



21st Century Healthcare

eHealth Investment Strategy



eHealth Investment Strategy

Published by the State of Queensland
(Queensland Health), August 2015

This document is licensed under a Creative Commons Attribution 3.0 Australia licence. To view a copy of this licence, visit creativecommons.org/licenses/by/3.0/au

© State of Queensland (Queensland Health) 2015

You are free to copy, communicate and adapt the work, as long as you attribute the State of Queensland (Queensland Health).

For more information contact:

Office of the Chief Information Officer, Department of Health, GPO Box 48, Brisbane QLD 4001.

Disclaimer:

The content presented in this publication is distributed by the Queensland Government as an information source only. The State of Queensland makes no statements, representations or warranties about the accuracy, completeness or reliability of any information contained in this publication. The State of Queensland disclaims all responsibility and all liability (including without limitation for liability in negligence) for all expenses, losses, damages and costs you might incur as a result of the information being inaccurate or incomplete in any way, and for any reason reliance was placed on such information.

Contents

A message from the Minister	4
A message from the Director-General	6
Executive summary	8
What is the eHealth Investment Strategy?	10
The health ecosystem in Queensland	12
Spotlight on health in Queensland	13
Health challenges in Queensland	14
Building a high quality sustainable health system	18
Trends in world healthcare	18
A plan for better healthcare	22
eHealth vision	26
Investment priorities	28
ICT infrastructure	30
Providing new infrastructure utility	32
Investing in contemporary business tools	34
Business systems	36
Replacing and reducing the risk of the financial management system	38
Digital future	40
eHealth architecture foundations	42
Information interoperability	44
Clinical systems	46
Patient administration system	48
Investing in an electronic medical record (ieMR) to enable digital hospitals	50
Pathology system renewal	54
Investing in primary and community care capability	56
Secure and reliable sharing of digital images	58
Improving our capability to deliver health services across the health system	60
Queensland Health ICT Portfolio	62
A balanced portfolio	62
Managing our investment	63
The planning process	63
Sources	64

Figures

Figure 1: eHealth Investment Strategy categories and indicative costings	11
Figure 2: eHealth Investment Strategy strategic alignment	25
Figure 3: Proposed investment aligned to eHealth architecture	27
Figure 4: Queensland Health digital continuum	61
Figure 5: Portfolio balance (run, grow, transform)	62
Figure 6: eHealth Investment Strategy timeline	63



A message from the **Minister**

Global healthcare models are continually evolving in complexity and sophistication and the demand for digital health service innovation is greater than ever. Strategic investment in eHealth and Information Communications Technology (ICT) is a fundamental requirement for delivering a patient-centric system that enables alternative models of care, as close to the home as possible. As such, I am proud to release this inaugural eHealth Investment Strategy as part of our broader and ongoing commitment to delivering accessible, quality and value for money health services for all Queenslanders.

This strategy has been developed in partnership with all 16 Hospital and Health Services (HHSs) and represents a statewide view of eHealth investment priorities. Through the eHealth Investment Strategy, Queensland Health is establishing the foundations of a digital health system that offers integrated services with timely, secure and reliable access to patient information across both public and private care providers.

The balanced investment approach outlined in this strategy will address both legacy system risks and ensure a greater level of integration between health providers and the community. Equally, investing in innovative digital technologies will better support our clinicians delivering front line services, maximising not only the value of our quality workforce, but offering a degree of mobilisation that will sustain new models of care and offer increased access to health services.

I am confident that our considered and strategic approach to eHealth investment, coupled with sustainable industry partnerships will derive significant value for the health system, but more importantly, for Queenslanders.

The Hon. Cameron Dick MP

Minister for Health and
Minister for Ambulance Services





A message from the **Director-General**

Information and Communication Technology (ICT) is continually transforming the delivery of healthcare and system administration services, here and around the world. As such, investing in ICT and innovation is a significant cornerstone of Queensland Health's commitment to improving the healthcare of all Queenslanders.

