

National Health IT Plan Update

2013/14

Citation: Ministry of Health. 2013. *National Health IT Plan Update 2013/14*.
Wellington: Ministry of Health.

Published in November 2013
by the
Ministry of Health
PO Box 5013, Wellington 6145, New Zealand

ISBN: 978-0-478-41555-1 (online)
HP 5756

This document is available at www.ithealthboard.health.nz



Message from Dr Murray Milner

Information technology (IT) plays a key role in ensuring our health and disability system offers the best possible care in a timely way. Commonly referred to as eHealth, well-designed information technology solutions help us work smarter to reduce costs, improve efficiency and give patients better, safer treatment.

Under the Government's *Better, Sooner, More Convenient* health care policy, we are moving services to a more effective platform that can deliver care closer to home. Increasingly, that platform involves multidisciplinary teams providing community-based care. eHealth solutions enable us to integrate services across hospitals and communities to put consumers' needs at the centre of how care is provided.

Our eHealth vision is for New Zealanders and the health professionals caring for them to have electronic access to a core set of personal health information by the end of 2014. Three years after the release of the *National Health IT Plan*, the sector is on track to achieve this vision. Consumers, clinicians, health leaders and vendors are working together to better integrate the delivery of health and disability services, supported by the innovative use of IT.

The feedback I am getting is that New Zealand is up there with world leaders when it comes to having a good road map for the sector's use of IT. We are fortunate to have privacy legislation that provides a strong framework for responding to privacy and security issues. This Plan continues to place these issues at the forefront of our thinking.

Now, more than ever, we need district health boards (DHBs) to prioritise spending on IT, and patients, consumers, clinicians and IT experts to keep working together to create systems that work well and benefit the people using health services.

The **critical priorities** set out in this Plan are the foundations that must be delivered by the sector to support health care delivery in New Zealand, now and in the future.

Dr Murray Milner
Chair, National Health IT Board

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Executive summary

Background

This *National Health IT Plan Update* builds on the September 2010 version of the *National Health IT Plan*. The original Plan directed the sector to implement a limited number of regional and national platforms, and to focus on developing shared care to support an integrated model of care.

However, the vision of consumers and patients having ‘a core set of personal health information available electronically to them and their treatment providers regardless of the setting’ requires a stronger focus. This updated Plan applies lessons learned from the past three years and creates a prioritised set of programmes, actions and key performance indicators.

Why is this updated Plan important?

- Clinical integration of services will only be effective if trusted health information is available at the point of care.
- Evidence clearly supports the empowerment of consumers in managing their own care, and having access to their own information is a prerequisite for this.
- Improvements in productivity and patient safety through the use of information systems are essential for achieving the long-term sustainability of the health system.

In the past three years the health and disability sector’s achievements, supported by the IT Board’s leadership, have been considerable, and the possibility of transformational change is tantalisingly close. One example is GP2GP, which allows a patient’s primary health record to be transferred electronically. There are now 20,000 transfers per month, a capability that has simultaneously lifted patient satisfaction, clinical safety and health care provider efficiency. Other examples include eReferrals, eMedications, hospital clinical workstations and patient access to information.

In order to speed up change, three main challenges need to be overcome: regional decision-making and leadership need to be reinforced, funding needs to be freed up for long-term commitments, and professionalism in both the delivery of projects and ongoing support needs to continue to improve.

Critical priorities:

- NZ ePrescription Service
- eMedicines Reconciliation
- Clinical Workstation / Clinical Data Repository
- Patient Administration System
- Finance Procurement Supply Chain
- Microsoft Common Operating Environment

What is in the updated Plan?

- The Tree Diagram and Health Sector Information Model describe the framework for eHealth and how various parts of the information ecosystem fit together.
- The sector's priorities are set out in order, from **critical**, through **important** to **emerging**.
- Key performance indicators (KPIs) define the measures to be achieved and specify the actions required.

How will the Plan be delivered?

- Local, regional and national information systems will be linked together using a common set of national functions for patient and provider identity, access rights, locating patient information and for secure access.
- Technology platforms will be replaced and updated to take advantage of new capabilities such as cloud computing, and to provide a stable and standardised platform for the whole sector.
- Governance and leadership will be further strengthened to ensure a focus on clinical integration, consumer and patient empowerment and productivity improvement, by allowing the sector to work together to achieve a common goal.
- The right balance of investment in infrastructure and informational and strategic change will be required.
- Clinicians, consumers and IT professionals will work together to design and produce the solutions.

Introduction

Purpose of this document

This update to the *National Health IT Plan* describes the priorities to the end of 2014 for the health and disability sector in order to achieve the eHealth vision, and signals future directions for 2015 to 2019. It discusses major achievements and identifies new challenges since the Plan was published in September 2010, and outlines the strategic drivers for the work under way. In doing so, it describes the work programmes and their state of adoption, and lists the order of priorities for implementation. It also briefly covers the important role of patients and consumers, clinicians, health leaders and IT vendors in co-designing solutions and bringing about change.

The update continues the 'call to action' begun in 2010. It provides a set of sector targets and KPIs that need to be achieved by the end of 2014 in order to set the foundation for further development. There is a clear expectation that the sector will work in a coordinated, aligned way to improve health care through better information and IT-enabled change, while ensuring the sector's information systems are secure, reliable and fit for purpose.

The update also strengthens the focus on enabling patients and consumers to direct their own care and to work as a partner in a care team. It asks health and disability service organisations to commit to the targets expected of them. The National Health IT Board (NHITB) will continue to focus on improving the way health organisations procure and contract with IT vendors, and on managing clinical and organisational change in order to support improved quality and productivity.

This update should be read in conjunction with other key documents, including the:

- original *National Health IT Plan*
- DHBs' regional service plans
- Ministry of Health IT Plan
- NHITB eBooklet *Sharing Health Information: Toward better, safer care*
- Consumer Panel's *Protecting Personal Health Information* paper.

Supplementary documents, including a Glossary of Terms, are available at www.ithealthboard.health.nz/national-health-it-plan.

The next stage is the development of a five-year IT Plan for the 2015 to 2019 period. The NHITB is working toward releasing an initial discussion document in 2014.

Document structure

The Plan has three key sections.

- ‘The reasons for the Plan’ (which comes next) covers why eHealth is so important and the strategic context of the Plan, and summarises key achievements and challenges.
- ‘The Plan’ describes the framework and work programme to achieve the eHealth vision and provides an overview of the priorities and key actions required to achieve the KPIs.
- ‘Implementing the Plan’ provides information about the partners and capability required to deliver the Plan, along with a health sector information model that shows how all of the systems will fit together.

The reasons for the Plan

Strategic drivers

Ensuring a sustainable growth path while lifting the quality of services and improving health outcomes continues to be a major challenge for the health and disability sector.

New Zealand continues to be a leader in the use of IT solutions in the health and disability sector. The combination of national, regional and local systems implemented with a high degree of inter-operability increases the capability of the sector, but also increases its reliance on systems and technology. Maintaining trust in the overall health system requires the sector to continuously improve the reliability and security of health information.

The Ministry of Health is working to ensure:

- New Zealanders are healthier and more independent
- health services are delivered better, sooner and more conveniently
- the future sustainability of the health and disability system.

The Ministry is actively encouraging investment in models of care and services that efficiently meet individuals' needs. Such models incorporate better use of IT to ensure that, for example, patients' health records are securely available to both them and their health care providers – no matter where services are delivered.

As part of this response, the NHITB is focusing on implementing eHealth solutions as a quality improvement activity. Implemented well, with clinical leadership and strong support from the people using health and disability services, eHealth solutions offer significant value and benefits. They can support new models of care, improve patient safety, and increase productivity within the health and disability system.

The NHITB, together with the Health Quality & Safety Commission, is working toward the New Zealand Triple Aim for quality and safety outcomes illustrated below.

Figure 1: New Zealand Triple Aim for quality and safety outcomes



Source: Health Quality & Safety Commission.

Solutions that enable high-quality information to be available for individuals and populations create benefits across the system, making such investments highly cost effective. The *National Health IT Plan* has the following vision:

To achieve high-quality health care and improve patient safety, by 2014 New Zealanders will have a core set of personal health information available electronically to them and their treatment providers regardless of the setting as they access health services.

