

# South Western Sydney Local Health District

## Information Communications and Technology Strategy 2015 - 2021

*Leading care, healthier communities*



**Health**  
South Western Sydney  
Local Health District

**South Western Sydney Local Health District**

Liverpool Hospital Eastern Campus

Locked Mail Bag 7279

Liverpool BC NSW 1871

Tel. (612) 8738 6000

Fax. (612) 8738 6001

[www.swslhd.nsw.gov.au](http://www.swslhd.nsw.gov.au)

Prepared by: The Checkley Group Pty Ltd  
for the Information Management and Technology Division  
South Western Sydney Local Health District

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## Foreword

Rapid advances in Information Communications and Technology (ICT) have contributed significantly to the improvement of health outcomes for patients and enabled smarter and more efficient ways of working.

With these rapidly evolving information technologies come a number of challenges that must be addressed if we are to provide the best quality and safest health care to our communities as well as provide first class IT systems for our workforce.

The District acknowledges the opportunities and challenges facing a complex IT environment and the SWSLHD Information, Communications and Technology Strategy has been developed to help us achieve the District's vision of "Leading care, healthier communities".

We are excited by the opportunities that information technology brings. Interactive IT systems containing high-quality data can help drive innovation and research to explore new models of care to improve outcomes for patients.

Having digital systems available to the public to book appointments online, receive SMS reminders and way finding technology promote patient-centred care and increase patient satisfaction at a time when most of our digital needs can be met by a smart device. By using these digital tools we hope to enable patients to have a greater role in the decisions that are made about their care.

The ICT Strategy provides a roadmap by which we can become a Digital Local Health District and work towards becoming an Integrated Digital Health Community.

A great deal of work on ICT development has been undertaken by organisations in jurisdictions outside the District notably, NSW HealthShare (eHealth) and the Australian Commission on Safety and Quality in Healthcare and, where appropriate, this work has been carefully considered and incorporated into the Strategy.

We would like to thank staff involved in the extensive period of consultation and particularly the clinical and IM&TD staff who contributed to the development of this SWSLHD ICT Strategy.

The strategic approach has been supported by the District Board and I look forward to the strategy being further developed into operational and business plans that will deliver on the recommendations to position the District as a leader in ICT in healthcare.

Prof Phil Harris  
Chair  
South Western Sydney Local Health District

Amanda Larkin  
Chief Executive  
South Western Sydney Local Health District





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## 1. Introduction

This Information Communications and Technology (ICT) Strategy is designed to position South Western Sydney Local Health District (SWSLHD) as a leader in information communications and technology to better support the delivery of healthcare.

This Strategy will support SWSLHD to achieve its strategic service development directions and corporate goals over the next five years. It has been developed in partnership with District staff and key external stakeholders.

A review of ICT governance arrangements in late 2013 highlighted the organisation's growing dependence on ICT as an enabler of healthcare service provision, the significant growth of this portfolio and the substantial organisational benefits of this investment. It was apparent that there were significant unserved District requirements for ICT services and expertise, and the increasing complexity of the ICT landscape highlighted the need for some adjustments to ICT governance. This strategy has been designed to identify the unserved requirements and governance needs.

An extensive consultation process was undertaken during which a number of key themes emerged as essential to the future vision for SWSLHD. This Strategy explains how these themes translate into strategies and actions which will move SWSLHD towards a vision of being a fully digitally-enabled LHD where clinicians, patients, and management can access the information they need to deliver quality care and to manage resources efficiently and effectively.

It is intended that this Strategy remain dynamic and flexible to shifts and major changes in healthcare policy, plans and delivery imperatives and shifts in Information Management and Technology Division (IM&TD) service delivery and technology changes. This is essential in recognition of the significant shifts and exponential changes in information and communications technologies and their applications.

Operational and Business Plans will be developed consistent with this Strategy to ensure its smooth implementation.

The framework for this Strategy will also be aligned with key Commonwealth and NSW Government policies and plans.



## 2. Planning Process

The ICT Strategy aims to support the vision and objectives articulated in the SWSLHD Strategic and Healthcare Services Plan Strategic *Priorities in Health Care Delivery to 2021* and the SWSLHD Corporate Plan 2013-2017 *Directions to Better Health*.

Development of the plan commenced in March 2014 and involved extensive consultation with a range of stakeholders. The planning process was designed to identify the challenges, opportunities, priority issues and strategies for ICT across the District. Specifically, that process involved:

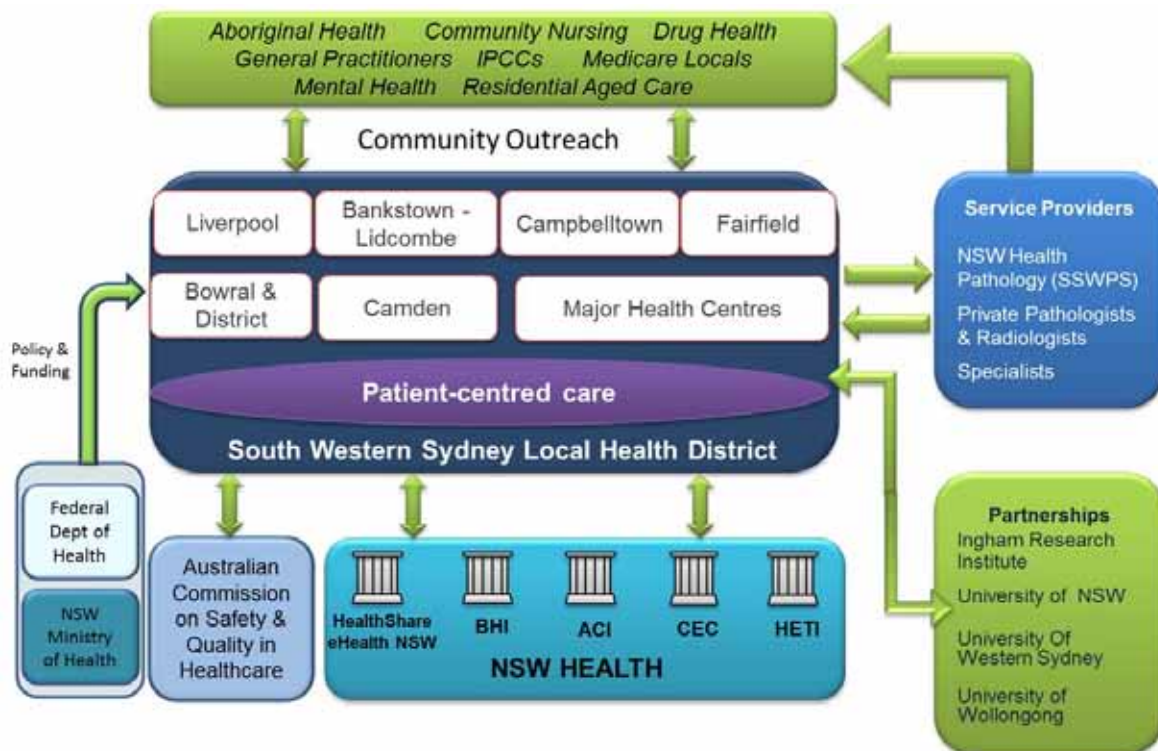
- Regular meetings with the South Western Sydney Local Health District Executive and the Chief Information Officer (CIO) and Executive team of the Information Management and Technology Division (IM&TD)
- Consultation meetings across all key stakeholder groups including representatives from clinical streams, facilities, District support services and key service partners such as universities

A full list of stakeholders consulted can be found in Appendix 2.



### 3. Current Information Communications and Technology Environment

#### 3.1 ICT in Context



As depicted in the diagram above, South Western Sydney Local Health District operates in a complex, highly regulated environment to execute its vision of **‘Leading care, healthier communities’**. ICT is a key enabler of the information flows necessary to delivery this vision. Some of these information flows are illustrated in the diagram above.

Clinical care delivered by the District covers the full spectrum from critical trauma care through to palliative care and is delivered in hospital facilities, community health services and in partnership with health professionals in the community.

External service providers also make significant contributions to the delivery of clinical care and support services within the District’s facilities. In addition to private pathologists, private radiologists and general practitioners, three NSW Health entities: HealthShare NSW, NSW Health Pathology through Sydney South West Pathology Service (SSWPS) and eHealth NSW provide a range of key services. The seamless integration of the services provided by these external service providers still presents some challenges. The Pathology Information Technology (IT) system is fully integrated into the Cerner Electronic Medical Record (EMR) and electronic order results are immediately available online. In the Neonatal Intensive Care Unit (NICU), SWSLHD directly feeds SSWPS results into the system to allow them to monitor and treat the patient in real time.

eHealth programs of work are being undertaken at an Australian Government, State and District level which adds complexity to ICT Planning within the District. The NSW Government has established *eHealth NSW* as a separate entity from HealthShare with the specific intent of



overseeing the strategic direction of e-health throughout Local Health Districts. This reflects the growing importance of ICT in the effective and efficient delivery of healthcare.

At a State level, the District is further supported by the following key NSW Health Pillars, all of which influence SWSLHD through policy and ICT program outputs;

- The Agency for Clinical Innovation (ACI) for evidence-based models of care
- The Clinical Excellence Commission (CEC) for all aspects of Clinical Quality and Safety
- The Health Education and Training Institute (HETI) for coordination and curriculum development for workforce training and skilling
- The Bureau of Health Information (BHI) which reports independently on multiple aspects of LHD performance, based on data provided by the District.

The District is also influenced by activities taking place through national organisations such as the Australian Commission on Safety and Quality in Healthcare which leads and coordinates national improvements in safety and quality in healthcare across Australia

SWSLHD's principal funding sources are derived from the NSW and Australian Governments and these sources are increasingly being defined through Activity Based Funding (ABF) models. ABF is necessarily dependent on accurate reporting of a wide range of performance data. The collection and reporting of this data is critically dependent on information systems and ideally should occur as an integral part of service delivery.

Accurate, timely information exchange across the continuum of care has always been essential to patient care. Integrated information systems are key enablers of this information exchange and to creating a single view of the patient.

### 3.2 Key ICT Enabling Themes

During the extensive consultation with stakeholders, stakeholders were asked how they saw ICT service provision supporting their service's strategic business needs over the next 5 years. Key ICT Enabling Themes were identified which support achievement of the District's strategic goals.

The Key ICT Enabling Themes are as follows:

<b>Access</b>	providing the ability for authorised users to get access to the <b>right information</b> , in the <b>right place</b> , at the <b>right time</b> .
<b>Alignment</b>	maximising the benefits of investments in eHealth by ensuring that LHD initiatives are aligned with State and Federal initiatives.
<b>Single View of the Patient</b>	making all the components of a patient's clinical record readily accessible.
<b>Integrated Care</b>	providing mechanisms to extend information for clinical care into the community.
<b>Communications Technology</b>	leveraging the full repertoire of technology to bring staff and patients closer, even if geographically separated.



<b>ICT Asset Management</b>	ensuring equipment is up-to-date and cost effective through efficient asset management.
<b>ICT Support</b>	providing staff with structured, prioritised, timely ICT support.
<b>Information Management</b>	Optimising the effective lifecycle management of the wealth of information generated in the LHD for improved operational management, decision making and clinical care.
<b>Research</b>	Enabling the integration of clinical research and clinical care.
<b>Patient / Community Expectations</b>	Meeting the expectations of patients and the community through the provision of health information through communication channels they use regularly.
<b>IM&amp;TD Service Design</b>	Refining the organisational structure of IM&TD to optimise its capacity to deliver the full range of services required to support the Digital SWSLHD.



## 4. Key ICT Enabling Themes

### 4.1 Access

Defined in the healthcare context, access refers to the ability of authorised users to get access to the **right information**, in the **right place**, at the **right time**.

Users may require ready access to fixed hardware such as personal computers (PCs) or mobile devices such as laptops, tablets or other smart devices which may include those supplied by the District or a university and those owned privately by the user. Access also includes systems, networks, the internet and the ability to work at a variety of locations e.g. SWSLHD facilities, university facilities, a patient's home or remotely at their own home and with a high degree of availability 24 hours a day, 7 days a week and 365 days a year. Access must be balanced against the organisation's security requirements.

As the EMR and other ICT system use grows, it is expected that so will the District's demand for access to hardware in locations where services are delivered. Anything which delays these types of access could have a direct impact on the quality of patient care and, consequently, the outcomes of this care. It will also impact operational service efficiency across the organisation as corporate functions increasingly rely on ready access to high quality data for decision making and to highlight areas for improvement.

The majority of staff consulted made it clear that they require access to a Wi-Fi network across the District as a basic need, and are looking for fast easy access to the electronic medical record (EMR) and the Internet. All stakeholders reported on the rich sources of clinical information available on the intranet and their expectation to have ready access to these in a state-of-the-art healthcare environment. Wi-Fi is currently available in some facilities in the District and is a priority for delivering improved access. The enrolment procedure to enable a SWSLHD supplied device to access the Wi-Fi network requires approval by the General Manager. Once that approval is obtained the user needs to get technical details of the device and complete a paper form for submission to IM&TD.

Internet access is currently only available to staff who have been through a lengthy authorisation process and requires the additional step of logging in with the correct credentials on the device in question. Users are required to have multiple usernames and passwords and logon separately to different systems. There is currently no single sign-on capability.

There is widespread use of personal smart devices at work and staff would like to log on to the hospital network with their own devices in lieu of a SWSLHD supplied device. The proliferation and widespread adoption of powerful smart devices for personal use has leapt ahead of policy makers and the District, like many organisations, has yet to develop a Bring Your Own Device (BYOD) Policy.

It was apparent from the consultation process however, that many staff are communicating clinical information via personal devices such as iPhones. It is unlikely that any policy or management directive can stop this type of activity. The issue is the need to establish processes for the control and management of this process and the associated risks.



#### 4.1.1 Internet Access

The current concern in relation to limiting internet access is based on a risk averse interpretation of the NSW Ministry of Health's policies. The relevant NSW Health policies are in the following Policy Directives:

- PD2013\_033 Electronic Information Security Policy
- PD2009\_076 Use and Management of NSW Health Communications Systems

To date, it appears that the approach taken to minimise any risk associated with potential abuse or unauthorised release of sensitive information is by constraining access. While this is a valid approach, the policies lend themselves to an alternative approach, one that is 'risk aware' rather than 'risk averse'; an approach that requires individual responsibility. The policies specifically describe the requirements for staff compliance, the fact that staff usage will be monitored, and that appropriate disciplinary action will be taken if staff are found to be in breach of the usage policy.

Importantly, the principles in the information security policy recognise that the maintenance of a secure information environment should not be at the expense of ready access to information.

*"The implementation of information security controls to mitigate the risks to sensitive information without impacting the timely provision of those services."* (PD2013\_033 Electronic Information Security Policy).

Further, it should be noted that the principles in the relevant policies acknowledge that staff may reasonably utilise employer supplied communication devices for private use.

*"staff are also private citizens with individual personal needs and obligations, who may need to make occasional use of employer communication systems for personal purposes"*

*there is a reasonable limit to the extent to which employer communication systems may properly be used for personal purposes which is determined by management and is reflective of the principles inherent in balancing work and family responsibilities"* (PD2009\_076 Use and Management of NSW Health Communications Systems).

IM&TD have implemented tools to ensure that there is monitoring and content management filtering of internet access to mitigate the risk of inappropriate use. Patients and visitors have expressed a need for access to Wi-Fi and internet on District campuses.

#### 4.1.2 Mobility

An accessible, secure Wi-Fi network is a pre-requisite to the use of mobile devices within a facility. Additionally, there needs to be a simple enrolment process to permit approved devices to access the secure network; a process that is automated and does not require any specific information technology (IT) knowledge or skills. For mobile access outside facilities, for example in the community, mobility will need to rely on portable devices and 3G (third generation) or 4G networks and devices will need to be equipped with either a SIM (subscriber identification module) card or a wireless modem.



Mobile Device Diversity and Management was identified as one of the Gartner's Top Ten Technology Trends for 2014. Gartner <sup>1</sup>says "Through 2018, the growing variety of devices, computing styles, user contexts and interaction paradigms will make "everything everywhere" strategies unachievable. The unexpected consequence of bring your own device (BYOD) programs is a doubling or even tripling of the size of the mobile workforce. This is placing tremendous strain on IT and Finance organizations. Enterprise policies on employee-owned hardware usage need to be thoroughly reviewed and, where necessary, updated and extended. Most companies only have policies for employees accessing their networks through devices that the enterprise owns and manages. Set policies to define clear expectations around what they can and can't do. Balance flexibility with confidentiality and privacy requirements."

BYOD is clearly a disruptive force, but one that can bring well documented productivity benefits to an organisation. Offsetting the benefits are inherent concerns, particularly around security, privacy, support, and the dependence on available Wi-Fi networks. From the available evidence when BYOD is implemented well, the benefits far outweigh the potential risks.

#### **4.1.3 Single Sign on**

Currently all staff must sign-on to the device, network and then to individual applications in order to perform their particular roles. For some staff, this involves a number of different applications and is dependent on a number of factors. These include the degree of integration of clinical systems which they require for their role, their requirement to access individual corporate systems and the degree to which they move between LHD facilities, university facilities and off-site locations such as the patient's home. Each time a clinician moves to another patient or another PC, they must repeat this sign-on process, which may take several minutes, many times per day. Respondents felt that this is an inefficient use of their time and can cause delays to patient care. A single sign-on process to the network and applications has the ability to transform healthcare delivery and staff considered this functionality highly desirable.