The Queensland Health eHealth Investment Strategy provides a cohesive and considered plan for our ICT investment priorities—from systems that increase health literacy, promote community education, and empower our communities to have greater control over their own healthcare; to upgrading core infrastructure to enable cutting-edge health service delivery—now and into the future. This will require strong and meaningful partnerships with our Hospital and Health Services (HHSs).

Through this document, we will look to address the establishment of a digital health system that enables secure access and sharing of medical records for every patient—an initiative that will change the way

consumers and healthcare professionals interact with health information and services. Our investment in electronic medical records and digital hospitals means that key information about a patient will be available wherever they present in the health system, across all HHSs and in Queensland's private health facilities as well.

Our commitment to a fully integrated health system also recognises that a mobile workforce—who can access information as quickly and as closely to the patient as possible—will be vital in increasing clinical efficiency, clinical time with patients, and ultimately, improving the patient experience.

I invite you to familiarise yourself with the Strategy and see how we will strengthen Queensland's health system through the integrated, innovative use of ICT. This is an opportunity for us to do things differently and position Queensland Health to best meet the needs of our communities.

Michael Walsh

Director-General
Department of Health



Executive summary

ICT is an increasing enabler of integrated, quality and safe health services.

The eHealth Investment Strategy (the Strategy) ensures that investments form part of a considered and cohesive plan between the Hospital and Health Services (HHSs) and the department to better enable the delivery of quality and efficient health services.

The Strategy is the mechanism through which Queensland Health identified the need for a significant investment in ICT—more than a billion dollars—to support healthcare delivery in Queensland.

The Strategy provides greater health system context around Queensland Health's proposed investment in ICT and outlines our plan for investing in the digital future of Queensland Health. In Queensland there is a growing demand for, and cost in supply of, health services.

Key factors increasing pressure on the health system and the Queensland economy include:

- increasing population
- growth in an ageing population
- longer life expectancies
- increasing burden of disease in conditions, such as cardiovascular disease, cancers and diabetes
- the challenge of providing equity of health service provision in regional, rural and remote communities.

The investment priorities in this Strategy not only include foundational elements such as ICT infrastructure, but also the strategic initiatives required for a more integrated health system and enables patients to access healthcare services in new and innovative ways. It also lays the foundations for providing greater integration across the health system through increased access to patient information.

Queensland Health's investment priorities include:

- new ICT infrastructure utility to provide contemporary network and data centre foundations that support contemporary systems and increase the mobility of the workforce
- a contemporary desktop environment to support a consistent user experience, and access to common systems and tools across the health system
- establishing a secure environment to share information and images, and consult with others through an information interoperability platform
- renewing enterprise systems, including those for patient administration, finance and laboratories
- investing statewide in electronic medical records and enabling digital hospitals.

Other priorities include investment in business intelligence, and systems to support integrated care with primary and community healthcare partners.

These investment priorities were identified through extensive ICT planning engagements with HHSs. Prioritisation by Health Service Chief Executives (HSCEs), Deputy Directors-General, the Chief Health Information Officer and the Chief Technology Officer was also formally conducted as part of the ICT planning process.

This investment is in line with worldwide trends where ICT is critical to the delivery of healthcare services, including:

- population health-focused outcomes
- accountable healthcare services
- consumer-centric health services delivered closer to or within consumers' homes
- seamless integration of health services involving interdisciplinary healthcare teams that cross organisation and jurisdictional boundaries
- a knowledge empowered, flexible and mobile workforce with changing professional profiles
- a population both healthy and capable of using ICT.

The investment outlined in this Strategy is indicative and represents the total estimated costs.

The proposed investment priorities have been selected to progress to business case development, to confirm the need for investment (risk, value and benefits) and confirm the ultimate cost estimates.

The identified investment priorities will be governed through the department's new Investment Management Framework and gated assurance processes. This is to ensure performance, return on investment and the delivery of benefits are robustly assessed and actively monitored.



4

What is the eHealth **Investment Strategy?**

Frontline public health services in Queensland are provided through 16 HHSs, each of which, operate as a statutory body with a governing Hospital and Health Board (HHB). The department supports HHSs with the overall management of the public health system, including the monitoring and performance of HHS performance.

