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Research Report 4

What role should the private sector play in Health*Connect*?

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HealthConnect is Australia's proposed network of electronic health records that aims to improve the flow of information across the health sector. The concept of HealthConnect is based on the recommendations of the National Electronic Health Records Taskforce in its July 2000 report to health ministers. In November 2000, ministers subsequently agreed to fund two years research and development work to test the value and feasibility of HealthConnect ahead of implementation on a national scale.

As a research project, the HealthConnect Project is shaped by a set of high-level research questions which are intended to gauge the potential of HealthConnect to be developed as a national system. They are:

1. Can HealthConnect prove its value?
2. Is HealthConnect technically feasible?
3. Is there a preferred implementation model?
4. What role should the private sector play?
5. What will be necessary to manage privacy?
6. How should HealthConnect be governed?
7. What will HealthConnect cost and is it sustainable?

The HealthConnect Project has also undertaken an assessment of the progress to date on national building blocks — that is, the design and development of health infostructure requirements which are necessary not only for HealthConnect but for the broader e-health agenda.

Each of the research questions and the assessment of building block development are the subject of a stand alone research report. This report addresses the issues underpinning Question 4. The findings should be considered as interim only. The findings will be reviewed at the end of the two-year research and development phase, following completion of the HealthConnect trials in June 2003.

1 WHAT ROLE SHOULD THE PRIVATE SECTOR PLAY IN HEALTH*CONNECT*?

1.1 Synopsis

A comprehensive response to the question of 'What role should the private sector play?' in Health*Connect* has to be grounded in a consideration of funding requirements and funding models for Health*Connect*, the many roles the private sector could play in providing the Health*Connect* solution, why Health*Connect* may or may not want private sector involvement, and why the private sector would want to become involved in Health*Connect*. Of overriding importance in the resolution of this question is the determination of the attitudes of consumers and health service providers to various mixes of public–private sector involvement in Health*Connect*, given that the success of this initiative depends upon a critical mass of both constituencies 'opting in' to Health*Connect*.

- Health service providers represent a key private sector stakeholder in Health*Connect* and key users of it. The private sector is an existing provider of technology solutions and services to all parts of the value chain to be addressed by Health*Connect*.

The private sector has the potential to play a major role in the design, development, deployment, operation and funding of the additional infrastructure, solutions and services that Health*Connect* will require. Here, the private sector's participation could be as 'arm's-length' vendors and providers of finance, as licensed providers of facilities and solutions operating on risk-reward basis, or as partners in some form of public-private-partnership.

This paper examines three models for engagement by the private sector in the core Health*Connect* solution. The first model assumes complete ownership of all aspects of the Health*Connect* solution by the public sector. The second model assumes predominant public sector ownership, but some private sector involvement. The third model assumes significant private sector involvement.

The preliminary findings of this research paper are as follows.

- The potential roles of the private sector in Health*Connect* are extensive and, in a number of cases, mission critical.
- The private sector is likely to embrace a significant involvement in all aspects of Health*Connect* and across all stages of its evolution, subject to reasonable mediation of commercial risks. The corollary to this is that the private sector is unlikely to participate on an open-ended risk basis, because of a renewed (post-dot.com) focus on the 'bottom line' and poor investment outcomes in prior e-government projects. In this regard, the 'opt-in' approach proposed by Health*Connect* for both providers and consumers may be seen by the private sector to significantly heighten the risk of failure of the initiative due to insufficient take-up. Given these reservations, any move to have private sector involvement on a build-own-operate basis could require Health*Connect* to underwrite minimum revenues as has been the case in the NSW Hills Motorway/M5 toll roads and the Sydney Airport rail link.

- The first private sector engagement model is favoured by two 'beacon' overseas electronic health record (EHR) implementations (United Kingdom (UK) and New Zealand). These represent a public sector ownership approach, in which the private sector's role is explicitly that of a vendor or contracted outsourcer.[1]
- Canada's Infoway[2] initiative, while at an early stage, seems to represent a hybrid of the second and third private sector engagement models. Here the not-for-profit company owned by the federal, provincial and regional governments, is seeking to operationalise the proposed 'health information and communications' initiative by acting as a venture capitalist or co-investor in public/private projects that will deliver parts of this.
- A study of private sector involvement in a number of successful non-health e-commerce/e-government community initiatives is instructive. The case studies presented[3] illustrate the importance of broadly-based community representation in the ownership and governance structures and the advantages inherent in monopoly or near-monopoly provision of key infrastructure.
- This paper identifies a range of private sector organisations that are most suitable to play a role in Health*Connect*. These have been divided into 'incumbents' and 'qualifiers'.
- Incorporation of the Health*Connect* infrastructure, solutions and key operational services within a 'Health Information and Communications' utility represents a way in which Health*Connect* could evolve from total or predominant public sector ownership to predominant private sector ownership. Health Insurance Commission (HIC) represents a strong base for such a utility.

The timeframes involved in developing this paper have not allowed for direct consultation with the private sector, nor the synthesis and iteration of the findings of this paper with the findings of the other six research papers. It will be essential, in developing a robust private sector engagement strategy and framework, to undertake both of these activities, as well as testing a range of scenarios with other stakeholders including consumers, health service providers and key Commonwealth, state and territory agencies and conducting further investigation and analysis of the approaches followed and the results obtained from other sectoral e-commerce/e-government initiatives.

1.2 The research question

The question under consideration, Question 4, asks: 'What role should the private sector play?' in Health*Connect*.

A complete answer to this question must be based around answers to a number of more detailed questions:

1. Why could/should Health*Connect* be seeking involvement of the private sector and why would the private sector wish to be involved?
2. What are feasible funding models for Health*Connect* and where could the private sector play a role in these?
3. What role might the private sector have in financing or co-financing Health*Connect*?
4. What is the business/solutions architecture for Health*Connect* and where and how can the private sector play a role in this?
5. What are the primary and secondary roles of the private sector in Health*Connect* more broadly?

1 See case studies B and C

2 See case study A

3 See case studies D through F

The determination of the optimal role of the private sector in Health*Connect* is heavily dependent upon iterating the findings of this paper with the findings of the other six research papers. It is also vitally dependent upon testing a range of scenarios with all stakeholders including the private sector, consumers, health service providers and key Commonwealth, state and territory agencies.

1.3 Components of the Health*Connect* solution

The possible roles of the private sector are closely linked with the components of the Health*Connect* solution. For the purposes of this paper it has been assumed that the key components of a Health*Connect* solution will be as follows:

- a 'root' directory or index that will:
  - store the IDs of registered users (consumers) and health service providers
  - hold a consolidated summary record/s per consumer (possibly)
  - contain pointers to all event records and/or pointers to the directories of the repositories of event records
  - act as the core resource for a potential Health*Connect* Access Control Authority
  - aid discovery of event records/summaries
  - provide a service akin to the domain name service (DNS) of the internet
- electronic health record (event summaries) repository/s that:
  - will contain consolidated directories/indexes of events per consumer to which the root directory will point
  - will store event summaries
  - could be a single repository, a limited number or an unlimited number
- telecommunications network that:
  - will join-up providers, the root directory and repositories
  - may have a form that will range from a dedicated virtual private network (VPN) through to reliance on the internet
- interfaces/enhancements to existing solutions and services to enable the capture, movement and storage of data at all appropriate points in the value chain
- solutions design, development and deployment capabilities
- interrogation facilities for providers, consumers and researchers to enable them to obtain information based upon view of data in the repositories
- deployment/outreach activities and ongoing support services and facilities for health service providers and consumers
- operational services to 'run' Health*Connect*
- a governance structure to operate or manage the operation of Health*Connect*.

In addition it is assumed that the implementation of Health*Connect* will require:

- the provision of basic information and communication technology (ICT) solutions to health care providers that don't already have these
- the modification of existing software solutions to enable the transmission/receipt of health event summary data.

1.4 Private sector involvement in Health*Connect*

This section addresses four foundation matters.

- Why Health*Connect* would want private sector involvement.
- Why Health*Connect* would not want private sector involvement or, more accurately, where this may have to be controlled or curtailed.
- Why the private sector would want to be involved in Health*Connect*.
- The broad roles that could be played by the private sector within and around market/s created by Health*Connect*.

Why Health*Connect* would want private sector involvement

Some reasons why Health*Connect* would want private sector involvement include gaining access to:

- private sector financing either in the form of loans or risk capital
- pre-existing infrastructure, solutions, presences, people and customers
- organisational capacity/bandwidth to develop and/or operate both the 'business' and the 'systems'
- technical and managerial capability, expertise and experience.

Health*Connect* may also see the approach as providing:

- benefits of competition, flexibility/responsiveness
- improved quality of service
- faster implementation
- enhanced consumer satisfaction.

Each reason needs to be examined in greater detail during the development of a Health*Connect* private sector engagement strategy and framework.