Since its publication, the *National Health IT Plan* has given people a better sense of where and how IT fits into the bigger health care picture, and there is better alignment of thinking about IT investment. By identifying which information solutions are needed to enable person-centred, integrated care, the NHITB has been able to guide and lead IT investment at the national and regional levels. It has also focused on building confidence with health care executives, supporting clinical leaders to take a stronger role in eHealth initiatives, and encouraging consumers to engage more fully in discussions about the benefits and potential risks of IT innovation.

A growing body of evidence suggests that people who feel able to make decisions about their health care often end up choosing lower-intervention and lower-cost options compared with the decisions often made by clinicians in traditional health care settings. In order to do this, patients and consumers need reliable access to their health information and to understand the various clinical options available to them. Clinicians, meanwhile, need to be confident users of eHealth solutions and support the use of patient portals by consumers.

The implementation of IT solutions to improve performance and outcomes for New Zealanders is a challenge for all public service organisations. The Ministry is participating in the *Better Public Services* initiative to build stronger cross-government capability. Recently the Government strengthened the role of the Office of the Government Chief Information Officer. The NHITB is seen as a model for sector ICT leadership as the Office develops its new ICT functional leadership role.

The *National Health IT Plan* aligns with the plans and priorities of key government agencies, including the Ministry of Health and National Health Board (NHB), the NHB's Capital Investment Committee, the Health Quality & Safety Commission, Health Workforce New Zealand, Health Benefits Limited (HBL), Whānau Ora and 'Ala Mo'ui.

The Plan recognises the special relationship between Māori iwi and the Crown under the Treaty of Waitangi. All projects under the *National Health IT Plan* endeavour to apply the Treaty principles of participation, protection and partnership when working with Māori organisations and staff.

Achievements

Significant progress has been made across a number of priority areas in the past three years. Some of the following achievements are described in more detail in the NHITB eBooklet, available on the NHITB website.

Electronic prescribing and administration (ePA)

Electronic prescribing has been implemented in three DHBs, and all DHBs are expected to have ePA in place by 2016. A national contract has been signed which supports a standardised approach to implementing ePA. The system allows doctors in hospitals to prescribe medicine electronically using specially designed software. It reduces the risk of errors, and alerts doctors to potential issues such as under- or over-prescribing, medications that are contra-indicated and allergies. For example, if a patient is allergic to a medicine such as penicillin, the ePA system will alert anyone trying to prescribe it for them.

New Zealand Electronic Prescription Service (NZePS)

NZePS is an electronic prescribing system being rolled out to general practices and community pharmacies. NZePS produces a barcoded script that helps general practitioners (GPs) track dispensed, as well as prescribed, medicines, and it therefore improves the links between GPs and pharmacies. Prescriptions are easier to read because they have been generated electronically, preventing transcription errors, and doctors are able to check whether patients have filled their prescriptions.

Electronic medicines reconciliation (eMR)

Three DHBs have implemented eMR, and all DHBs are expected to have the system in place by 2016. A national contract has been signed for integrating eMR with ePA. The system helps health professionals create the most accurate and up-to-date list available of a patient's medicines on presentation. eMR captures a patient's medication history from sources such as eReferrals so medicines can be reconciled electronically on admission to hospital, on subsequent hand-over points, and on discharge from hospital.

New Zealand Universal List of Medicines

The New Zealand Universal List of Medicines (NZULM) was released in July 2011. The NZULM combines standardised medicine descriptions from the New Zealand Medicines Terminology with information from Medsafe and the PHARMAC Pharmaceutical Schedule to create a one-stop shop for medicines information.

New Zealand Formulary

The New Zealand Formulary went live in July 2012. The Formulary is a point-of-care reference which provides clinical information about medicines, their use, contra-indications and side-effects. It supports the day-to-day needs of those prescribing, dispensing and administering medicines. The Formulary is based on the NZ Universal List of Medicines. It is continuously updated, accessible online and on portable devices, and in time will be fully integrated with the e-health environment, including prescribing and dispensing software.

National Shared Care Programme (Long-Term Conditions)

A programme is under way in Auckland to make a shared care planning tool available for clinicians who are managing patients with complex, long-term conditions such as diabetes and heart failure. It involves patients setting goals for the management of their health conditions and sharing that information with the clinicians involved in their care. A total of 1017 patients are enrolled for shared care planning in the metropolitan Auckland region. Canterbury DHB uses the same system to manage community care for more than 3700 enrolled patients.

The shared care system has also been adapted to handle medication management plans for patients with long-term conditions as part of the Community Pharmacy Services Agreement.

Electronic Shared Care Record View (eSCRV)

The eSCRV provides a view of a patient's relevant health information from a single log-on, including information from hospitals, GPs, community nurses and pharmacies. It means health practitioners in Canterbury can access patient information securely online, which is leading to faster diagnoses and treatment, and shorter waiting times. The South Island Alliance has agreed eSCRV will become a regional system, and implementation has started.

Patient portals

Patient portals allow patients to access their health information securely online. They are sometimes referred to as 'self-care portals'. The portals allow people to communicate electronically with their GPs, make appointments, view their records, check their lists of medicines and renew prescriptions. The NHITB is working with primary health organisations (PHOs) and integrated family health centres (IFHCs) to introduce secure electronic self-care portals. Two Patient Management System (PMS) vendors have developed portals, which are in use in a number of places.

GP2GP file transfer

Transferring a patient's medical records between general practices can be a lengthy process, but the roll-out of the GP2GP system has made it faster and easier. GP2GP allows different practice management systems to 'talk' to each other, meaning patient records can be electronically transferred immediately and securely at the touch of a button. As a result, GPs can receive the information they need about a new patient before the person has even set foot in the practice. The system is now being used in more than 80 percent of practices, with more than 20,000 patient files transferred each month.

Maternity Clinical Information System

A new way of collecting, sharing and viewing maternity and neonatal data is being developed that will allow women and their health care providers to have electronic access to their maternity information. The new system will bring together relevant information collected in the community and hospital about a woman's pregnancy. A national contract has been signed for the first stage of implementing the new system, which includes portal access to a shared maternity record view (SMRV). The first five DHBs will implement the system in 2014.

National Health Index

Every person who uses health and disability services in New Zealand has a unique National Health Index number (NHI) as a way of identifying them. About 150,000 new numbers are issued each year, and 98 percent of the population now have an NHI number. The National Health Index helps health professionals ensure the right information is available about the right person at the right time.

The 20-year-old technology supporting the National Health Index was replaced in May 2013 with a modern IT platform, which processes over 350,000 transactions by authorised health professionals and support staff every day. Many health organisations – including DHBs, breast-screening units and a number of private hospitals – access and update the National Health Index online.

Comprehensive clinical assessment for aged care (InterRAI)

InterRAI provides an electronic clinical assessment of the care required for an older person, which can then be shared among health care providers to make sure everyone has access to accurate, up-to-date information. The system has been implemented in all DHBs and is now being rolled out to aged residential care homes, with completion expected by July 2015.

Telehealth

Telehealth involves the use of ICT to deliver health care when patients and health professionals are not physically in the same location. This improves people's access to services. Whangarei Hospital, for example, uses video-conferencing to run patient clinics in Kaitaia, Dargaville and Bay of Islands district hospitals. Canterbury DHB delivers some paediatric and oncology services to West Coast DHB, which is a big user of video-conferencing. West Coast has a large network of 29 sites across the Coast and connections to Canterbury DHB.

Electronic referrals (eReferrals) and discharges (eDischarges)

Electronic referrals (eReferrals) help clinicians manage the transfer of patients through the health system, from general practice to hospital and between other health care providers, without having to rely on pieces of paper being correctly faxed or posted and arriving at the right destinations. There is less chance of an eReferral being lost or unreadable, and it is improving the quality of care by providing faster access to the information clinicians need about patients. All regions are implementing eReferrals, with 16 DHBs now sending more than 40,000 eReferrals a month from primary care to secondary and tertiary care.

All DHBs have also implemented eDischarges to transfer care from secondary and tertiary services to primary care.

