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Government of **Western Australia**
Department of **Health**

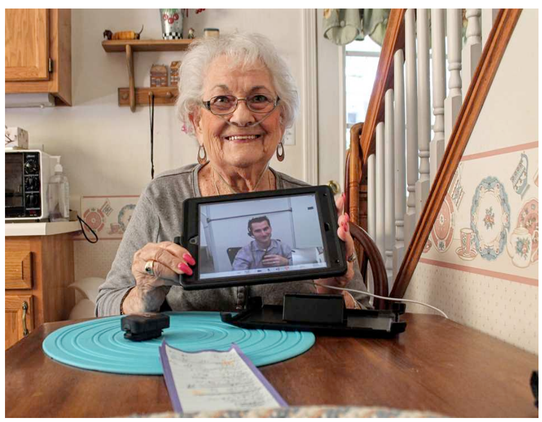
Sustainable
Health Review

Public Submission

Cisco Systems Australia

Level 5, 167 St Georges Terrace

Perth, WA 6000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Public Submission Cover Sheet

Please complete this sheet and submit with any attachments to the Sustainable Health Review Secretariat

Your Personal Details ***This information will be used only for contacting you in relation to this submission***	
Title	Mr ☐ Miss ☐ Mrs ☐ Ms ☐ Dr ☒ Other ☐
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A message from Ken Boal VP Cisco Systems ANZ

It is my pleasure to offer Cisco's submission to the Western Australian Department of Health's Sustainable Health Review.

Western Australia, like the rest of the country, is in the midst of a major economic, social and political transition that is being driven by global competition and is being built on rapidly expanding digital platforms and technological innovation.

Cisco is at the heart of this transition as we work with our customers and partners to help them to securely grow, reduce costs and deliver better, faster and personalised customer experiences to highly connected and mobile consumers and citizens.

This change is happening rapidly in healthcare, where access to information and better targeting of services, treatment and care can deliver real, measurable and sustainable benefits to Western Australians, right across the State.

Our submission focuses on improving patient outcomes by using digital tools to access existing information to accurately deliver healthcare capabilities where they are needed, when they are needed, with a focus on affordability.

While digital transformation brings many opportunities, we recognize that disruption to traditional business and organisational models presents challenges as people embrace a new wave of products and services.

Businesses have an important role to play in this transition in a fully digitised economy and that is why Cisco has developed a National Engagement Strategy (NES) to help play our part in in supporting Australia's digital transition, to have a voice in our public policy challenges relating to innovation, skills, education and building resilient communities.

A key part of our National Engagement Strategy is investing in innovation, such as our innovation centre at Curtin University, which is already undertaking globally relevant research that we hope will lead to commercialization and economic development opportunities in Western Australia.

This submission is an important part of our National Engagement Strategy and how we hope it adds to the information available to the Review team.

Western Australia has a unique combination of strong innovation capability, world class education and research facilities, a skilled workforce and a public and private sector willing to embrace new technologies in order to compete in the global marketplace.

I congratulate the Western Australian Government for undertaking this review and seeking public submissions.

About The Author

Brendan Lovelock

Health Practice Lead
Cisco Australia

In his role as the Health Practice Lead for Cisco Australia, Brendan is responsible for developing transformative information technology solutions and services that facilitate the delivery of safe, affordable and accessible healthcare. The focus is to drive quality and performance through improved utilisation of healthcare resources across the whole care provider ecosystem.

Prior to this role, Brendan was the CEO of the Health Informatics Society of Australia, where he had a focus on catalysing innovation in healthcare provider processes in Australia. Brendan has previously sat on the board of the Health Informatics Society of Australia and the advisory board of Melbourne University's Centre for Global Innovation Management.

Brendan has an extensive background in business management and technology commercialisation, having held senior executive positions with Telstra and Eastman Kodak, both in Australia and internationally.

Introduction

This paper will discuss the vision for a truly ***information enabled*** healthcare system, where care is more virtualised and enabled where it is needed, rather than where it is available. It is a system where clinicians and the population can communicate more effectively and one in which clinical process is centered around the ***needs of the patient***, rather than being forced into a limited number of delivery scenarios. Most importantly, it is an environment in which the individual is better socially engaged and supported in their journey to wellness.

This is not the conventional call for more clinical application investment, but a call to ***mobilise the information we have now***, to better engage the facilities and services that Western Australia has invested so much in, to enable health and wellness processes to dynamically form around the individual.

Western Australia has made a substantial investment on its physical healthcare infrastructure, and there are significant application and emerging interoperability capabilities in the acute and primary care sectors. The missing capabilities are in how these information resources are connected to the clinicians and patients, how the information is accessed, shared and coordinated to deliver health care that is formed around the needs of the individual and maximises the use of existing resources. It is these capabilities that sit at the centre of enabling Western Australia to drive a more citizen centric and productive healthcare system.

Information and Outcomes in Healthcare

Healthcare can be an all-consuming force, overwhelming people and resources at an unsustainable rate in its objective to deliver a healthier community. To overcome this fundamental challenge, we need to unravel the complex tangle of people, processes and information to create a more effective and equitable system. The problem has been well known for many years, health care, to be truly patient centric at the point of delivery, needs to be highly customised. However, customisation that does not leverage a common backbone of resources leads to an explosion in complexity and cost. This is one of the key issues faced by the providers of healthcare in Western Australia.

