with standards and specifications when investing in new information systems
  
  *The OCIO has documented the current suite of approved national standards for incorporation into tender specifications.*

- incorporating SNOMED CT-AU/AMT into new clinical systems and upgrades and specifying the inclusion of standard terminology functions when procuring new systems or replacing existing systems
  
  *AMT is already incorporated into the Cerner clinical system and is the standard expected for any other clinical systems. To date only a limited number of SNOMED CT-AU reference sets have been developed by NEHTA but these will be incorporated in the standards when nationally endorsed.*

- plan for the implementation of an appropriate authentication service over the next three years (all organisations using PCEHR are to obtain an appropriate authentication certificate)
  
  *The National Authentication Service for Health (NASH) program is yet to deliver its full functionality, although a roadmap has been developed in consultation with the NHCI O F. The future approach to authentication will be dependent on what is finally delivered.*
• the incremental adoption of healthcare identifiers for patients (IHIs) into electronic record systems of public healthcare services, such as when:
  – new patients are added to electronic record systems (including new births)
  – investments in new or replacement systems are made, such as new patient administration systems

Statewide adoption of IHIs is a government election policy. IHIs are being used in the national lead e-health sites in Eastern health and Barwon. Victoria has also published, in collaboration with NEHTA, a best practice approach to the safe adoption of IHIs but is yet to initiate any more widespread adoption.

• take steps towards healthcare identifiers being used in public hospitals so that healthcare identifiers for healthcare provider organisations (HPI-O) are more broadly adopted across health sectors

Outside of the lead e-health sites this has been a local decision with no statewide policy position. There have been administrative difficulties in setting up HPI-Os. This has led to some change in the national approach and there is likely to be further change as a result of the current HI Service review of operations.

• supporting the incremental connection of the health information, within the services they manage and fund, to the information held in the PCEHR system, including progressive uploading of clinical documents, subject to the approval of the Rapid Integration Project by the NEHTA board

The NEHTA board has approved $2.1 million in funds to extend the functionality of the existing Victorian lead e-health sites to enable posting of national standard discharge summaries to the PCEHR and provide their clinicians with access to the PCEHR. This builds on the work already undertaken to implement national standard messaging (including use of all national identifiers) for point-to-point messaging from hospitals to General Practitioners. There is also a possibility of this extending to Peninsula Health and Austin Health as further NEHTA funds become available.

• migration to the National Health Services Directory (NHSD)

The NHSD is built on the Victorian Human Services Directory (HSD), which has been sublicensed to the National Health Call Centre Network (NHCCN) to support its management of the NHSD. The NHCCN took over full management responsibility of the Victorian system at the end of February 2013.

• agreeing and adopting the Telehealth Technical Standards.

The standards have recently been endorsed by NHIPPC for adoption in all public health services and a policy directive will be issued to the Victorian Public Health service to that effect.

National E-Health Strategy and business case

The 2008 National E-Health Strategy was developed and endorsed by health ministers but only noted by COAG. Consequently, it was never explicitly funded beyond already committed resources flowing to NEHTA to develop the e-health foundations (identifiers, terminologies and specifications).

When the Commonwealth announced the PCEHR in April 2010, the $467 million funding was claimed to be equivalent to the first stage of implementing the individual electronic health record (IEHR) described in the strategy. This was not agreed by the states and territories not only because they disputed the costing but also because the scope and design of the PCEHR varied significantly from the IEHR proposed in the strategy. For this reason, Victoria’s official position is that it will not implement the PCEHR beyond supporting lead implementations (and then only if externally funded) until there is an agreed national business case.
The business case will cover the costs and benefits to the nation of future investment in e-health. It will address the level of recurrent funding required for ‘national infrastructure’ and address the issue of what programs and initiatives should be nationally coordinated, and what subject matters should be dealt with via national standards for e-health and informatics in support of each of the following:

- national governance, regulation and compliance
- secure message exchange
- healthcare identifiers
- NASH
- clinical terminology
- NHSD
- PCEHR
- telehealth
- medications management
- electronic transfer of prescriptions
- National Product Catalogue/eProcurement
- orders and results for diagnostics and imaging
- clinical decision support
- care plans
- healthcare reporting and research datasets

The business case should, for each of the programs and services, at the national level and for each jurisdiction, provide advice on:

- the disaggregated cost of ownership (capital and recurrent) including the cost of change and adoption, workforce skills development and ongoing maintenance and governance
- the costs of all components necessary to deliver the planned benefits, including the cost of central infrastructure and of supporting systems in the health services, and recommendations on how those costs should be shared between jurisdictions
- agreed measurable benefits for consumers, health professionals, the Commonwealth and states and territories, drawing on existing benefits analysis and evaluations – the benefits that are to be accrued must also be aligned with the investment required.

This level of detail will be essential as it is often the case in e-health that there is an inequitable burden placed on parts of the system in delivering an overall beneficial outcome. For example, preliminary modelling done for the PCEHR shows that hospitals bear a significant cost in implementation for which they receive little direct benefits in return. There will need to be close analysis of where the costs and benefits fall in any negotiations with the Commonwealth on sources of funding and incentives in the final business case. This may provide opportunities for complementary and mutually beneficial investment.

The development of the business case is being run by the Commonwealth with the support of a steering committee and working group (Victoria is on both). Central agencies are also engaged nationally through an EHealth Reference Group and both the Department of Premier and Cabinet and the Department of Treasury and Finance have been closely involved in Victoria.

Deloitte Consulting has been engaged with the report is due to SCoH in September 2013. The timing of subsequent referral to COAG will be affected by the September 2013 federal election.
National Health Information Agreement

The purpose of the NHIA is to ensure the availability of nationally consistent high-quality health information to support policy and program development, and improve the quality, efficiency, appropriateness, effectiveness and accountability of health services provided to individuals and populations. The agreement promotes the efficient, secure, confidential and timely use of information across the complete life cycle from development to use.

The NHIA will govern the structures and processes through which Commonwealth, state and territory health, national statistical authorities and national health reform bodies work together to improve, maintain and share national health information.

The scope of the agreement is all national health-related information, including clinical and statistical information, as determined by AHMAC. In order to ensure consistent national information, the scope of the agreement includes standards, definitions, classifications and terminologies for data collections and indicators.

The NHIA has existed as a policy instrument for over a decade but the current revision is much more comprehensive than previous versions, principally to accommodate the needs of the National Health Reform Agreement and the requirements of the new agencies formed under that agreement (IHPA, NHPA, ACHCQS and the funding administrator).

Specifically it has now taken a much broader view of the complete information life cycle from data capture to collection, collation, analysis and reporting and archiving, with an emphasis on principles such as ‘single provision, multiple use’ articulated in the National Health Reform Agreement, which is being progressed by the Standing Committee on Performance and Reporting (SCPR) for consideration by AHMAC.

The latest draft of the NHIA was been reviewed by AHMAC and is currently being finalised by the National Health Information and Performance Principal Committee (NHIPPC), based on advice from AHMAC for endorsement by SCoH. An issue yet to be determined is the role of SCoH in authorising updates to mandated national minimum datasets once it has initially approved them.

Health Identifier Service Review

Section 35(1) of the Commonwealth Healthcare Identifiers Act requires that an independent review is undertaken of the HI legislation and the HI Service after two years of operation. The aim of the review is to ensure the Act provides the regulatory support to enable the HI Service to operate efficiently and effectively and support the sharing of clinical information in practice.

The review is also to consider the implementation, operation, performance and governance of the HI Service and the HI Service operator. The Commonwealth Department of Human Services (DHS) is the service operator under contract to NEHTA.