Regional initiatives

All regions are making progress towards implementing consolidated regional clinical systems. DHBs that have implemented regional Clinical Workstation (CWS) and Clinical Data Repository (CDR) systems include Canterbury, South Canterbury, West Coast and MidCentral DHBs. The Northern Region shares a regional CDR. The Central Region has implemented a regional Picture Archiving Communications System (PACS) for storing digital images.

Electronic referrals, or eReferrals, are improving the way patients move through the health system – from general practice to hospital, and between other health providers. When a patient needs to be referred to a hospital clinician for further assessment or treatment, their GP can fill out an electronic form and send it with the touch of a button while the patient is present.

Christchurch GP Dr David Kerr says there is less chance of referrals being lost, mixed up or illegible when they are done electronically

‘Improvements in the quality of information in a referral means reduced waiting times for patients as referrals aren’t rejected or referred back for more information as often as previously,’ he says.

Collaborative relationships and partnerships

The original Plan recognised the importance of good leadership, engagement, partnerships and collaboration to support its successful implementation. Since 2010 much work has been done to build partnerships and relationships, and many working groups have been established, including:

- a Consumer Panel, which has 20 members from all walks of life and maintains representatives on all priority programmes
- the National Information Clinical Leadership Group, which has 30 or more clinicians from all specialities, nominated by their Colleges, with an agreed work programme
- the Telehealth Forum, which has 30 members, including clinicians, the IT cluster and the NHITB, and aims to promote the use of telehealth and maximise the benefits of the Government’s broadband programme
- four DHB chief executive officers, who are responsible for the IT portfolio for their region and now attend NHITB meetings
- a sector ICT Implementation Group, which is a forum of national and regional ICT representatives from the NHITB, DHBs, the Ministry of Health and primary care
- the Vendor Boardroom, a collaboration of executives from selected application software companies, the National Health Board and the IT cluster, plus NHITB representatives

- the Vendor Forum, primary sector focused vendors and health and disability sector stakeholders responsible for changes that affect those vendors
- the Health Information Governance Expert Advisory Group, which has been established to develop a health information governance framework for the New Zealand health sector
- the Sector Architects Group, a technical group formed to guide the development of a common architecture for national and regional information systems and infrastructure.

Challenges

Although considerable progress has been made on planned initiatives in the past three years, there have also been challenges, and these continue to have an impact.

Governance

The DHB sector needs to continue developing effective regional governance models. These have taken time to put in place due to tensions between local DHB autonomy and regional demands. Dedicated and mutually supportive regional leadership is required to agree on the regional ownership of assets and contracts, and to prioritise regional and national IT investment ahead of local initiatives.

The DHB sector needs to agree to, and fund, an IT service delivery function to support national and regional solutions. This requires reconfiguring hardware, software and people resources into a regional entity, governed and funded by DHBs.

The governance of national programmes involving multiple stakeholders requires extensive stakeholder engagement, firm and facilitative leadership, and extra time to reach a broad consensus on the design of the solution.

Funding

Health sector funders need to continue to invest in IT as a strategic asset and not make such investment subject to short-term funding constraints. IT investment requires a consistent, multi-year level of funding.

Capability

Timely enhancements to products in critical areas of the market are required to deliver end-to-end solutions. Some vendors have been slower than anticipated to align with the Plan's direction and programmes of work. It is also difficult to make progress when the legacy applications that are in wide use are difficult and expensive to change and need to be upgraded or replaced.

There is also a scarcity of IT skills and leadership to advance programmes of work quickly and effectively. For end users, changes in clinical and business practice and new skills are often required in order to achieve long-lasting benefits.

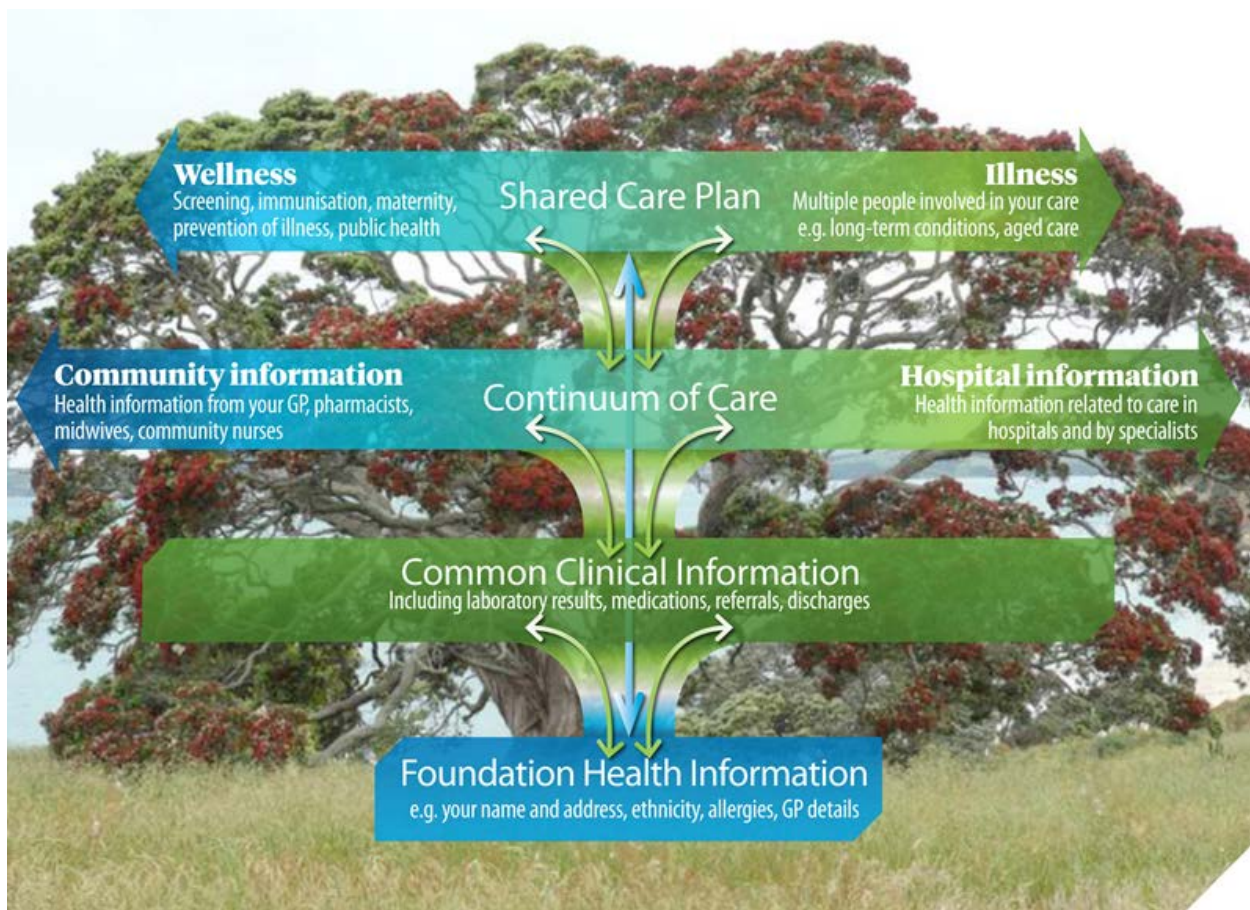
The Plan

The tree diagram

The tree diagram (Figure 2) represents the framework for eHealth and describes the way an individual's health information is collected during their lifetime over a continuum of care. Each person's 'tree' will be different, because each person has a different life experience. The tree has four levels, which build on each other:

- a person's foundation health information is represented by the roots
- an effective and secure system for sharing information is the trunk
- common clinical information across the continuum of care forms the lower branches
- shared care plans are the upper branches of the tree.

Figure 2: The tree diagram



Foundation health information

The eHealth vision is for a person's foundation health information to be collected once, kept current, stored securely, and accessed as needed by health professionals and individuals. Foundation health information includes an individual's NHI number, along with their demographic details, allergies and alerts. It will also include information about their relationship with key caregivers and community-based clinicians. The foundation health information will support the underlying mechanism, allowing links to other health information stored for this person.

Common clinical information

Having access to people's clinical information – such as laboratory results, medicines, referrals, discharges and other clinical documents – allows health professionals and patients to make the best treatment decisions. This data is collected in a number of settings in the community and in hospitals. We are working toward a future in which this clinical information will be held securely in clinical data repositories, and will be able to be securely viewed by health professionals.