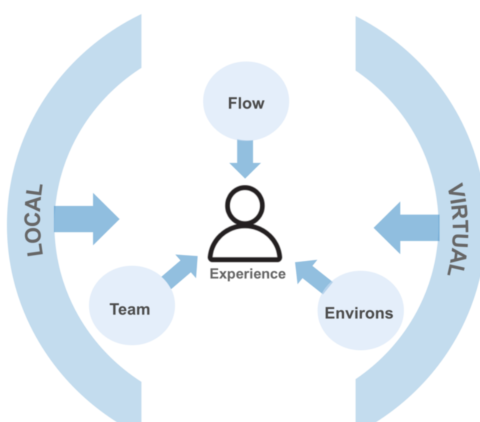
The effective delivery of health services is driven by optimising the delivery (fast, consistent and coordinated) of resources (people, equipment, supplies and knowledge). In a modern healthcare system, this optimised delivery of resources is, in turn, driven by the optimised delivery of information (fast, consistent, and coordinated). It is the delivery of a common information infrastructure backbone which creates the ability to customise resource delivery, that enables clinical process to form around the needs of the individual patient in a cost-effective manner. You can approach the creation of the information backbone by identifying the high-level information process types which will drive transformation, and focus on the creation of flexible and accessible information services to deliver them. Cisco has conducted several studies of information flows within Australian hospitals which have identified 3 major transformational information process types.

Teaming: More effectively leverage the skills of the individuals within the care team, encompassing providers, carers and the patient. Establishing an environment of pervasive and dynamic teaming.

Flow Optimisation of **patient experience** and productivity through creating the ability to engage with, and dynamically form care and its associated resource delivery processes around the **needs of the patient**.

Environment Creating an environment, both local and online, which maximises learning and decision making through **reducing distractions, interruptions and customising information delivery for the specific needs of the individual**. Empowering the individual in their role as a provider, carer or patient.

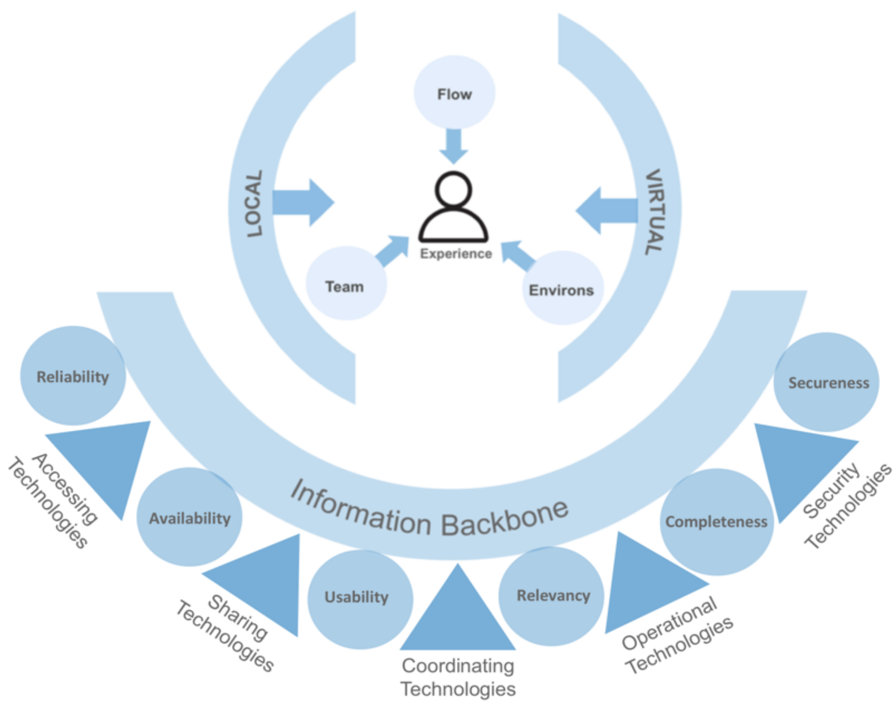
These information process types enable both local (in person) and virtual (online) service delivery, fully leveraging current skills and physical resources of the States healthcare system.



Key healthcare transformation processes

The common information backbone required to support these process types is comprised of two components. The first component is the integrated set of technologies that enable the core information functions:

- **Accessing Technologies:** Being able to access information where it is needed on a device appropriate for the information being consumed, the skills of the person consuming the information and the task at hand.
- **Sharing Technologies**: Once accessed, information needs to be shared to enable clinical decision making, and for the patient peer support. This information needs to be shared in manner which is simple to engage, and in line with the models for sharing common to the broader consumer environment.
- **Coordinating Technologies:** Once the information is accessed and shared, and a decision has been made on the next step, then the care providers and patients need the ability to engage with the clinical process to influence the way care is delivered.
- **Operational Technologies:** It is critical that the information backbone is constructed in such a way that it is easy and cost effective to maintain and evolve as the needs of the community mature.
- **Security Technologies:** In the current cyber security environment, it is critical that security is part of the information systems fabric, it is seamlessly integrated from the end points through to the cloud services and that it is constantly monitored and real time updated as threats appear internationally.



Information Backbone Structure

The second component to the backbone are the information attributes. These describe the qualities of the information delivered by the backbone technologies describer earlier.

- **Reliability:** Information is available whenever it is required
- **Availability:** Information is available wherever it is required
- **Usability:** Information delivered on/in an appropriate device/format
- **Relevancy:** It is the information required for the task at hand
- **Completeness:** Information contains all the context required for decision making
- **Secureness:** The information process is protected against extraction or tampering

The delivery of both the technology sets, and the information attributes, creates a set of services that can be selected and combined to enable sustainable customised care. In the remaining sections of this submission we will describe the three key process types that can be enabled by this common backbone.

Flow

The importance of optimising patient flow was emphasised in a recent 2016 comprehensive UK study[1] where they found that around 90% of patients spend less than 6 days in hospital and use only 35% of hospital space with an average stay of 1.1 days (Hospital Episode Statistics, 2016). Very small changes in length of stay (measured in minutes) and small changes in the time taken to prepare beds can cause significant disruption.