The review has produced its draft report, which has a large number of recommendations for improvements to both the legislation and service operations. This reflects Victorian experience to date. The legislation and its restrictive interpretation by DHS (despite legal advice to the contrary) has limited the level of functionality able to be achieved in interacting with the HI Service and in progressing change requests to make it more efficient.
Key national committees and agencies

National eHealth Governance May 2013

Other national groups not shown on diagram but with eHealth related roles
- AMIA Principal Committees
  - Hospitals
  - Mental Health and Drug and Alcohol
  - Health Workforce
- NPA and NHR Technical Working Groups
- National Community Services Information Management Group
- National Health and Medical Research Council
- Australian Statistics Advisory Council
- National Health and Financial Relations

IT-014-05 WORKING GROUPS
- IT-014-01 EHealth Reference Group
- IT-014-02 Australian Health Ministers Advisory Council
- IT-014-03 National Health Transition Authority
- IT-014-04 National Health Information and Performance Principal Committee

Other national groups not shown on diagram but with eHealth related roles
- AMIA Principal Committees
  - Hospitals
  - Mental Health and Drug and Alcohol
  - Health Workforce
- NPA and NHR Technical Working Groups
- National Health Funding Administrator
- National Community Services Information Management Group
- National Health and Medical Research Council
- Australian Statistics Advisory Council
- National Health and Financial Relations
Council of Australian Governments

The Council of Australian Governments (COAG) is the peak intergovernmental forum in Australia. The members of COAG are the Prime Minister, state and territory premiers and chief ministers and the president of the Australian Local Government Association. The role of COAG is to promote policy reforms that are of national significance, or which need coordinated action by all Australian governments.

Standing Committee of Health

The SCoH comprises the Minister responsible for health in each jurisdiction and is charged with:

- pursuing and monitoring priority issues of national significance that require sustained, collaborative effort
- addressing key areas of shared Commonwealth, state and territory responsibility and funding.

It is required to pursue the following COAG strategic themes as its major focus areas:

- a better health service and a more sustainable health system for Australia
- closing the cap for Indigenous Australians

SCoH also has a specific reference to improve efficiency in the healthcare system through the introduction of the PCEHR system, including the introduction of national healthcare identifier numbers, which will improve the interaction of healthcare providers across the sector.

Health ministers (largely as the SCoH) have inputs via multiple governance structures on national information and e-health arrangements, including:

- through AHMAC
- via the federal health minister
- directly from national agencies established to progress national priorities (health reform and e-health).

Reporting of data in some instances is under the governance of COAG directly, not involving through SCoH.

Australian Health Ministers Advisory Council

AHMAC comprises the chief executives of each of the jurisdictional health departments. It advises SCoH and directs work through determination of national priorities, monitoring the work program and resolving issues which cannot be resolved by lower level committees.

AHMAC is informed by six principal committees, one of which is the NHIPPC. Other program-related principal committees consider information management issues, usually related to use and reporting of information, not withstanding the four information management related subcommittees under the Mental Health Drug and Alcohol Principal Committee, which consider issues across the information management life cycle.

National Health Information and Performance Principal Committee

NHIPPC is an AHMAC Principal Committee. A key role of NHIPPC is to advise AHMAC on national priorities for collaboration in e-health and information management requirements to improve system management practices. NHIPPC’s responsibilities include endorsing the work plans of e-health, information and reporting committees and endorsing national information standards.
A number of standing committees currently operate under NHIPPC:

- National Health Information Standards and Statistics Committee (NHISSC) oversees the development of, and endorses: data standards for inclusion in the National Health Data Dictionary; national minimum datasets for national implementation; best practice dataset specifications; and national e-health informatics standards.

- Standing Committee on Performance and Reporting (SCOPR) in collaboration with NHISCC oversees the provision of advice on national priorities for collaboration in information, performance and reporting requirements, including those outlined in national activities on behalf of AHMAC and SCoH.

- National Advisory Group on Aboriginal and Torres Strait Islander Health Information and Data (NAGATSIHID) advises AHMAC and NHIPPC on ways of improving the quality and availability of data and information on Aboriginal and Torres Strait Islander health and health service delivery.

- National Health Chief Information Officers Forum (NHCIOF) is made up of CIOs from all jurisdictions. Its role is to assist the NHIPPC in the development and implementation of a national e-health strategy and in facilitating collaboration between the Commonwealth, states and territories to implement the strategy.