Why Health*Connect* would not want private sector involvement

Some reasons why Health*Connect* may wish to curtail private sector involvement include:

- public resistance based on privacy or trust issues in relation to the provision by the private sector of one or more of the proposed range of Health*Connect* tasks/services (that is, registration data collection and storage; data access, in identified form to consumers and their providers, and in a de-identified and aggregated way to, for example, providers, universities and research establishments, and so forth)
- impact of private sector driven charging regimes on the take-up of and participation in Health*Connect*
- competition/monopoly issues and/or consumer/health service provider perceptions of these
- interoperability issues arising from a competitive environment (for example, the establishment of separate virtual provider networks)[4]

[4] A virtual provider network is a model that is used to manage the complex network relationships of health systems in a seamless way.

- complexities of enforcing service levels and service continuity issues across an extended value chain
- financial capacity/standing/viability of private sector solution/services providers
- overhead involved in accreditation, licensing and audit of providers.

Why would the private sector want involvement in Health*Connect?*

Private sector involvement in Health*Connect* will be motivated by financial and strategic considerations.

Valid financial considerations for both incumbent health sector players, and new entrants considering a role in Health*Connect*, will include:

- earning market-related returns on new investments, and/or
- earning revenues (possibly marginal) from additional usage of existing infrastructure and solutions, and/or
- using Health*Connect* as 'base-load' (possibly marginal) business to justify investment in new infrastructure and services that will attract premium returns from additional health or non-health related applications.

Valid strategic considerations for players considering a role in Health*Connect* will include:

- for incumbents:
  - strengthening or consolidating their position in the health sector value chain, and/or
  - keeping competitors from expanding or consolidating their position in the health sector, and/or
  - blocking or discouraging entry by new players.
- for new entrants:
  - achieving a significant beach-head in the health sector that will enable the sale of other solutions and services, and/or
  - enhancing the sectoral coverage of their business (where completeness of coverage of key sectors is important).

Private sector involvement in Health*Connect* – what?

Private sector participation in Health*Connect* may be usefully examined by focusing on four necessary or potential roles:

- health service providers
- providers of existing services and solutions to the health sector
- providers of financing to Health*Connect*
- providers of new infrastructure, services and solutions required by Health*Connect*.

Health service providers

Health service providers represent the major contributors to and users of Health*Connect* information. They are likely to see the business issues associated with an involvement in Health*Connect* as:

- of upfront and ongoing solutions (hardware, software and networking)
- time costs (loss-of-revenue-opportunity cost) involved in:
  - capturing information for event summaries and transmitting it to Health*Connect*
  - retrieving information from Health*Connect* where required/desirable
  - learning to operate the systems
- costs of health event data supplied from Health*Connect* (assuming there is such a charge).

This cohort will need to be convinced of the financial return from a participation in Health*Connect* and are unlikely to be purely swayed by arguments regarding better health outcomes.

Financial incentives and 'arguments' in favour of this group participating could include:

- payments for consultations/processes involving the capturing and/or use of Health*Connect* information
- lower professional indemnity premiums on the basis that the provision/use of event summaries reduces the incidence of claim-inducing events or limits the quantum of awards. Health*Connect* would have to persuade insurers to this view
- free access to and usage of event summaries in exchange for providing information to Health*Connect*
- independent analysis to establish whether access to event summaries can speed consultations and improve the reliability of diagnosis/treatment
- promotion of the Health*Connect* brand in such a manner that patients will demand the participation in this by their health service providers.

The important role of health service providers as a key 'channel to market' (consumers) cannot be overstated. Health service providers represent 'gatekeepers' straddling the highway between Health*Connect* and consumers. Without the endorsement of health service providers and, ideally their active participation in the process of registering 'opt-in' consumers, the probability of obtaining engagement by consumers is extremely low.[5] Undertaking the registration process may require that health service providers be paid a fee.

Models for engagement of this cohort of the private sector include:

- extending the existing 'contracts' that exist between government/s and the providers of health care services, and/or
- establishment of a purpose-designed outreach and support program or the extension of existing programs (for example, those aimed at promoting the uptake of ICT and electronic health claims), and/or
- contracting with health service providers to provide consumer registration services, and/or
- inclusion of the professional/industry bodies as members of a public-private (not for profit) partnership to establish and operate Health*Connect*.

Resolution of this matter will need to be undertaken as part of the development of a comprehensive Health*Connect* private sector engagement strategy and framework.

[5] See discussions of ownership, governance and critical mass in case studies D through F.

Providers of existing services and solutions

These private sector players already provide technology solutions (for example, software) and services (for example, managed/shared services, telecommunication services) to players throughout the health value chain.

In order for Health*Connect* to function these players will need to amend their solutions/processes to accommodate Health*Connect* requirements. Examples of such modifications include:

- formulation of event summary records, including opt-in/opt-out selection mechanisms
- enabling event summary data to be retrieved, processed and presented to health service providers to enable, for example, enhanced diagnosis/treatment.

Such modifications will only take place as and when these suppliers have a business imperative — for example, demand from a large proportion of their user base. Their approach to dealing with the costs of modification is likely to follow one of two approaches:

- they will absorb it as part of ongoing service/maintenance charge as indeed they probably did when GST was introduced, or
- they will provide the functionality as an 'add-on' and charge the users (licencees) accordingly.

In the latter case, the health service providers will probably seek to recover such costs from the government or consumers.

The most appropriate model for engagement of this cohort of the private sector would seem to be that used successfully by a range of large scale public and private sector e-business projects. These have established a program specifically aimed at existing and potential solution and services vendors to provide visibility of the opportunities arising from a proposed community based e-government/ e-business initiative, the proposed business, information and technology architectures, the target customer base and estimated usage metrics for the initiative, and the likely timeframes. Most of these projects have also sought to publish data, systems interfaces, and security/authentication standards and protocols as early as possible. A number of these projects have undertaken a process of accrediting vendor solutions to ensure that they comply with the required standards (for example, those applying to interfaces and data standards).

Providers of finance to Health*Connect*

Standard means of financing include direct loans (for example, equivalent of government bonds) and financial leases covering one or more of the components of the solution. There is some understanding by the capital markets of the notion of information economy infrastructure and the willingness to lend against this.

Models for Health*Connect's* engagement with this cohort of the private sector range from conventional arm's-length financial lease arrangements through to all encompassing public–private partnerships[6] (PPP). The World Health Organisation is now openly promoting public–private partnerships.[7]

A public–private partnership for Health*Connect* could span the complete range of infrastructure, services and solutions described in section 3 above, or a subset thereof. If a public–private partnership is entered into, a build-operate-transfer model would seem most suitable as Health*Connect* would need to have

6 For further background on public–private partnerships see attachment 1.

7 A Lucas, 'Public–Private Partnerships: Illustrative Examples', Global Forum for Health Research, 2000.

an assurance of perpetuity of the solution/service. A variation on this theme would be an acquire-enhance-operate-transfer model of public–private partnership if Health*Connect*'s technology requirements were rolled in as part of an umbrella health information and communications utility that incorporated pre-existing HIC functions.[8]

Providers of new infrastructure, solutions and services for Health*Connect*

The Health*Connect* 'solution' requires infrastructure, solutions and services, during its design, development and deployment phases and for its indefinite operation. Private sector participation in the provision of all aspects of the Health*Connect* solution could follow the usual public sector practices of sourcing technology solutions and services from the private sector. However, the question of the corporate form and commercial basis for such involvement presents the key issue for a private sector engagement strategy and framework.

Over the past ten years there have been a number of significant projects in which the private sector has funded the establishment of an infrastructure, solutions and services environment to service an eGovernment requirement, on a 'pay for use' basis. Almost without exception these initiatives have failed costing the private sector collectively well over $100 million. The key cause of failure has been lack of take-up of the solution both by governments and the other intended users (for example, citizens, businesses).

These experiences, and the renewed focus of the private sector on the 'bottom line', have created a climate in which the involvement of the private sector as an infrastructure, solutions and services providers will be entirely dependent upon whether they believe there is an acceptable return to be made from doing this. They will compute this using cost/revenue/risk models. They will see major commercial risks involved in Health*Connect* as its rate of take-up (particularly given the opt-in approach to be applied to both health service providers and consumers), and its uncertain life-expectancy — that is, will it garner sufficient consumer/provider support and bi-partisan support of Commonwealth and state parliaments to be sustainable.

Given these reservations, any move to have private sector involvement on a build-own-operate basis would require Health*Connect* to underwrite minimum revenues as has been the case in the NSW Hills motorway/M5 toll roads and the Sydney Airport rail link.

1.5 Models for private sector involvement — Health*Connect* infrastructure, services and solutions

Three Health*Connect* infrastructure, services and solutions models are postulated to enable examination of the extent of the roles of the private sector and the nature of the commercial/contractual arrangements underpinning such roles. The models are:

- public sector ownership
- predominantly public sector ownership, with limited private sector ownership
- some government ownership with increased private sector ownership.