Continuum of care

People usually access health care in the community from GPs, nurses or pharmacists. If they require a greater level of specialist care, or hospital-based care, it is important their information is made available and shared between health professionals and with the individuals themselves. This is especially so at the time of transfer between health professionals (for example, between a GP and a specialist). We are developing information platforms that can communicate with each other locally, regionally and nationally, enabling information to be shared between community and hospital health services.

Shared care plan

The shared care plan branch of the 'tree' provides access to health information for consumers/patients across the spectrum of wellness and illness. Shared care plans will be available electronically for patients with complex needs at the illness end of the 'branch', estimated at 10 percent of the population, and self-care patient portals will provide access to a set of personal health information at the wellness end of the branch.

Connected health: transferring information

Health information will be transferred by the Connected Health 'network of networks'. This is a private health network which provides secure connectivity across the New Zealand health and disability sector to support safe and trusted ways of sharing health information. Only registered vendors, compliant with the Connected Health standard, can provide this service.

Connected Health is an existing brand of the National Health IT Board, and it is being expanded to have a public focus as an umbrella term for the IT systems and environments that use the network. Systems and portals that display the Connected Health logo will indicate to consumers that the information collected and accessed is secure and can be trusted.

Sector work programme and priorities to the end of 2014 and beyond

This Plan identifies a significant work programme that will deliver the goal of providing all New Zealanders with access to their personal health information by 2014. Regions should prioritise initiatives from the work programme that will meet their requirements. However, there are a small number of critical priorities that must be substantially progressed or delivered by the end of 2014. The critical priorities were selected based on the following criteria:

- replacement of out-of-date systems to create a sound foundation
- an essential platform or enabler to support other high-value applications
- high strategic and clinical value, enabling improvements in quality and productivity.

Work programme

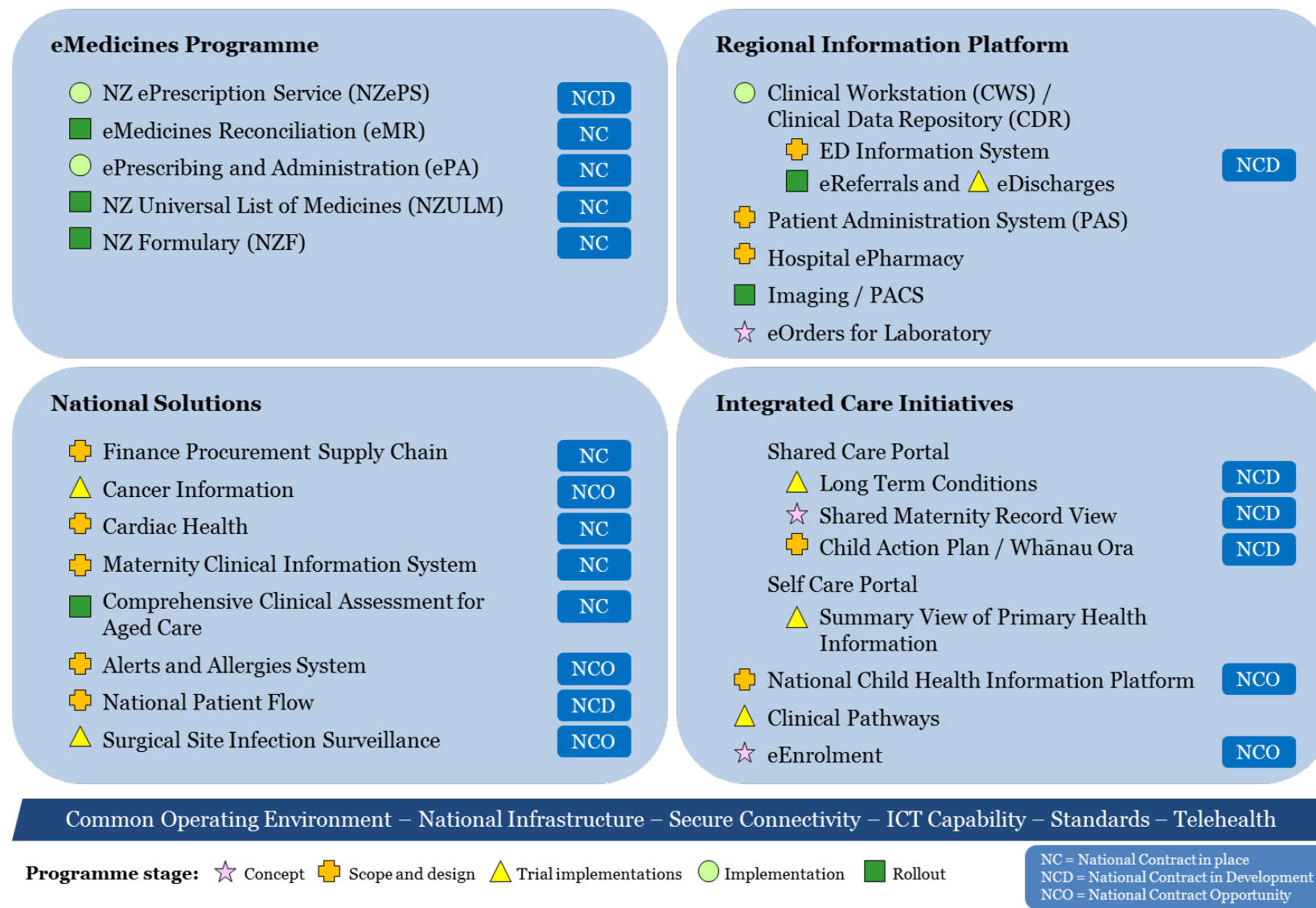
The diagrams on the following pages provide an overview of the sector work programmes and actions required to implement the IT Plan.

- 1 The first diagram, Work programmes supporting the National Health IT Plan 2013/14', shows the four 'windowpanes' of activity that make up the Plan's major work programmes, underpinned by the 'windowsill' infrastructure components. It also includes markers that indicate the status of each programme.
- 2 The next diagram, Order of priority supporting the National Health IT Plan 2013/14', shows the programmes in order of priority, as follows:
 - **critical** priorities are those agreed by sector leaders and the NHITB, which take precedence over all other new IT priorities
 - **important** priorities are when health organisations are responding to a strong local or regional need or requirement, as able
 - **emerging** priorities signal areas of emerging work so health organisations can make an early start on them, if able.
- 3 Tables 1 to 3 set out the actions required to achieve key performance indicators for delivering the **critical priorities**. Resources and funding must be assigned to these initiatives above other priorities. Progress on **critical priorities** will be reported on and monitored closely.
- 4 The Key Performance Indicators table (Table 4) shows targets for 2014 and longer-term targets for achieving the eHealth vision.
- 5 The next diagram, the Health sector information model (Figure 2), builds on the Tree diagram which provides a high-level description of the connectedness of information through the health system. The information model has been developed to guide implementation by describing how the information systems and structures, both current and future, will fit together to achieve an integrated whole. The model also shows their fit within the health sector.