- Joint Standing Committee on Health Informatics Standards (JSCHIS) members are appointed by NHISSC and NHCIOF, with external representation from national standards bodies. It supports a national program of e-health standards definition and adoption to underpin the consistent and accurate capture, representation, reporting and exchange of health information by:
  - identifying and providing advice on the prioritisation of e-health standards
  - providing advice on the funding required for development of e-health standards
  - coordinating and overseeing the development of e-health standards
  - providing advice about liaison and cooperation with other relevant national and international standards setting bodies such as Standards Australia-IT-014, HL7, NEHTA, the World Health Organization, the International Health Terminology Standards Development Organization (IHTSDO) and the International Organisation for Standardisation (ISO).

E-Health Working Group

EHWG is a time-limited committee reporting directly to AHMAC. EHWG is currently proposed to wind up in December 2013, at which time its scope of activity will return to NHIPPC.

EHWG is chaired by the Commonwealth with representation from all states and territories and NEHTA and is tasked with the refresh of the National E-Health Strategy and business case. Reporting also to EHWG is the National Health Information Regulatory Framework (NHIRF) subcommittee which provides advice on legislative and regulatory matters affecting national e-health and information management.

Jurisdictional Advisory Committee

The PCEHR JAC is a statutory body established under national PCEHR legislation and is made up of a Commonwealth representative nominated by the federal health minister and jurisdictional representatives nominated by the chief executives of each state and territory health department.

The JAC has an advisory role to the Commonwealth but plays no direct part in the management of the PCEHR program, although the JAC chair (currently the NSW representative) is an ex-officio member of the Department of Health and Ageing's PCEHR Project Control Board.
The Independent Hospital Pricing Authority

The *Commonwealth National Health Reform Act 2011* defines the functions of the IHPA as including to:
- develop and specify classification systems for healthcare and other services provided by public hospitals;
- determine data requirements and data standards to apply in relation to data; and determine requirements and standards relating to patient demographic characteristics and other information relevant to classifying, costing and paying for public hospital functions. IHPA may undertake data collection and research, including by commissioning others to undertake specified studies and research.

The National Health Performance Authority (NHPA)

The *Commonwealth National Health Reform Act* defines the functions of the NHPA as including provision of clear and transparent quarterly public reporting, monitoring against the performance measure and standards, and development of additional performance indicators as appropriate.

The Australian Commission for Safety and Quality in Health Care (ACSQHC)

The *Commonwealth National Health Reform Act* defines the functions of the Australian Commission for Safety and Quality in Health Care as including collecting, analysing and interpreting information on health safety and quality matters.

Standards Australia

Standards Australia is a public company that develops internationally aligned Australian standards and facilitates the accreditation of other standards development organisations. It acts as the coordination point for Australian representation at international standards meetings.

Standards Australia has a role in converting NEHTA specifications into consensus-based Australian standards and in engaging with the wide health informatics community through its Technical Committee, IT-014, Health Informatics.