#### **Strategies**

- 1.1 Build a business case for the rapid expansion of the Wi-Fi network to all facilities which can accommodate staff, patient and visitor access to the internet.
- 1.2 As a matter of urgency, develop a comprehensive BYOD policy that adequately protects the confidentiality of patient information and sensitive corporate information while delivering the productivity benefits that such mobile devices can bring.
- 1.3 Develop a business case for the necessary infrastructure and management systems to properly implement a BYOD environment.
- 1.4 Amend each user's network profile to enable internet access as a default. Prior to implementation, prepare and distribute a comprehensive communication plan to advise staff of the change in policy settings reiterating that usage will be monitored and that abuse will have consequences.
- 1.5 Ensure all mobile devices, such as smartphones and laptops, which are issued by the District, have a standard configuration which includes access to the SWSLHD Wi-Fi network, the internet support off-site mobility requirements via 3G/4G networks.
- 1.6 Define and implement a process to support single sign-on to the network and applications.

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<sup>1</sup> Gartner, Inc. is the world's leading information technology research and advisory company. Gartner Press Release, October 8, 2013 accessed @ <http://www.gartner.com/newsroom/id/2603623>



## 4.2 Alignment with State and Federal eHealth Initiatives:

### 4.2.1 HealthShare and eHealth NSW

The NSW Government has established *eHealth NSW* as a separate entity from HealthShare with the specific intent of overseeing the strategic direction of e-health throughout the Local Health Districts.

This reflects the growing importance of ICT in the effective and efficient delivery of healthcare.

The Secretary of the Ministry of Health has stated - *“What we are saying is that e-health is not just a support service like food or linen or payroll. It is a critical piece of design.”*

In establishing *eHealth NSW*, the NSW government has responded to a number of concerns raised by the public sector health stakeholders and will:

- **Establish an eHealth Executive Council** chaired by the Secretary of the NSW Ministry of Health with broad membership to provide state-wide strategic direction and support to eHealth NSW, particularly in the coordinated rollout of core programs across health services.
- **Appoint a Chief Clinical Information Officer (CCIO)** to engage with clinicians to align informatics and clinical practice across NSW Health.
- **Establish an eHealth Architecture Executive** with representation from Local Health Districts and eHealth users to provide state-wide technical direction to inform decision making on eHealth investments.
- **Adopt a federated governance approach for eHealth NSW** particularly in developing an approach that supports the state-wide selection and implementation of integrated, core programs while enabling local solutions and innovation in eHealth.
- **Involve Local Health Districts** as active partners in eHealth planning and program roll-out.

Once implemented, it is expected that these initiatives should largely address the major concerns around governance, engagement with LHDs and coordination of program rollout.

Inherent in the charter of *eHealth NSW* is the development of a refreshed eHealth Strategic Plan which will:

- articulate the benefits of eHealth to patients, clinicians and the community
- consolidate the expansion of existing State-wide eHealth applications
- demonstrate the transparency of the eHealth infrastructure to ensure reliability and security of patient information
- support new eHealth solutions – including mobile and innovative “disruptive” technologies, and locally driven solutions – to meet changing needs and deliver new models of care, including outside the hospital setting
- build eHealth capacity across the whole NSW Health network, as well as developing key partnerships and collaborations that will enable and support connectivity across providers and treatment settings.

Unfortunately this Plan was not available when the SWSLHD ICT Strategy was being developed but the above concepts have been incorporated into this Strategy where relevant.



Alignment with the Australian Commission on Safety and Quality in Healthcare initiatives, particularly in eHealth, is also important as the Commission oversees the Safety in eHealth program to support quality practice. The main elements of this are:

- Optimising safety and quality within the rollouts of clinical systems, with an initial focus on discharge summary and hospital medications management programs
- Using initiatives to improve the safety and quality of healthcare
- The secondary use of information agenda – optimising the reuse and analyses of safety and quality data available from clinical systems, to further drive improvements in safety and quality.

The Commission works in collaboration with jurisdictions, the private hospital and primary care sectors, the National eHealth Transition Authority (NEHTA), the National Health Chief Information Officer (CIO) Forum, and other national bodies to promote the safety and quality agenda within national eHealth programs. Some of their key priority areas for eHealth development which are relevant to the District are electronic discharge summary systems, electronic medications management in hospitals, the quality use of antimicrobials and the Personally Controlled Electronic Health Record (PCEHR), which is to be renamed My Health Record (MyHR).

#### **4.2.2 HealthShare Initiatives and Programs**

There have been significant changes in the last few years in the way that ICT projects are delivered with many of the key administrative systems such as Finance and Payroll implemented via HealthShare. Additionally there are growing State-sponsored, large clinical programs such as EMR, Endoscopy and now intensive care which have been driven from the centre and have not always taken much account of District strategies or of the implementation issues that they create as they are deployed.

HealthShare (eHealth NSW) has a large number of state wide programs that are being progressively rolled out. There is little visibility of the program timelines and hence mapping them to District initiatives and priorities is difficult. Current HealthShare Programs include:

- Asset & Facilities Management (AFM)
- Community Health and Outpatient Care (CHOC)
- eRecruit
- Electronic Medical Record (EMR)
- Electronic Medication Management (eMM)
- Endoscopy Information System (EIS)
- HealthNet
- HETI Online Learning Management System
- Incident Management System (IMS) replacing current IIMS
- Intensive Care Clinical Information System (ICCIS)
- Medical Imaging (MI) including the Enterprise Image Repository (EIR)
- Pharmacy Improvement Program (PIP)
- StaffLink
- Statewide Rostering Program
- Uniforms
- VMoney Redevelopment



These programs listed above will deliver significant benefits to SWSLHD and address many of the requirements articulated by stakeholders during the consultation process, for example, by enabling functions such as staff self-service, improved access to and recording of staff education, improvements to the recruiting process, enabling enhanced EMR functionality and supporting integrated care, all of which are required by the District to achieve their corporate goals.

In addition to these programs of work, HealthShare operates the Statewide Service Desk (SWSD) which currently provides Help Desk services to all the LHDs except Sydney LHD, South Western Sydney LHD and Hunter New England LHD. The Children's Hospital Westmead has adopted a hybrid Help Desk model in which the SWSD system is used to log and manage service requests but the actual Help Desk staff are employed by the Children's Hospital. The consultation indicated a very high degree of satisfaction with the Helpdesk service. It is worth noting that this situation is most unusual – it is not common to find a Help Desk which is so well regarded in any large organisation and this situation is to the credit of the managers and staff involved.

The skills needed to support a complex set of clinical and operational systems in busy hospitals and community services are absolutely best developed by staff who are working closely with customers in those facilities. A smooth functioning Help Desk is a key part of ensuring that the SWSLHD ICT strategy is accepted. Staff need to be comfortable that their problems are understood and can usually be swiftly resolved if they are going to have faith in the direction of ICT within the organisation.

SWSLHD should continue to have a locally managed Help Desk, as per the Children's Hospital model, where IM&TD staff utilise HealthShare's hardware and software to manage the local Helpdesk services.

Historically IM&TD for SWSLHD has managed their own data centres, while all other LHDs have outsourced this function to eHealth NSW. Downtime for the LHD data centres has been much lower than the experience of the customers of the HealthShare data centres. The duration of any planned downtime has also historically been lower than the HealthShare data centres.

Nonetheless, during this planning horizon, the District will need to consider outsourcing these facilities to the State or to a private provider such as the Cerner Regional Hosting Operation (RHO) in Brisbane.

There are three key reasons for this:

1. As the organisation approaches the digital LHD goal and more and more systems are deployed, including complex 24x7 systems such as EMM, the stresses on the LHDs' ability to adequately maintain the required hardware will increase.
2. The combined LHDs currently have several key resources with data centre skills who are now nearing retirement. These resources are not easy to find and are in high demand in the overall IT marketplace.
3. NSW Government has mandated that all agencies migrate to the new Whole of Government data centres by 2017. Whilst it is not clear whether this deadline can be achieved, there is likely to be ongoing pressure on the LHDs to move to this arrangement (elaborated on below).

NSW Health, and hence the LHDs, are subject to Whole of Government policy directives. One important directive that has a substantial impact is the *NSW Government Data Centre Reform Strategy (GovDC)*. This strategy mandates the relocation of all NSW Government agency data centre



and computer room infrastructure to the new government data centres. This is to occur within the planning horizon of the SWSLHD ICT Strategic Plan.

The mandate imposes a significant effort on the District to develop the necessary migration plan and proscribes any further investment in current data centres, unless a specific exemption is obtained.

*“While agencies are required to migrate to the data centres in accordance with the published timetable, in certain circumstances an exemption may be provided by the Director General, Department of Finance and Services.*

*Agencies must obtain approval from the Director General before making alternative data centre arrangements such as entering into a new contract (or extending an existing contract, or taking any extension option) to acquire data centre capacity in any form, or designing or commissioning any capital works for a new or existing data centre.”* (From the Department of Finance & Services Circular 2013-8 Data Centre Reform Strategy).



### DFS C2013-8 Data Centre Reform Strategy

**Status – Supersedes DFS C2012-1 Data Centre Reform Strategy**

#### KEY POINTS

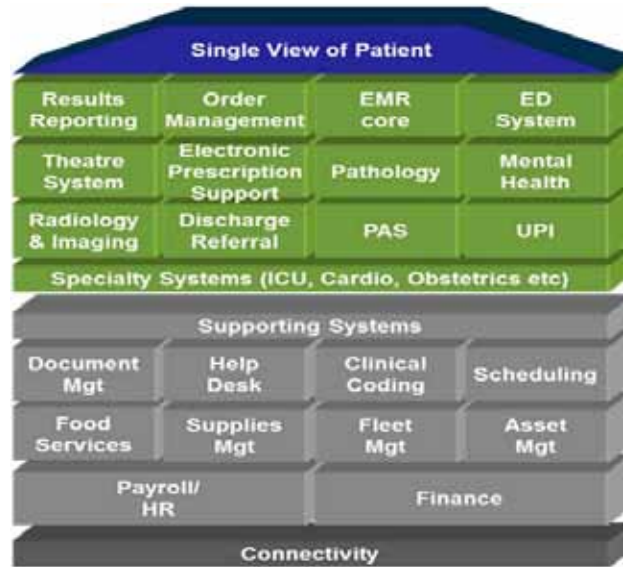
- The New South Wales Data Centre Reform Strategy aims to consolidate all New South Wales Government agencies' data centres and computer rooms into two modern, reliable, energy efficient, secure and fit-for-purpose data centres.
- All NSW Government agencies (except State Owned Corporations) must relocate their data centre and computer room infrastructure into the new data centres within four years of the facilities opening (30 August 2017) by subscribing for capacity through a tenancy agreement with the Department of Finance and Services.
- Agencies must obtain approval from the Director General, Finance and Services before making alternative data centre arrangements or expenditure

#### Strategies

- 2.1 Align with eHealth NSW programs to date and implement corporate and clinical modules developed.
- 2.2 Develop only those EMR modules which the State is not intending to deliver within the planning horizon.
- 2.3 Work with eHealth NSW to obtain improved visibility of future implementation plans in order to ensure alignment between the District and their program of work.
- 2.4 Over the course of this planning horizon, plan to outsource the Data Centre facilities to the State or to a private provider such as the Cerner Regional Hosting Operation (RHO) in Brisbane.
- 2.5 Continue to operate a locally managed Help Desk in SWSLHD. Plan to implement HealthShare's hardware and software to manage the Helpdesk.



### 4.3 Single View of the Patient



The primary purpose of a patient's medical record is to consolidate all the relevant clinical information about that patient in one place. Until relatively recently, patient records in most hospital facilities were largely paper based and in well managed facilities. The medical records department typically did a good job of maintaining a relatively complete set of patient information; however a truly complete medical record was a rarity. X-Rays were generally stored separately from the main record, laboratory results were often not incorporated because patients had been discharged before all the reports were available, discharge summaries were not attached and prescribed medications lists were often not included.

The primary purpose of the medical record remains unchanged and the ideal end state of an EMR is providing clinicians with a single view of the patient where all the relevant past and current clinical information is readily accessible. We are some distance from that ideal end state.

In SWSLHD there are numerous situations where the capability to enter electronic patient information in the care setting is not yet available e.g. outpatient clinics. In these situations, clinical staff necessarily revert to paper based record keeping.

PowerChart, the default clinical viewer to the patient EMR is widely used across the District, but there is currently no single solution that provides a comprehensive, unified view of the patient medical record. Some parts of the record are kept in paper form and there are also specialist clinical systems which create and manage patient information electronically, but which are not integrated with the EMR. This has a particular impact for Multi-Disciplinary Team (MDT) working where multiple sources of patient information are needed to inform patient care. Staff reported that a lot of time is spent creating PowerPoint presentations to bring together the relevant patient information from several different systems in preparation for MDT meetings.

The creation of hybrid patient records is an unavoidable consequence of the introduction of an electronic medical record system. A hybrid health record is the documentation of an individual's health information that is tracked in multiple formats and stored in multiple places. Hybrid records present a challenge because the records administrator (Health Information Manager) must use both manual and electronic processes to determine which pages, data elements, electronic documents,



images, audio and video files should become part of the legal electronic health record. They must also document where the information in the record is located so it can be accessed quickly.

The hybrid record also creates challenges for clinicians. There is clear evidence that delays or difficulty in locating specific information or an inability to access the required up-to-date clinical information on a patient can have adverse impacts on timely service delivery and clinical outcomes. Several clinicians expressed a desire for the EMR to include, for example, external pathological results from private providers and electronic referrals.

In some intensive care units (ICU), all the patient monitoring and test results are captured electronically i.e. creating a complete EMR. However, because the ICU system is not integrated to the core EMR, when the patient is transferred to a ward following ICU care, the ICU staff need to print a paper copy of the ICU record for inclusion in the paper medical record.

Diagnostic Imaging is another area where access to the images can be problematic. If a patient has diagnostic imaging performed at another facility or LHD, those images cannot be readily viewed and providing an on call specialist with an image to review remotely is complex. eHealth NSW has implemented a Statewide Enterprise Image Repository (EIR) which is intended to store these types of images, regardless of where they were performed, and make them available to authorised users for viewing anywhere on the Health Network. Currently there are reported difficulties with the usability of the system in terms of the images available, when they were created and the time it takes to download these images. Imaging staff require enhanced EIR capability to support MDT meetings which take place across the District.

Digital radiology images and digitised electrocardiography (ECG) traces have been available for at least five years, which has had a positive impact on patient care. However, making that digital imagery available to an on-call specialist is complex without the appropriate additional functionality in the PACS system or without the image capture capability in the EMR. It is easier and faster for clinicians to take a photo of the image with their personal smartphone and send it to the clinician/specialist. This is not ideal but respondents feel that this is essential to delivering timely, quality patient care.

If a clinician takes a photo of a patient's wound, burn or for any other purpose, it is currently not possible to upload the image onto that patient's electronic record. Patient's images may therefore remain on the personal device of the clinician and this poses a threat to patient privacy

The medical records department (Patient Information Services) manages the storage of the paper record, and as patient numbers increase the number of paper records increases. They are fast running out of physical storage space for paper records and the cost of this management needs to be weighed up against the cost of digitisation e.g. scanning and the development of the EMR.

SWSLHD must ensure that policies and processes are in place to mitigate the potential clinical risks associated with the persistence of the hybrid record until the vision of full digitisation is achieved.

### **Strategies**

- 3.1 Establish a roadmap to EMR that takes into account some digitisation e.g. scanning requirements to move along that journey and expands on the existing limited capability to capture some images. The roadmap must include achieving a safer hybrid solution and policies to ensure that there isn't further fragmentation introduced over time but that SWSLHD are moving towards a single view of the patient.



- 3.2 Agree a defined program for eventually integrating the various historic patient records into the electronic system within a specific time frame so as to further reduce the many risks of the hybrid record.
- 3.3 Articulate a clear strategy and roadmap towards an Integrated Healthcare Community beyond the District and communicate this widely throughout SWSLHD and to the community and partners.

#### 4.4 Integrated Care

Improving and expanding integrated care is one of the priority strategic directions for SWSLHD. The NSW Ministry of Health's definition of integrated care involves the provision of seamless, effective and efficient care that responds to all of a person's health needs, across physical and mental health, in partnership with the individual, their carers and family. It means developing a system of care and support that is based around the needs of the individual, provides the right care in the right place at the right time, and makes sure dollars go to the most effective way of delivering healthcare for the people of NSW. Based on feedback from Community and Consumer groups as well as market trends, SWSLHD services need to be digitally enabled via a number of channels such as the internet, social media, Short Message Service (SMS), e-mail, online content and patient portals in order to widen their reach.

There are significant challenges to the achievement of integrated care in both the acute and non-acute care settings that need to be addressed through service redesign. ICT will be an important enabler in that redesign.

Within the acute care setting, the capacity of ICT to support integrated care is dependent on the breadth of the EMR i.e. the range of modules implemented that support particular care pathways. To some extent this has been covered in the "Single View of the Patient" theme (4.3).

Extensive planning has been undertaken in the past few years to identify appropriate models and services to establish Integrated Primary and Community Care Centres (IPCCCs) in the South West Growth Centre, supported by hospital based services at Campbelltown, Camden and Liverpool.

