LESSONS FROM DIGITAL HOSPITAL BUILDS IN AUSTRALIA

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Introduction

This paper offers a summary of the roundtable meeting of State and senior hospital CIOs and CEOs that occurred in Melbourne on December 4, 2014. The discussion centered around the observation that there can be significant disconnects between the aspirations articulated for a new hospital and the final outcomes of that hospital build.

While it is acknowledged that this is a complex area there appears to be a number of underlying themes that lead to this result, particularly in case the of new digital hospital builds. This paper is built around the major themes of the discussion that occurred during the roundtable meeting and the survey of CIO opinions, which was also taken during the meeting (see Appendix).

The six major themes that developed during the discussion were:

1. The Vision Disconnect
2. Governance
3. Models of Care
4. Standards
5. Future Proofing Design and Best Practice Adoption
6. Project Management and Public Private Partnerships (PPP) Risks and Responsibilities

In addition to summarising these six conversations this paper also identifies topics for further discussion. The objective of this paper is not so much to answer any of the questions, but to identify critical areas for future conversation. This paper aims to establish a structure for ongoing exchange of learnings between key stakeholders in new hospital builds and redevelopments.
The Vision Disconnect

Hospitals are highly complex facilities that represent one of the most critical investments a community will make. As such, stakeholders in the development of a new hospital often have strong aspirational visions of what they would like to achieve. But frequently there are many stakeholders involved with complex motivations and the lines of authority are not always clear. As a result, new hospital builds can often lack the understanding of how to translate the high level goals into practical operational outcomes. That is, the link between vision, roles and principles underpinning the design and delivery, including funding, may not always be clear. This issue is compounded by the complexity of the stakeholder groups that a hospital needs to serve. In Public Private Partnerships (PPP) this includes not only the patients, the health region, health service providers, State Health Department and the relevant State and Federal politicians, but also the builders, facility managers and their financing organisations.

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This can make the vision for the hospital a concept that evolves as the hospital is delivered. Such a situation can lead to the overall budget being poorly defined at the early stages of the build and prone to error. Often budgets can be wildly optimistic and create expectations that plague the project throughout its delivery. Commonly the budget and scope for the central building infrastructure is based on build costs only and omits project management, change management and other stakeholder costs. However, more significantly ICT, medical equipment, and transition to operation costs and issues are either not costed or poorly understood. The issue of optimistic or incomplete budgets can lead to the need for constant design revisions, progressively removing the key elements of design and functionality, and often leaves the hospital significantly under performing against its initial aspirations. In some cases it also leads to late top-up budgets or overruns, at a time in the project when it is difficult to integrate or reclaim either the original intent or the desire of the top-up.

This is particularly important in the delivery of digital hospitals where the design is not a simple evolution of past hospital builds. The technology ecosystem in healthcare is rapidly evolving as hospitals go through massive transitions in the way they use information. Hospitals are facing not only the onslaught of digital information from an increasing array of diagnostic devices, but also the mass conversion of their clinical and operational processes from paper to online, and demands from both clinicians and patients to access information on a bewildering array of personal information devices. The huge amount of information and these changes in technology can have a significant impact on both the vision and roles of a digital hospital and the principles by which they are delivered. The understanding of how information can be used to enable performance is still evolving, sometimes lacking established frameworks on how technology can be applied to deliver specific results or improve performance. This can lead to the need for a somewhat iterative process for designing the delivery on the hospital vision. It requires the collaboration between clinicians, technologists, change managers, health planners and project executives to enable for education on how technology could enable processes and the power of technology to change the way care is delivered.

FUTURE DISCUSSION ISSUES

- There is a critical need to be able to bring together all key stakeholders in a new digital hospital build and establish a realistic vision and roles for the facility. This vision needs to be underpinned by a clear set of principles (including funding principles) that can guide the managers and designers in the creation of the facility.