Health Workforce Principal Committee

The Health Workforce Principal Committee (HWPC) is an AHMAC principal committee. Its major roles is to provide a forum for reaching agreement on key national level health workforce issues that require government collaborative action and advise AHMAC. Health Workforce Australia (HWA) has commissioned a report on the current state of the health information workforce, which is currently being considered by the HWA board. When the report is endorsed it will then be forwarded to the HWPC for appropriate action. The department has been consulted in the preparation of the report by HWA.
## Appendix 10: Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
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<tbody>
<tr>
<td>ABS</td>
<td><strong>Australian Bureau of Statistics</strong>: Australia’s national statistics agency</td>
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<tr>
<td>ACSQHC</td>
<td><strong>Australian Commission for Safety and Quality in Health Care</strong></td>
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<tr>
<td>AHMAC</td>
<td><strong>Australian Health Ministers Advisory Council</strong></td>
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<tr>
<td>AIHW</td>
<td><strong>Australian Institute of Health and Welfare</strong>: an Australian Government national agency to provide reliable, regular and relevant information and statistics on Australia’s health and welfare.</td>
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<tr>
<td>AMT</td>
<td><strong>Australian Medicines Terminology</strong>: the national terminology to identify medicines used in Australia using unique codes to deliver unambiguous, accurate and standardised names for both branded (trade) and generic medicinal products.</td>
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<tr>
<td>big data</td>
<td>A collection of datasets so large and complex that it becomes difficult to process using on-hand database management tools or traditional data processing applications.</td>
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<tr>
<td>CDA</td>
<td><strong>Clinical Document Architecture</strong>: standard intended to specify the encoding, structure and semantics of clinical documents for exchange, for example, a discharge summary.</td>
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<td>CHS</td>
<td><strong>Community Health Services</strong></td>
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<tr>
<td>Cloud</td>
<td><strong>Cloud computing</strong> is the use of hardware and software that are delivered as a service over a network (typically the internet). The name comes from the common use of a cloud-shaped symbol as an abstraction for the complex infrastructure it contains in system diagrams. Cloud computing entrusts remote services with a user’s data, software and computation.</td>
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<tr>
<td>CMS</td>
<td><strong>Client Management System – Intersystems TrakCare</strong></td>
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<td>COAG</td>
<td><strong>Council of Australian Governments</strong>: the peak intergovernmental forum in Australia. The members of COAG are the Prime Minister, state and territory premiers and chief ministers and the president of the Australian Local Government Association.</td>
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<tr>
<td>CRISSP</td>
<td>A flexible client information and case management system developed by the Victorian Department of Human Services for the community services sector. It provides an extensive range of functions for recording client information, assisting case management and enabling electronic reporting of data required by the department.</td>
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<tr>
<td>DHS</td>
<td><strong>Department of Human Services</strong>: the Australian Government Department of Human Services is about people and the services they may need at different stages of their lives.</td>
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<td>DoHA</td>
<td><strong>Department of Health and Ageing</strong>: the Australian Government Department of Health and Ageing seeks to promote, develop, and fund health and aged care services for the Australian public.</td>
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<tr>
<td>DoJ</td>
<td><strong>Department of Justice</strong>: The Victorian Department of Justice includes police; courts; corrections; emergency services; regulation of gaming, racing, liquor licensing and trade measurement; and victims’ services. The department also drafts legislation and administers various tribunals and programs to protect citizens’ rights.</td>
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<tr>
<td>domain</td>
<td>A domain is a shared environment for an application that dictates common functions, and localised functions for the application. The key nature of a domain is to deliver efficiencies by sharing common functionality.</td>
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<tr>
<td>Term</td>
<td>Meaning</td>
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<tr>
<td>e-enablement</td>
<td>The process of empowering an entity to perform a task through electronic means over the internet. It is the progressive integration of business and technology to increase the ability of a business to respond to change, increase service value and reduce overall operating costs.</td>
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<tr>
<td>e-health</td>
<td>A term for healthcare practice supported by electronic processes and communication.</td>
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<tr>
<td>EHR</td>
<td>Electronic Health Record: a systematic collection of electronic health information about individual patients or populations. It is a record in digital format that is theoretically capable of being shared across different healthcare settings. In some cases this sharing can occur by way of network-connected enterprise-wide information systems and other information networks or exchanges. EHRs may include a range of data, including demographics, medical history, medication and allergies, immunisation status, laboratory test results, radiology images, vital signs and personal statistics such as age and weight.</td>