It is crucial that Queensland Health operates as a cohesive health system in a federated environment. Together, the department and HHSs must:

- co-design strategic direction
- examine challenges, risks and service delivery needs
- determine the investment priorities which will deliver the greatest value.

The Strategy is a comprehensive view of the collectively identified ICT investment priorities across the health system. These priorities have been indicatively costed, and includes contextual information that underpins the prioritisation order and overarching plan, to which each investment priority aligns. Further to this, the Strategy has been developed to ensure a more equitable distribution of ICT funding across the state, leveraging collective solutions to better address the varying levels of capability and enable a more consistent standard of care, particularly in rural and remote health services.

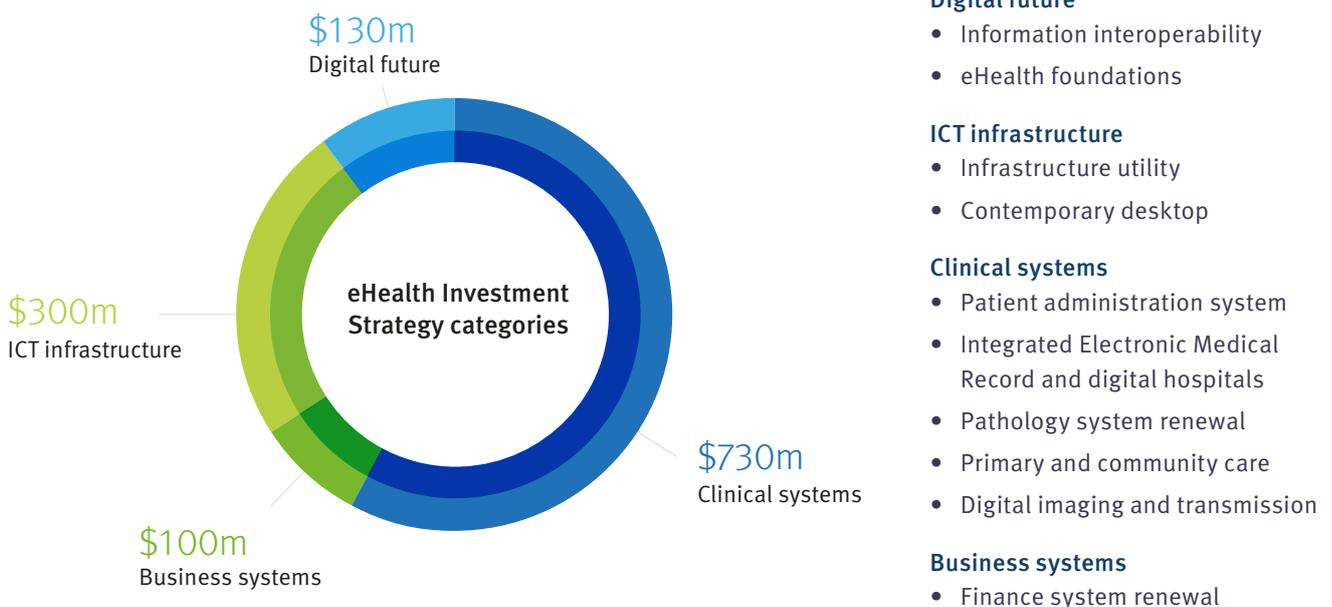
Working with HHSs, the ICT Portfolio Office has introduced a new process for facilitating the definition and development of ICT strategies, plans and roadmaps. Individual HHS and collective health system challenges, risks and ICT priorities have been collaboratively identified through the contributions from HHB members, HSCEs, chief information officers, executive teams, clinicians and community representatives. The production of this document and resultant prioritisation of ICT investment has been supported by contributions from Queensland Treasury, the Department of the Premier and Cabinet, and the Queensland Government Chief Information Officer.