The domains of information in the model are:

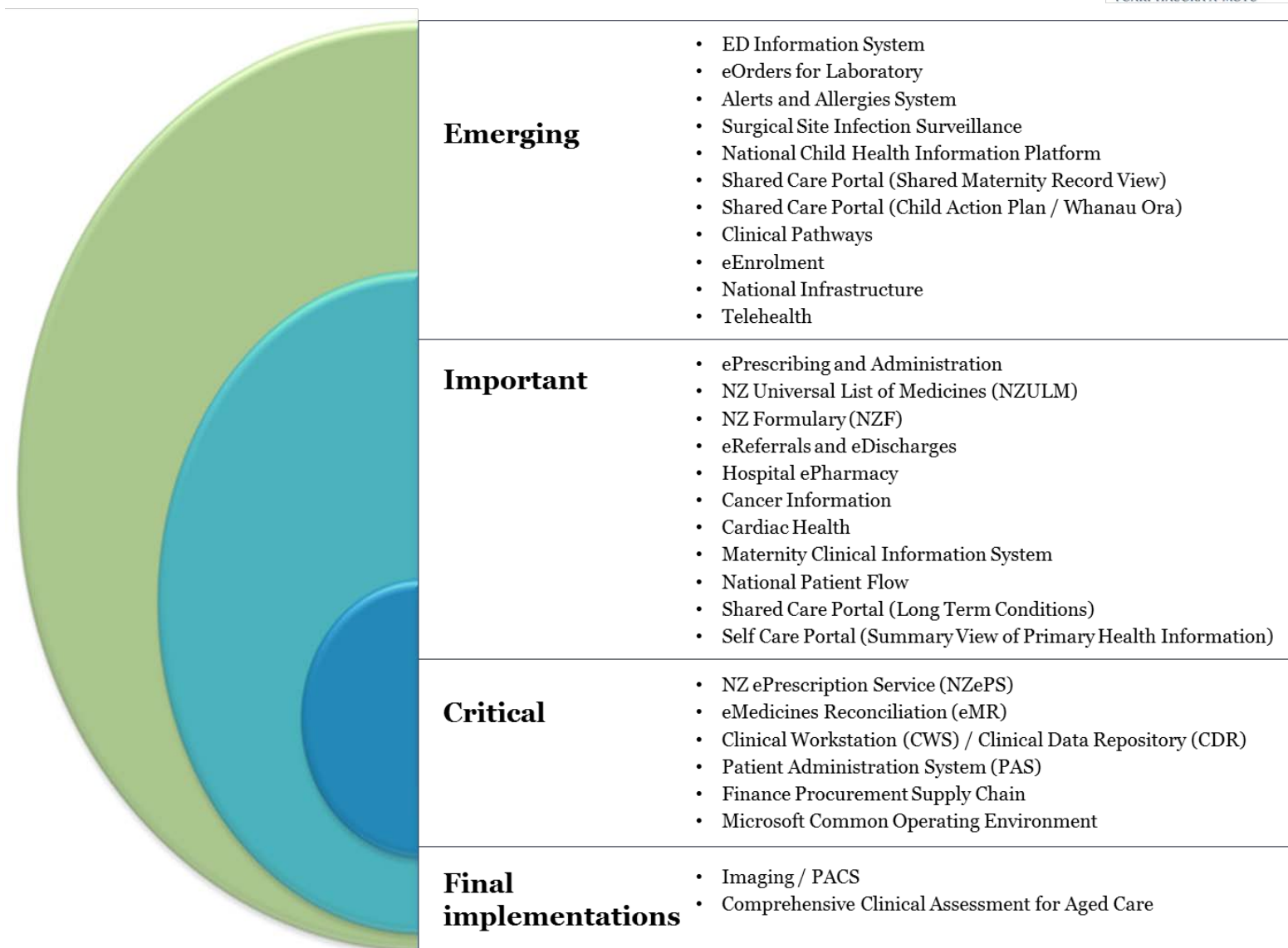
- a. **Connected Health (yellow section)** defines the common set of national functions that will support the information infrastructure of the New Zealand health and disability sector. Some components have already been developed, such as the secure private health network and replacement of the NHI.
- b. **Transactional Applications** describes local, regional and national systems in the sector that support providers in their day-to-day clinical and business activities. These systems must integrate with shared data repositories, and with clinical and patient portals, and use the Connected Health functions.
- c. **Shared Data Repositories (light green and purple sections)** represent regional and national aggregations of detailed transactional data, both clinical and non-clinical. They act as a repository of information that can be used for multiple purposes, such as national collections reporting, or reference at point of care.
- d. **Information Centre (turquoise section)** encompasses data sets that store health event histories accumulated over time from many health agencies. The resulting data warehouse acts as a rich store of knowledge about health care usage, which is used for research, analysis and funding allocation.

Figure 3: Work programmes supporting the National Health IT Plan 2013/14



Programme stage and national contract indicators current as at 1 August 2013.

Figure 4: Order of priority supporting the National Health IT Plan 2013/14



Actions required to achieve the KPIs

The actions required to achieve key aspects of the *critical priorities* linked to the KPIs are listed below.

Table 1: New Zealand ePrescription service and eMedicines reconciliation

Action	Current state (as at August 2013)	Responsibility	Related KPI for December 2014
ePrescribing and Administration (ePA) implemented in 6–8 DHBs	Taranaki, Southern and Waitemata DHB roll-outs are well under way. Canterbury DHB is about to start, and Counties Manukau and Auckland DHB are at the early stages of engagement.	DHBs and eMedicines Programme team	6–8 DHBs have implemented ePA
Implementation of electronic Medicines Reconciliation (eMR) as part of the discharge summary following the national standard	The national standard discharge template has been agreed and developed by Orion. Three DHBs have implemented eMR.	DHBs Vendor (Orion)	15 DHBs have implemented eMR. 12 DHBs are using the national clinical standard for eDischarges.
Pharmacy system vendor Toniq and GP Practice Management System MedTech will support NZePS and roll-out to customers	Other pharmacy and PMS vendors have implemented NZePS and will make it available to their customers.	Vendors (Toniq and MedTech)	All GPs and community pharmacies have implemented NZePS.

Table 2: Clinical workstation, clinical data repository and patient administration system

Action	Current state (as at August 2013)	Responsibility	Related KPI for December 2014
Regional Clinical Data Repository (CDR) and Clinical Workstation (CWS) implemented at DHBs	Active programmes in place in Midland, Central and South Island. Northern Region has partially achieved this capability.	DHBs	75% of population have a CDR record available through a regional view. 25% of population have a CDR record available through a national view.
Northland, Nelson Marlborough, and Canterbury DHBs will implement a supported Patient Administration System	Business cases are in progress for Northland DHB and South Island PAS.	Northland, Nelson Marlborough and Canterbury DHBs	5 DHBs will be implementing a supported PAS.

Table 3: Finance, procurement, supply chain and Microsoft common operating environment

Action	Current state (as at August 2013)	Responsibility	Related KPI
Hutt Valley, Capital & Coast and Wairarapa DHBs will implement Finance, Procurement and Supply Chain	Work is in progress for Hutt Valley DHB to be using the national system in the first quarter of 2014, with the other two DHBs to follow.	HBL, DHBs	HBL
All DHBs will have migrated off Windows XP and Office 2003/2007 by April 2014	Work is under way in all DHBs to meet this target, with reporting coordinated through the Department of Internal Affairs.	DHBs	Government 2012 Microsoft agreement