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<tr>
<td>EMR</td>
<td>Electronic Medical Record: a computerised medical record created in an organisation that delivers care, such as a hospital or clinician's office. EMRs tend to be a part of a local stand-alone health information system that allows storage, retrieval and modification of records.</td>
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<tr>
<td>EHWG</td>
<td>E-Health Working Group</td>
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<td>FMIS</td>
<td>Finance &amp; Material Management Information System – Oracle's eBusiness Suite</td>
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<tr>
<td>functionality</td>
<td>How closely an ICT product meets its specifications.</td>
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<tr>
<td>funded agencies</td>
<td>Agencies funded by the Victorian Department of Health, including health services and community health services (whether stand-alone or integrated with a health service).</td>
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<tr>
<td>health information exchange (HIE)</td>
<td>Refers to the process of reliable and interoperable electronic health-related information sharing conducted in a manner that protects the confidentiality, privacy and security of the information.</td>
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<tr>
<td>Health service provider</td>
<td>For the purposes of this report, a provider of health services within the Victorian public health system, such as a community health service or a metropolitan or a rural health service</td>
</tr>
<tr>
<td>health services</td>
<td>Metropolitan and rural public hospitals.</td>
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<tr>
<td>healthcare identifiers (HI)</td>
<td>A national system for consistently identifying consumers and healthcare providers.</td>
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<tr>
<td>HIMSS</td>
<td>Healthcare Information and Management Systems Society</td>
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<tr>
<td>HPI-I</td>
<td>Healthcare Provider Identifier – Individual</td>
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<tr>
<td>HPI-O</td>
<td>Healthcare Provider Identifier – Organisation</td>
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<tr>
<td>HL7</td>
<td>A framework and related standards for the exchange, integration, sharing and retrieval of electronic health information.</td>
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<tr>
<td>HSD</td>
<td>Human Services Directory: database with a comprehensive set of records on health, community and disability services and practitioners in Victoria.</td>
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<tr>
<td>HSS</td>
<td>Health Shared Services</td>
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<tr>
<td>HWA</td>
<td>Health Workforce Australia: a Commonwealth statutory authority that delivers a national, coordinated approach to health workforce reform. It was established by the Council of Australian Governments (COAG) to address the challenges of providing a skilled, flexible and innovative health workforce that meets the needs of the Australian community.</td>
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<tr>
<td>Term</td>
<td>Meaning</td>
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<tr>
<td>HWPC</td>
<td>The Health Workforce Principal Committee has two major roles: to provide a forum for reaching agreement on key national level health workforce issues that require government collaborative action; and to provide advice on health workforce issues to the Australian Health Ministers’ Advisory Council (AHMAC).</td>
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<tr>
<td>IEHR</td>
<td>individual electronic health record</td>
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<tr>
<td>IHI</td>
<td>individual healthcare identifier</td>
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<tr>
<td>IHPA</td>
<td>Independent Hospital Pricing Authority</td>
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<tr>
<td>ICT</td>
<td>information and communication technology</td>
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<tr>
<td>Informatics</td>
<td>The study of how to design a system that delivers the right information to the right person in the right place and time, in the right way</td>
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<tr>
<td>integration engine</td>
<td>Allows different computer systems to exchange, share and retrieve information using standard messaging protocols.</td>
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<tr>
<td>i.PM</td>
<td>i.Patient Manager (CSC propriety product)</td>
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<tr>
<td>Interoperability</td>
<td>The degree to which information systems are capable of sharing data in a meaningful way.</td>
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<tr>
<td>JAC (PCEHR)</td>
<td>Jurisdictional Advisory Committee: a statutory body established under national PCEHR legislation that provides an advisory role to the Commonwealth. It is comprised of a Commonwealth representative nominated by the federal health minister and jurisdictional representatives nominated by the chief executives of each state and territory health department.</td>
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<tr>
<td>KPI</td>
<td>Key Performance Indicator</td>
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<tr>
<td>Likert scale</td>
<td>A psychometric scale commonly involved in research that employs questionnaires. It is the most widely used approach to scaling responses in survey research, such that the term is often used interchangeably with rating scale.</td>
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<tr>