- The rapidly evolving nature of technology and the long development times for digital hospitals require a flexible approach to the principles of hospital design.
Governance can act as a catchall term to cover all aspects of management and the influence structures that drive it. Central to the discussion for new digital hospital builds was the issue of ownership and the influence structure that stemmed from it. The lack of clear project ownership by a single leader was felt to be a potential contributing issue in the difficulties associated with some new builds. While most builds have well-documented governance structures the problem can be how these structures function, and where the real points of decision-making and authority lie. Weak leadership leads to lack of clarity in the mission, roles, and principles of the hospital. This in turn leads to poor decisions being made. This is particularly relevant in the area of information technology where there the technology and its outcomes are rapidly evolving and there are fewer established reference points. This can mean that technology is an easy target for early cost-cutting exercises that result from over zealous expectations as discussed in the Vision Disconnect section of this paper.

An influential and articulate leader with the ability to bring together multiple stakeholders and create continuity across the project is an important element in a successful new hospital build. A clear line of authority enables a well-defined project methodology that can be supported by informed and considered decision making. The importance of a strong leader and the engagement of competent project managers and team members is a continuing theme in most successful hospital builds. It should be noted that these individuals are in high demand in Australia.

The issue of ownership is particularly complex in the case of a PPP hospital where the three key stakeholders, the funders (State Government), the providers (the CEO and his operational team) and the build managers (the PPP team) have strong and interdependent roles to play. It was felt to be important that the responsibilities of each of these groups needed to be clearly defined at the earliest possible stage of the project, and in particular how each of these parties execute their authority through the management structure. In some cases it was felt that due to the complexity of the project there was a tendency for insufficient transparency and consultation between parties resulting in elements of the build progressing in unproductive ways. This of course caused significant delays to the project. Again, this is where the role of a unifying leader of the project can bring together and manage these potential process flaws.

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An important aspect of Governance is the role of vendors and consultants in the early stages of the digital hospital design. In a rapidly evolving technological ecosystem these project participants are often the repositories of critical design knowledge. There needs to be improved ways of engaging these providers in the early stage of design that fits with an established model of governance and probity for the project. This issue of engaging the broader ICT ecosystem is compounded by ICT being one of the last groups to be involved in the hospital design process. The increasingly central role of ICT in the delivery of care demands that this needs to change. ICT impacts all phases of hospital design, including the built environment.

FUTURE DISCUSSION ISSUES

- Project ownership and the roles and the responsibilities of key stakeholders
- The need for a single strong leader to bring together stakeholders
- Continuity of key, leaders, decision makers and project directors
- Transparency and consultation between project groups
- The early engagement of consultants and vendors
- The early engagement of ICT in a holistic design process
Models of Care

One of the challenges in building a digital hospital is that the design process may begin up to five or six years prior to the hospital opening date. In the delivery of a digital hospital, where a rapidly evolving technology set is a defining part of the design, there is a major challenge in designing around technologies which are anticipated but may not initially be present in the market.

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It’s important to recognise current technology deliverables while allowing for the flexibility to encompass new technologies that could better support the constantly evolving care processes. The most common method for achieving this has been the development of the Models of Care for a hospital. These are the descriptions of how care will be delivered in the facility. They are patient focused and clinician enabling frameworks that link processes with staff and outcomes. Models of care are a critical document in defining the clinical requirement of a hospital and their creation is central to the effective operation of a new facility. While these documents provide the description of how a hospital operates they are often not completed at the time of hospital design, so they sometimes miss the opportunity to inform the design of the built environment.

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In the past these frameworks have been clinician driven and are often out of step with the key design phases of the hospital. There are exceptions to this, particularly in Victoria where a number of recent hospitals have engaged in the early development of models of care that have informed technology design.

There is a compelling need to establish a standardised framework for Models of Care for new hospitals and hospital redevelopments. These frameworks need to be structured to include the role of information technology in enabling care. This needs to be carried out with the leadership of the medical colleges in partnership with health technologists, designers and health managers to ensure frameworks that will engage all these groups in a dynamic and iterative process. The incorporation of information technology into clinical processes can often be a learning process for all parties. A framework that brings these parties together in this collaborative discussion at the early stage of hospital design would have powerful influence on the application of technology and its integration into the design process.