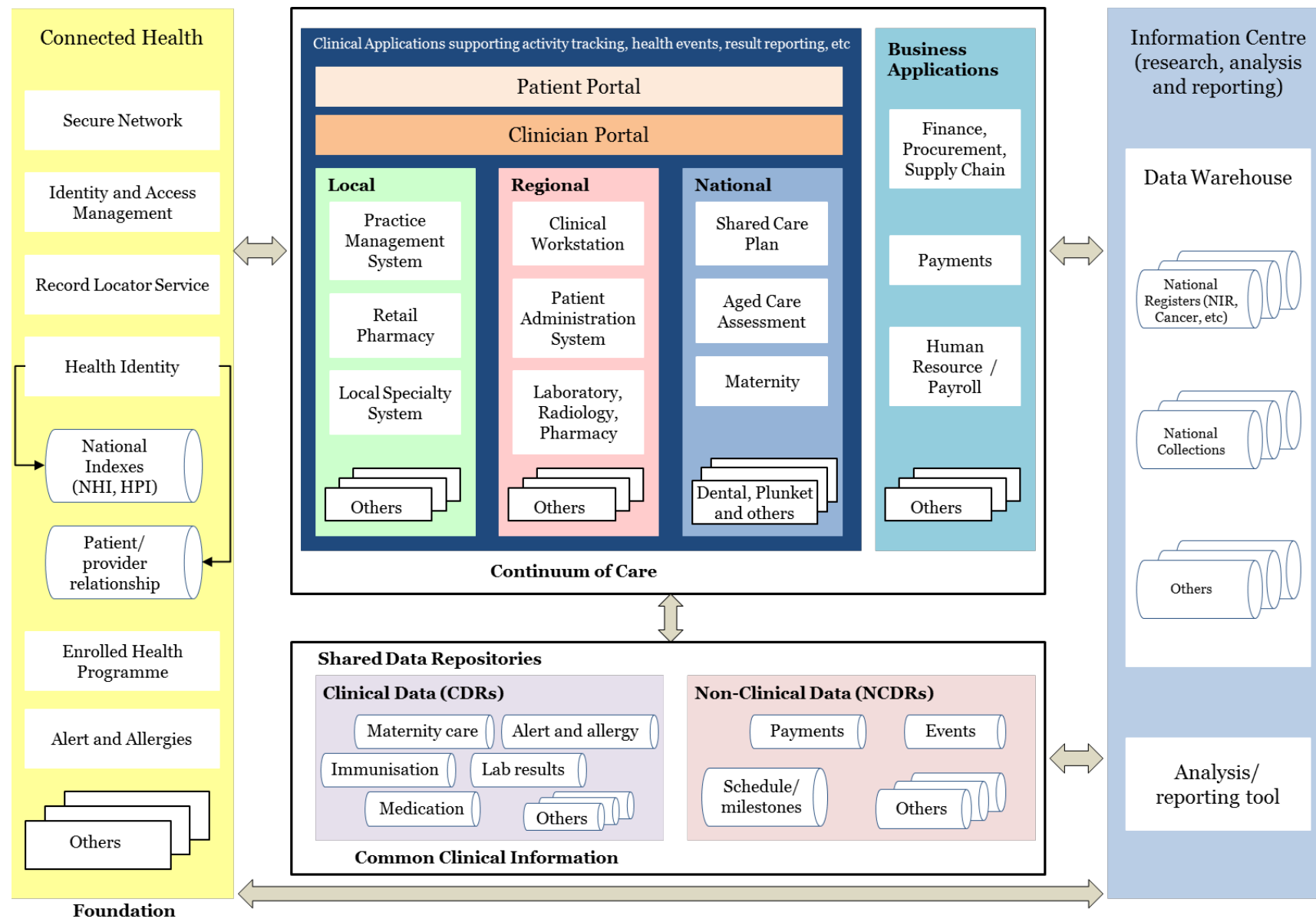
Progress to the end of 2014 and beyond will be monitored and measured using a set of key performance indicators (KPIs) relating to the work programmes and delivery of the eHealth Vision.

Table 4: Key performance indicators (KPIs)

	Item	Target by end 2014	Long-term target	Responsible
Shared Care Plan	Shared Care Portal	All Community Pharmacy Services Agreement (CPSA) risk-profiled patients have access to a long term conditions (LTC) shared care plan	95% of the eligible population have a relevant shared care plan	Pharmacies
		50% of women under maternity care will have a shared maternity record available		DHBs / LMCs
	Comprehensive Clinical Assessment for Aged Care	50% of residential care and consumers requiring complex home based support have a comprehensive clinical assessment	All residential care and consumers requiring complex home based support have a comprehensive clinical assessment	Residential Care Facilities
	Self Care Portal	50% of Integrated Family Healthcare Centres (IFHC) and GPs provide an after-hours summary to ED / Accident and Medical	All Integrated Family Healthcare Centres (IFHC) and GPs provide an after-hours summary to ED / Accident and Medical	GPs / PHOs / IFHCs
		10% of the PHO eligible population have accessed a self-care portal 90% of the PHO eligible population have a self-care portal available		All of the PHO eligible population can access their health information electronically
Continuum of Care	eReferrals and eDischarges	75% of GP referrals are sent electronically	95% of referrals are sent electronically	GPs / DHBs
		12 DHBs are using the national clinical standard for eDischarges	All DHBs are using the national standard for eDischarges	DHBs
	Patient Administration System (PAS)	5 DHBs will be implementing a supported PAS	All DHBs are using a regional PAS	DHBs
	eMedicines Programme	2 regions are implementing a regional ePharmacy solution	All regions have a regional ePharmacy solution	DHBs
		6 to 8 DHBs have implemented ePrescribing and Administration (ePA) 15 DHBs have implemented eMedicines Reconciliation (eMR) All GPs and Community Pharmacies have implemented NZ ePrescription Service (NZePS)	All DHBs have implemented ePA All DHBs have implemented eMR 95% of community prescriptions are electronic	DHBs Pharmacies / GPs

	Item	Target by end 2014	Long-term target	Responsible
Common Clinical Information	Common Clinical Results (CDR)	75% of population have a CDR record available through a regional view 25% of population have a CDR record available through a national view	95% of population have a CDR record available	DHBs
Foundation Health Information	National Health Index	All consumers who use the New Zealand health service have an NHI number	All consumers who use the New Zealand health service have an NHI number	Ministry of Health

Figure 5: Health sector information model
 Showing relationships between information domains



Implementing the Plan

Successful implementation of the Plan requires delivery of a coordinated programme of work to be delivered across a broad range of stakeholders. Delivering each programme requires focused and sustained leadership from the governance groups, clinical leaders and funders. The full success of the Plan depends on delivering the **critical priorities**, without which progress in the remaining programmes will be slowed down.

The Health Sector Information Model summarises the 'end-state architecture', showing how national, regional and local systems will link together to allow the sharing of relevant clinical and business information. The implementation of all major health information systems will need to adhere to the sector architecture to ensure compatibility and inter-operability with other systems.

The National Health IT Board relies on DHBs, community and primary care providers, and health system vendors to deliver the Plan.

A range of options is being developed to support the implementation of the Plan. These include building on areas of excellence and sharing lessons learnt, regional and national contracting, and the development of national standards and architectural models. Future options may include financial incentives and policy changes to support new practices and models of care.

Capability required to deliver the Plan

National and regional solutions require the delivery of key capability components, including inter-operability, standards, IT skills, security and technology platforms.

Inter-operability

All health and disability IT systems are expected to become fully inter-operable to allow the secure sharing of health information to support a patient-centred view of information, when and where it is required.

Standards

Health information standards support inter-operability and standardised clinical data. The Health Information Standards Organisation (HISO) supports and promotes the development, understanding and use of fit-for-purpose health information standards for the New Zealand health sector. Providers intending to introduce new, or upgrade existing, systems must meet the requirements of appropriate HISO standards.

Canterbury clinicians are confident a new system for sharing electronic patient records will help to reduce clinical errors. The Electronic Shared Care Record View (eSCRV) gives health care professionals electronic access to relevant patient information when they need it. Dr Nigel Millar, Chief Medical Officer at Canterbury DHB, says this will improve communication and speed up diagnosis.

'A lot of services were disrupted after the big earthquake here in 2011 and we found people were coming to the hospital's emergency department without a formal referral,' he says. 'There was no quick way to check their medical history, and it really drove home the need for access to timely, accurate information.'

He says eSCRV makes an appropriate set of data available to community and hospital health professionals, and people can 'opt out' if they don't want their health information shared.

Coding

While there are a number of appropriate coding sets in use in health IT systems, the international standard SNOMED CT is the clinical code set of choice and is fully licensed for the New Zealand health system. The NZULM is based on SNOMED CT, and coding sets are currently being adapted for emergency department and ambulances, for example.

Privacy and security

The need to ensure the security and privacy of patients' data is essential for maintaining trust in health information. Electronic health records give people more control over their information by allowing direct access, and ensuring third party access to records can be tracked and audited.

However, they also bring significant potential risks. Improper disclosure of health information, whether accidental or malicious, can occur more quickly and affect many more people when the information is held in electronic form. Careful assessment of privacy risks, appropriate mitigation of those risks and robust governance of electronic health record systems are required.

The other privacy issue is transparency. If patients are to maintain their trust in the health system, then steps need to be taken by health organisations to protect that trust. These steps include ensuring patients and clinicians are aware of how health information is to be shared and disclosed within the health system, and protecting information from being used for unintended purposes.

The NHITB has been working with the Government Chief Information Officer to ensure security standards are implemented, and is also taking advice from the Health Information Governance Expert Advisory Group (HIGEAG). This group was set up to develop a health information governance framework for the sector, to provide a set of policies and guidelines on how health information can be safely shared.

The NHITB-convened Consumer Panel has developed a statement on 'Protecting personal health information – consumer expectations'. This sets out the principles for protecting privacy, and designates a framework of national requirements to strengthen confidence and trust in the use of personal health information.