In 2014/15 Cisco completed in-depth ethnographic studies of communication process flows in 4 major Australian hospital Emergency Departments. These studies found a consistent picture of the role information flow played in disrupting patient flow. In summary, some of the key findings were:

- Finding and engaging other clinicians was a consistent cause of lost time and process variability
- Lack of timely to access information (lack of mobile data) was a driver of process unreliability
- Lack of transparency and communication of orders (Path, Rad and Beds) drove wastage of time
- Lack of closed loop tasks (notification of task accepted and completed) led to uncompleted tasks
- Gathering teams and sharing information was a time-consuming challenge
- Lack of active processes (ability to directly notify and individual of a task) led to uncompleted tasks
- Lack of systems interoperability led to time consuming note taking and unreliable data re-entry

These gaps in information flow were significant drivers of process variability and had the potential to negatively impact patient flow and increase patient length of stay. The conclusions from these studies were that the choreography of the care process is far from optimised in most hospitals and that improving information flow would have a major positive impact. Information technology had a central role in enabling more effective clinical and operational processes.

We have the capability to use what is now conventional technologies in retail and stadium facilities in the healthcare environment. These technologies can locate staff and patients, link this data with clinical applications, which **define a patient's needs and the available resources to support the patient**. This is providing an unequalled opportunity to better choreograph the journey of the patient through the hospital. This is the opportunity to improve process coordination, reduce process time and improve the consistency and reliability of care outcomes.

While some of the solutions could involve sophisticated location and analytics capabilities, there were a group of information flow disrupters which were relatively un-complex in concept. In all the hospitals that were studied, the

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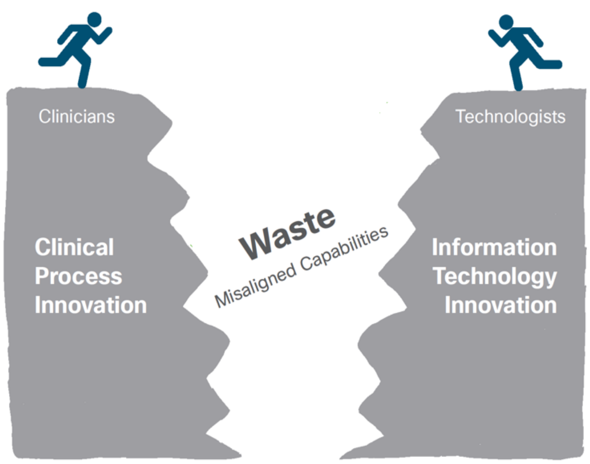
[1] Karakusevic, S (2016) Understanding patient flow in hospitals. Nuffield Trust briefing. Nuffield Trust. https://www.nuffieldtrust.org.uk/resource/understanding-patient-flow-in-hospitals

ability to access an up to date directory of staff roles and contact numbers on their mobile phone was seen to be a significant driver of improved collaboration.

The approach to this type of process improvement requires crossing the innovation chasm. That is the gulf which often exists between the Lean and 6 Sigma process improvement teams and the information technology innovators within the facility. The task of improving flow within a hospital or health region is not only the creation of easily accessible information services through a common information backbone, but also the engagement of the process improvement teams so that they can better envisage the opportunities held within a technology enabled healthcare environment.



The innovation chasm between clinical process innovation and information technology innovation

Teaming

The body of knowledge associated with delivering care to an individual is rapidly expanding and this knowledge needs to be shared and coordinated across a growing multi-disciplinary team. This complex team nature of care is more than just having many different care professionals delivering services to an individual. It requires them to work together, to collaborate, to provide the best possible outcomes for the individual. Information and how it is provided and consumed is central to addressing these challenges.

But there is no universal way to do this, as each team will have its own unique requirements and restraints. By enabling each team to best utilise its own resources, and take advantage of knowledge and expertise outside their team, we can enable them to develop models of collaboration and care delivery that allows them to continuously improve their services, enhance their skills and deliver better outcomes. To achieve this requires a clear focus on the way information is accessed, shared and coordinated to create high quality clinical processes which are both efficient and adaptable to the complex individual needs to the patient and the skills of the supporting care teams.

Building a more effective infrastructure for shared information use and teaming contains many technology types, including, mobility, quality of service, security, location services and task management. In this mix, the collective technology group that has the greatest power to transform an individual's engagement with information is communications. The future evolution of teaming, is about more deeply engaging the individual staff of a care provider, across multiple access technologies, using the integrated combination of images, text, voice and video. It is **leveraging all the consumer capabilities of social collaboration** into the secure environment of clinical process. This is the emerging domain of "Process Collaboration".

Process Collaboration encompasses **accessing relevant clinical and operational information**, freely on the most appropriate platform, the **ability to share that information with others to come to a clinical decision** and the capability to bring teams around that information to drive clinical actions. To understand this process of human to systems and human to human interaction that is time, location and task dependent it is necessary to segment the process into a series of stages with the appropriate characteristics, as detailed in the framework below. These stages range from simple point to point communication through to full process collaboration.

Characteristic / Stage	**Immediate:** Rapid access to the individual	**Collective:** Brings together multiple teams members	**Informed:** Information is aggregated from multiple data sources	**Persistent:** The discussion is stored and supplemented	**Coordinated:** Information is linked with workflow
Separate Communications: Separate stacks for voice, video and data applications	🟢	🔴	🔴	🔴	🔴
Mixed Communications: Single point linkage between individual voice, video and data communication stacks and device. Often driven through consoles and human intervention	🟢	🟢	🔴	🔴	🔴
Unified Communications: Multiple devices with single interfaces integrating a mix of multimedia communications apps on a unified infrastructure	🟢	🟢	🟢	🔴	🔴
Social Collaboration: Multiple devices with single interfaces integrating a mix of multimedia communications, collaboration, social networking, on a cloud based infrastructure	🟢	🟢	🟢	🟢	🔴
Process Collaboration: Multiple devices with single interfaces integrating a mix of multimedia communications, collaboration, social networking, linked with workflow and key business application on both a secure cloud and on-premise infrastructures	🟢	🟢	🟢	🟢	🟢

The evolution of communications to Process Collaboration

The evolution to a process collaboration enabled health environment is built upon the technology services and attributes of the common information backbone.