[8] For further elaboration of this concept see section 7 and attachment 2.

These three models are intended to be illustrative rather than exhaustive. Variations and combinations of these as well as other hybrid approaches need to be considered in the development of a private sector engagement strategy and framework.

Public sector ownership

In this model the Commonwealth, state and territory governments working in cooperation (Health*Connect*) build, own, operate and fund all or most[9] of the key infrastructure, solutions and services described in section 3 above.

The role for the private sector in this scenario is as a:

- supplier of goods and services to Health*Connect*
- potential provider of loan capital/lease finance to Health*Connect*.

Private sector involvement could take the form of:

- multiple conventional customer-vendor arrangements, or
- a public–private sector-partnership[10] (PPP) with a single provider/consortium for the provision of the solution.

The latter could take the form of a build-own-operate or build-operate-transfer public–private partnership arrangement. While this would be provided to Health*Connect* on a pay-for-use basis, private sector concerns regarding the timing and extent of take-up and usage would require Health*Connect* to agree to the payment of minimum revenues.

Potential benefits of the public sector ownership model include:

- greater capacity for Health*Connect* to control all key issues including: design, deployment, capacity planning, security, privacy, operational, performance and redundancy requirements
- flexibility to rapidly affect changes to aspects of the solution
- possible higher levels of consumer and health services provider 'trust' because of the solution's public ownership.[11]

Potential disadvantages of this approach include:

- the public sector bear all costs and risks
- there are potential service level and 'single-point-of-failure' issues associated with monopoly service provision.

This approach is essentially the one in use today in the Commonwealth health claim environment with HIC acting as monopoly service providers. Overseas, the UK and New Zealand follow this model (see case studies B and C in attachment 3).

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9 Elements of the telecommunications requirements and the 'last mile' interfaces to health service provider solutions may be excluded. There may also be existing shared security services, data storage and 'disaster recovery' facilities and transaction switches that could be encompassed within a 'grid' approach to the Health*Connect* infrastructure.

10 See attachment 1 for discussion of public–private partnerships.

11 Whether consumers and health service providers exhibit different responses to various public–private involvement scenarios needs to be tested.

Predominantly public sector ownership, with limited private sector ownership

In this model the government (Health*Connect*) builds, owns and operates the 'root' directory and provides the overarching management of the Health*Connect* environment. A limited number of Health*Connect*-certified EHR repositories (EHRR) are built, owned and operated by, for example, state governments, HIC and major private sector health organisations.[12] Health*Connect* may fully or partially fund these although this approach would ideally be based upon the funding of repositories according to existing health funding practices — that is, public hospitals would be paid for by state/territories, the HIC EHRR by HIC, private sector EHRR providers by private health service providers.

The role of the private sector in this model is as a:

- supplier of goods and services to Health*Connect*
- potential provider of loan capital to fund these services for Health*Connect*
- partner in a public–private partnership arrangement to build and operate the 'root directory' service
- provider of solutions and services to EHRR operators
- potential owner/operator of some EHRR services and thereby provider of 'sales' and registration function to health service providers.

Potential benefits of this approach include:

- Health*Connect's* financial risk is lowered because the establishment and operation of EHR repositories is undertaken by others
- a more competitive environment is established (this may not be actual competition, but the existence of multiple services enables benchmarking of costs and efficiency and service levels)
- reduced risk of single point of technical and commercial failure
- greater health sector-wide participation in service provision potentially providing faster deployment and greater levels of buy-in
- possible higher levels of consumer and health service provider trust because of the pre-dominance of the solution's public ownership.[13]

Potential disadvantages of this approach include:

- the public sector still bears the majority of costs and risks
- health service providers will have to understand more about the workings of Health*Connect* as they may need to select an EHRR provider
- enforcement of service levels and assurance of service continuity become more complex given the autonomous nature of EHRR providers.

Aspects of this approach are followed in the national database approaches of, for example, Police.

[12] See section 6.1 for a listing of these.

[13] Whether consumers and healht service providers exhibit different responses to various public–private involvement scenarios needs to be tested.

Some government ownership with increased private sector ownership

In this model the government (Health*Connect*) builds, owns and operates the 'root' directory and provides the overarching management of the Health*Connect* environment. An unlimited number of Health*Connect* — certified EHR repositories (EHRR) are built, owned and operated by, for example, state governments, HIC, major private sector health groups and health funds, collectives of health service providers, managed technology services providers and so on. Health*Connect* may partially fund these services, but only on a fee for service basis, and then probably only for groups falling within a 'community services obligation' net (for example, low income groups and consumers in health priority groups — for example, asthma, diabetes, heart conditions). The EHRR operators would earn other revenues by, for example, providing value added services to health service providers and consumers, and through the sale of de-identified and aggregated data.

The potential role of the private sector in this scenario is as a:

- supplier of goods and services to Health*Connect*
- provider of loan capital to fund these services for Health*Connect*
- partner in a public–private partnership arrangement to build and operate the 'root directory' service
- provider of solutions and services to EHRR operators
- owner/operator of EHRR services and thereby provider of 'sales' and registration function to health service providers and, possibly, consumers.

Potential benefits of this model include:

- the public sector's financial risk is lowered because the establishment and operation of EHR repositories is undertaken by others
- a competitive environment is established
- reduced risk of 'single point of technical and commercial failure'
- greater cross-community participation in service provision potentially providing faster deployment and greater levels of buy-in.

Potential disadvantages of this approach include:

- health service providers and consumers will have to understand more about the workings of Health*Connect* as they may need to select an EHRR provider
- enforcement of standards, interoperability, information integrity and data completeness becomes more complex
- enforcement of service levels and assurance of service continuity becomes more complex.

The approach is not dissimilar to the banking system in which key sources of data are retained by a customer's bank, but access to and updating of data is available from almost any banking point in the world today through network interconnection, interoperability standards, cross-border contracts and legal harmonisation and the existing of providers of shared clearing houses/financial transaction switches. The non-health case studies contained in attachment 4 provide insights into the establishment and operation of private sector based e-communities.

1.6 Private sector participants — Health*Connect* infrastructure, services and solutions

The attributes that identify those private sector organisations most capable (and hopefully most desirous) of participation in Health*Connect* are:

- Domain (that is, health sector) knowledge
- Existing domain (that is, health) positioning
- Trusted position/image in the mind of health service providers and the general public
- Reach (geographic and across the health value chain) and scale (funding, solutions, management)
- Capability to derive financial benefits to more than offset costs. The business case for participation will be assisted where the organisation has existing capabilities and is able to view this as additional/marginal business and/or where the Health*Connect* business is seen as strategic to the organisation's position in the health value chain.

The key questions that arise in relation to such organisations are:

- Why would they be interested in an involvement in Health*Connect* — that is, how might it fit with their overall strategies?
- What is the extent of their 'assets' — that is, skills, infrastructure, existing capital, management, existing client base of health service providers and/or consumers and so forth?
- What will their approach be to the development, deployment and operation of the service?
- How high is their tolerance for risk?
- What are their new funding capabilities?

The potential private sector providers of infrastructure, services and solutions under any of the scenarios postulated in section 5 above, are seen to fall into two broad categories:

- Category 1 — incumbents.
- Category 2 — qualifiers.

Providers — Category 1 — incumbents

The first category of potential providers are characterised by having an existing involvement in health. These organisations possess: knowledge of 'health', people, infrastructure, funding and a 'trusted' position/image to a greater or lesser degree.

The players include:

- health service providers (clusters/groupings of these)
- HIC
- private health funds (for example, Medibank Private, MBF, HCF)
- major health groups (for example, Mayne, Moran)
- providers of networked health services (for example, HCN) and health portals (for example, Doctor Global)
- providers of technology solutions to public and private sector providers in health industry

- managed/shared services providers (for example, IBM, CSC)
- certification authorities (for example, HeSA/Baltimore)
- health claims processing services providers — for example, Hicaps (NAB/Optus).

Participants – Category 2 – 'qualifiers'

The second category of potential providers meets most of the criteria outlined above other than that they may be not incumbents in the health sector. These organisations possess knowledge of networked information processing in 'sensitive' environments, skilled people, management, infrastructure, funding and a 'trust' position/image to a greater or lesser degree. They include:

- banks
- telecommunications companies (for example, Telstra, Optus)
- Australia Post
- Centrelink
- managed/shared services providers (for example, EDS, Kaz, 90East, SecureNet)
- other certification authorities (for example, Verisign, Telstra)
- other health portal providers.

1.7 Health information and communications utility

Incorporation of the Health*Connect* infrastructure, solutions and key operational services within a health information and communications utility represents a way in which Health*Connect* could evolve from total or predominant public sector ownership to predominant private sector ownership. Precedents for this approach in Australia include telecommunication, rail and air services and power utilities.