Three support models, based on the size of the population, have been proposed:

- **Tier 1**--Team General Practice - servicing a catchment population of 4 - 5,000 people
- **Tier 2** Primary Care Clinics - servicing a catchment population of 15 - 18,000 people
- **Tier 3** Regional Integrated Primary and Community Care Centres (RIPCC) - servicing a catchment population of 75 - 100,000 people

The extent of the services provided is relative to the size of the population supported, but there is an underlying reliance on hospital-based services for all three Tiers. Optimally, this would require a connected, shared patient record, accessible at wherever the point of care happens to be.

The challenge of being able to provide continuity of relevant clinical information across all of those care providers is considerable and is compounded by the need to capture the necessary data to support activity based funding. ICT enablement can go a long way to meeting this significant challenge.

While effective ICT enablement of integrated care is still some way off, there are potential solutions being trialled or implemented. One such solution is HealthNet, a portal developed by NSW Health which is intended to be rolled out to all LHDs by the end of 2015. The portal provides a mechanism



via the implementation of national unique patient identifiers to extract information from other LHD EMRs and through its integration with the PCEHR (soon to be rebranded as myHR), deliver discharge summaries, referrals, Pharmaceutical Benefits Scheme (PBS) prescribing information, general practitioner (GP) summaries and other clinical information to SWSLHD staff, GPs and other healthcare professionals involved in the care of the patient.

It is important to ensure the implementation of Data and Information Governance when collecting data across the care continuum in order to support research.

### **Strategies**

- 4.1 Strengthen liaison with eHealth NSW to ensure that HealtheNet can be implemented as soon as possible.
- 4.2 Leverage the HealthShare experience from the roll out of the Community Health and Outpatient Care (CHOC) module at Hornsby to fast-track the implementation of that module within SWSLHD.
- 4.3 Ensure SWSLHD services are digitally enabled to provide health content to the local population via a number of channels such as the internet, social media, SMS, e-mail, via SWSLHD web pages and patient portals.

## **4.5 Communications Technology**

Communications Technology covers a broad spectrum of communication modalities. These include both traditional and internet protocol (IP)-based telephony and their associated private automatic branch exchange (PABX) systems, Video Conferencing (VC) using both mobile devices via the internet and installed VC devices, paging systems, messaging systems such as SMS and Multimedia Messaging Service (MMS), instant messaging systems and the use of mobile phone technologies. Video conferencing technologies in particular are important enablers of telehealth initiatives, innovative models of care and integrated care pathways.

SWSLHD has already implemented new VOIP PABXs in a number of facilities and this is the future direction for facility-based fixed telephony. Further expansion of this technology is currently budget dependent.

### **4.5.1 VOIP PABX**

Voice over Internet Protocol (VoIP) based PABX systems have been installed at Liverpool Hospital. Some PABX systems at other SWSLHD facilities are approaching end on life and need to be replaced. From the implementation at Liverpool, there is now a good understanding of the technical requirements as well as a capability to host smaller facilities. An important benefit of VOIP PABX is the linkage with a single source of truth for staff details (e.g. Active Directory) which should help ensure that up-to-date contact details are maintained.

It should be noted that the implementation of the VOIP PABXs has been conducted as a business as usual (BAU) activity. To ensure that future roll-outs can be completed quickly they should be managed as properly resourced projects, not as BAU activities.



#### 4.5.2 Video Conferencing

This section refers to two modes of Video Conferencing (VC). 'Fixed Facility' video conferencing refers to the type of VC where the equipment (camera, screen, and telecommunication) are usually permanently located in a room or department. This mode also includes those VCs which can be moved from room to room within a building such as those affixed to a Computer on Wheels (COW) are set up in some tertiary facility Emergency Departments which provide clinical support to rural clinicians. Fixed Facility Video Conferencing is ideally suited to scheduled, recurrent interactions such as regular internal team or MDT meetings where the participants are in different, geographically dispersed facilities. It supports the participation of many people at each site where the equipment is located.

The second mode is Internet-based video conferencing that uses PC, laptops, tablets or smart phones and specific video sharing applications such as Skype, Whatsapp, and Apple's FaceTime. This mode is more suited to ad hoc requirements, particularly one-on-one sessions. It has the key advantages of being quick to set up and supports high definition video. In addition to those applications above, there are commercially available applications such as Microsoft's Lync, Webex and GoToMeeting and GoToWebinar that support multi-participant environments and are well suited to supporting remote education and training.

#### 4.5.3 Fixed Facility Video Conferencing

The poor performance of the currently installed video conferencing facilities across SWSLHD was frequently mentioned during the consultation. *"It just never works"* was typical of the comments made. It is not clear whether this poor performance is due to network performance, a lack of training and support, defective equipment, or a combination of these. Resolution is hampered by the lack of ownership of responsibility for the system. IM&TD indicate that it is not responsible, but there appears to be no other business unit which could assume responsibility. This ownership issue will have to be resolved as these systems need ongoing technical support to work effectively.

When properly implemented and maintained and when staff are properly trained in its use, the productivity benefits of video conferencing, particularly for organisations that are widely geographically dispersed, are indisputable. For example, staff regularly need to travel between facilities across south western Sydney (for example between Bowral and Liverpool) for meetings that may only last for an hour or two, but the travelling time adds a minimum of two hours of unproductive time which could be eliminated if the video conferencing worked properly. Clinical care can also benefit; for example, access to good video conferencing facilities could allow the provision of more regular and cheaper services remotely, rather than clinical staff needing to travel.

#### 4.5.4 Internet-based video conferencing

This functionality is being used, but there is no support for its use on personal devices. The absence of a BYOD policy currently limits the potential usefulness of this mode of video conferencing. Desktop Video Conferencing has the potential to deliver wide-ranging benefits including the elimination of travel time and consequent cost reductions e.g. for staff internal meetings, formal training/education and MDT clinical care meetings. A further extension of the technology supports various Telehealth initiatives and enables models of care with the future potential to reduce the need for patients to come from their home or community care setting into the hospital facility, and at times, reduce the need for Community Health visits.

#### 4.5.5 Paging

A number of clinicians expressed a requirement to review the hospital's internal communication system which is currently provided primarily via Paging technology. It was felt the current technology is old and has limitations. Clinicians carry both pagers and smartphones as a means of



communication. Paging technology has some significant limitations including that it cannot accommodate detailed messages and usually requires a follow up telephone call. There are some current challenges in using mobile telephones as a primary means of communication as mobile signal quality and access varies greatly between facilities and indeed even across facilities and staff mobile numbers are often not up to date and available in a central look up location. Repeaters have been installed in some facilities and could be used in other sites where signal strength is an issue. Currently messages can quickly and reliably be delivered to staff through the paging system. There is an ICT working committee looking at a Paging across the District, however the status of this review was not known.

Future approaches to paging may include mobile VOIP, and integration of instant messaging, SMS/MMS messaging with an Exchange server. All of these approaches require that the 'source of truth' i.e. the Active Directory is properly configured and maintained so that contact information is always correct and up to date. These approaches need to be evaluated in the broader context of the LHD's ICT enterprise architecture which, unfortunately, has not been developed. There are currently some significant limitations to using mobile phone technology for paging at some facilities due to the patchy nature of 3G/4G reception.

### **Strategies**

- 5.1 Develop a business case for the replacement of the end-of-life PABX systems that incorporate the necessary planning and resourcing to implement the new systems without interruption to essential telephony services.
- 5.2 Incorporate the findings of the Paging Systems review into a wider-ranging review that considers the risks and benefits of alternative solutions using messaging based on authentication via Active Directory.
- 5.3 Allocate responsibility for the management and maintenance of the fixed facility video conferencing to an appropriate business unit.
- 5.4 Investigate the use of a managed service provider for fixed facility video conferencing.
- 5.5 Ensure that the Bring Your Own Device ( BYOD) Policy accommodates the wider adoption of internet-based video conferencing.
- 5.6 Develop a comprehensive communications and engagement plan to identify opportunities where such technology can be actively adopted to reduce costs and enable innovative models of care. This can inform the business case.
- 5.7 Develop a business case that quantifies the full costs and benefits of the various types of commercially available internet-based systems with a view to adopting a single, cost effective solution across SWSLHD that supports both internal staff use for education and training and clinical care, and external use in telehealth initiatives.

## **4.6 ICT Asset Management**

IM&TD is currently not responsible for desktop acquisition and management. The procurement of PC's is decentralised and General Managers are tasked with ensuring that these comply with a standard operating environment. Asset refreshes do not always take place at the appropriate intervals which means that PC's may operate slowly or no longer be fit for purpose. This in turn means staff may not be able to access the systems they require to provide services in a timely fashion and become frustrated and dissatisfied with their IT service provision. There are also issues around service departments which use Apple MAC computers, which they report are not currently supported by IM&TD.



The recent necessity to acquire some 2600 desktops for SLHD and SWSLHD to mitigate the risks associated with the end of life support for Microsoft XP highlights the ineffectiveness of the current means of ICT asset management. The cessation of support for Microsoft's XP operating system has been well documented and communicated for many years, so there has been adequate time to plan for the replacement of the affected desktop fleet.

The decision to delegate responsibility for the purchase of desktops and laptops to business units meant that effective control of these essential ICT infrastructure components was lost by IM&TD.

As the degree to which the LHD become more and more dependent on ICT to support almost every aspect of its operations, both clinical and non-clinical, there needs to be an unambiguous understanding of what constitutes ICT infrastructure, who defines the specifications and method of acquisition, and who defines the maintenance and support arrangements. There are significant benefits if responsibility and accountability for all these elements resides with a single, appropriately resourced business unit.

IM&TD do have a specification for the Standard Operating Environments (SOE) of desktop and laptop devices and the relevant SOE is applied when the device is purchased. Within the District, outright purchase is the predominant mode of acquisition and this, to some extent, has contributed to the situation where devices have outlived the operating system support lifespan.

A far more common enterprise acquisition model for a desktop and laptop fleet is the fixed term lease model. There are several variants of the leasing model designed to suit differing organisational requirements. One of the most popular is the fully managed lifecycle. In this model the devices, as specified by the organisation, have the relevant SOE image applied and are delivered to end users along with any relevant user-specific information (such as favourites, etc.) copied across from the old device. The old device is then removed from the network and the new one connected and the user logged on to ensure that the correct connectivity is in place. Importantly, ongoing support and maintenance of the new device for the period of the lease is functionally outsourced to the leasing organisation. As the lease period and warranty period are matched, any failure of the device during the period will be quickly rectified, either through repair or replacement. An additional important feature of this model is that the logistics are managed externally and old devices are removed and the disk drives properly erased prior to disposal.

Similar lease or management models are available for printers and multi-function devices which require connectivity to SWSLHD networks.

There are some business units in the District that acquire ICT assets (systems or devices) without reference to IM&TD. This can easily lead to incompatibility issues that could compromise the effectiveness of the systems, devices or the network. Biomedical Science ICT assets were specifically identified in relation to this issue. It is acknowledged that some of these devices may be at the 'bleeding edge' and that IM&TD may not have subject matter experts with the relevant expertise to provide unequivocal advice. In these situations, external expert advice and vendor guarantees need to be obtained before procurement and implementation. Equally important is the up-front recognition that these Biomedical Science devices and vendor systems will contribute data to the EMR, so advice needs to be obtained from the IM&TD team about how that information will be integrated to ensure there is no further fragmentation of the medical record and understand how these assets will be supported after implementation (refer to Sections 4.3 and 4.7).



### **Strategies**

- 6.1 Develop, implement and enforce a policy that defines what constitutes an ICT asset for use on the SWSLHD network and mandate that accountability for the acquisition and the management of those assets reside with IM&TD. This excludes those devices covered by BYOD policies.

The policy should cover the situations where a business unit needs to acquire specific ICT system or devices as part of a specialist service e.g. specialist biomedical equipment, tablets or laptops to meet mobility requirements. At a minimum, IM&TD must to be consulted during an environmental scan of available products and should be involved in testing the device and providing sign off prior to acquisition to ensure that asset is consistent with the relevant architectural standards and compatible with the network. Further, there needs to be a shared and agreed documented understanding between the vendor, business unit and IM&TD about responsibility for post-implementation support and maintenance.

- 6.2 Investigate the costs and benefits of ICT leasing models for the desktop, laptop, tablet and printer (or Multi-Function Device) fleet with a view to implementing a cost effective model within 12 months.

## **4.7 ICT Support**

IM&TD provides functional ICT support for approximately 20% of NSW Health. While first level Help Desk support was generally considered as being well delivered, concern was often expressed about the handling and resolution of more complex or difficult service requests. There was a perception that some requests had 'disappeared into a black hole'. The effective service management of such a large user base is dependent as much on the functional capability of the Help Desk system as it is on the knowledge and expertise of the support staff. IM&TD have acknowledged that the current Help Desk system is out-dated, unsupported and unable to be enhanced. Local knowledge and expertise are well recognised as being important in the rapid resolution of issues.

eHealth NSW manages the Statewide Service Desk (SWSD) which provides 24/7 support for most of the LHDs, the Ministry of Health and some other external agencies. Sydney LHD, SWSLHD and Hunter New England LHD are currently the only LHDs that are not utilising the SWSD. The Children's Hospital Westmead has adopted an approach in which the SWSD Help Desk System is used but the staffing is provided by the Hospital.

It would be possible for the Statewide Service Desk to provide support to SLHD and SWSLHD but the applications supported are predominately those deployed as 'core' or 'common' State Based Build applications. This presents a challenge in using this service for SLHD and SWSLHD as the EMR in use in the District has significant differences to the State Based Build. Similarly, there would be challenges with infrastructure as the SWSLHD data centre support is currently managed locally.

Adoption of the support model used by the Children's Hospital would provide a better outcome. Firstly by replacing the current Help desk Systems with one that is current and supported, secondly by retaining the local knowledge and expertise of the existing support staff, and thirdly by having a potential support and escalation mechanism for some applications that are not currently well supported by IM&TD.

The lack of support for departmental systems was frequently referred to by staff consulted. There appear to be two main underlying reasons for this situation. Firstly, as discussed in the ICT Asset Management theme (4.6), there is uncertainty about the responsibility and accountability



boundaries for ICT systems which provides an opportunity for departments to 'do their own thing'. As a consequence, in some cases, department systems and IT support are acquired and implemented without any reference to IM&TD, but once these are operational there is an unreasonable expectation that the IM&TD will provide users with support. This leads to a risk that this support is not properly costed and the skills may not reside in-house.

When departments do employ their own local IT support staff and these team members are off sick, on leave or leave the organisation, there is often no contingency or succession planning and IM&TD are expected to resolve support issues when they do not have visibility of local processes, vendor arrangements and may not have the skills required within the team to support the system. These local IT resources have no accountability to IM&TD despite the potential risk and impact of their activities on District architecture and infrastructure and require some dotted reporting lines to IM&TD. The lack of co-ordination and support for new departmental systems will be addressed on adoption of the strategy in the ICT Asset Management Theme for defining an ICT asset (Strategy 6.1).

IM&TD have identified a need to fully document the Helpdesk processes but have not had the resources to do this.

### **Strategies**

- 7.1 Investigate the costs and benefits of utilising the Statewide Service Desk (SWSD) system as the Help Desk Support system, implementing it using the model adopted by the Children's Hospital Westmead which retains the local support staff. Provided that the cost/ benefit analysis is satisfactory, staff training should be conducted and implementation planned for a low activity period within the next 12 months.
- 7.2 Ensure that departmental IT resources have a dotted reporting line to IM&TD and implement processes to ensure that support arrangements are agreed and documented.

## **4.8 Information Management**

When patient medical records were predominantly paper-based, responsibility for the management of the record was clearly defined; the Medical Records Department 'owned' the record. In today's era of the hybrid patient record, where parts of the record remain paper-based while other parts are held electronically, often in different systems, the overall management is essentially federated. Elements of patient records, e.g. laboratory results and diagnostic images are often also held in source systems and databases for research and education purposes. The development and implementation of the Personally Controlled Electronic Health Record (PCeHR or MyHR) provides yet another repository.

*Policy Directive PD2012\_069 Health Care Records – Documentation and Management* defines the requirements for the documentation and management of health care records across public health organisations in the NSW public health system. The Policy ensures that high standards for documentation and management of health care records are maintained consistent with common law, legislation, ethical and current best practice requirements. Further guidance on what needs to be included in a variety of circumstances is provided in the NSW Ministry of Health *Patient Matters Manual*.

It appears that the organisation is missing an overarching Information Management Strategy that encompasses the information lifecycle of both clinical and corporate information and defines the necessary governance and policies to ensure that the information is firstly captured and stored and then securely maintained to preserve patient confidentiality and support secondary use for research purposes. Such a framework would also cover research data and information management, data



capture for operational decision making as well as clinical data to inform safety and quality initiatives. This includes the adoption of national eHealth standards, the use of clinical terminology, data dictionaries and support for standardisation where possible.

Sydney LHD has invested in a leading Business Intelligence platform (QlikView) that provides powerful search and analytical functions across multiple datasets as well as capabilities for near-realtime dashboard reporting. eHealth NSW is currently negotiating Statewide licensing for the QlikView product. The SLHD Performance Unit is currently developing the Sydney Targeted Activity Reporting System (STARS) which has already delivered a range of very useful reports drawing on data from the HIE. Further development of the analytic capability will be vitally important for Activity Based Funding. Clinicians have shown much interest in STARS and are keen to extend the functionality to the EMR. However, the complex underlying database structures in Cerner will make this a challenging task. The SWSLHD Performance Unit has begun investigating the sharing and repurposing of the reports developed for use in SLHD.