Environment

The digital transformation of healthcare has enabled clinicians to be subjected to an almost endless flow of both relevant and irrelevant data, be located and interrupted at any time, as well as being subjected to visual and audible distractions throughout the hospital or healthcare facility. There is a significant potential for the benefits of the digital transformation to have some serious side effects. Clinical care is a profession that requires periods of concentration where distractions and interruptions can seriously affect the quality of work. It is also a profession where decision often require rapid access to very specific information amongst a sea of data competing for attention.

The ability to purposefully design our electronic healthcare environments to optimize an individual's clinical and personal decision-making capabilities is now becoming an important consideration in the design of both the physical and information components for a healthcare facility. This is the application of cognitive workplace design to healthcare.

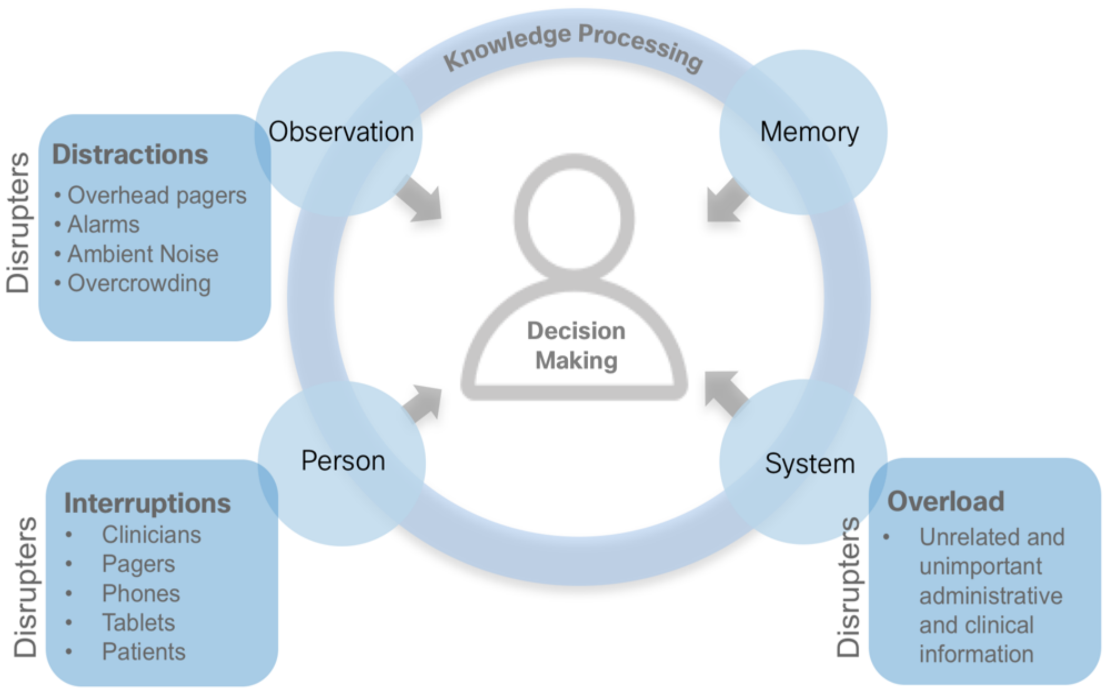
For hospitals, there are three major vectors for distraction:

Personal Interaction: Clinical care in a hospital is dependent on finding others and consulting on a decision or engaging their assistance in task, and so interruptions are an essential part of the way clinical workflow functions in a hospital. However, there are certain tasks (high cognitive load activities), such as medication management, where interruptions can have a highly detrimental effect on the quality of outcomes with serious impacts to the patient experience. This impact has been potentiated by the increasing electronic connectedness of clinicians, making them increasingly available to a broader community of people. Minimizing unneeded or inappropriately timed interruptions can have an important impact on the quality outcomes of a healthcare facility. Westbrooke et al, found that each interruption in the medication management processes they studied was associated with a 12.1 % increase in procedural failures and a 12.6 increase in clinical failures (ARCH INTERN MED/VOL 170 (NO. 8), APR 26, 2010. In a further Australian study Westbrooke also found that doctors failed to return to 18.5% of interrupted tasks (*Qual Saf Health Care* 2010;**19**:284-289).

The Observed Environment: The noise of overhead paging, the distraction of constantly tripping monitor alarms, the audible ringing of phones, the visual clutter of equipment with multiple monitors competing for attention, are all sources of distraction and causes of stress and fatigue for both patients and clinicians.

Information Overload: Digital Clinical Applications have the potential to gather and display substantial quantities of information. For both a clinician and the patient, the challenge can be how readily available is the information that is require for the task at hand. How deeply is that information masked by other unrelated and distracting data that needs to be waded through to get the required information. The ability to prioritize information according to the role of the person searching, or even the nature of the patient they are looking after, can have an important impact to the speed of access and consequently the usability of the information systems within the facility.

The role of the common information backbone is to enable the consideration of context in the way information is delivered. This enables and individual to use their role, location and the type of device they have to reprioritize the information they receive and the way they are contacted. This approach is also relevant to the health consumer, where being able to dynamically curate the information delivered to an individual depending on need and skills has the opportunity to improve the comprehension of health care information.



The impact of the information environment on the decision-making skills of the individual.