An examination of the form and history of utilities is provided in attachment 2.

In spite of the probable scale of Health*Connect*, a utility focused purely on the area of electronic health records is unlikely to attract the required level of support from health service providers and other sections of the private sector because it represents a small part of the business of moving and storing health related information.

A more compelling instance would be a broadly based health information and communications utility that provided a major part of the infrastructure and services required to support the new networked health information paradigm. Such a utility could provide a 'single-plug' into which health service providers would connect for communication, reticulation/switching and, where appropriate, storage of all or most health-related transactions and information records.

A simple vision would have the utility encompass:

- the existing health claims transaction processing functions of HIC
- reticulation of claims to private funds
- connection to the financial system to enable payment of the patient component of claims
- conduit for Medi*Connect*

- hosting of Australian Childhood Immunisation Register, disease and other registers
- the root directory/index functions of Health*Connect*
- potentially an EHR repository.

Some of HIC's regulatory and inspectorial functions may be inconsistent with this approach.

1.8 Other research questions — dependencies/ interdependencies

There is a significant level of dependency and interdependency between the matter of private sector involvement in Health*Connect*, and most of the other matters that are the subject of research reports. The results of this and the other research reports should be seen representing the boundaries of a linear programming problem. The solution to the problem lies in the space between the boundaries.

Q1 — Can Health*Connect* prove its value?

The value of Health*Connect* will be dependent upon achieving:

- financial benefits for governments arising from:
  - reduced treatment costs due to avoidance of adverse conditions that require higher levels of treatment
  - reduced treatment costs due to avoidance of over prescribing/diagnosing
  - reduced level of information reticulation costs
- financial benefits for health service providers arising from:
  - reduced professional indemnity premiums due to improvement in treatment and/or better evidence to be used for defence of health providers
  - reduced level of information reticulation costs
  - time/personnel cost savings
- financial benefits for consumers arising from:
  - reduced health costs (that is, those costs not covered by public and private health cover)
  - increased earnings due to fewer work days missed
- consumer social benefits arising from:
  - better health outcomes
- societal economic benefits (increased GDP) arising from:
  - reduction in (health) systemic efficiencies, and a healthier and more productive population.

The quantum and timing of these benefits will rely primarily upon the level of take-up by health service providers and consumers. The extent of the involvement of the private sector in the development, deployment and operation of Health*Connect* will certainly impact take-up levels for better and for worse.

Q2 – Is Health*Connect* technically feasible?

Health*Connect* is technically feasible! The 'technology issues' relate to the extent to which the business, information and technology architectures resolve the hurdle issues of cost, logistics, matters of information standards and interoperability and key issues of service levels and systems continuity. The nature and extent of the role to be played by the private sector has a direct bearing on each of these issues. The case studies presented[14] illustrate the advantages inherent in monopoly or near-monopoly provision of key infrastructure.

Q3 — Is there a preferred implementation model?

The implementation model needs to achieve the optimum balance of benefit, cost and risk. The role of the private sector is a key factor in any of a number of implementation model scenarios. The utility model presented represents a way of boot-strapping the implementation of key Health*Connect* infrastructure and services while enabling immediate and/or future private sector involvement in management, operational and funding aspects of the service.

Q5 — What will be necessary to manage privacy?

The issue of privacy will be one of substance and one of appearance. The latter will be of most significance in relation to consumer support for Health*Connect*. The extent of the role of the private sector, and the extent to which this is visible, will be a significant factor in the public's mind when it comes to assess the privacy aspects of Health*Connect*. The role of the private sector in other privacy sensitive areas such as financial services, and how trust is established and maintained provides a model for Health*Connect* to examine.

Q6 — How should Health*Connect* be governed?

Governance is seen to encompass issues relating to the overall ownership of Health*Connect*, its top level 'board structure', management structure and operational/day-to-day management. A study of sector/community based e-government and e-business projects over a number of decades has shown a close correlation between the success of such initiatives and the participation of key stakeholders (for example, information providers and users) in the governance/ownership of such initiatives albeit through a not-for-profit membership-based structure.[15]

The approach to governance will be interdependent with the role played by the private sector. The private sector will be extremely sensitive to the governance arrangements and will be looking for the structure/approach to embody a number of key attributes including:

- capacity to make decisions in a reasonable timeframe
- capacity to contractually bind key stakeholders
- capacity to be sued
- assurance of longevity or at least for the term of the main private sector contracts
- clarity and realism of mission statement and objectives

[14] See case studies D through F in attachment 4.

[15] See case studies D through F in attachment 2.

- acceptability of the governance arrangements to the target client base (health service providers and consumers)
- demonstrable capacity to raise required funding
- calibre or standing (within health and government circles) of the members of the Board.

Q7 — What will Health*Connect* cost and is it sustainable?

The upfront and ongoing costs of Health*Connect* and who bears this cost and how and when this is funded will be substantially related to the extent of private sector involvement and the commercial models of such involvement. The private sector has the capacity to provide major elements of the Health*Connect* infrastructure from pre-existing facilities. Therefore the issues of cost, governance, architecture and private sector engagement models are tightly coupled. It will be necessary to develop a number of whole-of-life cost models based around assumptions of differing levels of involvement of the private sector, and the guises in which this happens (for example, arm's-length solutions/services vendor versus public–private partner).

2 CONCLUSIONS

The approach to this section has been to provide a short response to the sub-questions posed by Health*Connect* in relation to 'the role of the private sector' in Health*Connect*.

Question	Preliminary conclusions
In a public sector Health*Connect* which components could be delivered by the private sector, which by the public sector and which should be contestable?	'Ownership', top level governance and overarching management of the Health*Connect* 'solution' should be predominantly within the domain of the public sector, although experience in other sectoral e-government and e-business initiatives shows the value of having key stakeholders (for example, private sector health service providers in this case) involved in a governance/ownership structure. All other aspects of Health*Connect* can be undertaken by the private sector either on a conventional customer–vendor basis or through public–private partnership arrangements. Benefits of contestability must be weighed up against the risks of increased complexity in initiative management, interoperability issues and market fragmentation leading to vendors exiting because of poor financial returns.
What role could HIC take in Health*Connect* (including consideration of the appropriateness of having a role with both administrative/payments information and clinical information)?	HIC represents one of the incumbent health industry players most easily able to provide major aspects of Health*Connect's* core infrastructure and processing requirements and the registration of consumer and health service providers. The financial and operational costs and risks to HIC are probably orders of magnitude lower than those of most other players given their infrastructure, solutions, networks, people, national branch network, consumer and health service provider relationship as well as expertise and experience. To avoid health service provider perceptions of an HIC conflict of interest (that is, its role as a health 'regulator and inspector' vs that of an EHR service provider) it may be necessary to separate the functions. It is also suggested that consideration be given to inclusion of major parts of HIC's business within a health information and communications utility. This could provide the basis for a public–private sector partnership arrangement of the acquire-enhance-operate-transfer form.
What is the case for a private sector (market place) approach to Health*Connect*?	The substantial financial, social and economic benefits accruing from the successful deployment and operation of Health*Connect* will not be realised without the substantial involvement of the private sector in the various roles and through the various structures and arrangements outlined in this report. For the private sector the motivation is financial and strategic, the latter referring to the significant positioning that this initiative will provide to incumbents in the health sector or those seeking to enter it. The private sector will, however, have to be convinced of the potential for an economic return commensurate to the risks and costs involved. Because of poor financial outcomes from many previous private sector engagements in large scale e-government projects, Health*Connect* should expect the private sector to take an extremely hard-nosed approach to this opportunity.
What strategies would be needed to protect the notion of an open, national, integrated health information scheme for Health*Connect* in a private sector (market place) model?	It will be necessary to examine each logical segment of Health*Connect* to determine the extent of 'openness' required. Some segments may warrant a less open, more monopolistic approach to make the initiative economically feasible, provide required levels of trust and simplicity of use for consumers and health service providers, and to provide adequate levels of return for private sector participants. Key aspects that require careful examination in determining the exact extent of private sector involvement in the various aspects of Health*Connect* and the form of such engagement include: ■ the nature of Health*Connect's* design as embodied in the business, information and technology architectures ■ market size and value issues (to avoid fragmentation to the point where vendors exit the market) ■ assurance of service levels and service continuity across the chain ■ compliance with standards, protocols and interoperability frameworks ■ the financial standing of key providers.
What strategies will be needed for engagement of the private health sector?	All successful e-community projects of the type represented by Health*Connect* demonstrate a number of attributes in relation to private sector engagement: ■ early, full and ongoing consultation ■ ensuring that the business approach/economic model provides the potential for participants to make a fair return on investments ■ providing reasonable levels of assurance regarding the project's longevity ■ providing governance and engagement process that is efficient and delivers results in a reasonable timeframe.