<td>meaningful use</td>
<td>The set of standards defined by the Centres for Medicare &amp; Medicaid Services (CMS) Incentive Programs that governs the use of electronic health records and allows eligible providers and hospitals to earn incentive payments by meeting specific criteria.</td>
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<tr>
<td>m-health</td>
<td>mobile health is a term used for the practice of medicine and public health, supported by mobile devices.</td>
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<tr>
<td>NASH</td>
<td>National Authentication Service for Health – issues high quality digital credentials, including digital certificates managed through a public key infrastructure (PKI) and secured by tokens such as smartcards used to access e-health systems.</td>
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<tr>
<td>National Product Catalogue</td>
<td>A central repository of product and pricing data published by suppliers for medical devices, medicines and medical consumables published by commercial suppliers. All products with a unique identifier, the Global Trade Identification Number (GTIN), a globally recognised standard.</td>
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<tr>
<td>NEHTA</td>
<td>National E-Health Transition Authority: established by the Australian, state and territory governments to develop better ways of electronically collecting and securely exchanging health information.</td>
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<tr>
<td>NHCIOF</td>
<td>National Health Chief Information Officer Forum</td>
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<tr>
<td>Term</td>
<td>Meaning</td>
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<tr>
<td>NHFB</td>
<td>National Health Funding Body</td>
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<tr>
<td>NHIA</td>
<td>National Health Information Agreement</td>
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<tr>
<td>NHIPPC</td>
<td>National Health Information and Performance Principal Committee</td>
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<tr>
<td>NHPA</td>
<td>National Health Performance Authority</td>
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<tr>
<td>NHSD</td>
<td>National Human Services Directory</td>
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<tr>
<td>OCIO</td>
<td>Office of the Chief Information Officer</td>
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<tr>
<td>PACS</td>
<td>Picture Archive Communication System – FujiFilm Synapse</td>
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<tr>
<td>PCEHR</td>
<td>Personally Controlled Electronic Health Record: a secure, electronic record of a person’s medical history, stored and shared in a network of connected systems.</td>
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<tr>
<td>PCMS</td>
<td>Patient &amp; Client Management System – CSC’s i.PM</td>
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<td>Performance Authority</td>
<td>National Health Performance Authority provides consumers, clinicians, health service providers and policymakers with access to nationally consistent, locally relevant and comparable information on hospitals and primary healthcare organisations.</td>
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<tr>
<td>RVEEH</td>
<td>Royal Victorian Eye and Ear Hospital</td>
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<tr>
<td>SCoH</td>
<td>Standing Council on Health: pursues the following COAG strategic themes: 1. a better health service and a more sustainable health system for Australia 2. closing the gap for Indigenous Australians.</td>
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<tr>
<td>SCPR</td>
<td>Standing Committee on Performance and Reporting</td>
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<td>SLA</td>
<td>Service Level Agreement</td>
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<tr>
<td>SNOMED CT</td>
<td>Systematized Nomenclature of Medicine Clinical Terms: a systematically organised computer processable collection of medical terms providing codes, terms, synonyms and definitions covering diseases, findings, procedures, microorganisms, substances, etc.</td>
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<tr>
<td>SoP</td>
<td>Statement of Priorities: Statements of Priorities (SoPs) are the key accountability agreements between Health Services and the Minister for Health. SoPs for rural Victorian public hospitals are agreed with the Secretary of Health. The annual agreement ensures delivery or substantial progress towards the key shared objectives of financial stability, improved access and waiting times, and quality of service provision.</td>
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<tr>
<td>statewide footprint</td>
<td>The concept of a single software application being deployed to multiple health services across the whole of the state of Victoria.</td>
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<tr>
<td>usefulness</td>
<td>How closely an ICT product serves business objectives.</td>
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<tr>
<td>VACIS</td>
<td>An integrated ambulance system that allow paramedics to record patient information electronically.</td>
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<tr>
<td>VCCC</td>
<td>Victorian Comprehensive Cancer Centre</td>
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<tr>
<td>VeHN</td>
<td>Victorian electronic Health Network</td>
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<tr>
<td>VHPF</td>
<td>Victorian Health Priorities Framework</td>
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<tr>
<td>VICTAC</td>
<td>Victorian Information Communication and Technology Advisory Committee</td>
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<tr>
<td>Workaround</td>
<td>A bypass of a recognised problem in a system. A workaround is typically a temporary fix that implies that a genuine solution to the problem is needed.</td>
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