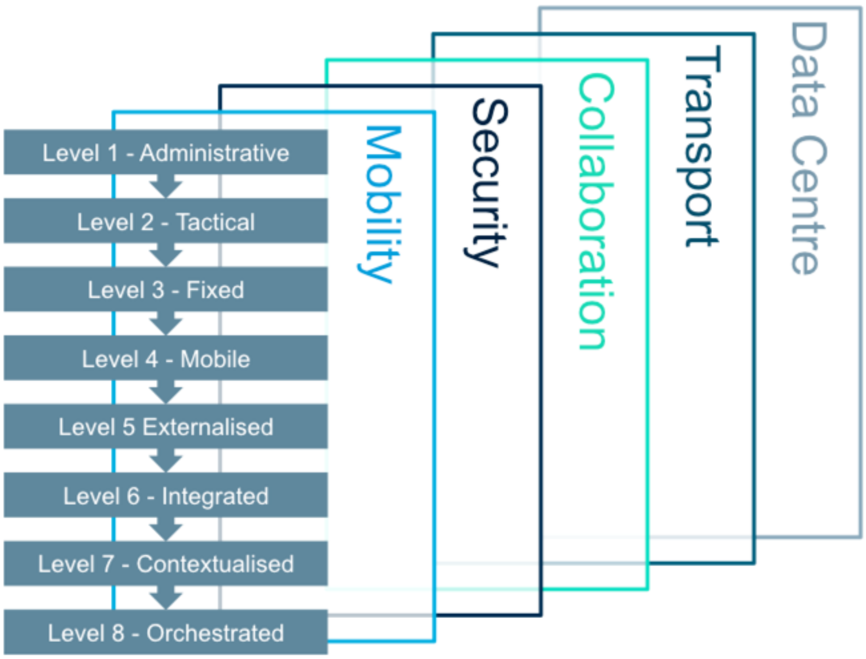
Delivery

The delivery of the common information backbone that supports the complex needs of Western Australia's healthcare system requires a clear understanding of the current infrastructure status, and a structured approach to evolving the State's information systems capabilities. Cisco has developed a vendor neutral approach to benchmarking information infrastructure capabilities and planning the evolution of that infrastructure. The Infrastructure Maturity Model characterises the technology services required to support healthcare's information driven processes. It provides a framework for determining the preparedness of an organisation to support existing information processes or planned process rollouts. It can be used to plan the evolution of a healthcare region's ICT services into discrete steps that are more effectively deployed at a lower risk. It has been mapped to the HIMSS EMRAM maturity model and can provide insight as to the healthcare infrastructure requirements needed to support major clinical systems roll outs.

The IMM classifies the way hospitals manage their digital information into an 8 level model reflective of the sophistication of their information use. Each of these levels is characterised in terms of the experiences they generate for the key stakeholders in the healthcare facility and the technology services required to support those experiences.

The 8 level model is applied over the 5 domains of information technology services that are used to characterise a healthcare services ICT infrastructure

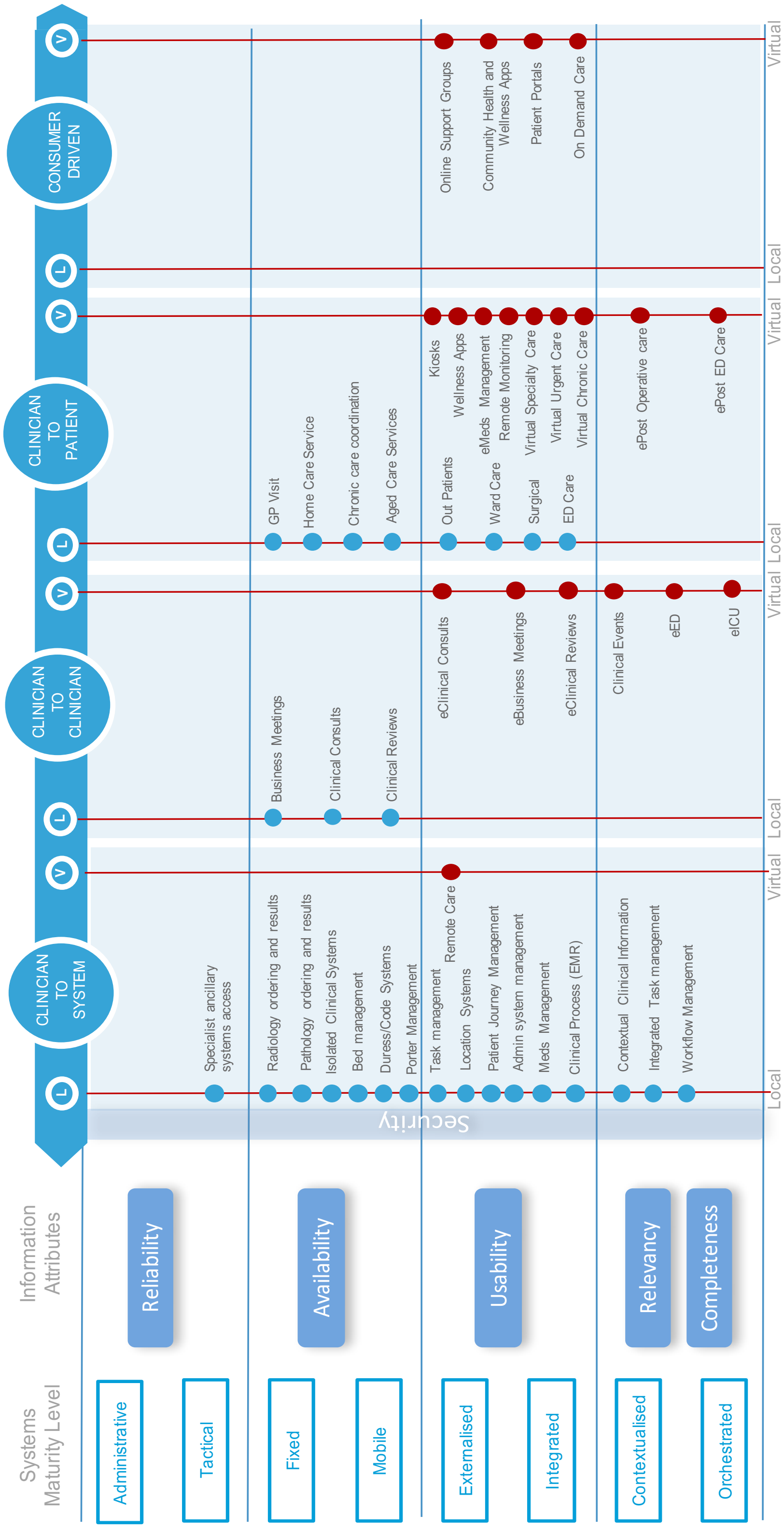
- Transport
- Mobility
- Security
- Collaboration
- Data Centre



Domain Structure of the Infrastructure Maturity Model

Each of these domains are further divided into a number of subdomains where the relevant technology services supporting those domains are defined. With each of the technology services a set of technology dependencies are also established.