In summary, the potential roles of the private sector in Health*Connect* are extensive and, in a number of cases, mission critical. While there are few Australian or international health related precedents to follow in regard to this question (particularly sector-wide initiatives), a study of broadly-based e-commerce/ e-government initiatives in other sectors is instructive. The case studies provided in attachments 3 and 4 provide insights into relevant health and non-health e-community initiatives.

2.1 Further work

This report has sought to define a framework within which decisions regarding private sector engagement can take place. The timeframes involved in developing this paper have not allowed for direct consultation with the private sector nor the synthesis and iteration of the findings of this report with the findings of the other six research reports. In developing a robust private sector engagement strategy and framework it will be vital to undertake both of these activities as well as conducting further investigation and analysis of the approaches taken and results obtained from other sector-based e-commerce/e-government initiatives.

In order to better qualify the private sector engagement models the following should be developed/ undertaken:

- monetarised estimates of the financial and economic benefits (per stakeholder group) that will flow from the successful deployment of the Health*Connect* solution and the timing and dependencies associated with these
- compelling, empirically-based statements regarding consumer/social benefits that flow from the Health*Connect* solution (that is, how easily can the case for Health*Connect* be made to consumers and which consumer cohorts will be most amenable to the service)
- market research regarding the attitude of health service providers, consumers, and consumer and privacy advocates to Health*Connect* including reactions to various public–private ownership/ operational scenarios
- metrics (best, worst, average scenarios) covering anticipated year-by-year take-up and usage by health service providers and consumers including data on transactions/usage volumes, demand patterns and storage requirements
- the range of possible business/service architecture scenarios
- undertaking of detailed examination of case studies in other industries that will inform the project on aspects of business and technology architectures, deployment models, private sector roles, and experiences.

3 SOURCES

Health Infoway Canada, ‹www.canadahealthinfoway.ca/home.php?lang=en›.

UK Department of Health, ‹www.doh.gov.uk›.

New Zealand Ministry of Health and Health Information Service, ‹www.moh.govt.nz›, ‹www.nzhis.govt.nz›.

National Council on Public Private Partnerships, ‹www.ncppp.org/presskit/ncpppwhitepaper.pdf›.

Health Care Commission, ‹www.healthcarecommission.ca/›.

Ippr — UK Think Tank, ‹www.ippr.org.uk›.

Harvard School of Public Health, ‹www.hsph.harvard.edu›.

Public Utility Research Centre, ‹http://bear.cba.ufl.edu/centers/purc/database.htm›.

Doctor Global, ‹http://www.doctorglobal.com›.

4 ATTACHMENT 1: PUBLIC–PRIVATE PARTNERSHIPS

The term 'public–private partnership' describes the collaborative programs, including, in some cases the corporate 'vehicles', established between the public sector and the for-profit private sector to provide particular infrastructure and/or services that would be seen by the public as lying within the purview of government. Some of the more visible instances of public–private partnerships in Australia include the sale of power utilities and the approaches taken to construction of toll-roads and toll-tunnels. Deutsche Bank, a major convenor and provider of finance for public–private partnerships describes this form of arrangement as 'a partnership arrangement between the public and private sectors [providing] respective strengths for mutual benefit'.[16]

Characteristics of public–private partnerships include:

- the assets — for example, infrastructure, solutions, (some) people — required to provide the service are normally owned and operated by the private sector
- service delivery is linked to an agreed output specification, that allows the private sector to offer 'innovative solutions'
- the private sector assumes partial risk for the initiative at the planning/architecting stage
- payment mechanisms can include a performance based element payable only when service is actually provided and accepted.

Public-private partnerships can take a number of forms:

- Build-own-operate, in which the private sector develops and operates the required infrastructure/service/solutions for a finite period of time, or indefinitely. At the end of the term, the private sector retains the ownership of the infrastructure/solution
- Build-operate-transfer, in which the private sector develops and operates the required infrastructure/service/solutions for an agreed period of time and transfers ownership back to the public sector for some or no consideration at the end of the term. The construction of roads and tunnels is often funded on this basis
- Acquire-enhance-operate, in which the private sector acquires pre-existing assets (infrastructure, equipment, solutions, people) from the private sector, extends these to make them fit for the purpose intended and then operates these on a commercial basis. At the end of a term, the 'assets' may remain in private hands or may be transferred back to the public sector. The 'sale' of airports and ports has followed this approach.

[16] 'Opportunities for Government—Public Private Partnership (PPP) and e-commerce', presented by Deutsche Bank Australia and New Zealand, 2000.

5 ATTACHMENT 2: UTILITIES

5.1 Form

Utilities in this context are seen as a class of organisation established (or promoted) by governments to build, own and operate organisations, facilities/infrastructure and functions that provide a service to the public. Activities that are encompassed within utilities usually embody a range of characteristics that make this particular organisational form most suitable:

- they provide an essential (often infrastructural) service
- they are unlikely to be established by the private sector[17] other than under heavily regulated/franchised conditions
- they are required to exist indefinitely
- they need to be able to operate without the interference and disruptions that occur with government agencies (for example, re-organisations, changes of government)
- they need to be able to raise funds from banks and the capital markets
- they need to be able to attract 'commercial' management by providing the autonomy and remuneration levels such management would expect.

5.2 History

Utilities are usually established as fully owned government not-for-profit corporations or as heavily regulated/franchised private corporations. Government-owned utilities have an independent management and in some cases an independent board of directors nominated by the sole shareholder, being the minister of the department that 'owns' the utility.

The history of state-owned utilities in Australia show these having been established in the areas of transport (air, road and sea), postal services, power (electricity and gas) and water, markets, and telecommunications. The major examples of regulated/franchised utilities are those established to build, own and operate toll-roads/tunnels.

Utilities usually commence life having a monopoly based upon geographic (for example, national, state, area) or market (for example, electricity, rail travel) boundaries.

[17] The factors that limit private sector inititiation of utilities usually relate to one or more of the following factors:
- the pan-community implications of most utilities:
- the scale of investment required and lack of confidence in obtaining a market-related return on this
- a lack of understanding of the service requirement and its possible commerciality.

An examination of the history of utilities shows a particular pattern:

1. They are established with seed funding by governments or as or heavily regulated/franchised private corporations.
2. They borrow funds, usually by issuing bonds.
3. They have a defacto or legislated monopoly.
4. They seek to recover as much of their costs as the public will bear through usage-based charges, the deficit being met from government coffers. Over time, many become profitable with the profits being reinvested in the enterprise or returned to the government as a dividend.
5. Over time competition arises or is fomented by governments via a deregulation process.
6. Where state-owned, the utility is partially or fully privatised, either through a public listing or sale by tender.

Examples in Australia of state-owned utilities where this pattern has been followed include the Commonwealth Bank, Telstra and the Overseas Telephone Company (OTC), Qantas and Australian Airlines, ports, railways, power utilities, public transport, airports, and medical research laboratories.

Examples in Australia of where this hasn't been done include Australia Post, defence, hospitals, and educational institutions.

6 ATTACHMENT 3: HEALTH CASE STUDIES

A Canadian Health Infoway

Synopsis

The Canadian federal, provincial and territorial governments have jointly established and funded (to the extent of $C500 million) a not-for-profit corporation to focus on the accelerated development and adoption of advanced systems for health information and communications. The initiative has a particular focus on electronic health records. The company established, Canada Health Infoway Inc.[18] (Infoway), will not implement solutions, but will lead, partly fund, facilitate, foster, and promote initiatives. While Infoway is not explicit about the role of the private sector, it appears clear that it expects private sector participation in most initiatives funded by it, although it appears that all initiatives must have some form of public sector sponsorship/endorsement. The guidelines used by Infoway for soliciting and evaluating co-investment proposals from the public/private sector are informative.

Detail

Canada Health Infoway Inc. is an independent, not-for-profit corporation that was created on 22 January 2001, as a strategic response by federal, provincial and territorial governments to the rapid development of health information and technology initiatives in Canada.

Governments had begun to make considerable investments in this area to improve efficiency, cost-effectiveness, access, quality and safety in health care. When the first ministers of health met in September 2000, they acknowledged that many of these health information and technology initiatives stood in isolation. The first ministers concluded that the value of their efforts and investments would increase if they developed a strategic and coherent response to health information and technology. The Ministers unanimously agreed 'to work together to strengthen a Canada-wide health infostructure' and committed their governments to develop electronic health records (EHR), enhance technologies, and work collaboratively to develop common data standards.

Infoway's role is to lead, facilitate, promote and foster the accelerated development and adoption of modern systems of health ICTs throughout Canada — as distinct from actually implementing these solutions. Infoway's immediate priority is to support the accelerated development of interoperable electronic health record solutions (EHRS) on a Canada-wide basis. One goal is to have the basic elements of these solutions up and running across Canada within five to seven years.