Identity access management

A universal way to manage access to clinical information is possible through a nationally standardised identity access management solution. This capability will uniquely identify an end-user and associate them with one or more roles, health organisations and locations. A given identity and their permissions will flow through joined-up health systems. The solution will support role-based access, respect authorised access rights and provide an audit trail of activity.

IT skill requirements

Successful execution of projects requires the right set of skills and an understanding of how IT projects are most effectively delivered. The sector will need to continue to promote centres of excellence and learn from each other's experiences.

The ongoing development of staff with skills that support the cross-over between IT and clinical work is crucial to building a workforce capable of delivering programmes successfully. Clinicians who cross over into IT are especially important for undertaking co-design and change management. They need to continue to be supported by employers because many will still carry a clinical workload.

Technology capability

Certain parts of the sector require improved technology capability. This includes access to hardware, the network, and knowledge of how to set up and run software systems. Groups requiring improved capability include sole trader health professionals, non-government organisations (NGOs) and smaller rest homes. The medium- to long-term solution for these providers is to use cloud-based solutions (sometimes called Software as a Service), which means they can bypass the need to own and operate some of their own equipment and software.

The convergence of technology can lead to new solutions for the delivery of health care. An example of this is telehealth, whereby lightweight, network-enabled smart devices can be used for information gathering in homes and remote settings. Such telehealth services will need to link to patient portals and electronic health records to ensure a seamless experience for the consumer and health care providers.

As the health sector becomes more dependent on IT for its information, improvements in the availability, performance and resilience of systems are required. Business continuity contingency and disaster recovery plans need to be built into operational systems – for both existing critical systems and all new systems.

Shared services

The implementation of regional and national solutions requires the use of shared services in order to consolidate infrastructure and services and provide clear lines of accountability. It will free up knowledge and skills to support health sector applications rather than the hardware and operating environments on which they run. Such infrastructure has become a mainstream service better operated by companies who specialise in this area.

The IT Board has been working with the Department of Internal Affairs, which is coordinating all-of-government services, along with HBL, to consolidate infrastructure and standardise operating platforms, and to provide them as cost-effective services to the sector. Regional service plans and business cases will be required to consider this approach for all new initiatives.

Governance

Governance of the National Health IT Plan is the responsibility of the NHITB. The NHITB is a sub-committee of the National Health Board and is supported by the Ministry of Health, but it also retains a direct line to the Minister. It is advised by and supports a number of subgroups, and works with a number of established sector groups and has established accountabilities.

The following are accountable for aspects of the IT Plan:

- 1 **Patients First:** a collaboration of three organisations focused on improving the collection, use and reporting of health information across the continuum of care (www.patientsfirst.org.nz)

- 2 **DHB regions:** four DHB regions, comprising all 20 DHBs, are held accountable through their regional service plans – each region has a CEO representative on the NHITB, and a regional IT lead and a portfolio manager on the Sector ICT Implementation Group
- 3 **national programmes:** key national programmes are governed by sector steering groups
- 4 **Ministry of Health Major Projects Committee (MPC):** this group prioritises Ministry of Health capital expenditure and oversees the delivery of new national infrastructure projects, including the Health Identity programme and changes to claims and payment systems.

The Health Sector Forum, made up of representatives from all key health agencies, has an overarching responsibility for prioritising IT and other related programmes of work where demand exceeds supply.

Governance groups must ensure benefits are aligned with the original (or revised) objectives, as agreed with the business owner. The benefits must be identified in the business case, and then measured and monitored during and after new capability is delivered.

Regional service plans

Since 2010 each DHB region has been required to develop and implement a regional service plan. These provide an integrated approach to delivering health services within the DHB's region, underpinned by IT, workforce and new buildings and facilities. This approach is improving the planning and decision-making in relation to IT investment at the regional level, increasing clinical involvement and providing better alignment of regional initiatives with national priorities.

Partners in delivery

A partnership between consumers, clinicians, health executives and IT staff is essential. It can be thought of as a four-legged chair: if all parties play their part well and trust each other, the chair will be strong and stable; if one party gets left behind or assumes too much influence, the chair will become unstable.

Patients and consumers

Active engagement of people using health and disability services is critical to the success of the IT Plan. This engagement ensures that health information solutions are responding to the needs of the many thousands of New Zealanders who use health services every day, and that risks are appropriately identified and managed. In addition to consultation on specific programmes of work, the NHITB has established a Consumer Panel to provide expert input and consumer perspectives on the direction and priorities, key issues and risks.

Health practitioners

The leadership of health professionals is essential for the effective design and implementation of eHealth initiatives. The NHITB is working closely with the National Information Clinical Leadership Group (NICLG), which comprises a number of senior clinical leaders. Increasing involvement of the health workforce – in particular nursing and allied health – is essential if the full benefits of clinical information systems are to be realised.

Health and disability service providers

A wide range of health and disability service providers, from DHBs to NGOs, are at the forefront of implementing new systems and processes to benefit patients and clinicians. Private hospitals and specialist health care providers are also important contributors and increasingly need to be joined up with other parts of the sector. New models of care and treatment options, as determined by clinical pathways, will require multiple public and private health care providers to work together to achieve optimal patient outcomes.

Vendors

Strategically placed IT vendors able to respond to the needs of practitioners and health service providers by developing practical, effective eHealth solutions are an integral part of achieving the IT Plan. The Health IT Cluster is made up of 120 members. It provides industry and vendor engagement and services to facilitate collaborative and innovative concepts in health IT.

Health Benefits Limited

Health Benefits Limited (HBL) works with the health sector to deliver sustainable business support solutions nationally. It is currently working with DHBs in the following areas: collective procurement; facilities management and support services; finance, procurement and supply chain; human resources management information systems; and information services.

The NHITB is working in partnership with HBL and DHBs to ensure effort is not duplicated and strategic programmes are aligned. Further information on HBL's programmes of work is available at www.HealthBenefits.co.nz