The model provides and understanding of the how the both the technology services and the underlying information attributes are delivered. In particular it can be mapped to the requirements of the critical information services within the health care system. See Appendix I for details



Mapping of the Infrastructure Maturity Model to the information attributes and selected clinical services

Recommendation

In this submission, we have described three sets of transformational processes that are operating to different levels within the Western Australian healthcare system, Teaming, Flow and Environmental Design. These are all underpinned by a set of information infrastructure capabilities, as defined by the infrastructure maturity model. The initial need is to define the appropriate existing and future maturity levels that the State needs to deliver on its desired clinical service goals. The State's information capabilities can then be benchmarked through the IMA and a roadmap and investment plan put in place to achieve those capabilities.

Of course, there are many elements to achieving a clinical outcome, of which the information services are one. However, in the current information driven healthcare environment, information services are an essential foundation that must be attended to if the State wishes to take advantage of the potential of their significant capital infrastructure investments, and overcome their skill and geographic distance challenges.

Appendix I

The Cisco Infrastructure Maturity Model

Cisco Infrastructure Maturity Model (IMM)

Overview

The Infrastructure Maturity Model (IMM) characterises the technology services required to support a hospital's information driven processes. It provides a framework for determining the preparedness of an organisation to support existing information processes or planned process rollouts. Its structured information forms the foundation of technology strategy roadmaps and associated business case proposals. It can be used to plan the evolution of a hospital's ICT services into discrete steps that can be more effectively cost justified. It has been mapped to the HIMSS EMRAM maturity model and can provide insight as to the hospital infrastructure requirements needed to reach a given EMRAM level.

The IMM classifies the way hospitals manage their digital information into an 8 level model reflective of the sophistication of their information use. Each of these levels is characterised in terms of the experiences they generate for the key stakeholders in the healthcare facility and the technology services required to support those experiences. The 8 level model is applied over the 5 domains of information technology services that are used to characterise a hospital's ICT infrastructure.

- Transport
- Mobility
- Security
- Collaboration
- Data Centre

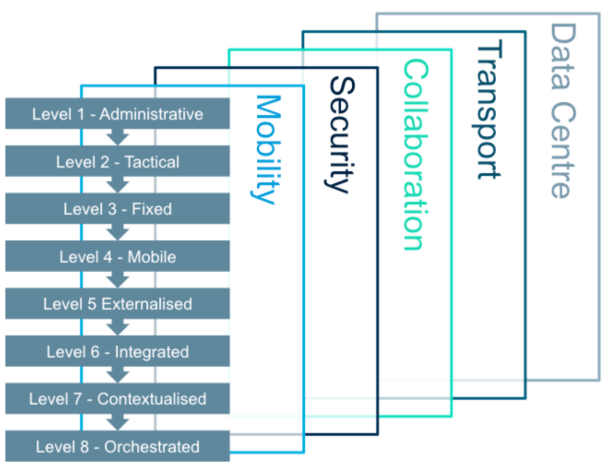


Figure 1: *Domain Structure of the Infrastructure Maturity Model*

Each of these domains are further divided into a number of subdomains where the relevant technology services supporting those domains are defined. With each of the technology services a set of technology dependencies are also defined (see figure 2)

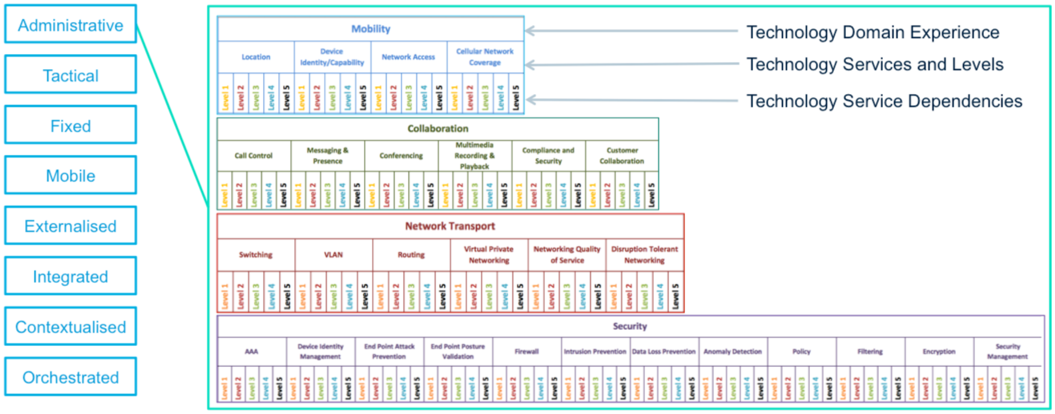


Figure 2: *Sample Domain and Subdomain Structures for the Infrastructure Maturity Model.*

Process

The analysis of an organisation's capabilities in terms of the IMM is carried out using the Infrastructure Maturity Assessment (IMA).

The assessment is carried out using a guided on-line assessment tool. A Cisco trained individual will work with the hospital staff completing the survey to clarify each of the questions and ensure consistent information.

The survey process is usually completed in under 4 hours. It is important to have people skilled in the 5 domains (Transport, Mobility, Security, Collaboration and Data Centre) present to assist in the completion of the survey.

After completion of the survey the data will be analysed by Cisco and a report is provided to the hospital.