Infoway was launched with an initial $C500 million investment from the Government of Canada. Since the cost of building interoperable electronic health record solutions (EHRS) will be much more, Infoway

[18] Canada Health Infoway Inc. 2003, Canada, viewed 10 April 2003,‹http://www.canadahealthinfoway.ca/›.

will act as a catalyst, leveraging its financial resources through intelligent and targeted investments and, where possible, building on best practices and existing initiatives in a collaborative manner.

Infoway's tactical plan has ten key areas of activity with associated goals that the organisation aims to achieve with its partners in the next 12–18 months. These include fully operationalising Infoway, completing the EHR solution architecture, testing the architecture through an EHR drug pilot, targeting projects in labs and diagnostic imaging, building client and provider registries, researching consumer and physician attitudes, and working collaboratively with jurisdictions to address privacy and consent issues.

Infoway intends to make regular investments, at a minimum, every six months. However, in the short-term (October 2002 – March 2003), it expects to make more frequent investment decisions, particularly as the EHR solution architecture is more fully defined. It will also continue to refine the selection criteria based on its experience and feedback from the field.

Infoway will identify investment opportunities in three ways:

- specifically-targeted Initiatives (most common approach)
- unsolicited submissions
- formal calls for proposals.

Infoway will view potential projects through three lenses to determine their suitability for funding. Each lens provides a further level of specificity. These are:

- investment guiding principles
- investment policies
- detailed selection criteria.

Infoway may invest in initiatives that are:

- 'idea stage' initiatives — these initiatives develop innovative concepts or address specific problems for which solutions do not yet exist, or
- 'solution development' initiatives — these initiatives address gaps that need to be filled.

Infoway does not:

- invest in venture capital funds
- fund bandwidth (physical layer) initiatives such as fibre backbone and switches
- fund user interface devices (for example, PCs, palm pilots)
- fund the ongoing operating costs of individual or local initiatives (Infoway will support one-time costs).

Infoway's policies for leveraging funds are:

- **Strategic investor**—Infoway will link funding to well-defined project phases with key milestones. Initiatives must achieve these milestones before activities can proceed to the next phase. This approach will enable Infoway to monitor regularly the performance and viability of a project, work with partners to understand benefits realised from projects. If a project is not achieving its objectives, Infoway will work proactively with its partners, where necessary, to help ensure success, and stop investment in those rare instances where a project is no longer viable.
- **Possibility to earn revenues**—Revenues can be generated from initiatives, if the opportunity presents itself.

Infoway's selection criteria categories for evaluating investment proposals are:

- mandatory criteria — summary
- strategic fit criteria
- impact criteria
- partnership/financial viability criteria
- operations criteria.

The partnership/financial viability criteria will be evaluated based using the following matrix:

Criteria	Measure	Scoring	
		Low	High
Adequate funding	Ability to meet costs for start-up phase and growth	Initiative will require an un-determinable amount of funds to complete, with no reliable funding sources in place	Initiative has significant funding, with multiple well-established funding/revenue sources
Sustainability model	Ability to self sustain after implementation and rollout	■ spotty financial history ■ no credible references ■ no sources of ongoing funding	■ long-standing positive financial history ■ ongoing funding in place
Financial returns	Level of financial returns realised by investing in initiative	■ no financial returns will be realised	■ very high probability of significant recurring returns ■ strong, proven, revenue model or significant cost avoidance to other organisations through reuse
Partnership viability	Key attributes needed for successful partnership	Key attributes for successful partnership missing (based on Harvard Model)	Demonstrated key attributes for successful partnership (based on Harvard Model)

Infoway will go through six steps to select projects for its initial rounds of investments.

1. Identify initial target projects.
2. Conduct preliminary due diligence.
3. Apply detailed investment selection criteria to develop project 'short list'.
4. Conduct site visits for 'short list'.
5. Review with expert investment panel.
6. Approve investments.

Reference: ‹www.canadahealthinfoway.ca/home.php?lang=en›.

B UK — Electronic Record Development and Implementation Programme (ERDIP)

Synopsis

The UK Government's Information for Health[19] strategy commits it to the implementation of a lifelong electronic health records for every person in the country by 2005. The government has established an independent statutory authority, the National Health Service Information Authority (NHSIA) to drive the implementation of the strategy. The essential model for the engagement of the private sector in this overarching initiative, and in the Electronic Record Development and Implementation Programme (ERDIP) that forms part of this, is as arm's-length suppliers. The experience of ICT initiatives in health prior to the strategy pointed to the requirement for avoidance of adversarial relationships with suppliers and the increasing requirement to have suppliers bid as consortia. Experience in the early ERDIP projects has demonstrated that 'EHR can be successfully delivered, on time and on budget, through a partnership with a committed EHR system supplier and senior-level involvement of GP system suppliers'. A range of lessons in relation to 'Developing Industry Capacity and Managing Procurement' from the ERDIP EHR Issues and Lessons Learned Report is detailed below.

Detail

The UK Government's 1998 *Information for Health — An Information Strategy for the Modern NHS 1998 – 2005 — A national strategy for local implementation*[19] committed the Government to the implementation of a lifelong electronic health records for every person in the country by 2005.

The strategy highlighted that the UK was starting from a position that included:

- the development and implementation of the new NHS number
- development of clinical terms version 3 (read codes)
- implementation of NHS-wide networking and standards
- introduction of the NHS-wide clearing service
- agreements with the clinical community on security and confidentiality of patient data
- agreement on message standards in a number of administrative and clinical areas.

The Information for Health strategy pointed to further areas in which development of the NHS IM&T infrastructure was required to address a number of difficulties:

- the lack of common record structures and terminology (with some notable exceptions) being used within and between primary and secondary care
- the absence of comprehensive nationally agreed standards and protocols for the capture and communication of clinical information

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[19] NHS Information Authority, UK, 2002, viewed 11 April 2003 at ‹http://www.nhsia.nhs.uk/def/pages/info4health/contens.asp›.

[20] F Burns, *Information for Health: An Information Strategy for the Modern NHS 1998–2005: A national strategy for local implementation*, NHS Executive, West Yorkshire, 1998, viewed at ‹http://www.info.doh.gov.uk/doh/point.nsf/66b6f04bdca6defc0025693b0051ada0/ada0/abfbf04f6630e1e1002566b000530f72/$FILE/IMT.PDF›.

- professional and public concerns over the security of information in EPRs and EHRs and the transmission of identified personal records over electronic networks
- the uncoordinated approach to developing condition-specific clinical minimum data sets without ensuring there is a common core
- practical difficulties in providing mutual access to patient/client records between health and social care
- the lack of a universal coded drug dictionary
- uncertainty surrounding mandatory use of clinical terms version 3 (read codes)
- confusion over the development of operational information systems to support community health workers.

The Information for Health strategy commits the government to central funding of the following national infrastructure:

- the NHS Network — NHSnet
- the NHS-wide Clearing Service (NWCS)
- the NHS Strategic Tracing Service (NSTS)
- clinical terms licences
- the strategic messaging service
- the FHS Exeter core systems.[21]

The strategy highlights that: 'The key partnerships necessary to ensure success will be between the NHS and information systems and services suppliers.'

The government established the National Health Service Information Authority (NHSIA) and charged it with the implementation of the Information for Health strategy. The NHSIA is a single employer, incorporates statutory public accountability and has non-executive involvement — for example, from the commercial and academic sectors — to ensure access to a wide range of skills and experience.

In its early years, the focus of investment by NHSIA has been on connecting general practitioners to NHSNet, developing information services for primary care and assisting with funding for local implementation.[22] The NHSIA funds NHSNet (infrastructure and services provided by private sector firms, ICL UK and Syntegra) to provide health care professionals with access to secure email, NHSweb and the internet.

More recently, the overall governance of NHS information technology has undergone review to increase the level of national direction for information technology with strategic outsourcing of major components of the NHS information technology program. The NHSIA will be responsible for delivery of the standards and infrastructure for the National Health Record Service.

In so far as the private sector is concerned the (1998) Information for Health strategy noted that: '[m]uch of the past experience with suppliers has been confrontational but adversarial supplier management will not deliver the necessary results. Partnerships must be the norm, with long-term contracts and suppliers who are strategic partners allowed to make a profit. As the NHS develops a

[21] This represents a change from a partial commercial trading organisation into a directly managed and funded part of the NHSIA.

[22] A Cornwall, *Connecting health: a review of electronic health records projects in Australia, Europe and Canada*, Public Interest Advocacy Centre, Sydney, 2002.

more integrated approach to the procurement and implementation of information systems, suppliers need to respond by establishing consortia to offer a range of integrated products and services. This may lead to the development of more strategic partnership arrangements and help reduce the number of independent procurements as well as contributing to streamlining the procurement and implementation process'.