SWSLHD needs seamless, easy to use reporting for administrators and clinicians. Users need to be able to extract multiple levels of data, produce quality audits and provide regular quality feedback to clinicians and departments. The introduction of QlikView is a start on this but more work will be needed over the next several years, and demand for data will continue to grow.

In particular SWSLHD is likely to want to establish a better mechanism for reporting on clinical practice variation with the defined goal of reducing unnecessary variation and thereby improving service delivery (e.g. reporting variability in blood product use between departments/clinicians with the aim of reducing waste of blood products). Some of this reporting will potentially require access to data from a range of systems and will require a significant level of expertise to develop.

### **Strategies**

- 8.1 Develop and implement an Information Management Strategy, with special emphasis on governance and supporting research, within the next 12 months.
- 8.2 Develop specialist health informatics staff who are able to support operational staff, researchers and clinicians to obtain the information they require from existing systems.
- 8.3 Further develop the liaison between the SWSLHD Performance Unit and the SLHD Performance Unit to leverage the existing STARS development with a view to repurposing the reports for use in SWSLHD.

## **4.9 Research**

SWSLHD is committed to ensuring a strong, vibrant and well-governed research and healthcare environment now and in the future. The District has a developed strong research linkages with the University of NSW, the University of Western Sydney and the University of Wollongong and the Ingham Institute of Applied Medical Research at Liverpool. Research capacity and capability has developed from the platform of Bankstown-Lidcombe and Liverpool Hospital's teaching hospital status. SWSLHD has a focus on applied research in a variety of health disciplines across medicine, nursing and allied health. The focus on health research across the District enables the delivery of enhanced clinical care and evidence based care, as well as acting as an attractor in establishing and maintaining a high quality, professional workforce.

The integration of high quality health delivery, education and research has long been a feature of this District. Much of the focus of the research endeavour at SWSLHD is on the translation of research in to clinical practice.



This type of research would be greatly aided by the incorporation of flags in the EMR. For example, a flag could indicate that a patient had been enrolled in a clinical trial, or that a patient would be a suitable candidate for a particular research project.

SWSLHD is participating in several Statewide initiatives including the NSW Strategy for Health & Medical Research Hubs; Framework for NSW Biobanking; and NSW Bioinformatics and Data Linkage Strategy.

Current IM&TD support for Research is mainly for hardware. In the future more storage capacity will be needed for large research data needs for the District. Improved EMR data capture and reporting capability is needed to accommodate research needs for data mining and ultimately to extract data in real time. Currently the process of extracting data from the EMR is complex and time consuming. Improved Wi-Fi coverage as discussed under other themes is also necessary to support the mobility of clinicians and researchers between the District and university facilities. Internet access is seen as a basic requirement to support researchers and clinicians in SWSLHD facilities. Improved interconnectivity between acute, primary and community care records has the potential to enhance research opportunities across the entire care continuum provided an Information Governance Framework is applied as discussed previously.

Health Informatics will continue to be a complex area requiring well-trained and highly skilled staff who understand the EMR, are able to assist clinicians and researchers to perform complex information queries to support clinical and operational EMR reporting which supports research and safety and quality initiatives to improve patient outcomes. The demand for these services is growing in line with LHD dependence on ICT.

### **Strategies**

- 9.1 Ensure that the requirements of research and researchers are embedded into all aspects of Information Management strategies (8.1 – 8.3) and Access strategies (1.1- 1.6)

## **4.10 Patient/ Client and Community Expectations**

Community Health services in SWSLHD form an integral part of the continuum of health treatment and care offered to the local community. The importance SWSLHD places on the delivery of community based services is evidenced by planning for Integrated Primary and Community Care Centres in the South West Growth Centre.

Community Health have identified a vision of being “an integrated and coordinated primary and community health care system working in partnerships to promote the health and wellbeing of our community”. Central to the realisation of this vision is a philosophy of ‘working with’ rather than ‘doing to’ people and the involvement of consumers and carers in decisions about individual health care, as well as the involvement of consumers and communities in decisions about the planning, provision and evaluation of health care services.

The ‘working with’ philosophy recognises that client expectations regarding their interaction with healthcare providers are changing rapidly. An example is the growing use of technology by individuals to collect or receive health information via smart devices and wearable devices and apps that collect and monitor daily activities and health indicators. This growing interactive capability can be harnessed through patient portals which have been widely adopted by leading health providers internationally. Significant efficiencies could be achieved simply through the use of such a portal to manage planned appointments.



Currently most appointments, treatments and procedures within the District are booked via telephone, which is labour intensive and does not always meet growing expectations by patients and communities for technology to support self-service and choice. Based on feedback from SWSLHD Community and Consumer groups as well as market trends, SWSLHD services need to be digitally enabled via a number of channels such as the internet, social media, SMS, e-mail, online content and patient portals to meet changing patient/client and community expectations.

There is recognition within SWSLHD services and the community that there is a need to improve the District's online presence through the SWSLHD website to include up to date and interactive information regarding services, health promotion and literacy information (these could be links to existing trusted sources of information) and the ability to support client self-service e.g. where to find information on services, to enable clients to book their own appointments online, update their personal information, supply information pre-admission or complete online patient surveys. Client groups would like the content to include videos on what to expect when you come to hospital, disease related information and surgical procedures, while non-government organisation (NGO) partners want to be able to find a specialist, know when and where clinics take place, etc. to support the referral process. eReferrals and the associated workflows would assist this process.

Patients and visitors would like to have Wi-Fi and internet access available at SWSLHD facilities to access SWSLHD and other digital content. The need for expansion of WiFi which can accommodate staff, patient and visitor access to the internet is addressed under Access in Strategy 1.1.

### **Strategies**

- 10.1 Improve and maintain the SWSLHD website in line with community expectations which contains health literacy information for download as well as videos and information to support NGO partners and other referrers to access relevant service information to support referrals.
- 10.2 Develop a patient/community portal to support online self-service e.g. for self-service appointment booking and as a means of communicating with patients e.g. providing specific pre-admission advice or health literacy information.
- 10.3 Implement Scheduling in all outpatient areas to support technology enabled appointment booking and confirmations and reminders e.g. SMS or e-mail.
- 10.4 Implement eReferrals and associated workflows for common referral pathways.
- 10.5 Consider the use of kiosks e.g. to display health literacy information, assist patients to self-serve and perform way-finding.
- 10.6 Support the development of smart device apps to support way finding or as a means of interacting with services.

### **4.11 IM&TD Service Design**

A pre-requisite to the achievement of the overall goal of 'leadership, innovation and excellence in Information & Communications Technology' is the **service design** of the IM&T Department. During the consultations, it became increasingly apparent that, despite the diligence and commitment of the staff in IM&TD, underlying structural issues were impacting their ability to deliver quality service and fulfil many of the identified unmet ICT needs.

The symptoms of these structural issues included the following:

- IM&TD's operation is predominantly a reactive one rather than proactive one



- IM&TD is struggling to provide 'Business as Usual' support leaving little capacity for new initiatives
- IM&TD's roles, responsibilities and support boundaries are unclear
- In relation to State-driven ICT initiatives, there is frequently a misalignment between Ministry of Health priorities and timelines and those of SWSLHD
- Ineffective communication about initiatives in progress or planned creates the perception that nothing is happening
- Key IM&TD resources are highly skilled but ageing, however there is very limited succession planning

The current structure of IM&TD is shown below.



The current structure was a result of the Area Health Service (AHS) amalgamation and has not been adjusted following the creation of the LHDs. Staffing levels were significantly reduced when the combined AHS was created and those levels have been largely maintained.

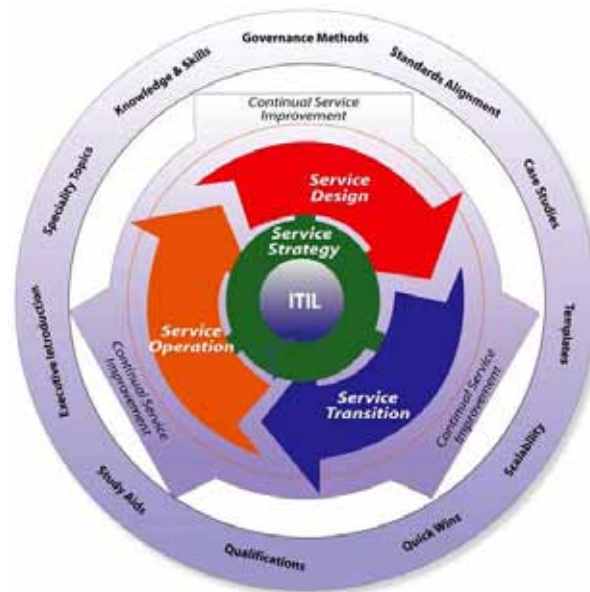
The current structure blends development, delivery and support activities into service streams but does not necessarily resource those streams appropriately. The EMR, Client Services and Web Services streams are predominantly Application-focused; the Desktop and Data Centres streams are Infrastructure-focused; and the Business & Support services provides both application and infrastructure support.

There are important functional elements missing from the current structure. Firstly, there is no stream dedicated to Strategy & Architecture. Secondly, there is no overarching ICT portfolio management stream. Thirdly, there is no agreed IT Service Management framework in place.

The absence of the Strategy element contributes to the lack of strategic alignment between SWSLHD initiatives and State-driven initiatives. Typically, a Strategy group engages closely with business units to understand their current and future requirements which can then be fed into forward planning. The Strategy group typically works closely with the Architects. Without an Architecture function there is little clarity around the 'big picture' for ICT; this function would normally define an enterprise architecture that sets out the desired and acceptable parameters for applications, networks, infrastructure and devices as well as future desired states, the latter being developed jointly with the Strategy group.

The absence of an overarching ICT portfolio management function contributes to difficulties experienced by the team in trying to delivery projects and business-as-usual activities concurrently and the ineffective communication about progress of initiatives.

IM&TD does not currently have a comprehensive framework for IT Service Management. ITIL is the accepted best practice Service Management framework based on the principle of continuous service improvement. The framework covers the full lifecycle from strategy development through service design, transition into the business, and full operation as shown in the following diagram.



Reproduced from ITIL Refresh News, 1st Edition Autumn 2008

Workforce planning in IM&TD could be significantly improved. Despite the widespread recognition that ICT is a fundamental enabler of health care in the 21<sup>st</sup> Century, the recent NSW Ministry of Health *Health Professionals Workforce Plan 2012 -22* makes no mention of IT professionals (but does note the predicted shortage of Radiopharmaceutical Scientists and Diagnostic Imaging Medical Physicists). It is certainly the case that IT professionals from other industries can readily fill roles in the healthcare environment; however specialist expertise in complex systems such as EMRs cannot be gained elsewhere.

Several of the highly skilled resources in IM&TD with deep expertise in Cerner’s EMR are likely to retire during the life of this Strategy and unless action is quickly taken to train and transfer some of that expertise to other resources, there is a very real risk that the expertise will be lost. As other health jurisdictions implement EMRs, these types of specialist skills will become increasingly in demand.

Currently the IM&TD department services two LHDs and this arrangement has worked reasonably well via an understanding that day-to-day reporting and financial management sits with one LHD – i.e. Sydney LHD. Nonetheless there is an emerging view that WSLHD requires greater transparency over the services provided by IM&TD and their associated costs.

The benefits of a commercial SLA usually include:

- Delivering clear performance expectations of both the customer and provider
- Cementing the roles and responsibilities of each party
- Drawing attention to customers’ priority needs
- Promoting a service quality culture and driving improvement
- Creating a checklist for both parties to plan for the future
- Ensuring customer has visibility of value for money
- Allowing the customer a simple way to monitor performance
- Giving the service provider incentive to innovate



However, it is important to recognise that the relationship between SWSLHD and SLHD is not a normal commercial relationship and the kinds of financial redress that commercial SLAs are designed to accommodate, will not necessarily be appropriate.

It may be more practical in the first instance to develop a clear Memorandum of Understanding which includes:

- High-level expectations of both parties
- Outline of the financial arrangements including:
  - Costs to be borne by each part
  - Reporting arrangements and frequency
  - Notice to be given for upcoming expenditure
- Escalation procedure when SWSLHD is not satisfied with the service delivered and processes for ensuring visibility of where jobs and requests are in the “queue”

### **Strategies**

11.1 Restructure, resource and maintain IM&TD to enable it to achieve the goal of ‘leadership, innovation and excellence in Information & Communications Technology’ by:

- Clearly defining IM&TD’s Roles, Responsibilities and service boundaries.
- Creating a dedicated Strategy & Architecture stream to maximise internal and external strategic alignment between LHD initiatives and State-driven initiatives.
- Implementing an appropriately resourced ICT portfolio management stream responsible for:
  - prioritising the portfolio of pipeline projects in line with the LHD’s strategic directions.
  - developing business cases for investment approval that comprehensively describe the full lifecycle costs.
  - providing project management oversight of approved projects including management reporting, budgetary control, and effective management of risks and issues.
- Regularly communicating the status of the project portfolio broadly throughout SWSLHD.
- Agreeing and implementing an IT Service Management framework such as ITIL.
- Ensuring that effective workforce succession planning for IM&TD is included in the District’s strategy to develop and implement a comprehensive Workforce Strategic Plan.

11.2 Develop a Service Level Agreement or Memorandum of Understanding with Sydney LHD as the current “manager” of the joint IM&TD department, covering expectations around service delivery from IM&TD and specifying the agreed governance arrangements and escalation procedures.



## 5. Future Vision

SWSLHD faces fundamental challenges in service delivery into the future including high population growth overall and in older age cohorts; providing faster access to care; rising costs; addressing health disadvantage and high rates of poorer health; attracting a skilled workforce; providing sufficient infrastructure for demand; and ensuring safety and quality.

Additionally, like any large complex organisation, the District faces process challenges in the delivery of services. Many of these have been addressed via Clinical Process Redesign and other initiatives; however there are still issues in some areas with:

- Handover problems from point to point, leading to delays and adverse events
- Limited ability to predict when and where services will be needed, making it difficult to improve patient journeys or use evidence-based data and business process skills to manage the District
- Patient frustrations about lack of communication, delays, and cancellations
- Systems are not always set up to allow flexible allocation of resources to ensure services meet patient needs and resources are available when and where required
- Transfer of patients from hospitals to the community can cause delays
- Typically there are a wide variety of information systems reporting inconsistent information. These do not always integrate information about the patient journey making it difficult for staff to co-ordinate and communicate patient care.

The impact of these systemic problems can contribute to:

- Sub-optimal waiting times
- Sub-optimal utilisation of Operating Theatres, resulting in delays across the hospital
- Poor transfer of care from acute services to the community leading to unplanned readmissions and adverse events
- Dissatisfied patients
- Staff frustration
- Limited ability to manage chronic disease well and focus on prevention for long term demand management.

### 5.1 How can technology help to solve these problems?

The District has a number of business strategies already in place which are designed to tackle many of these challenges. This includes the National Emergency Access Target (NEAT) programs and many other local and State initiatives.

In addition the District has been a leader in the use of ICT as a tool to address these issues by implementing core clinical and administrative systems over a number of years.

The District understands that technology has the potential to make a major difference and recognises that the following approaches are key:



- The patient journey needs to be managed as a whole with effective systems for supporting communication among teams, between teams and with patients and their carers
- Effective patient logistics systems including scheduling, booking admissions, referral networks, discharge planning, capacity management and active patient flow management.
- Provision of data to health service managers to support forecasting of demand and areas of disconnect between processes to resolve delays rapidly
- Improved capacity to align resources with demand, flexible resource allocation and the redesign/extension of traditional roles to improve patient flow and reduce avoidable delays

Good information provided through a common suite of information systems is critical to solve these problems in a sustainable and consistent way. Whilst good progress has been made to date, there is clearly more to do if the District is to deliver on its vision *Leading care, healthier communities*.

The next step in the journey is the patient-centred digital LHD which enables a single view of patient, and ultimately extends its reach outside the boundaries of SWSLHD and into the community.

This will allow the District to build an Integrated Digital Healthcare Community over time.

## 5.2 Emerging key concepts from the consultations

The consultations undertaken to develop this Strategy identified three key concepts specific to SWSLHD.

This section describes these in more detail and outlines how these concepts can be addressed through the development of a Digital Healthcare Community model.



All clinicians consulted commented on the difficulty of getting meaningful data out of the various existing systems easily and in a timely manner. And yet the promise of EMRs and of many other systems is not about putting data in, but about getting data out and then using it to drive change. The change might be to clinical practice or to management processes.

The future vision for SWSLHD will include a strategy for Data-driven health which includes:

- capturing and managing data
- connecting fragmented systems
- optimising processes and logistics
- driving out unnecessary variation

Clinicians typically respond to evidence of variation and benchmarking data when presented in a structured manner. However, the capacity of clinicians to obtain easier access to evidence based data from the EMR is currently limited.

Fixing this will require not only a change in strategy but also a change in governance arrangement to ensure a better level of input into priority setting by clinicians to ensure that there is a proper focus on projects which will drive out clinically useful data.



## PATIENT-CENTRED CARE

The future vision must address the changing patient, family and staff expectations over how care can best be provided. Staff across the District were very cognisant of the changing landscape of consumer expectations and saw the potential to make patient centricity a key point of difference for the District.