The outcomes of the new process will be used as the basis for preparing a robust and defensible case for ICT investment, and detailing the greatest areas of need (risk) and innovation (value). The identified investment priorities noted in this Strategy will be subject to a gate-assured Investment Management Framework to ensure performance, return on investment and benefits realisation is assessed and monitored.

The cost outlined in the Strategy are indicative and the value of the proposed investments will be further analysed as part of business case development.

Queensland Health’s investment categories outlined in this Strategy are summarised below.

Figure 1: eHealth Investment Strategy categories and indicative costings



The health ecosystem in Queensland

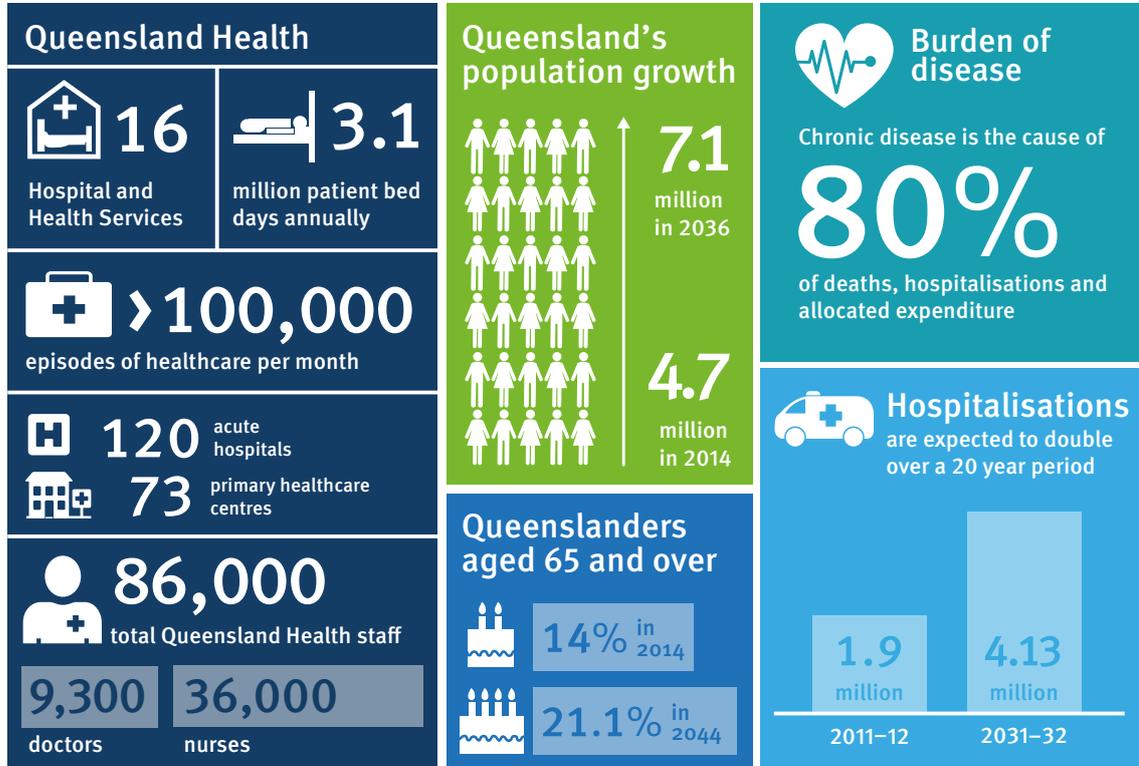
In keeping with global trends, there are significant cost implications surrounding the growing demand for the provision of health services in Queensland. Key factors increasing pressure on the health system and Queensland economy include:

- population growth and ageing—the current population of 4.7 million is projected to be 7.1 million by 2036, with a 50 per cent increase in the number of persons aged 65 years and over, and 100 per cent increase in those persons aged 85 years and older
- longer life expectancy—people are living longer, with an increase in correlative chronic disease, including cardiovascular disease, cancers and diabetes
- geographically dispersed population—in 2011, 62 per cent of the population lived in major cities, 20 per cent lived in regional areas and 18 per cent lived in outer regional or remote areas
- the rising cost of service provision—health continues to be the Queensland Government's single largest area of investment, increasing by six per cent in 2014–15 to \$13.6 billion. This trend in health spending is projected to continue, with an estimated 50 per cent increase in the next 40 years (as a proportion of Gross Domestic Product).