In 2002 the PA Consulting Group conducted an evaluation of the Walsall ERDIP project concluding: 'that the Walsall ERDIP work is of significant strategic value to the NHS, it has demonstrated that a pan-community, NSF focused, EHR can deliver measurable benefit to the clinical and information technology community in the form of time and cost savings. The EHR can be successfully delivered, on time and on budget, through a partnership with a committed EHR system supplier and senior-level involvement of GP system suppliers.'

The ERDIP EHR Issues and Lessons Learned report noted the following lessons in relation to 'developing industry capacity and managing procurement':

Strategy/policy

- The NHS cannot assume that there is commitment from suppliers even to a national program such as ERDIP, or the new 'national program'. It should not be assumed that suppliers will respond, and will be equally as enthusiastic as local/national NHS leads.
- Allow adequate time for negotiations and be prepared to seek an alternative solution.
- Suppliers have had significant problems in resourcing multiple projects and need to ensure the load can be spread.
- EHR /ICRS environment means that a number of complex supplier relationships and dependencies exist.
- Big projects are not an exact art — suppliers experience unforeseen difficulties, obstacles and delays.
- To the user, NHS net, NHAIS and so on, are also 'suppliers'. Same terms and conditions should apply as to commercial partners.
- The NHS needs to take on board supplier development in defining the direction of travel for standards, such as HL7.

Supplier characteristics

- Commercial suppliers need to think how their markets will change with the advent of EHR systems.
- Suppliers may need to re-think their boundaries, and to consider partnerships, collaborations.
- Smaller/medium-size suppliers may be more responsive in providing an approach fitting to NHS strategy.
- Scan for new 'market entrants' who may offer significant advantages in terms of flexibility over existing suppliers.
- Supplier needs experience in public sector/partnership working.
- From a supplier's perspective, there are two important reasons to participate in ERDIP: cultivating new relationships and knowledge.

[23] N Owens, N Mathisen and R Foord, *NHS Information Authority ERDIP N2 Core National Evaluation — Walsall* , report section 1–3, PA Consulting Group, London, 2002, p. 5.

Tactical/operational

- Link suppliers together as a cooperative group, a supplier forum [this was the most striking reward in terms of building up a team]. The Forum should be part of the project/project team.
- While solutions must first fit with the NHS national strategy, it may be easier (initially) to build a solution which works with the supplier's own long-term strategy.
- Each supplier is unique and there is a need to understand each one's perspective, motivations to help achieve success.
- Ensure good supplier communications, both individually and collectively, and about the whole project, not just supplier issues.
- Active engagement early appears to be best approach — ensure supplier has positive interest in implementation and ultimate outcome.
- Ensure a fit with supplier's long-term strategy, influence it if necessary.
- Contract to include:
  - the full life span of the project
  - resource commitment, escalation mechanisms
  - intellectual property rights
  - documentation
  - system development methodology
  - maintenance arrangements during and beyond the project lifespan
  - helpdesk services.
- Agree to use the same mechanisms to address interaction with suppliers as they use with the client.
- New systems should be fully tested before live operation with users.
- Supplier must have a well-established, reliable help desk, which is able to respond to critical issues speedily.
- Suppliers / designers don't fully understand the requirements of users — more user involvement with suppliers is needed at the outset. The problems getting general practice system suppliers to respond to the needs of users have been the single greatest cause of delay.
- Pragmatic, workable solution using rapid prototyping and high quality software rather than lengthy analysis.

Difficulties with partnership working

- Unexpected withdrawal of supplier from the partnership in response to changing commercial priorities caused severe difficulties for the project, and delay.
- Lack of documentation from the supplier/guarding of commercial interests causes problems for working with other suppliers.

C New Zealand — WAVE Initiative[23]

Synopsis

New Zealand is regarded as having made significant progress towards the implementation of electronic health records. The National Health Information Service (NZHIS), a group within the New Zealand Ministry of Health (MOH), has responsibility for the collection and dissemination of health-related data. As EHR solutions are rolled out as part of the larger WAVE program, MOH expect that the private sector will be engaged in development and selective outsourcing, but that the operation of national infrastructure will remain under the control of MOH.

Detail

The WAVE program of the New Zealand Government represents a broadly based information and technology plan for the sector. The program has the aim of improving health outcomes through the effective use of information, at the least cost.

WAVE has reviewed the current management of health information and technology, investigated how links between sector participants can be improved and gaps in knowledge identified and remedied.

WAVE sees the old model of health care (based on bricks and mortar) is shifting to one based on community care, provided by multiple providers (primary and secondary providers, as well as the various multi-disciplinary teams required to provide services to people in the broader community).

The WAVE program has to date embraced eight work streams within the program — strategy, knowledge, electronic health records, data architecture, privacy, systems infrastructure, investment and organisational design.

New Zealand is seen as having the basis for deployment of EHR. It has central patient master indexes, giving the advantage of a common framework and view of patients on which to build collaborative initiatives. It also has a national minimum data set.

The WAVE report recommends a proactive stance on the development of EHRs. The core goals are:

- connect up different parties in the sector with the capability for electronic versions of the existing transaction load
- design templates and implement protocols for disease management
- drive the development of these standards needs off a proactive timetable, that should be refreshed every six months.

WAVE recommends the establishment of a central body to exercise leadership, to drive the standards setting and governance functions (including design, implementation, promulgation) necessary to implement and order the future environment.

[24] The WAVE Advisory Board, 'From Strategy to Reality—The WAVE Project Kia hopu te ngaru October 2001—Health Information Management and Technology Plan—Working to Add Value through E-information, Ministry of Health', Wellington, New Zealand, viewed 10 April 2003, ‹http://www.moh.govt.nz/moh.nsf/7004be0c19a98f8a4c25692e007bf833/f34f8959738e992ccc256af400177998?OpenDocument›.

New Zealand has established a National Health Information Service (NZHIS) a group within the New Zealand Ministry of Health. The NZNHIS has responsibility for the collection and dissemination of health-related data, including the National Health Index (NHI) which provides a mechanism to uniquely identify health care users and the Medical Warning System, comprising medical warnings, event summaries and donor information.

The current approach to private sector engagement is illustrated by the NZHIS' approach to the Health Intranet that has been established to provide a secure messaging service across the hospital and community sectors. Within the hospital sector, the Health Intranet is delivered by Telecom NZ (a private sector telecommunications company). In the community/primary care sector, the Intranet messaging between providers and services is delivered by HealthLink which is also a private sector organisation.

As EHR solutions are rolled out as part of the larger WAVE program MOH expect the private sector will be engaged in development and selective outsourcing, but that the operation of national infrastructure will remain under the control of MOH.

7 ATTACHMENT 4: NON-HEALTH CASE STUDIES

D Managed investments industry—hub services

Synopsis

Hub services (and their equivalents) in the managed investments industry provide a primary function of collecting client financial holdings data from multiple funds managers and supplying this in an aggregated form to financial advisers. The economic/commercial, technical, logistical and legal (including privacy) issues relating to intermediating information services faced by Health*Connect* mirror those of the investment funds industry. As opposed to the United States (US) where a single industry owned hub has been successfully providing services covering most of the industry's requirements, the Australian scene, ten years after the establishment of the first hub provider is marked by patchy take-up by both fund managers and advisers, fragmentation, and an oversupply of existing and would be service providers and an absence of industry co-ordination/leadership. The absence of a smoothly functioning transaction switch and information aggregation infrastructure is estimated to cost the industry, and thereby the Australian investing public in excess of $700 million per annum.

Detail

Hub services in the managed investments industry provide a primary function of collecting client financial holdings data from multiple funds managers and enabling access to this in an aggregated form to financial advisers. In Australia there are approximately 150 fund managers (selling over 6 000 investment products) and approximately 14 000 advisers. The latter advise over five million Australians.

The history of hub services in the industry go back to December 1994 when InvestmentLink commenced commercial operations as an unlisted public company owned by a consortium of 30 funds managers and (financial adviser) dealer groups. InvestmentLink is a provider of shared infrastructure to the Australian Managed Investments industry. It provides services to fund managers, superannuation fund administrators, dealers, advisers, brokers and margin lenders. One of the key services it provides is the aggregation of client financial data. On a daily basis multiple fund managers provide client holding information to Investmentlink. Financial advisers (planners) acting on behalf of investors are able to poll Investmentlink and retrieve this aggregated data for their clients. Each client has a unique ILCN (Investmentlink client number) which enables the aggregation of data received from multiple fund managers. Clients are required to give consent to allow this aggregation.

While conceptually a good idea Investmentlink has never commanded a critical mass of players in the investment funds industry. This is in part the result of the suspicion with which financial advisers viewed the service given their lack of ownership in it. Another reason has been the glacial pace at which fund managers developed the required interfaces to their legacy systems to enable the export and import of data. Even today the industry utilises a surprisingly low level of electronic interchange for data exchanges. Much information is still moved via paper and fax.