The Institute of Medicine defines Patient-Centred Care as *“providing care that is respectful of and responsive to individual patient preferences, needs, and values, and ensuring that patient values guide all clinical decisions.”*

Patients are already demanding to book appointments on line, receive SMS notifications and so on. Patient portals are well-established and will need to be worked towards as a priority. This also applies to auto-queuing systems, way-finding technology, and other systems which improve the patient experience.

Obviously a patient is at the centre of his or her care, but hospitals in Australia have not routinely treated patients as partners in their own care. This concept is an essential part of high quality and safe health care. Additionally, family members and others with close relationships to the patient are also part of the health care partnership.

The adoption of patient-centred care values is clearly a priority for improving patient safety, and patient and staff satisfaction.

Technology can assist by:

- upgrading patient rooms to “smart” rooms empowering patients to more actively participate in their care and enhancing caregivers’ workflow, efficiency, and the quality and safety of patient care.
- enabling systems that clinicians can use to show patients the key information about their treatment and explain any care options they may have.
- the use of Patient Portals and websites to send out information prior to any admission and allow patient/customer input to the process at the earliest possible stage.
- delivering services closer to the patient.

## DIGITAL ENABLEMENT

Digital Enablement of SWSLHD means being able to:

- facilitate access anywhere for approved staff and business partners with appropriate credentials and approvals.
- provide seamless integration and information exchange within the organisation to employees and outside the LHD to consumers, suppliers, and other business partners.



Across the organisation clinicians of all types commented on the challenges of accessing data from home or from Private Rooms, or even in accessing data within SWSLHD buildings in areas where there is no Wi-Fi or mobile phone access.

There are many steps that the District can take now to digitally enable its staff and these are not complex or difficult. There was a clear demand from District staff at all levels for digital enablement to be part of the daily fabric of life at SWSLHD.

### 5.2.1 Digital Enablement outside the District

In addition to the access issues within the LHD, there was a clear demand to also:

- extend the chain of information outside the LHD facilities
- allow approved parties access into LHD systems
- enable flexibility in delivery of service using NGOs

Many clinicians commented on the value of approved external parties directly accessing SWSLHD systems, or the other way around. Examples included:

- GPs appreciate receiving Discharge Summaries, however their view of the patient could be enhanced by direct access to lab results and other data in the hospital EMR
- pharmacists spend much time calling GPs to check on the latest medications for admitted patients. This could be made simpler and faster through Hospital Pharmacist access to GP systems.

It is noted that SSW Pathology Service hopes to have an electronic link to all GPs, VMOs and external clinicians available in 2015 that will integrate with external desk top medical management systems such as Medical Director. This will allow direct downloading of Discharge Summaries with Pathology results.

### 5.2.2 The Solution: From Digital Hospital to Digital LHD to Integrated Digital Healthcare Community

Many healthcare organisations around the world have embraced the concept of the digital hospital. In theory they provide faster and safer throughput of patients, creating more capacity through process efficiencies, while containing costs. Examples of benefits include:

- improved patient outcomes, as measured by reduced length of hospital stay, reduced readmission rates and other key metrics
- safer, healthier, green environments and medical workplaces that help attract world-class medical talent
- improved consumer service and patient satisfaction
- decreased documentation and administration effort, while increasing staff satisfaction
- broad improvements in healthcare access, quality, safety and sustainability
- improved operational efficiencies and decreased capital expenditure

A digital hospital is one that:

- has implemented a comprehensive, pervasive IT infrastructure to enable clinical and administrative workflow and communications, process and quality improvements



- uses various advanced technologies, such as critical medical devices, intelligent information systems, facility control systems, automated transport systems, location-based services and sensors, and digital communication tools, to provide a fully integrated set of applications and services that improve staff productivity, hospital operations, process quality, patient safety and the overall patient experience. <sup>2</sup>

There are many projects around the world that have adopted the digital hospital model: In Australia these include:

- St Stephens (Hervey Bay), Queensland
- Fiona Stanley, Western Australia Health
- Macquarie Hospital, NSW
- Sunshine Coast University, Queensland
- Royal Adelaide Hospital, South Australia
- Royal Children’s Melbourne, Victoria



And Internationally:

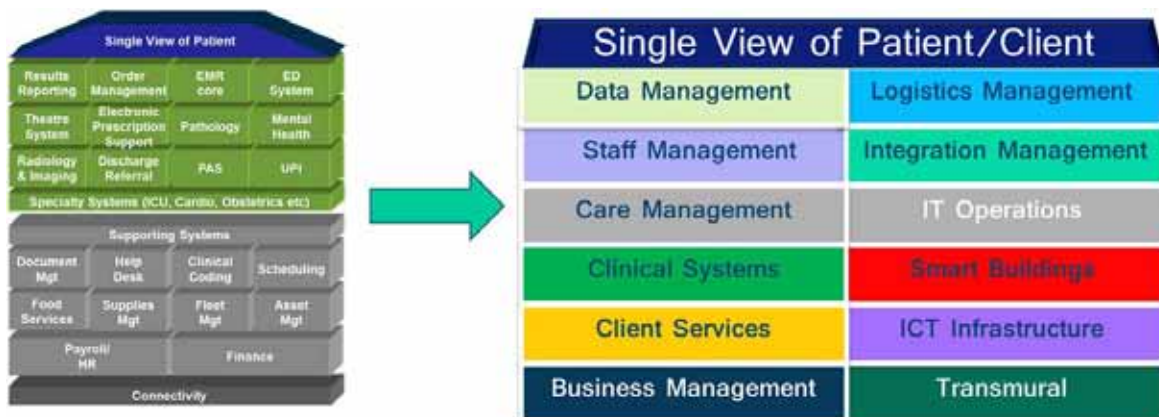
- Aarhus, Denmark
- Oxford University Hospital, England
- Bumrungrad, Thailand
- Various sites in the United Arab Emirates
- Various sites in the United States of America

Usually these projects have been for a single hospital, and often for a Greenfields site or as part of a major redevelopment.

For an LHD, the challenges are far more complex, with generally a mix of old and new sites and a range of architectural challenges in the older buildings in particular.

### 5.2.3 The model proposed for the District is the Digital LHD.

The simple “legoblocks” model developed from the previous strategy and governance work have been translated into a more detailed model as illustrated below:



<sup>2</sup> Source: White Paper “The Digital Hospital of Tomorrow: The Time Has Come” IDC Health Industry Insights March 2009



This reflects the change from the previous model which was centred primarily around the hospital environment and focused on clinical and management systems, missing some of the other key components such as building management systems. It also places an increased emphasis on ICT and other infrastructure requirements to deliver a comprehensive, single view of the patient.

### 5.2.4 Components of the Digital LHD Model

Each component of the Digital LHD model has a number of sub-components as illustrated in the diagrams below:

#### A digital LHD Model Level 2:





The first step to the Integrated Digital Healthcare Community is the Digital LHD. The “building blocks” in combination will deliver the components required to achieve a “single view of patient”, and these steps will deliver value to patients, clinicians, managers, and researchers. They will also position SWSLHD to become a true Integrated Digital Healthcare Community.

This model can serve as a framework for the LHD in a number of different ways:

- as a template for illustrating the overall vision for the digital LHD
- for highlighting what has already been achieved
- for highlighting what remains to be completed

In addition the colour coding can be used to show components that are:

- SLHD managed and controlled
- jointly managed with SWSLHD
- mainly going to be delivered or managed by HealthShare and/or other agencies

This is illustrated further in the following sections.

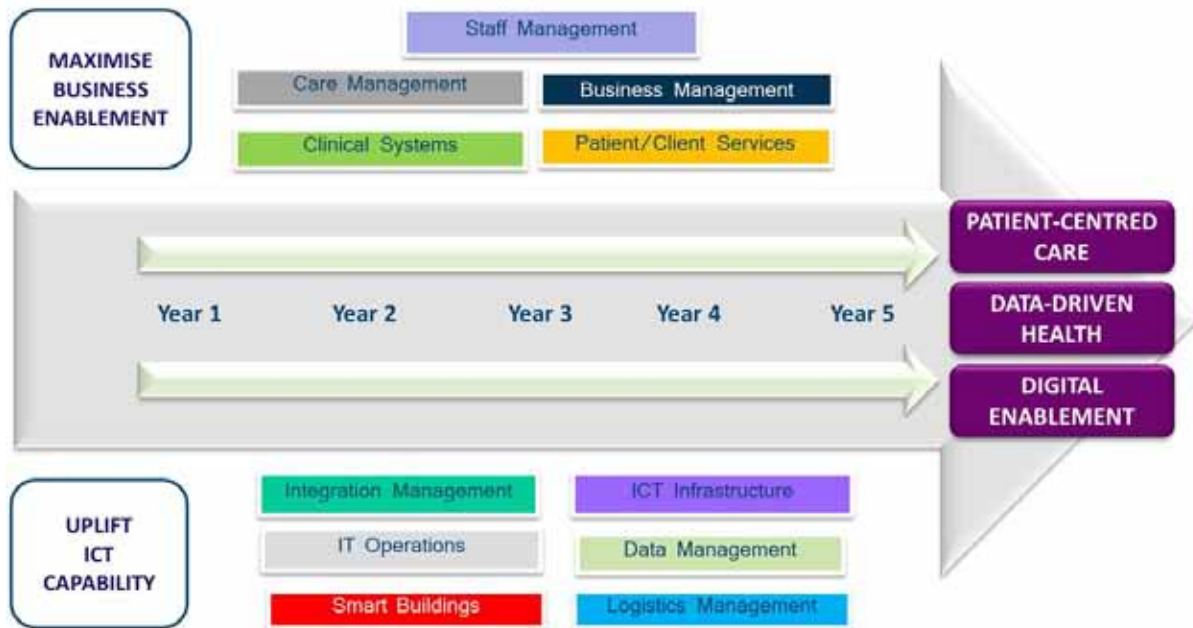
#### **5.2.5 Strategic Roadmap**

The following diagram represents the roadmap for SWSLHD. It shows that the component pieces of the digital LHD journey can be rolled up into two broad groups:

- those that are directly about better supporting patient care and providing management information about that care. Collectively there are the systems that “Maximise Business Enablement”
- the components that relate to the back-end systems – whether these are technical ICT components or building management or automated vehicle systems. These as the systems which “Uplift ICT Capability.”



## Strategic Roadmap to the Digital LHD

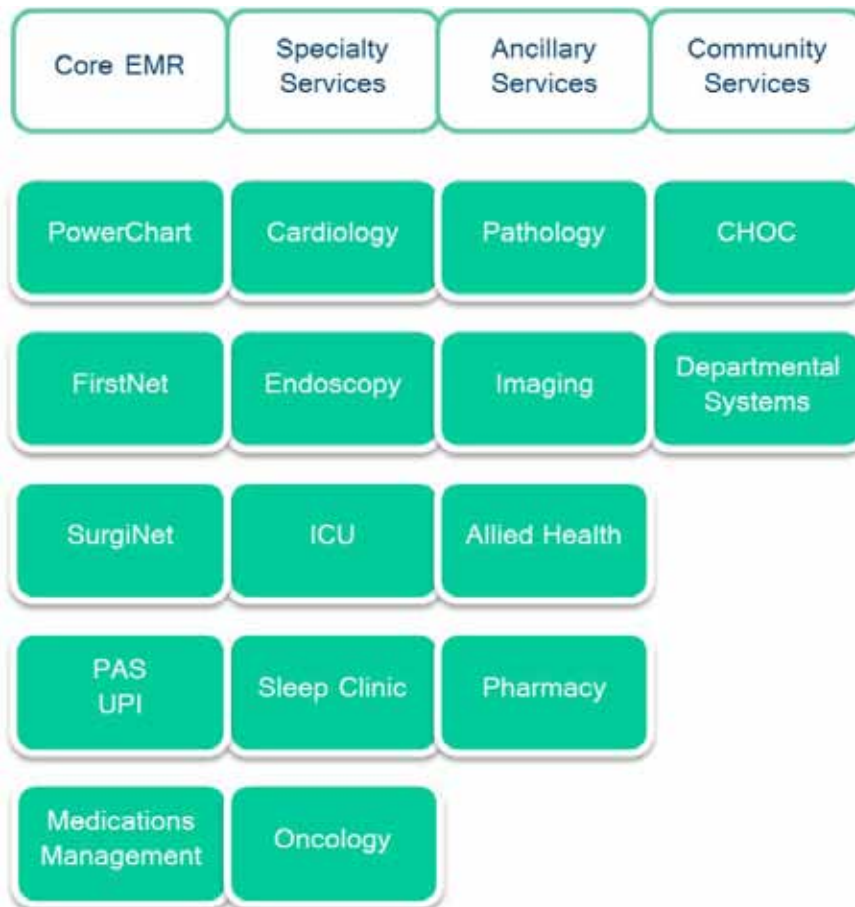


The intention of the Roadmap diagram is to serve as a simple tool that summarises the ICT journey for SWSLHD and its intended goals. This Roadmap or a version of it will form part of any key communication with clinical and other staff on the ICT program of work.



### 5.2.6 Clinical Systems and their sub-components

The following schematic shows the summary position around clinical systems, where there are two layers of sub-components.



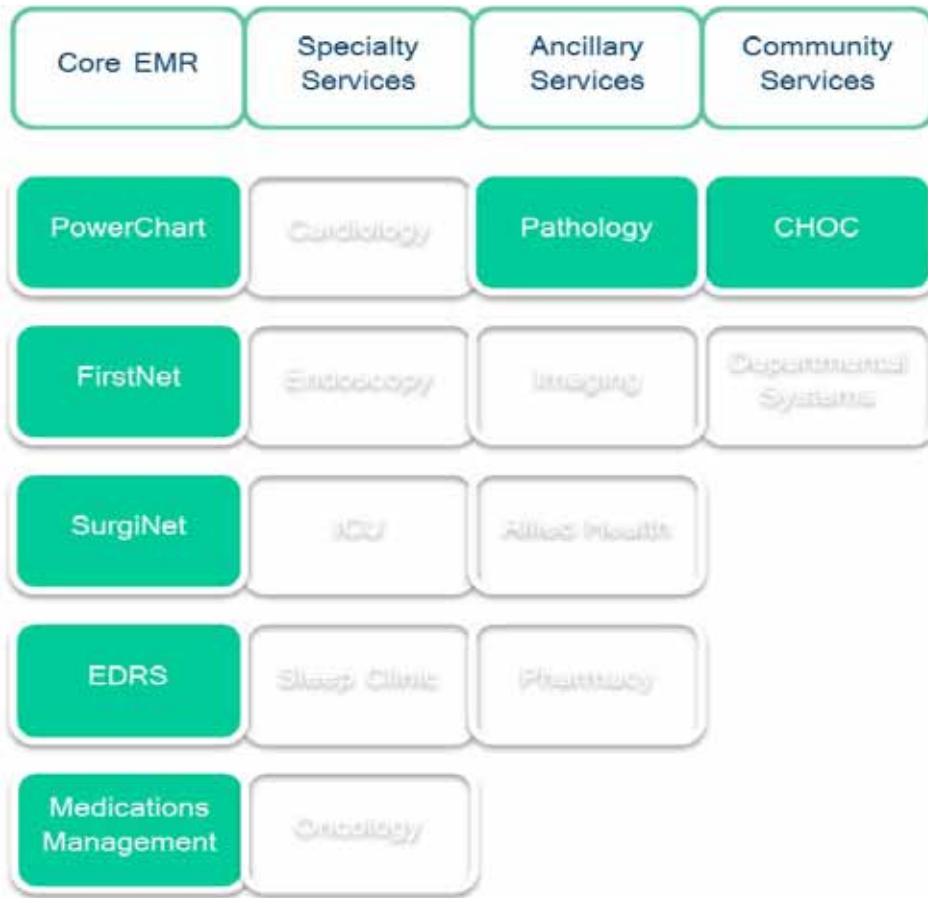
SWSLHD will retain its current Core Vendor approach, with variation accepted for speciality areas. These variations should always be assessed against:

- how easily the proposed system interfaces with other systems
- whether the information from that system is quickly available to other clinicians elsewhere in the organisation
- contribution to the goal of a single view of the patient
- the total cost of ownership
- the organisation's ability to support the product



**5.2.7 Common Areas with SLHD**

There are a number of common areas with SLHD as illustrated below:



SWSLHD will continue with the current Shared Core Vendor EMR solution for at least the next 2-3 years.

Both organisations will need to continue to work on optimum governance arrangements, and Information Management issues will also need addressing.



### 5.2.8 Areas of Intersection with eHealth NSW/HealthShare

There are also areas of intersection with eHealth NSW in the clinical area in particular:



It is clear that there will be an increasing impact of centralised HealthShare and eHealth NSW managed projects and that Treasury funding for State-wide programs will continue to be the easiest way for the State to ensure everyone has equitable distribution of funds.

SWSLHD will need to work with eHealth NSW on developing a better process for the prioritisation and initiation of new projects. SWSLHD should ensure that new projects funded and/or driven by HealthShare do not commence until it is satisfied that:

- the project fits the Roadmap and is prioritised appropriately
- sufficient funding is available to implement it effectively
- SWSLHD can incorporate the ongoing capital costs and the ongoing support costs of the new project

### 5.2.9 Sub-components illustrated

This section outlines the key sub-components of the Digital LHD Model – except for clinical systems which are dealt with in more detail in the previous section. For each component, only the major sub-components are listed, and there will clearly be a lower level of detail in some instances, which will be addressed in SWSLHD detailed ICT project plans.