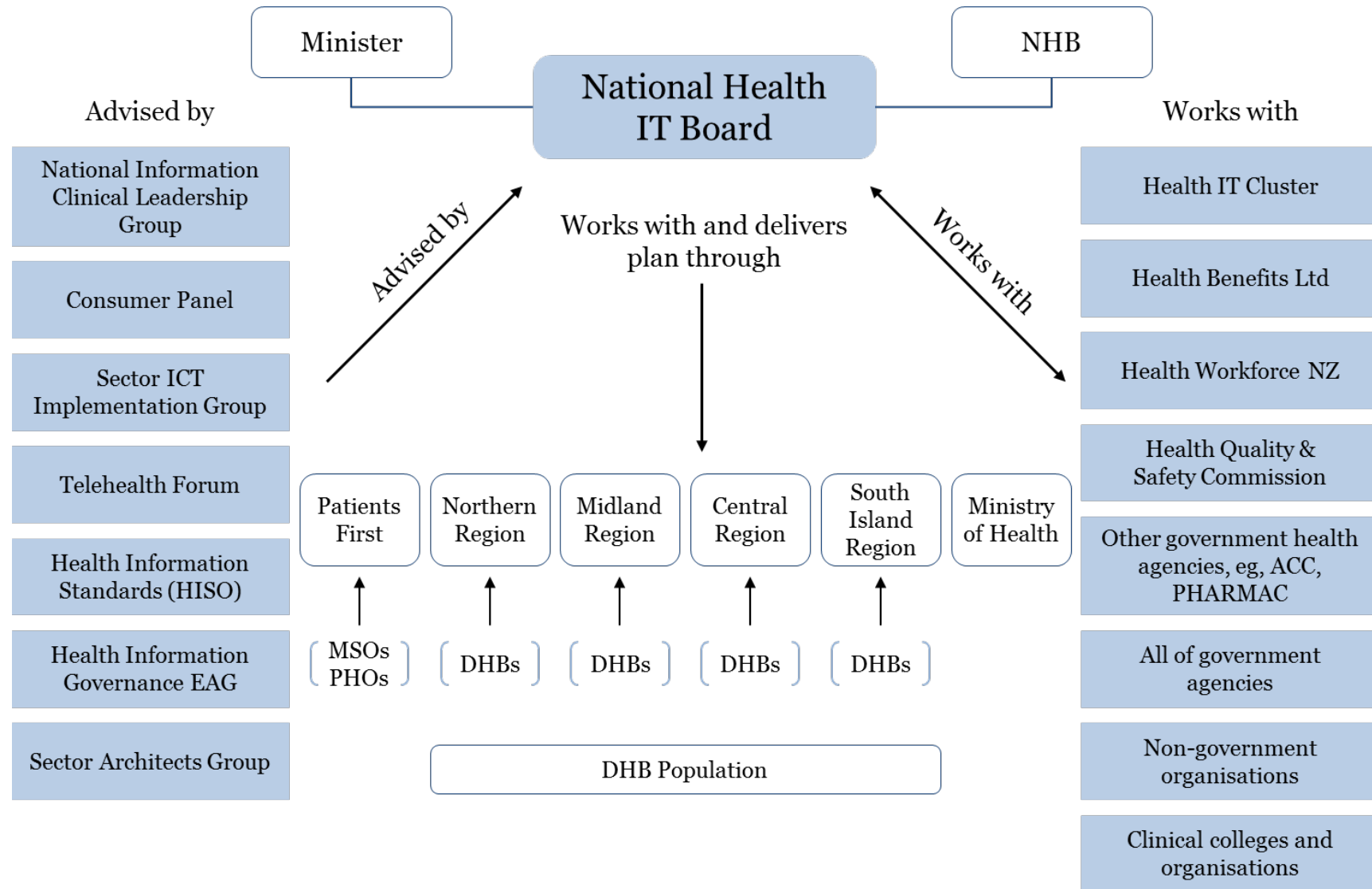
Ministry of Health

The Ministry of Health participates as a national provider of health information services and infrastructure. As national contracts mature and new sector-led systems move into operational service, the Ministry will have a role in ensuring their ongoing management and operational governance. It has developed a Ministry of Health IT Plan, outlining its own priorities and changes to support the sector and the goals of the *National Health IT Plan*.

The Ministry's IT Plan describes priority developments in five areas:

- health identity services – extend web-service-delivered identity services to all major sector systems
- payment services – migrate obsolete systems to a modern rule-based payment management system
- patient journey measurements – measure the patient's journey through hospital-based services, from receipt of referral to discharge
- rationalising screening systems for breast, cervical and bowel cancers, and antenatal and newborns
- National Immunisation Register – replace an out-of-date system.

Figure 6: Governance and delivery of the *National Health IT Plan*



Funding and investment

Responsibility for funding ICT investments lies with the organisations that benefit from the solutions. In most cases this is the DHBs, regional service agencies or primary health care organisations. Additional sources of funding are the NHITB Primary and Integrated Grants fund, and the Ministry of Health's Non-Departmental Expenditure.

The Primary and Integrated Care Grants fund of \$11.4 million has committed \$10.4 million to projects in the past three years. This money has been spent on feasibility studies, innovations, evaluations, the development of national programmes, and support for specific cases where barriers to progress are a problem.

Investment will continue to shift from mainly capital funding (capex) to operational funding (opex) as Infrastructure-as-a-Service and Software-as-a-Service solutions mature. An example of this is the Maternity Information Systems Programme, which will provide a solution for all DHBs from a hosted platform on the basis of a payment per live birth. Included in this is the cost of hosting the system, software licences, software maintenance, helpdesk support, upgrades and ongoing enhancements.

Investment portfolio approach

A balanced investment portfolio approach by investors is critical for ensuring that value for money is achieved in IT investment. The Center for Information Systems Research at MIT has developed a model describing four different classes of IT assets and recommends developing a portfolio of investments based on proportional investment in these asset classes. Each of the asset classes has a different set of objectives and risk profiles. An investment portfolio approach creates a balance of investments to align strategy, priorities and constraints.

Organisations invest in IT to achieve four different management objectives:

- strategic – to gain a competitive advantage or major innovation
- informational – to provide better management information
- transactional – to process transactions and reduce the costs of doing business
- infrastructure – to provide shared services and integration.

The next diagram shows how average and top-performing organisations (comparable to DHBs) invest in the four asset classes, and the relative proportions of IT investment based on a range of performance measures, including asset use. Currently, between 40 percent and 70 percent of DHB IT investment is spent on infrastructure and maintaining systems, which means that other asset classes are not receiving sufficient investment. Sector leaders will need to address this imbalance if the sector is to make faster progress. Investment in **critical priorities** is required to deliver the foundations of the IT Plan.

Rethinking IT as an Investment Portfolio

Four Different Asset Classes

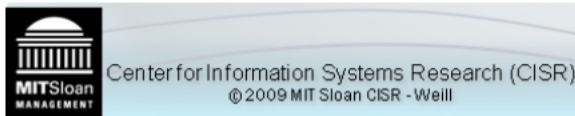
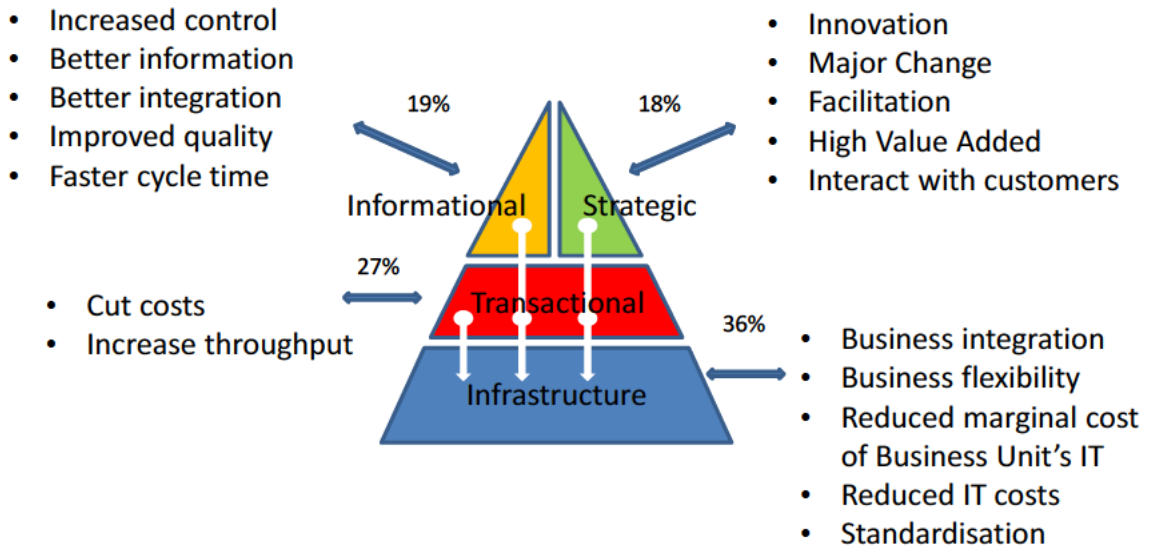


Figure 2
% = proportion of IT investment of average and top performing firms

Looking to the future

What success will look like

The National Health IT Plan will have been achieved when:

- New Zealanders:
 - understand, support and trust how their electronic health information is recorded, managed and accessed
 - participate in new models of care and are more involved in their own care
 - can and do access a core set of their personal health information shared with their health practitioner(s)
- clinicians:
 - can access the most commonly held health information electronically at the point of care
 - can use information systems to enhance the effectiveness of their health care practice
- DHB regions:
 - have implemented sustainable common platforms in each region to manage patient administration and clinical information
 - have good regional leadership and governance models in place, and timely and robust decision-making
 - have inter-operable systems that can seamlessly and securely share information.

The improved health information eco-system will support:

- a greater focus on providing integrated care in the community
- improved equity and access to services
- more standardisation in the care provided, and reduced variation in health outcomes
- more consistent monitoring and measurement of systems performance and health interventions
- clinical change management and changing models of care.

Future focus

The next stage is the development of a five-year IT Plan for the 2015 to 2019 period, which will build on the achievements of the first Plan. The NHITB is working toward releasing an initial discussion document in 2014.

Key considerations for future planning will be the impact of technology improvements, the increase in online communication channels and the growth of digital data in general. The use of social media and mobile devices will become major factors in the delivery of health care.

As the publicly funded health sector builds improved information capability, the need to share information and work alongside NGOs and private hospitals becomes more important, and also ensures that the patient has a seamless experience on their journey through the health system.