FUTURE DISCUSSION ISSUES

• How can we create a standardised form of Models of Care that can guide the design of new hospitals and facility rebuilds?

• How can we develop standardised Models of Care that incorporates ICT capabilities and functions?
While Models of Care are critical in defining the clinical and technology requirements for the hospital, the understanding of how to implement these technologies is founded in the existence of strong hospital ICT standards. While Models of Care are critical in defining the clinical and technology requirements for the hospital, the understanding of how to implement these technologies is founded in the existence of strong hospital ICT standards. At present there are a very limited set of standards in Australia for the application of health IT in hospital construction. Building on the established health ICT standards in Australia to create a relevant set appropriate for hospital design is a significant and complex task. To initiate and guide this process there is a need to establish an overarching set of principles and guidelines on the application of ICT in hospital design as a precursor. These guidelines could include the outcomes on issues such as Models of Care, Governance and future proofing design which have been discussed in the roundtable forum and could be further developed by this group.

FUTURE DISCUSSION ISSUES

- We need to develop a set of principles and guidelines of the incorporation of ICT into Digital Hospital Design in Australia. Some of the topics may include:
  - Facility design including space allocation, services and reliability engineering
  - Wireless network design for hospitals
  - Integrated communication and messaging standards
  - Medical equipment integration
  - Interoperability principles and standards
  - Mobility and devices
- How can we best support the project under development within Standards Australia on this subject?
Future Proofing

One of the key challenges in the delivery of a digital hospital is how you design a technology enabled facility that can maintain its currency, not only from hospital design to deployment, but also over the 20 to 50 years of its total lifespan. As technology becomes more central to the delivery of care, technology refresh cycles (capex or opex) will become a natural part of long term healthcare planning. However even with funding available the question is how do you design to be flexible for evolving technology? Central to this discussion is the need to have a capabilities base care design process that can clearly articulate the requirements of technology, rather than directly specifying any technology. This was part of the models of care discussion that was detailed earlier in this paper.

This discussion is relatively undeveloped and requires considerably more input to enable a comprehensive understanding on how to future proof technology design for a digital hospital. Part of successfully evolving our capabilities in this area is to maintain active communication on the success and failures of hospital builds and redevelopments, and this is part of the function of the roundtable group.

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FUTURE DISCUSSION ISSUES

- There is a need to continue the conversation around how to future proof the technological design of digital hospitals to support the constantly evolving care processes and performance requirements. This discussion would build on the topics outlined earlier in the paper.

- How do we maintain up-to-date and clear communication between those parties involved in hospital builds and redevelopments so that all participants can learn from the success and failures of others?
Project management and Private Public Partnership (PPP) risks and responsibilities

Project management and PPP risks and responsibilities were two other topics that were brought up in the discussion but were not reviewed in detail. Individual discussions with roundtable participants have highlighted that complex contract frameworks are common for major projects, including hospitals and have evolved in response to a range of issues over time including:

- Poor delivery and cost records for traditional procurement. The PPP shifts some of the delivery and cost risk to Project Co
- Clearer and fewer project interfaces
- Secured and agreed funding at project initiation as part of the PPP vehicle which cannot be diluted by other budget and project pressures
- Mixed accountability in government for delivery between Works agencies and Health, a PPP in effect locks down the works delivery

These incentives for PPP make it likely that this form of contract will continue. Also in some projects there has been a tendency to load in technology to the PPP (either up front or as a late inclusion) because of a poor in-house record of technology delivery.

The more standard PPP framework typically has poor mechanisms included for adapting to later technology selection or accommodating changes in the technology capability as the project evolves. Operational technology refresh and adaptation has also emerged as an issue.

Operationally the strongly delineated PPP service boundaries have also created some issues with end-to-end service accountability and operational integration.