Collectively these components, when delivered, will enable SWSLHD to be a fully digital organisation. It is unlikely that this journey will be fully accomplished in the five year horizon of this plan. However this vision will persist beyond this five year horizon.

### Care Management

Resource Scheduling	<ul style="list-style-type: none"> <li>Optimised Rostering and staff management systems, linked to acuity</li> </ul>
Referral/ Intake Management	<ul style="list-style-type: none"> <li>Extended referral process outside LHD boundaries, including ability for GPs to refer into LHD systems with appropriate safeguards</li> <li>Patient/customer ability to optimise appointment times where practical</li> </ul>
Telehealth/ Telemonitoring	<ul style="list-style-type: none"> <li>Provision and active management of AV equipment to support Telehealth</li> <li>Trial of telemonitoring solutions</li> </ul>
Process Optimisation	<ul style="list-style-type: none"> <li>Use of ICT to drive process optimisation</li> <li>Management and clinicians are able to assess best practices</li> </ul>

### Patient/Client Services

Enterprise Master PM	<ul style="list-style-type: none"> <li>Master Index linked to State solution and ultimately linked to national indices. Enables cross-LHD matching</li> </ul>
Billing/ABF	<ul style="list-style-type: none"> <li>Systems which optimise LHD ability to identify and collect revenue and ensure correct coding</li> </ul>
Patient Engagement	<ul style="list-style-type: none"> <li>In-house patient service solutions via portals to allow entry of information and allow clinicians to share relevant clinical data</li> <li>Communication and Entertainment options</li> </ul>
Patient Services	<ul style="list-style-type: none"> <li>Systems that allow patient ability to link in with Food services and other ancillary services</li> </ul>
Patient Education	<ul style="list-style-type: none"> <li>Use of portal solutions to communicate with patient/customers in multiple formats and languages</li> </ul>



## Data Management

HIE  
Warehouse

- An electronic repository, populated with selected data elements from operational systems, designed for reporting and use with Business Intelligence tools.

Master Data  
Management

- Information Management Framework and tools used to ensure consistent definition and use of data nomenclature.

Performance  
& Quality

- The components of the Information Management Framework focused on ensuring data quality and its effective use as performance indicators.

Compliance  
& Audit

- Components of the Information Management Framework that ensure data is used in accordance with defined policies, particularly security and privacy, and that access can be effectively tracked.

Research  
Management

- The collection of operational data, typically generated in the course of clinical care, that can be de-identified, aggregated and used for research.

## Business Management

Enterprise  
Resource  
Planning

- An ERP is an integrated suite of applications that enable better decision-making, improved resource utilisation and cost reduction.

Bed  
Management

- System that monitors, allocates and optimises the utilisation of beds within a facility and between facilities. Analogous to a hotel booking system.

Financial  
Management

- The components of the ERP used for tracking and reporting on revenue and expenditure (both CAPEX and OPEX)

Human  
Resources

- Systems that capture all the personnel information required to fulfil statutory and organisational requirements of the Human Resources function.

Media &  
Comms

- Channels used for internal and external communication. These include intranets, websites and increasingly the use of social media



**Staff Management**

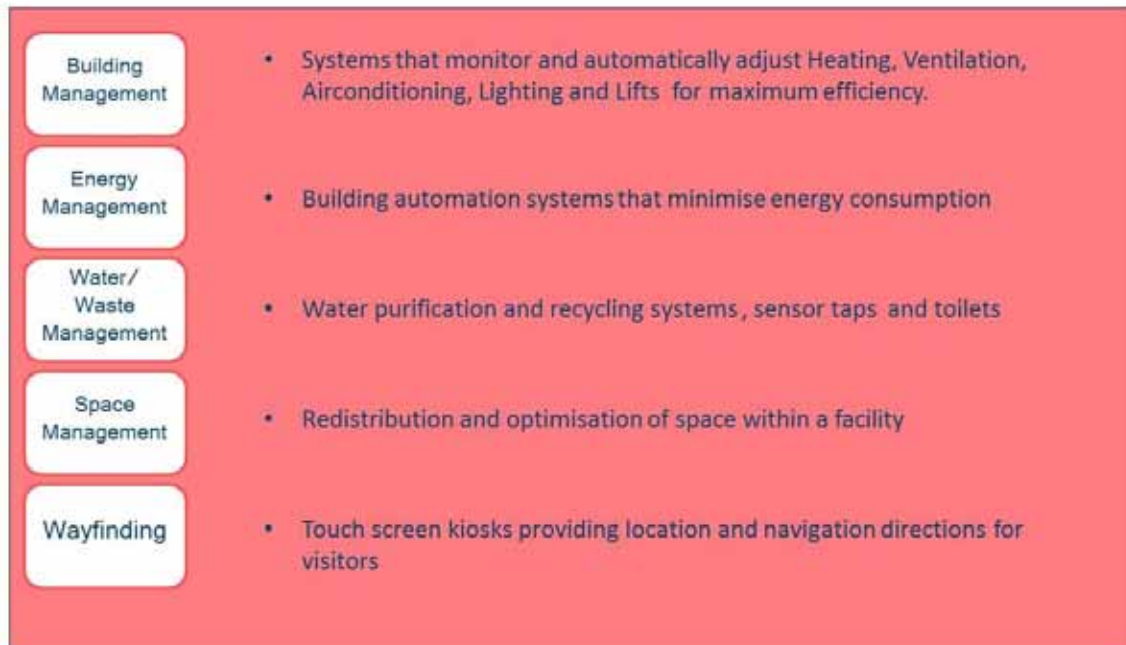
Education & Training	<ul style="list-style-type: none"> <li>• Learning Management Systems that provide an interactive learning environment, track progress through courses and test knowledge .</li> </ul>
Development & Credentialing	<ul style="list-style-type: none"> <li>• Learning Management System’s structured courses that build or strengthen competencies and can be used to gain accreditations or certifications.</li> </ul>
Staff Scheduling	<ul style="list-style-type: none"> <li>• Systems that optimise staff supply to match demand in a 24/7 environment. The right staff, at the right place, at the right time.</li> </ul>

**Logistics Management**

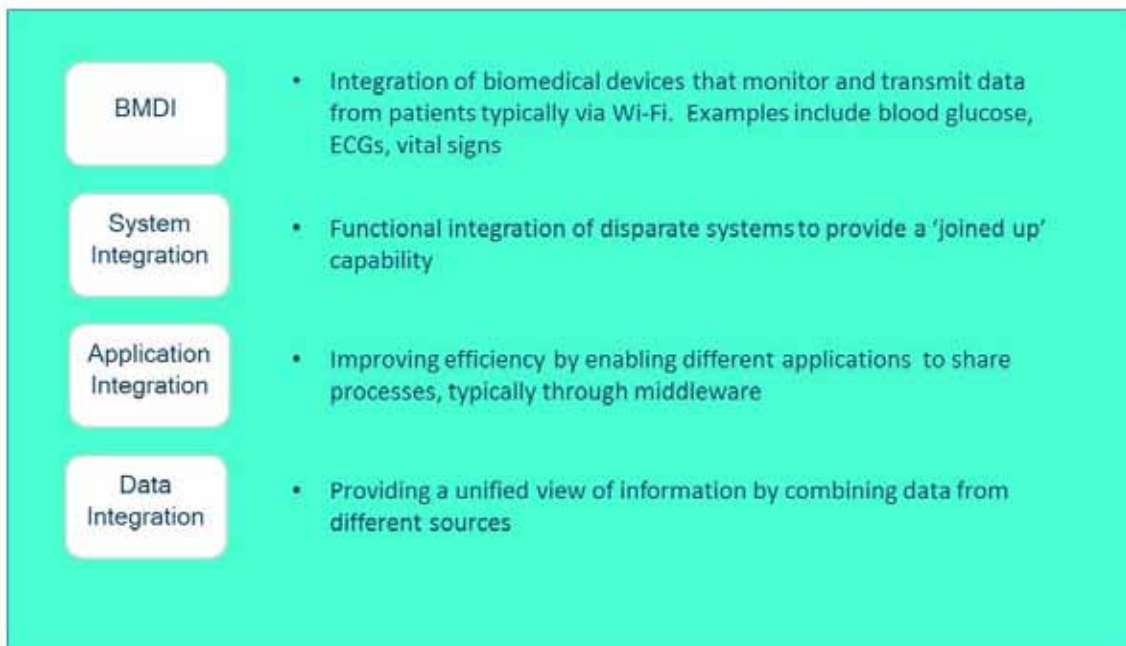
BYOD	<ul style="list-style-type: none"> <li>• The use of personally –owned devices to access applications on the corporate network, typically via Wi-Fi .</li> </ul>
Tracking and Alerts	<ul style="list-style-type: none"> <li>• Rapid response capability through automated monitoring , for example cardiac arrest, unplanned patient movement, falls detection, panic alarms</li> </ul>
Clinical Messaging	<ul style="list-style-type: none"> <li>• Pervasive unified messaging and paging capability</li> </ul>
Real Time Location System	<ul style="list-style-type: none"> <li>• The capability to identify the location of patients, staff, equipment, food and specimens within a facility by using RFID tagging.</li> </ul>



## Smart Buildings



## Integration Management





## IT Operations

<div style="border: 1px solid #000; border-radius: 5px; padding: 5px; text-align: center; margin-bottom: 10px;">Data Centre Management</div>	<ul style="list-style-type: none"> <li>• Management of specialised facilities purpose-built to house IT infrastructure</li> </ul>
<div style="border: 1px solid #000; border-radius: 5px; padding: 5px; text-align: center; margin-bottom: 10px;">IT Operations</div>	<ul style="list-style-type: none"> <li>• The overall management, support and planning of IT infrastructure, applications and systems enabling the business.</li> </ul>
<div style="border: 1px solid #000; border-radius: 5px; padding: 5px; text-align: center; margin-bottom: 10px;">Data Management</div>	<ul style="list-style-type: none"> <li>• The effective management of data, information and knowledge through the complete lifecycle from collection to disposal.</li> </ul>
<div style="border: 1px solid #000; border-radius: 5px; padding: 5px; text-align: center; margin-bottom: 10px;">Application Management</div>	<ul style="list-style-type: none"> <li>• Maintaining and enhancing software through its lifecycle.</li> </ul>

## ICT Infrastructure

<div style="border: 1px solid #000; border-radius: 5px; padding: 5px; text-align: center; margin-bottom: 10px;">Servers &amp; SAN</div>	<ul style="list-style-type: none"> <li>• The core processing and data storage components of a data centre configured to provide desired response times, automatic failover and redundancy</li> </ul>
<div style="border: 1px solid #000; border-radius: 5px; padding: 5px; text-align: center; margin-bottom: 10px;">Unified Comms</div>	<ul style="list-style-type: none"> <li>• The convergence of voice, data, video through a single platform</li> </ul>
<div style="border: 1px solid #000; border-radius: 5px; padding: 5px; text-align: center; margin-bottom: 10px;">Medical Grade Network</div>	<ul style="list-style-type: none"> <li>• A secure, high availability, high reliability, redundant IT network supporting the 24*7*365 nature of healthcare</li> </ul>
<div style="border: 1px solid #000; border-radius: 5px; padding: 5px; text-align: center; margin-bottom: 10px;">Privacy &amp; Security</div>	<ul style="list-style-type: none"> <li>• Systems, processes and technology to limit access to authorised users and to maintain the confidentiality of information held in the systems</li> </ul>



### 5.2.10 Digital LHD versus HIMSS and other models

The combined LHDs have in the past used the HIMSS model, which is a model for levels of EMR adoption and digitisation developed by the US Health Informatics organisation as shown in the following diagram. The State is using this as an accepted model of measuring EMR adoption.

Asia Pacific EMR Adoption Model <sup>SM</sup>	
Stage	Cumulative Capabilities
Stage 7	Complete EMR, CCD transactions to share data; Data warehousing; Data continuity with ED, ambulatory, OP
Stage 6	Physician documentation (structured templates), full CDSS (variance & compliance), full R-PACS
Stage 5	Closed loop medication administration
Stage 4	CPOE, Clinical Decision Support (clinical protocols)
Stage 3	Nursing/clinical documentation (flow sheets), CDSS (error checking), PACS available outside Radiology
Stage 2	CDR, Controlled Medical Vocabulary, CDS, may have Document Imaging; HIE capable
Stage 1	Ancillaries - Lab, Rad, Pharmacy - All Installed
Stage 0	All Three Ancillaries Not Installed

Data from HIMSS Analytics® Database ©2012

Historically one of the stated goals of IM&TD has been to reach HIMSS Level 7.

However the difficulty with such models is that they assume a sequential progression, which is never going to be a realistic possibility in a complex LHD with multiple sites. In addition a goal of “HIMSS Level 7” is not a strategy that is easily communicated to the great bulk of clinicians and staff who may have little interest in ICT.

The Digital LHD and later the Integrated Digital Healthcare Community models will be a better model for communicating the District’s vision and our progress against this goal.

### 5.2.11 From Digital LHD to Digital Healthcare Community

SWSLHD is already working towards a vision that extends outside the boundaries of the organisation and into the broader community. Lots of work is underway to improve the process flows between the District, South Western Sydney Medicare Local (to be replaced by the South Western Sydney Primary Health Network in July 2015) and various NGO partners with whom it interacts.

All parties understand the difference that information availability could potentially make in process efficiency and quality care and there are a number of pilot projects already underway in a number of areas.

A key strategic decision for the District is how far we want to operate along the “Digital Health Continuum”, as illustrated in the diagram following:



## The Integrated Digital Healthcare Continuum



SWSLHD will need to decide how far along this continuum it wants to support ICT-enabled change

Based on content from Neils Boye

There is the potential for an enhanced level of communication between the District, the community and partners which enables:

- Data sharing and co-ordination
  - integrated data access, across agencies, for care providers and informal carers
  - design and execution of pre-defined care pathways to enable care coordination
  - access to the home and the mobile person: telemonitoring and telecare
- Real time communication
  - between care providers e.g. case conferences
  - to facilitate joint responses to ad hoc care requests – including urgent situations
  - to enable shared clinical scheduling
  - to enhance team co-ordination
  - for delivering of training for patients and professionals

At the consumer end of the continuum there are movements like the Quantified Self movement.

*“The Quantified Self is a movement to incorporate technology into data acquisition on aspects of a person's daily life in terms of inputs (e.g. food consumed, quality of surrounding air), states (e.g. mood, arousal, blood oxygen levels), and performance (mental and physical). Such self-monitoring and self-sensing, which combines wearable sensors (EEG, ECG, video, etc.) and wearable computing, is also known as lifelogging.”<sup>3</sup>*

The relevance to SWSLHD is the emergence of technologies such as remote blood pressure monitoring which could potentially send data into LHD systems and contribute by:

- setting off alerts when patients may need to be seen again by SWSLHD and/or

<sup>3</sup> Wikipedia, Quantified Self accessed in March 2015 @ [http://en.wikipedia.org/wiki/Quantified\\_Self](http://en.wikipedia.org/wiki/Quantified_Self)



- helping LHD patients and clients to self-monitor effectively so that unnecessary readmission rates are reduced

Further, these sorts of technology have significant potential to keep people out of hospital in the first place.

However there are clearly challenges around appropriate funding models which will need to be resolved at a state and or federal level at some point. In the meantime the LHD will need to take a strategic view on its level of investment along this continuum.

Ultimately the goal for SWSLHD is to create an Integrated Healthcare Digital Community:

### From Digital LHD to Digital Healthcare Community

#### A Digital LHD:

- Has implemented a comprehensive, pervasive IT infrastructure to enable clinical and administrative workflow and communications, process and quality improvements;
- Uses various advanced technologies, such as critical medical devices, intelligent information systems, facility control systems, automated transport systems, location-based services and sensors, and digital communication tools, to provide a fully integrated set of applications and services that improve staff productivity, hospital operations, process quality, patient safety and the overall patient experience<sup>14</sup>

<sup>14</sup> Source: White Paper "The Digital Hospital of Tomorrow: The Time Has Come" IDC Health Industry Insights March 2009

#### A Digital Healthcare Community:

- Has begun to expand those process improvements beyond the hospital's four walls and into the community, providing connectivity and collaboration with physician offices, other, remote healthcare organizations and even extending its digital reach into patient homes and emergency medical services;



The free flow of relevant clinical information between hospitals, GPs and NGOs will have enormous benefits for patients and for the efficiency of the system overall. However for the vision to be achieved, the patient/ consumer must be at the centre of the process.

The ready availability of 'information everywhere', through apps on smartphones and tablets, that consumers experience in their day-to-day activities leads to an expectation that similar availability should be present when they interact with their Local Health District. This interaction can be within a facility or in the community setting, closer to the patient. Ultimately LHDs and other providers who do not make their client's needs a priority will be left behind. No-one can seriously argue that the old process of having all patients turn up for a clinic at 9am because it suits how the clinician likes to work is a sustainable model for the future. The generation brought up on iPhone apps will no longer accept a process that does not allow them the flexibility to book their own appointments in the hospital system and upload the latest data from their home blood sugar monitor prior to their arrival at the hospital.