The final reason relates to extraordinary fragmentation in the 'hub' area. Over the past five years a range of independent data processing services — known in the industry as 'IDPSs' or 'platforms' have been established that provide a range of support and automation functions to financial advisers. To compound matters there are currently two emerging hub services: MainHub, operated by the National Australia Bank (NAB) owned Australian Market Automated Quotation (AUSMAQ) System Limited, and Fund*Connect* owned and operated by the Australian Stock Exchange.

By way of contrast the US equivalent of Investmentlink, Fund/SERV (www.dtcc.com) has enjoyed virtually universal support for its service since the late 1980s, providing that industry with a level of automated information interchange unrivalled in investment industries any other country.

Further information : See series of three articles by David Jonas in July, August and September 2002 editions of *Asset Magazine* (‹www.assetmagazine.com›).

E The airline industry

Synopsis

The success, seamlessness, efficiency and scalability of airtravel (and airfreight) today is significantly due to the collective efforts of the industry working through two key industry bodies:

- IATA, the International Air Transport Association, a not-for-profit industry owned vehicle that has played a major role in achieving the level of safety, service and inter-operability displayed by the industry today
- SITA, an industry owned, for-profit organisation that has provided the telecommunications infrastructure and services for most airlines.

Detail

IATA, the International Air Transport Association[25] is the prime vehicle for inter-airline cooperation in promoting safe, reliable, secure and economical air services for the benefit of the world's consumers. The modern IATA, founded in Havana, Cuba, in April 1945, is the successor to the International Air Traffic Association founded in the Hague in 1919, the year of the world's first international scheduled services. Today IATA has over 230 members from more than 130 nations in every part of the globe. Continual efforts by IATA ensure that people, freight and mail can move around the vast global airline network as easily as if they were on a single airline in a single country. Thanks to airline cooperation through IATA, individual passengers can make one telephone call to reserve a ticket, pay in one currency and then use the ticket on several airlines in several countries — or even return it for a cash refund.

IATA allows airlines to operate more efficiently. It offers joint means — beyond the resources of any single company — of exploiting opportunities, reducing costs and solving problems. Airlines knit their individual networks [that is routes] into a world-wide system through IATA, despite differences in language, currencies, laws and national customs.

[25] Reference ‹www.iata.org›.

Today IATA's organisation provides a range of services to members in addition to its co-ordination functions.

IATA's funding is obtained via member fees and fees for services provided.

SITA[26] is the primary provider of global information and telecommunication solutions to the air transport and related industries. SITA has members and customers in over 220 countries and territories; and is the only organisation providing the global network services — as well as the information technology infrastructure and applications — that enable air transport organisations to operate seamlessly.

SITA services the global aviation and related industries including airlines, airports, aerospace companies, organisations involved in aircraft design, maintenance and communication, as well as logistics organisations, international organisations and governments.

Founded 50 years ago, SITA spearheaded the definition of common use technologies, as well as hosted solutions, and open information technology standards. SITA's whole-of-industry approach has ensured interoperability and the cost-effective use of the latest technologies for the airline industry. SITA is the leading provider, to airports and the wider aviation sector, of the end-to-end information technology infrastructure, shared use platforms, and application solutions. It is regarded as a world leader the world in the provision of hosted and managed applications to the air transport industry.

SITA has around 3 800 staff, of more than 130 nationalities from all over the world. It provides application services, end-to-end desktop and infrastructure services network services, focusing on systems integration, and outsourcing and consulting, in support of complex solutions. It operates the largest portfolio of managed data and voice network services over a single seamless network in the world.

SITA's success is significantly due to its neutrality (SITA is completely owned by the aviation community), global reach and breadth of service, support and the industry expertise it provides.

SITA's revenues are derived from market-based tariffs for services provided.

F Australian import-export — TradeGate[27]

Synopsis

Tradegate Australia, established in 1989, represents one of the most successful community-based electronic commerce initiatives in Australia. Key lessons from Tradegate relate to the success of having a genuinely neutral, industry owned 'utility', the requisite level of Commonwealth Government backing, outsourcing of service provision to the private sector and appropriate governance structures and giving attention to all aspects of the 'challenge' including commercial and legal issues, standards, education, deployment, and infrastructure and solutions.

[26] Reference ‹www.sita.aero›.

[27] Excerpted from case study, which was prepared for David Jonas of ETC Electronic Trading Concepts Pty. Ltd. by Julie Cameron of InfoTEC Solutions Pty. Ltd.

Detail

Tradegate Australia represents one of the most successful community-based electronic commerce initiatives in Australia. Tradegate was established in August 1989 as an initiative of the Federal Government's Waterfront Strategy, in recognition of the need for a faster and more cost efficient means of facilitating the nation's trade. Founding members of Tradegate, represented participating public and private sector organisations within the trade and transport chain.

Tradegate's original operating philosophy was based on:

1. neutrality — no dominant sector
2. standards — all speaking the same language
3. common good — Australia wins when the community works together—the philosophy of common good was intended to prevent fragmentation, non-standardisation and industry inefficiency
4. consolidation — a single 'brand' for product supply (that is, Tradegate)
5. equal access/cost at the same price per unit of supply for all members.

In order to implement this philosophy Tradegate ensures that there are:

- common services to help all members to increase their competitiveness
- services available to all companies in the international shipping, transport and associated industries
- no dominant group
- assurances that data will remain confidential
- best technologies and support nation-wide
- systems to enable the electronic preparation and transmission of standard forms, such as invoices, manifests and customs entries together with access to related services including news and email
- training and education services available for small and medium businesses.

Tradegate's objectives are 'to:[26]

1. facilitate community cooperation through a process of cross sector working groups
2. build a working technical infrastructure through our main supplier AT&T EasyLink Services
3. create a critical mass of users through the Customs Electronic Initiatives program
4. assist users of the Customs Electronic Initiatives program in becoming EDI enabled for non ACS activities
5. encourage the supply of additional Value Added Services (VAS) and end user software by third party suppliers
6. actively support the international UN/EDIFACT process
7. promote a high market profile for Tradegate.
8. develop communication links to the international trade community.
9. provide assistance and education in the use of electronic commerce techniques
10. work closely with the Federal Government micro economic reform process as it relates to the reform of Australia's transport environment.'

[26] *Tradegate Annual Report* for year ended 30 June 1994, p. 2.

Governance: Tradegate is headed by a Board of Directors comprising one representative from the various public and private sector communities that comprise the import/export community in Australia. A chairman from among these is selected by members. The full Board meets about six times a year. Board members do not receive remuneration for their services.

Staffing: A chief executive officer, based in Sydney, is responsible to the Board for the implementation of aims and objectives, management and promotion of Tradegate. The current chief executive, Andrew Robertson was appointed by the original Board in 1989.

The staff of the Sydney office comprise an office manager, a secretary and a marketing consultant, appointed in 1995. The Melbourne office, established in 1992, was supported by the appointment of a senior consultant who was primarily involved in the UN/EDIFACT standards development process. In 1996, due to the success of the ELECTRA projects, a marketing consultant was appointed to the Melbourne office. Independent consultants are contracted as required.

Staff are involved in activities related to:

- training and education services
- promoting the implementation of electronic commerce throughout the trade and transport communities
- managing contracts with value added networks (VANs)
- coordinating and facilitating community activities and initiatives
- managing the affairs of the Board and its operation
- attending to the needs of Tradegate members
- developing UN-EDIFACT standards and other standards related to electronic commerce
- liaising with other organisations related to the trade and transport process (for example, banks).

Funding: The foundation members provided start-up funding capital of $1.1 million as an interest free loan in order to establish and develop Tradegate operations. Tradegate's recurrent funding requirements are met mainly from membership fees and the royalty received from its network services. Grants for specific purposes have been received from Federal Government and independent organisations. In addition Tradegate activities are supplemented by the considerable contributions of resources, time and expertise of organisations participating in various activities and projects. It has been estimated that the end user costs of EDI implementation are eight to ten times the costs borne by Tradegate.[29]

Membership: The benefits of Tradegate membership are stated in the membership application form as:

- 'Access to a range of Tradegate sponsored services for the trading community.
- Pre-arranged contract terms and conditions for the use of all services covering areas such as price, service levels, confidentiality and liability thus avoiding lengthy and complex contract negotiations. Contracts were developed by lawyers acting for Tradegate and key initial subscribers.
- Ability to influence further development for the benefit of the whole community.
- A simple and cost effective means of communicating with your trading partners through a common network controlled by Tradegate (and therefore its members). In particular this gives electronic EDI access to the Australian Customs Service.
- Access to global community networks and other international trade community systems.

[29] R Schware and P Kimberley, *Information Technology and National Trade Facilitation: Guide to Best Practice*, World Bank Technical Paper Number 317, 1995, p. 44.

- Assistance and guidance in the use of the services and the international standards upon which they are based.'

Service provision: In 1989 Tradegate was awarded a contract by Customs to supply electronic network services to Customs' users until the end of 1996. The contract was thereafter extended to 2002.

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