The report will analyse the maturity of the ICT infrastructure and map that to the requirements of the HIMSS Electronic Medical Record Adoption Model (EMRAM) assessment.

The information from the survey will remain confidential. De-identified information will be used to enable individual hospitals to benchmark themselves against hospitals from similar peer groups.

Outcomes

On completion of the surveys the Department of Health will receive a report that identifies the overall maturity score of the hospitals surveyed and their respective experience levels. It also will receive a combined report consisting of the surveyed hospital's maturity ratings in each of the subdomains within the five infrastructure domains. This report will highlight the key potential issues and opportunites that come from being at those specific IMA levels. Examples of key report outcomes can be found in Appendix I.

The report will also provide a mapping of the maximum EMRAM level that can be supported by the ICT infrastructure's technology domains and subdomains.

With this information, an individual hospital can be analyzed with respect to the gap between where they are in terms of information capabilities and where they need to be, given their plans for services, applications or equipment upgrades. It will also enable the WA Health Department to view the collection of hospitals that have been surveyed and better target the deployment of infrastructure improvement to areas which match the capability gaps in the States Hospital Network.

IMA Sample Output

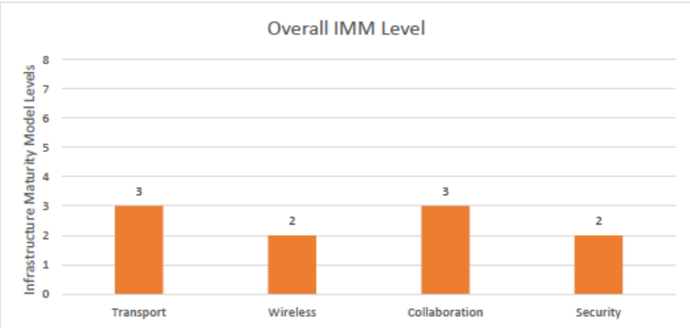
IMA Word Document

Hospital Overall Result

IMM Current State Result

Level	Description
3	Fixed

IMM Current State Domain Result



IMM Current Level Business Value Propositions

IMM Overall Current Business Value Proposition	
Capability	**Value**
Patient Experience	**Enhancing the care processes** - Better access to clinical staff through improved communications - Improve support of the patients' needs with the better integration of clinical needs
Clinical Quality	**Improved breadth of access to clinical information** - Quicker access to clinical information - Improved access to colleagues - Access to a broader array of clinical information
Productivity	**Enhanced resource utilisation** - Improve staff utilisation through broader access to information, improving clinical quality and reducing waste through duplication

IMM Next Level Business Value Propositions

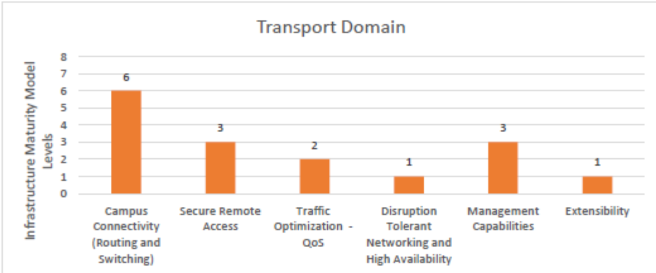
IMM Overall Next Value Proposition	
Capability	**Value**
Patient Experience	**Creating an information driven patient experience** - Creation of bedside patient services - Enabling clinical staff so they are more proactive to patient needs - Enabling clinicians and patients to have greater mobility
Clinical Quality	**Improved speed of access to clinical information** - Access to information where the clinician needs it - The ability to track and recover equipment and locate key staff - Reduced walking time to engage and manage process
Productivity	**Improve process efficiency** - Enabling process redesign through increasing the availability of information where care is delivered and operational processes are transacted.

Transport Domain

Current State Domain Result

Level	Description
3	Fixed

Current State Sub-Domain Result



Sub Domain Technical Value Proposition

Transport Domain Technical Value Proposition	
Current Level Value	**Next Level Value**
Enhancing and improving the care processes and access to clinical information - Limited down-time and high bandwidth for clinicians connecting to the wired network - Clinicians have adequate access to their data applications throughout the hospital - Clinicians can access hospital resources from outside of the facility (i.e. home) securely	**Creating information driven clinical decision processes** - Clinicians can have reliable and prioritised access to data and voice - Clinicians can access their applications based on their user credentials - Clinicians can make phone calls and roam throughout the hospital using the health entity 802.11x wireless network - Clinicians can access their own unique data applications based on their identity and role - Network administrators have a single pane of glass to manage the network - Administrators have the ability to manage 3rd party medical devices

Sub Domain Typical Level Characteristics

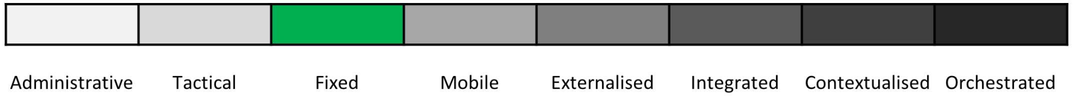
Typical Transport Domain Characteristics	
Sub-Domain	**Present Domain Typical Level Characteristics**
Campus Connectivity (Routing and Switching)	- Hierarchical Network design - Resilient Network Design - Modular and Scalable Network Design - Well defined Access Port Policy - Virtual Segmentation - Mobile Experience - High Bandwidth, Resilient and Secure WAN Connectivity - Centralised Repositories that Service multiple facilities - Integration between Hospitals and other External Service Providers. - WAN connectivity for Networks in Motion i.e. ambulances or ad hoc service centres. - Care at Home - Patient Portal Access - WAN optimisation - Edu-roam - Onsite Access for External Parties - Medical Device Connectivity through - Converged Network Infrastructure - Onsite Visiting Consultants have access to Internal Network Resources. - BMS Connectivity through Converged Network Infrastructure
Secure Remote Access	- Layer 2 & 3 VPNs - Remote Access VPN (SSL/IPSEC/IKEv2)
Traffic Optimization - QoS	- Isolated QoS - Basic QoS policy defined - Trust boundaries are well defined
Disruption Tolerant Networking and High Availability	- Manual Switchover