Conversely the LHDs that truly embrace the integrated digital community concept will be at the forefront of the change and best positioned to attract and retain staff who want to work in a forward-looking organisation.

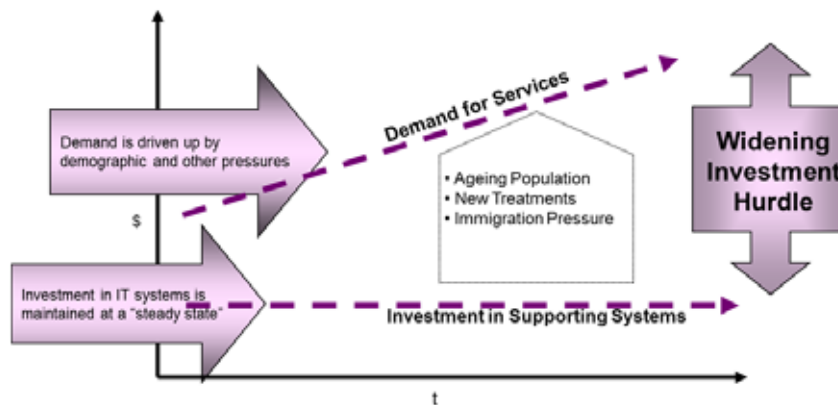


### 5.3 Funding and Investment Decision Processes

Historically SWSLHD has funded ICT project through a combination of planned and ad-hoc projects, and there has been no overarching investment plan or strategy.

As demand for health services is driven up by demographic and other factors, continued under-investment in supply-side systems will create a widening investment hurdle for SWSLHD. Thus the need for a clearly articulated investment plan is critical.

Managing and monitoring the increased demand will be hampered by poor information availability. Eventually the investment requirement may reach a point beyond the capacity of the District and of Government to fund without significant impact on other services



An analysis in 2013 concluded that the combined South Western Sydney and Sydney LHDs are spending a comparatively low amount on ICT as a percentage of total LHD expenses.

The combined SWSLHD and SLHD ICT budget represents approximately 1.8%-2.4% of total joint LHD expenditure, based on an estimate of a total "actual" ICT annual budget of \$50M-65M. This included an assessment of the ICT spend that is delivered via HealthShare.

Of note is that the ICT expenditure across NSW Health is 3.0% compared to the Gartner ICT expenditure benchmark used for state and local governments of 3.6%.<sup>4</sup>

#### 5.3.1 Investment Strategy

The District will require an ongoing investment strategy to create a suite of integrated systems that support improved clinical care and provide real time management information.

A portfolio approach to managing IT investment and implementation is needed to build on the recent successes and ensure coordination of investment in alignment with the ICT Strategy. A strategy and program of work will need to be developed to:

- focus on further improving clinical service delivery. The bulk of the effort of the overall program will be on service delivery, and on projects that deliver improvements in safety, quality, access and efficiency of patient care.
- achieve further savings from back end processes and allow more efficient use of existing staff resources e.g. patient self-service appointment booking

<sup>4</sup> System Relationships and Frameworks Branch, 2011-12 NSW Health ICT Benchmarking Report, NSW Ministry of Health

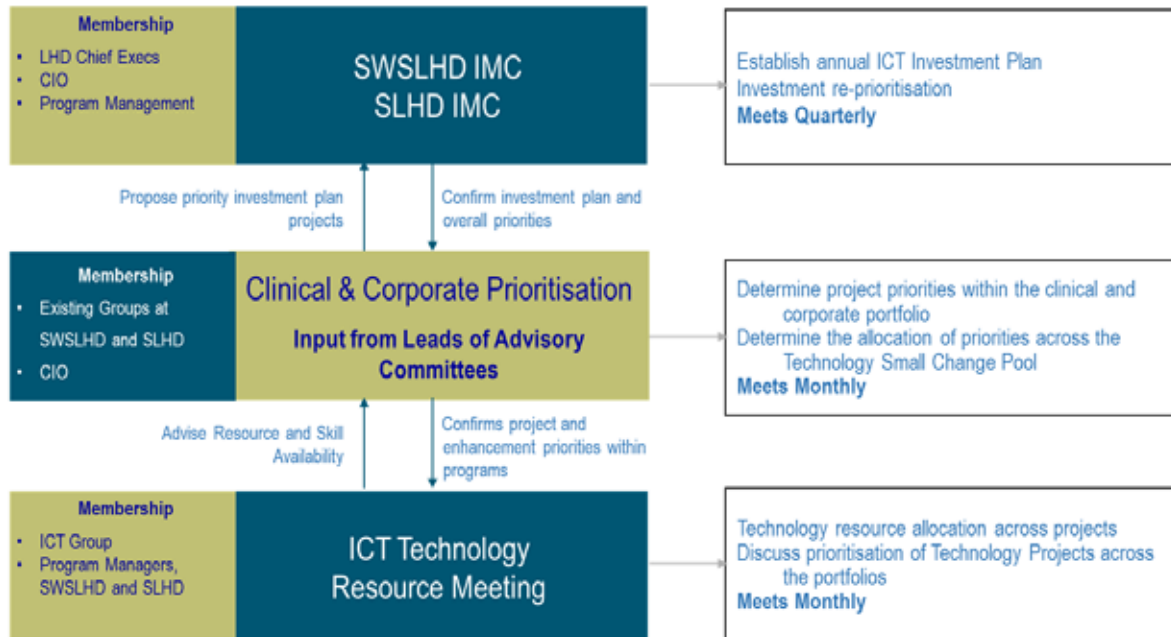


- provide for greatly improved workforce utilisation through strong and effective HR management using integrated information systems.

The investment strategy should be clearly linked to business benefits via the creation of a benefits realisation plan and monitoring.

### 5.3.2 Investment Prioritisation

The District will adopt an investment prioritisation process as reflected in the three-tiered prioritisation process illustrated below:



It is important to note that SLHD will need to continue to be involved at second and third tier (as illustrated) whilst the current shared EMR and ICT Management arrangement continues.

All proposed investment should go through this process.

In order for the three-tiered process to be effective, the committees must be provided with adequate information on which to base their decisions. This should include a requirement for a standardised “Project Initiation Application” which would include details of the project’s Sponsor; a business case incorporating the scope, alternative solutions considered, the current situation that the project is intended to improve; a high-level project execution plan describing the timeline, resources, budget, risks and benefits. The level of detail in the “Project Initiation Application” should be proportional to the value of the project.

## 5.4 Requirement for an overall Program Plan

SWSLHD will develop an overarching Program Plan which tracks all of the approved projects and initiatives, including those being delivered by other parties such as eHealth NSW.

At a minimum this program plan will include:

- high-level summary plans for all the key strategies In this ICT Strategy
- the high-level plan information for the various projects being delivered by eHealth NSW
- a total costs table indicating the SWSLHD and other party contributions(such as eHealthNSW)



- the anticipated timelines for all projects and the interdependencies where known

This overall Program Plan will form the key document for the Executive and Board to be able to monitor delivery against this strategy over the next several years.

## 5.5 Future of combined SLHD and SWSLHD systems

The previous review looked at a high-level at the option of splitting the IM&TD service and the systems used by the two LHDs.

The decision was made to continue with the status quo model for the time being and work on improving the governance and the program management and service delivery aspects.

Continuing with a shared set of systems should not prevent SWSLHS from moving towards:

- Data-driven health
- Digital Enablement
- Patient-centred care

However it remains an option to split the two LHDs by:

1. making a copy of the complete EMR database as at a fixed date (e.g. 1 July 2015)
2. creating a copy of the domain on an HealthShare server
3. one of the LHDs using the HealthShare version from that date forward, and the other remaining on the version currently on the servers at Camperdown and Liverpool.

The historical data for both LHDs would remain on both copies as it would be too difficult to separate out. Operationally this should not cause any issues though – it just means old data for the “other” LHD be available without needing to view this via HealtheNet. The main hurdles are cost, time, and effort. No patient safety implications have been identified at this point – the situation would be no different to that between SWSLHD and South Eastern Sydney LHD for example.

In the other, non-Cerner EMR core areas, the LHDs are not as tightly joined and the split would be simpler e.g. for Imaging two systems are already in place and only minor changes would be required.

Many of the key administrative systems such as Finance and Payroll are now supplied via HealthShare so the challenges in that area will not be substantial.

There are however significant challenges for Pathology, where the service has centralised work to specific labs to achieve maximum efficiency. The transparent transfer of this work would be lost and require significant additional resources. Additionally outpatients at present can attend any collection room in either LHD with the results immediately available when the patient attends a clinic. This seamless results availability would be lost in a split.

The largest risk is around staffing and resourcing. There are only so many skilled staff within IM&TD and under the “split” model they would each have to go to one LHD or the other. Both LHDs may then find that they need more staff and that the staff they have left do not have the skills or experience of the old combined team.



This issue will be revisited in 2-3 years to see if the two LHD strategies are still reasonably closely aligned. If not, at that point a more detailed estimate of the time cost and effort to split should be conducted.

**Strategies**

- 12.1 Develop a coordinated program plan which incorporates a program audit and summary implementation plan to operationalise this strategy. This will need to include:
  - High-level summary plans for all strategies included in this ICT Strategy
  - The high-level plan information for the various projects being delivered by eHealth NSW
  - Priority actions, key steps and responsibilities
  - A total costs table indicating the SWSLHD and other party contributions (such as eHealthNSW)
  - The anticipated timelines for all projects and the interdependencies where known
  
- 12.2 Use the program plans to monitor and report progress of this Strategy to the SWSLHD Executive and the Board.



## 6. Summary of Strategies and Strategic Roadmap

### Access

- 1.1 Build a business case for the rapid expansion of the Wi-Fi network to all facilities which can accommodate staff, patient and visitor access to the internet.
- 1.2 As a matter of urgency, develop a comprehensive BYOD policy that adequately protects the confidentiality of patient information and sensitive corporate information while delivering the productivity benefits that such mobile devices can bring.
- 1.3 Develop a business case for the necessary infrastructure and management systems to properly implement a BYOD environment.
- 1.4 Amend each user's network profile to enable internet access as a default. Prior to implementation, prepare and distribute a comprehensive communication plan to advise staff of the change in policy settings reiterating that usage will be monitored and that abuse will have consequences.
- 1.5 Ensure all mobile devices, such as smartphones and laptops, which are issued by the District have a standard configuration which includes access to the SWSLHD Wi-Fi network, the internet support off-site mobility requirements via 3G/4G networks.
- 1.6 Define and implement a process to support single sign-on to the network and applications.

### Alignment with State and Federal eHealth Initiatives

- 2.1 Align with eHealth NSW programs to date and implement corporate and clinical modules developed.
- 2.2 Develop only those EMR modules which the State is not intending to deliver within the planning horizon.
- 2.3 Work with eHealth NSW to obtain improved visibility of future implementation plans in order to ensure alignment between the District and their program of work.
- 2.4 Over the course of this planning horizon, plan to outsource the Data Centre facilities to the State or to a private provider such as the Cerner Regional Hosting Operation (RHO) in Brisbane.
- 2.5 Continue to operate a locally managed Help Desk in SWSLHD. Plan to implement HealthShare's hardware and software to manage the Helpdesk.

### Single View of the patient

- 3.1 Establish a roadmap to EMR that takes into account some digitisation e.g. scanning requirements to move along that journey and expands on the existing limited capability to capture some images. The roadmap must include achieving a safer hybrid solution and policies to ensure that there isn't further fragmentation introduced over time but that SWSLHD are moving towards a single view of the patient.
- 3.2 Articulate a clear strategy and roadmap towards an Integrated Healthcare Community beyond the District and communicate this widely throughout SWSLHD and to the community and partners.



### **Integrated Care**

- 4.1 Strengthen liaison with eHealth NSW to ensure that HealthNet can be implemented as soon as possible.
- 4.2 Leverage the HealthShare experience from the roll out of the Community Health and Outpatient Care (CHOC) module at Hornsby to fast-track the implementation of that module within SWSLHD.
- 4.3 Ensure SWSLHD services are digitally enabled to provide health content to the local population via a number of channels such as the internet, social media, SMS, e-mail, via SWSLHD web pages and patient portals.

### **Communications Technology**

- 5.1 Develop a business case for the replacement of the end-of-life PABX systems that incorporate the necessary planning and resourcing to implement the new systems without interruption to essential telephony services.
- 5.2 Incorporate the findings of the Paging Systems review into a wider-ranging review that considers the risks and benefits of alternative solutions using messaging based on authentication via Active Directory.
- 5.3 Allocate responsibility for the management and maintenance of the fixed facility video conferencing to an appropriate business unit.
- 5.4 Investigate the use of a managed service provider for fixed facility video conferencing.
- 5.5 Ensure that the Bring Your Own Device ( BYOD) Policy accommodates the wider adoption of internet-based video conferencing.
- 5.6 Develop a comprehensive communications and engagement plan to identify opportunities where such technology can be actively adopted to reduce costs and enable innovative models of care. This can inform the business case.
- 5.7 Develop a business case that quantifies the full costs and benefits of the various types of commercially available internet-based systems with a view to adopting a single, cost effective solution across SWSLHD that supports both internal staff use for education and training and clinical care, and external use in telehealth initiatives.

### **ICT Asset Management**

- 6.1 Develop, implement and enforce a policy that defines what constitutes an ICT asset for use on the SWSLHD network and mandate that accountability for the acquisition and the management of those assets reside with IM&TD. This excludes those devices covered by BYOD policies.
- 6.2 Investigate the costs and benefits of ICT leasing models for the desktop, laptop, tablet and printer (or Multi-Function Device) fleet with a view to implementing a cost effective model within 12 months.



### **ICT Support**

- 7.1 Investigate the costs and benefits of utilising the Statewide Service Desk (SWSD) system as the Help Desk Support system, implementing it using the model adopted by the Children's Hospital Westmead which retains the local support staff. Provided that the cost/ benefit analysis is satisfactory, staff training should be conducted and implementation planned for a low activity period within the next 12 months.
- 7.2 Ensure that departmental IT resources have a dotted reporting line to IM&TD and implement processes to ensure that support arrangements are agreed and documented.

### **Information Management**

- 8.1 Develop and implement an Information Management Strategy, with special emphasis on governance and supporting research, within the next 12 months.
- 8.2 Develop specialist health informatics staff who are able to support operational staff, researchers and clinicians to obtain the information they require from existing systems.
- 8.3 Further develop the liaison between the SWLHD Performance Unit and the SLHD Performance Unit to leverage the existing STARS development with a view to repurposing the reports for use in SWSLHD.

### **Research**

- 9.1 Ensure that the requirements of research and researchers are embedded into all aspects of Information Management strategies (8.1 – 8.3) and Access strategies (1.1- 1.6)

### **Patient/Client and Community Expectations**

- 10.1 Improve and maintain the SWSLHD website in line with community expectations which contains health literacy information for download as well as videos and information to support NGO partners and other referrers to access relevant service information to support referrals.
- 10.2 Develop a patient/community portal to support online self-service e.g. for self-service appointment booking and as a means of communicating with patients e.g. providing specific pre-admission advice or health literacy information.
- 10.3 Implement Scheduling in all outpatient areas to support technology enabled appointment booking and confirmations and reminders e.g. SMS or e-mail.
- 10.4 Implement eReferrals and associated workflows for common referral pathways.
- 10.5 Consider the use of kiosks e.g. to display health literacy information, assist patients to self-serve and perform way-finding.
- 10.6 Support the development of smart device apps to support way finding or as a means of interacting with services.
- 10.7 Build a business case for the rapid expansion of the Wi-Fi network to all facilities which can accommodate staff, patient and visitor access to the internet (see Access Theme).

### **IM&TD Service Design**

- 11.1 Restructure, resource and maintain IM&TD to enable it to achieve the goal of 'leadership, innovation and excellence in Information & Communications Technology' by:
  - Clearly defining IM&TD's Roles, Responsibilities and service boundaries.



- Creating a dedicated Strategy & Architecture stream to maximise internal and external strategic alignment between LHD initiatives and State-driven initiatives.
- Implementing an appropriately resourced ICT portfolio management stream responsible for:
  - prioritising the portfolio of pipeline projects in line with the LHD’s strategic directions.
  - developing business cases for investment approval that comprehensively describe the full lifecycle costs.
  - providing project management oversight of approved projects including management reporting, budgetary control, and effective management of risks and issues.
- Regularly communicating the status of the project portfolio broadly throughout SWSLHD.
- Agreeing and implementing an IT Service Management framework such as ITIL.
- Ensuring that effective workforce succession planning for IM&TD is included in the District’s strategy to develop and implement a comprehensive Workforce Strategic Plan.

11.2 Develop a Service Level Agreement or Memorandum of Understanding with Sydney LHD as the current “manager” of the joint IM&TD department, covering expectations around service delivery from IM&TD and specifying the agreed governance arrangements and escalation procedures.

#### **Develop a Program to Operationalise the Strategy**

12.1 Develop a coordinated program plan which incorporates a program audit and summary implementation plan to operationalise this strategy. This will need to include:

- High-level summary plans for all strategies included in this ICT Strategy
- The high-level plan information for the various projects being delivered by eHealth NSW
- Priority actions, key steps and responsibilities
- A total costs table indicating the SWSLHD and other party contributions (such as eHealthNSW)
- The anticipated timelines for all projects and the interdependencies where known

12.2 Use the program plans to monitor and report progress of this Strategy to the SWSLHD Executive and the Board

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## Appendix 1: Mapping the ICT Enabling Themes to the SWSLHD Strategic Directions

The following tables map the Key ICT Enabling Themes to the District’s Strategic Directions and Corporate Action Areas.