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FUTURE DISCUSSION ISSUES

- Project management and PPP strengths, risks and responsibilities should be reviewed with a specific focus on the technology cycle, whole of hospital integration and end-to-end performance regimes for critical technology as part of future digital hospital builds.
MODELS OF CARE

- Plan “Model of Care” early and engage clinicians early
- Well-defined specifications, standards and architecture
- Get the model of care right. Make best efforts to understand where future developments (ICT and Clinical) will lead.
- Define a model of care, refine over time and do it at the start of a project.
- Define the operating model with consumer and system outcomes in enough detail
- Patient-centric
- Models of Care to be developed prior to hospital project start
- Define the model of care early in the planning phase
- Engage in “Human Design Process”
- Test in a test environment until you are satisfied the system is safe and fit for purpose
- Clear definition of model of care (including the ‘why’ and ‘when’)
- Define model of care first
- Work with clinical teams to project models of care. Future design
- Forward plan - two to three years ahead of funding

VISION DISCONNECT

- Begin with the end in mind
- Clear definition and shared accountability for operation readiness
- Realistic expectations
- Matrix implementation - combine strategies e.g. mobility strategy to introduce clinician change. Don’t tell a clinician you are going to ‘manage them so they will change;’ they hate that
- Vision
- Define an ICT vision beyond ‘a digital hospital.’ ‘The why!’
- Lead executive who acquires appropriate baseline knowledge, owns a defined vision and wants to sponsor it
- Shared vision shared implementation plan
- Ensure there is commitment at the highest level to vision (integrated, over all, business and how it supports), Capex and Opex, outcomes delivery and managing effectively
- Close the disconnect between the build ‘vision’ and reality of dependencies on underlying systems and information

BEST PRACTICE ADOPTION AND STANDARDS

- Ignore outdated hospital ICT and other building standards
- Agree upon a definition of ‘digital hospital’ and standards
- Standards and architecture in place
- Building in ‘flexibility’ to accommodate changes or new tech evolving our priorities over six-year build
- Iterate/consult/collaborate/adapt
- Architecture
- Adopt all known IM & ICT practice: good business case, governance, architecture, scope (including model of care), funding, change management, clinical and other user engagement, program and project management, etc. etc.
- Structured approach to lessons learned sharing
- Vendor management

Appendix: Roundtable Survey

Below are the issues that the roundtable group listed when asked the question:

What have been the factors driving success and failure in the delivery of digital hospitals in Australia?

These topics formed the themes of the conversation during the session:

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GOVERNANCE AND PROJECT MANAGEMENT

- Good governance
- The ‘right’ governance model driven by the ‘right’ people
- Governance
- Clinical governance - engage clinicians
- Defined project methodology and reporting frameworks
- Build project management methodology, capability and commitment from senior executives (e.g. risk, scope, budget, change management, benefits, vendor management)
- Clear governance arrangements and delegations established up-front
- Don’t outsource control of build and design process completely - must keep input of health service in
- Must be championed by the CEO and not delegated
- Single point of accountability (project lead needs leadership capability, not technical or clinical, but the ability to bring them together
- Stakeholder engagement
- Effective governance

PEOPLE

- True clinical leadership (not the same thing as ‘clinical engagement’)
- Structured approach to change management
- Correct team and governance
- Right people and right procurement
- Experienced and skilled program management
- Right people and right procurement
- Capability
- Clinical leadership
- Focus on change and transformation
- Stakeholder engagement of clinicians and management from beginning, prior to the hospital build
- Early engagement with clinicians
- Change management to be incorporated into the scope and budget
- Linking real clinical need/change to drive IT (no such thing as an IT project)

BUDGET

- Ensure ICT budget is adequate in broad terms
- Money
- Assert the IT budget, stick to it and refine risk/benefit solution
- Define funding rules in Cabinet submission. E.g. role of Treasury, prevent future budget top-slicing, efficiency dividends, prevent rollover of funds between periods
- Build budgets appropriate to support the project - ICT and change management
- Appropriate budgets that are contained for ICT
- Double the size and cost of whatever you plan
- Proper funding

SCOPE

- Better PPP/brief KPIs linked to health outcomes
- Quality and process for starting brief
- When setting scope - define what can be fluid and what must be locked down early
- Understand current ‘as-is’ to get the interoperation of ‘to be’ right