At the same time, global healthcare models are shifting focus from episodic, provider-centric service delivery to patient-centric, accountable health management. Queensland Health recognises the need for a more sustainable approach to health service delivery, with a distinct focus on outcomes and accountability. This paradigm shift is becoming increasingly reliant on ICT for support, enablement and innovation, as evidenced by the growing demand for online services, alternative models of care, evolving clinical practice and advances in biomedical equipment.

The changing models coupled to our current ICT challenges, including out-of-date infrastructure, ageing technology and highly-customised bespoke systems place increased pressure on striking the right balance between investment to mitigate ICT risk and investment to upgrade ICT foundations.

Spotlight on health in Queensland



Health challenges in Queensland

Queensland Health is working to achieve a high degree of patient satisfaction, hospital efficiency and reduced wait lists, with a central focus on patient safety.

The health system in Queensland continues to face a number of strategic challenges that demand new and innovative delivery approaches.

Preventable disease in the community

Queensland's increasing burden of preventable chronic disease, including cancer, diabetes, obesity, heart disease, smoking and alcohol-related health issues, continue to stretch health service delivery. With an ageing population in many regions, the demand for acute and sub-acute chronic disease services is rising. Adding to the total burden of disease across the state is a range of mental health disorders—with the provision of inpatient mental health unit beds proving a current and future challenge in many HHSs.

Queensland's population of Aboriginal and Torres Strait Islander people also has a recognised burden of disease in many regions that require separate and specific management. The relative burden of disease for Indigenous Queenslanders is more than two times that of non-Indigenous Queenslanders. A greater proportion of the Queensland Indigenous population live in regional and remote areas where they experience a disease burden 47 per cent greater than those in major cities.

Health for the bush

Distance is a challenge for many HHSs based outside of the metropolitan areas, where large geographic boundaries encompass a number of rural and remote communities. Often, access to immediate 24-hour clinical services is not possible. The state's health services play a dual role of providing emergency and

acute care as well as frontline primary healthcare in rural areas. This places an increased burden on the availability of resources, particularly skilled clinicians and facilities.

Alternative methods of health service delivery, such as Telehealth and Telemedicine have proved highly successful in reducing the:

- tyranny of distance
- cost of travel—for both the public health system and the patient
- provision of close to home healthcare
- enablement of more effective clinical networking.

Queensland Health is keen to continue investing in the core infrastructure, which will widen the scope of services to expand in rural and remote regions.

'We must invest wisely in ICT to support better care practices and models of healthcare suited to rural and remote settings.'

Michel Lok

Chief Executive,
Central West Hospital and Health Service

People and partnerships

The historical trend of declining workforce participation and productivity rates must be addressed in order to grow capacity. The ability to recruit and retain appropriately skilled staff to provide safe, sustainable services, close to the consumer, continues to be a significant strategic challenge, particularly in rural and remote regions where there is a geographic distribution of the health workforce.

Queensland Health needs a contemporary ICT platform, state-of-the-art systems and an appetite for innovation to attract and retain a productive healthcare workforce.

A range of optimisation strategies are being introduced in partnership with primary healthcare services to strengthen accountability and reporting systems, and develop integrated care pathways.

HHSs and health partners require systems that securely share patient and clinical information to ensure the patient experience and integration of services is seamless across the continuum of care.

Children's Health Queensland is committed to working in partnership with other HHSs, child and youth services, universities and research centres across the state to ensure market-leading paediatric healthcare provision, teaching and research. This requires a strengthened network of services and increased partnerships to provide more streamlined and coordinated care for children and families.

Demand for integrated care

Information is central to improving healthcare outcomes and providing integrated care for Queensland patients in the community. Queensland Health needs to easily, accurately and comprehensively share patient and clinical information with the HHS, across regional boundaries and with relevant healthcare partners.