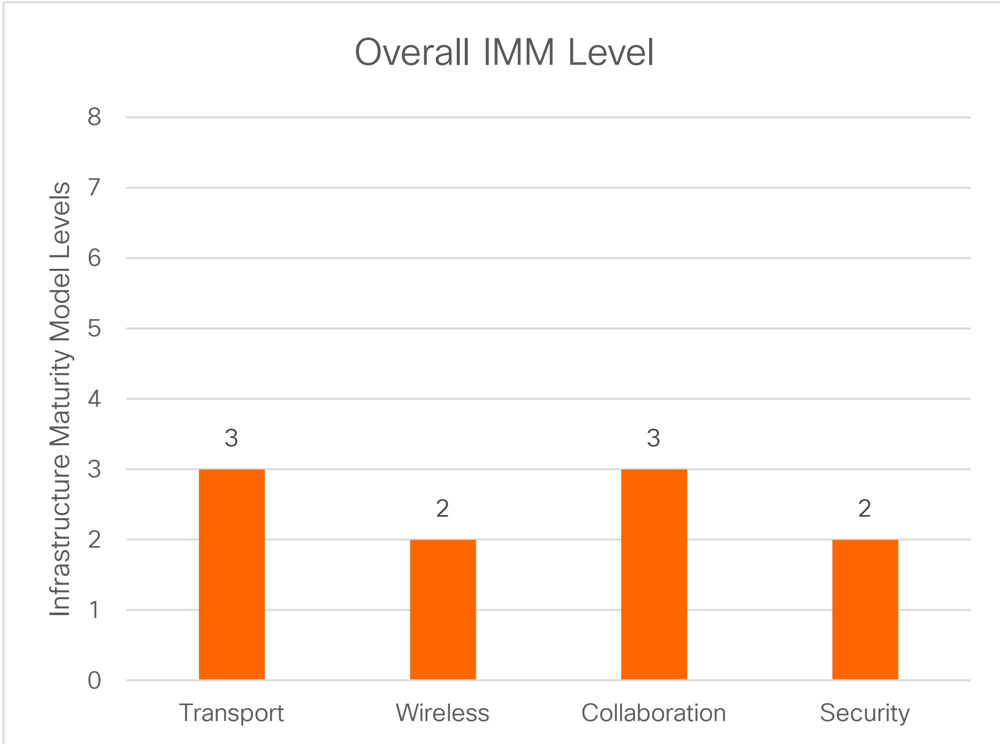
Questions and Responses

Transport Domain	
Question	**Response**
Select an option that best describes your campus network	The campus network is implemented according to a well-designed multi-tier architecture and there are well defined policies in place. QoS is deployed in parts of the network to allow smooth voice/video between endpoints in some parts of the building. There are a few different Network Management Systems (NMSs) in place to manage different components of the network.
Select the option that best describes the network connectivity in the hospital campus	Access to any internal resource can be provided to 3rd party service providers upon request and given that they meet all the requirements Virtualised network infrastructure is being used. New network infrastructure can be provisioned automatically as and when needed.
What percentage of the core/distribution/access layers of the network is less than 3 years old: Core	30-60%
What percentage of the core/distribution/access layers of the network is less than 3 years old: Distribution	N/A
What percentage of the core/distribution/access layers of the network is less than 3 years old: Access	10-30%
How widely is PoE available in the hospital network	90-100%
How is virtual segmentation implemented and assigned	VLANs are used for segmentation and a VLAN trunking protocol is used to propagate VLAN information

IMA Presentation: Whole of Hospital

Hospital IMA Assessment: Level 3 (Fixed)





General Capability Description: Level 3 Fixed

Information technology is a key resource in the accessing, sharing and actioning of clinical information. The network has been designed for clinical requirements and has high reliability and data speed. There are a multitude of clinical applications for the support of specific departments and usually some interchange of data between applications. There are sufficient PCs of high performance to enable clinical access when required. Mobile data is accessed through Computers on Wheels (CoWs) and stand alone laptops. While ordering could remain paper based, patient results are electronically available to the staff for key services such as pathology, radiology and bed management. Reporting and patient information access remains largely paper based. There is voice grade wireless throughout the hospital. Staff regularly collaborate through fixed and mobile phones and are relatively self sufficient, frequently not requiring the switch services to connect them. They share text messages when they cannot call directly.

Implications

Operation at level 3 IMM capability creates significant limitations in the ability of the facility to take advantage of technologies aimed at improving information flow and process operations within the facility through making data mobile. It describes an organisation with

IMA Transport Domain Assessment Sample Result

Impact Areas

The very high score in Campus Connectivity reflects a transport infrastructure that is on the verge of high performance capability. However, the weaker scores in other areas also reflect that the same network has the potential for unreliability, where there is a lack of capability to optimally manage data priority, or deal with network failures. The potential is for the network to not be able to fully leverage its capabilities.

Interesting Points

- An isolated QoS approach is a major limitation. With the delivery of new services and the traffic prioritization that may occur. An enterprise wide approach should be seriously considered
- There are single points of failure in the Core/Distribution layers. With the imminent introduction of new EMR services, the hierarchical campus design may need to be-realigned with QoS, Secure Remote Access, Disruption Tolerance and High Availability should be considered possibly even at the Access Layer if medical device connectivity into the IP converged network is implemented.
- 40-70% of core switches and 70-90% of access switches are more than 3 years old. A new Switch design needs to be considered with redeployment and reuse of older Switches in areas of less importance and then procurement of new Switches.
- With the advent of more devices connecting to the IP converged network, an in-depth analysis of Management requirements needs to be investigated.