Priority Strategic Direction 1. Build capacity to effectively service growing demands for healthcare		ICT Enabling Themes
<p><b>Priority Actions include</b></p> <ul style="list-style-type: none"> <li>• Re-appraisal of priority projects in the Asset Strategic Plan focussing on non-asset strategies and alternative service models, hospital avoidance strategies and private or not for profit sector involvement in responding to demand growth</li> <li>• Providing additional, enhanced and new clinical services of greater sophistication and complexity at all hospitals, with role delineation uplift across clinical networks</li> <li>• Developing a SWSLHD Workforce Plan, to ensure a high quality workforce with an appropriate mix of generalist and specialist skills is available to provide contemporary models of care</li> <li>• Developing with partner education agencies, more comprehensive educational services for all employees with flexible technology assisted learning using modern state of the art facilities</li> <li>• Enhanced attention to patient-centred care, meeting National patient safety, quality and performance indicators and implementing initiatives from the CEC and ACI</li> <li>• Creating systems to plan, implement and evaluate new models of care and emerging technology, with reengineering and disinvestment in current inefficient or ineffective models</li> </ul>	<ul style="list-style-type: none"> <li>• Access</li> <li>• Alignment</li> <li>• Single View of the Patient</li> <li>• Integrated Care</li> <li>• Communications Technology</li> <li>• Information Management</li> <li>• Research</li> <li>• Patient / Community Expectations</li> <li>• IM&amp;TD Service Design</li> </ul>	



Priority Strategic Direction 2. Redesign of services bringing them closer to people and their communities	
Priority Actions include	ICT Enabling Themes
<ul style="list-style-type: none"> <li>Reviewing the range of services, models of care and service delivery mechanisms of Community Health Services, identifying opportunities for community benefit from program provision in partnership with the profit or not for profit sector</li> <li>Establishing Regional Integrated Primary and Community Care centres at Oran Park and Leppington, so that residents can access locally a seamless and integrated continuum of services across prevention, primary care and ambulatory specialist care</li> <li>Exploring the potential to consolidate the existing matrix of Community Health provision into larger centres providing a greater range of services more efficiently, matched specifically to local health needs and readily accessible by local communities</li> <li>Establishing a rolling program for the increased migration of acute ambulatory care and day stay hospital services to community health centres, enhancing local access for communities and mitigating demand at congested hospital sites</li> </ul>	<ul style="list-style-type: none"> <li>Access</li> <li>Alignment</li> <li>Single View of the Patient</li> <li>Integrated Care</li> <li>Communications Technology</li> <li>Information Management</li> <li>Patient / Community Expectations</li> </ul>
Priority Strategic Direction 3. Integrated action with the South Western Sydney Medicare Local	
Priority Actions include	ICT Enabling Themes
<ul style="list-style-type: none"> <li>Ensuring an integrated preventative health strategy is working involving all settings of care, providers of care, tiers and agencies of government and is embedded in community action</li> <li>Collaborating to improve access to care providers in the community aiming for extended hours availability across primary care, community health services and specialist outreach services</li> <li>Establishing an integrated clinical governance framework with links between Clinical Councils</li> <li>Moving towards shared ownership of a core set of indicators to measure the impact of integrated action to improve patient and community health outcomes</li> <li>Developing a shared Consumer and Community Framework with SWSLHD community participation networks increasingly engaged in primary care issues</li> </ul>	<ul style="list-style-type: none"> <li>Access</li> <li>Alignment</li> <li>Single View of the Patient</li> <li>Integrated Care</li> <li>Communications Technology</li> <li>Information Management</li> <li>Research</li> <li>Patient / Community Expectations</li> </ul>



Priority Strategic Direction 4. Partnering with external providers to deliver public health care	
Priority Actions include	ICT Enabling Themes
<ul style="list-style-type: none"> <li>• Exploring Public Private Partnership (PPP) opportunities e.g. for diagnostic and interventional laboratories within public hospitals; medical specialist centres in the community; providing public care in high demand specialties in the private sector; privately referred ambulatory care</li> <li>• Strengthening partnerships with Ministry of Health (MoH) Pillars and academic institutions</li> <li>• Exploring options for a partnership arrangement in sub-acute mental health care</li> <li>• Partnering with Affiliated Health Organisations to increase capacity in sub-acute care</li> <li>• Working with NSW Kids and Families on development of a tertiary regional paediatric service</li> </ul>	<ul style="list-style-type: none"> <li>• Access</li> <li>• Alignment</li> <li>• Single View of the Patient</li> <li>• Integrated Care</li> <li>• Communications Technology</li> <li>• Information Management</li> <li>• Patient / Community Expectations</li> </ul>
Priority Strategic Direction 5. Enhancing service networks and growing centres of excellence	
Priority Actions include	ICT Enabling Themes
<ul style="list-style-type: none"> <li>• Strengthening existing well performed service networks e.g. orthopaedics, GIT surgery</li> <li>• Establishing new surgical networks e.g. High Volume Short Stay, hand surgery at Fairfield</li> <li>• Establishing new centres of excellence e.g. Pelvic Cancer Surgery, Breast Cancer Assessment</li> <li>• Increasing the role delineation (sophistication and complexity of care) in a number of specialties at Campbelltown Hospital</li> <li>• Exploring options for leading a multiple LHD network for lower volume complex cancer surgery</li> <li>• Establishing strong local networks for services previously provided under Inter District Agreements e.g. mental health, oral health, drug health, population health</li> </ul>	<ul style="list-style-type: none"> <li>• Access</li> <li>• Alignment</li> <li>• Single View of the Patient</li> <li>• Integrated Care</li> <li>• Communications Technology</li> <li>• Information Management</li> <li>• Research</li> </ul>



Priority Strategic Direction 6. Shared access to unified information for all the health care team	
Priority Actions include	ICT Enabling Themes
<ul style="list-style-type: none"> <li>• Prioritising IT developments to provide all health professionals in the care team with access to the hospital eMR from remote locations e.g. general practice</li> <li>• Developing a SWSLHD Enterprise Data Integration Model converting de-identified clinical data from multiple sources into reporting modules to support corporate decision making</li> <li>• Expanding teleconferencing, telehealth, web based technologies, fibreoptic initiatives and social media to improve connectivity of all the health care team, including patients and carers</li> <li>• Supporting research and education through eMR modules and firewall traversal to Universities</li> <li>• Exploring web and social media portals for the community and service providers to access a unified service directory and resources in health information, education and health literacy</li> </ul>	<ul style="list-style-type: none"> <li>• Access</li> <li>• Alignment</li> <li>• Single View of the Patient</li> <li>• Integrated Care</li> <li>• Communications Technology</li> <li>• ICT Asset Management</li> <li>• ICT Support</li> <li>• Information Management</li> <li>• Research</li> <li>• Patient / Community Expectations</li> <li>• IM&amp;TD Service Design</li> </ul>
Priority Strategic Direction 7. An integrated focus on primary prevention for patients and communities	
Priority Actions include	ICT Enabling Themes
<ul style="list-style-type: none"> <li>• Closing the Gap in Aboriginal communities, in partnership with Aboriginal Land Councils and health organisations, with a focus on overweight and obesity and smoking related harm</li> <li>• Providing children with the best start in life, through inter-agency partnerships including the provision of sustained home visiting in the first two years of life to vulnerable families</li> <li>• Reducing the burden of preventable chronic disease through programs addressing smoking, obesity, healthy eating and drinking, food security, physical activity and falls prevention</li> <li>• Reducing health inequity through primary prevention and multilateral community renewal programs in areas of locational disadvantage and ensuring services address health equity</li> <li>• Working with planning agencies to develop healthy urban environments promoting safety, social interaction and cohesion, connectivity, active transport and healthy food</li> </ul>	<ul style="list-style-type: none"> <li>• Access</li> <li>• Alignment</li> <li>• Single View of the Patient</li> <li>• Integrated Care</li> <li>• Communications Technology</li> <li>• Research</li> <li>• Patient / Community Expectations</li> </ul>



Priority Strategic Direction 8. Embedding education and research within service delivery	
<p><b>Priority Actions include</b></p> <ul style="list-style-type: none"> <li>• Creating a stronger research and teaching culture emphasising leadership, recognition of research achievement and retention of high quality academic clinicians</li> <li>• Ensuring curriculum and workforce development provides quality teaching and learning</li> <li>• Encouraging collaborative research that focuses on national, state and local priorities</li> <li>• Growing research capacity through expanded enrolment in post graduate research courses and building clinical trial capability, including governance and support structures</li> <li>• Increasing the community's willingness to participate in research and clinical teaching programs</li> <li>• Using new Clinical Skills and Simulation centres and the South Western Sydney Education Centre, with effective IT links, to develop clinical skills and translate research into practice</li> </ul>	<p><b>ICT Enabling Themes</b></p> <ul style="list-style-type: none"> <li>• Access</li> <li>• Alignment</li> <li>• Single View of the Patient</li> <li>• Integrated Care</li> <li>• Communications Technology</li> <li>• Information Management</li> <li>• Research</li> <li>• IM&amp;TD Service Design</li> </ul>



<b>Corporate Action 1 High Quality Health Services</b>		<b>ICT Enabling Themes</b>
<b>Action will focus on</b>		
<ul style="list-style-type: none"> <li>• Ethical conduct</li> <li>• Respect and dignity</li> <li>• Maintaining accreditation</li> <li>• Meeting targets</li> <li>• Prevention and early intervention</li> </ul>	<ul style="list-style-type: none"> <li>• Interpersonal communication</li> <li>• Safety and quality</li> <li>• Managing the patient journey</li> <li>• Timeliness of care</li> </ul>	<ul style="list-style-type: none"> <li>• Access</li> <li>• Alignment</li> <li>• Single View of the Patient</li> <li>• Integrated Care</li> <li>• Communications Technology</li> <li>• Research</li> <li>• Patient / Community Expectations</li> </ul>
<b>Corporate Action 2 Community Partnerships</b>		<b>ICT Enabling Themes</b>
<b>Action will focus on</b>		
<ul style="list-style-type: none"> <li>• Information portals</li> <li>• Understanding community values</li> <li>• Capacity building</li> <li>• Fund raising</li> </ul>	<ul style="list-style-type: none"> <li>• Health literacy</li> <li>• Community participation</li> <li>• Media and public relations</li> </ul>	<ul style="list-style-type: none"> <li>• Access</li> <li>• Alignment</li> <li>• Integrated Care</li> <li>• Communications Technology</li> <li>• Information Management</li> <li>• Patient / Community Expectations</li> <li>• IM&amp;TD Service Design</li> </ul>



Corporate Action 3 Seamless Networks	
Action will focus on	ICT Enabling Themes
<ul style="list-style-type: none"> <li>• Clinical networks</li> <li>• Patient transport</li> <li>• Linking with the Medicare Local</li> </ul> <p>Areas of high population need, including:</p> <ul style="list-style-type: none"> <li>• Carers</li> <li>• Chronic care</li> <li>• Child protection</li> <li>• Culturally and linguistically diverse communities</li> </ul>	<ul style="list-style-type: none"> <li>• Access</li> <li>• Alignment</li> <li>• Single View of the Patient</li> <li>• Integrated Care</li> <li>• Communications Technology</li> <li>• Patient / Community Expectations</li> </ul>
Corporate Action 4 Developing our Staff	
Action will focus on	ICT Enabling Themes
<ul style="list-style-type: none"> <li>• Workforce planning</li> <li>• Recruitment processes</li> <li>• Career and succession planning</li> <li>• Job design/redesign</li> </ul>	<ul style="list-style-type: none"> <li>• Alignment</li> <li>• Communications Technology</li> <li>• IM&amp;TD Service Design</li> </ul>



<b>Corporate Action 5 Research and Innovation</b>	
<b>Action will focus on</b>	<b>ICT Enabling Themes</b>
<ul style="list-style-type: none"> <li>• Expanding research opportunities</li> <li>• Clinical trials</li> <li>• Best practice models of care</li> <li>• Building the evidence base</li> </ul>	<ul style="list-style-type: none"> <li>• Access</li> <li>• Alignment</li> <li>• Single View of the Patient</li> <li>• Integrated Care: Communications Technology</li> <li>• Information Management</li> <li>• Research</li> </ul>
<b>Corporate Action 6 Enhancing Assets and Resources</b>	
<b>Action will focus on</b>	<b>ICT Enabling Themes</b>
<ul style="list-style-type: none"> <li>• Linking service and capital plans</li> <li>• Equipment and technology</li> <li>• Asset maintenance</li> <li>• Asset disposal</li> </ul>	<ul style="list-style-type: none"> <li>• Alignment</li> <li>• Communications Technology</li> <li>• ICT Asset Management</li> <li>• IM&amp;TD Service Design</li> </ul>



<b>Corporate Action 7 Supporting Business</b>	
<p><b>Action will focus on</b></p> <ul style="list-style-type: none"> <li>• Electronic Medical Record</li> <li>• Telehealth</li> <li>• Corporate IT systems</li> <li>• Data and information integration</li> </ul>	<p><b>ICT Enabling Themes</b></p> <ul style="list-style-type: none"> <li>• Access</li> <li>• Alignment</li> <li>• Single View of the Patient</li> <li>• Integrated Care</li> <li>• Communications Technology</li> <li>• ICT Asset Management</li> <li>• ICT Support</li> <li>• Information Management</li> <li>• IM&amp;TD Service Design</li> </ul>
<b>Corporate Action 8 Efficiency and Sustainability</b>	
<p><b>Action will focus on</b></p> <ul style="list-style-type: none"> <li>• Financial processes</li> <li>• Budget management</li> <li>• Clinical support services</li> <li>• Asset and energy sustainability</li> <li>• Corporate governance</li> </ul>	<p><b>ICT Enabling Themes</b></p> <ul style="list-style-type: none"> <li>• Access</li> <li>• Alignment</li> <li>• Single View of the Patient: Communications Technology</li> <li>• ICT Asset Management</li> <li>• IM&amp;TD Service Design</li> </ul>





## Appendix 2: List of stakeholders consulted

The following stakeholder groups were consulted:

### Clinical Streams

- Aged Care and Rehabilitation
- Allied Health
- Cancer Services
- Cardiovascular Services
- Complex Care and Internal Medicine
- Critical Care
- Drug Health
- Gastroenterology and Liver
- Medical Imaging
- Mental Health
- Operating Theatres (Liverpool)
- Surgical Specialities
- Paediatrics & Neonatology
- Population Health
- Women's Health

### Chief Executive's Unit

- Clinical Governance
- Director of Finance
- Directors of Nursing
- Operations

### District Services

- Community Participation
- Community Health
- District Ethics Research Governance
- Education and Workforce Development
- Human Resources
- Media and Communications Unit
- Information Management and Technology Division (IM&TD)
- Performance Unit
- Pharmacy
- Planning Unit
- Senior Complaints Officer
- Shared & Corporate Services
- Sydney South West Pathology Service (SSWPS)

### Facilities

- Bankstown Hospital – Acting General Manager
- Bowral Hospital – General Manager
- Campbelltown Hospital - General Manager
- Fairfield Hospital – General Manager
- Liverpool Hospital – General Manager

### Partners

- Ingham Institute of Applied Medical Research
- South Western Sydney Medicare Local
- University of NSW Clinical School





## Acronyms

IM&TD	Information Management and Technology Division
EMR	Electronic Medical Record
NICU	Neonatal Intensive Care Unit
ICT	Information Communications and Technology
eHR	Electronic Health Record
BYOD	Bring Your Own Device
IT	Information Technology
SWSLHD	South Western Sydney Local Health District
3G	Third generation
SIM	Subscriber identification module
NEHTA	National eHealth Transition Authority
CIO	Chief information Officer
PCEHR	Personally Controlled Electronic Health Record
MyHR	My Health Record
IP	Internet Protocol
PABX	Private automatic branch exchange
VC	Video Conferencing
MMS	Multimedia Messaging Service
BAU	Business As usual
AFM	Asset & Facilities Management
CHOC	Community Health and Outpatient Care
eMM	Electronic Medication Management
EMR	Electronic Medical Record
ICCIS	Intensive Care Clinical Information System
IMS	Incident Management System
EIR	Enterprise Image Repository
PIP	Pharmacy Improvement Program
GovDC	NSW Government Data Centre
MDT	Multi Disciplinary Team
EIR	Enterprise Image Repository
ECG	Electrocardiography
PBS	Pharmaceutical Benefits Scheme
GP	General Practitioner
COW	Computer on Wheels
VOIP	Voice Over Internet Protocol
SOE	Standard Operating Environments
LHD	Local Health District
SLHD	Sydney Local Health District
STARS	Sydney Targeted Activity Reporting System
NGO	Non-government organisation
AHS	Area Health Service
NEAT	National Emergency Access Target
MI	Medical Imaging
HETI	Health Education and Training Institute
EIS	Endoscopy Information System







**Health**  
South Western Sydney  
Local Health District

**South Western Sydney Local Health District**

Liverpool Hospital Eastern Campus

Locked Mail Bag 7279

Liverpool BC NSW 1871

Tel. (612) 8738 6000

Fax. (612) 8738 6001

[www.swslhd.nsw.gov.au](http://www.swslhd.nsw.gov.au)