Improved data integrity, assurance and access will better support the fair and equitable distribution of

Queensland Health needs a contemporary ICT platform, state-of-the-art systems and an appetite for innovation to attract and retain a productive healthcare workforce.

'This eHealth Investment Strategy is a collaborative effort to inform our investment in ICT with an appropriate balance of addressing our complex legacy systems with investing in transformative digital capabilities for a healthier Queensland.'

Mal Thatcher

Chief Health Information Officer,
Queensland Health

services in a close to home model. Benefits include higher patient satisfaction, reduced healthcare costs and reduced hospital inpatient length of stay.

Designing flexible services with access to contemporary and relevant operational planning information will enable HHSs to respond quickly to changing healthcare demands and population fluctuations.

Patients are demanding more participatory, informed decisions in their care journey. They require access to referral pathways, scheduling information across the continuum of care, an ability to select their healthcare providers and the services as part of their treatment plan.

The digital consumer

In the age of the consumer, service delivery channels are driven by the consumer. Where time saving is a precious commodity and ICT provisioning is measured in hours and minutes, the need for agility and responsiveness is greater than ever. Traditionally, the decision-making paradigm was clear—the seller controlled the product and the information about the product, whereas the buyer generally controlled the purchasing decision. In the ‘age of the consumer’ however, lines are now blurred. There has been a strong shift in consumer control over product and service information and the consumer, together with consumer technology is now the major disruptor in determining business strategy.

According to Gartner research, more than 80 per cent of companies now believe customer experience is their primary basis for competition, compared with 36 per cent in 2010. Future models of healthcare will need to enable consumers to take greater responsibility for their healthcare, which will subsequently inform investment decisions in clinical systems.

Systems and infrastructure

Increased fiscal pressure in the Queensland Public Sector has resulted in ageing ICT infrastructure across the health system. The risk of compromising health service delivery is significantly increased with antiquated systems, architecture, policies and equipment—markedly impacting the timeliness, quality and efficiency of frontline service delivery.

Future-proofing the healthcare system necessitates striking a balance between the challenges described earlier and the technological advances likely to materialise. New technologies and an increase in the variety of services available from the ICT industry create an opportunity to develop a highly interoperable and flexible ICT environment.

Large complex systems are less resilient to change. The combination of statewide and independent, local systems with low levels of interoperability decrease the capability of the system and reduce the sharing of information. As medical practices and technologies continue to evolve, Queensland Health will employ a flexible approach that advocates innovation, to ensure quality healthcare outcomes, without overhauling entire systems.

In the current environment, information is not sufficiently standardised and systems are not sufficiently integrated to enable the secure sharing of information. Electronic health information must be readily available and easily accessed to derive maximum benefit. Patients with adequate access to information will be empowered to take greater responsibility and a more participatory role in their healthcare.

Health literacy

Health literacy is the skills, knowledge, motivation and capacity of a person to access, understand and make effective decisions about health and healthcare, and to take appropriate action. Health literacy is a significant issue in Australia. The direct relationship between low levels of individual health literacy and the higher use of healthcare services is well documented, as is the relationship between low health knowledge and lower overall health outcomes.

The Queensland health system is committed to increasing health literacy, promoting community education and empowering patients to take greater responsibility for their personal healthcare. Access to medical records and care plans are fundamental to this aim, in order to provide patients with a mechanism to be proactive in managing their health. Our health system needs to increase health literacy, promote community education and empower Queenslanders to take greater responsibility for their healthcare. They also require equitable access to healthcare services delivered as close as possible to their home to increase the capacity of our local hospitals and health centres.

Like many other developed countries, almost 60 percent of adult Australians have low individual health literacy, which means they may not be able to effectively exercise their choice or voice when making healthcare decisions.

'ICT affords the opportunity to establish regional centres of excellence that provide a high standard of healthcare across the state, focused on the health service needs of people in regional Queensland.'

Clare Douglas

Chief Executive,
Mackay Hospital and Health Service