

P3 Healthcare ICT Investment Model

A How-to Guide for Executives and Healthcare Boards

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Introduction

Every day, all over the world, health departments, hospital boards, CEOs, and healthcare investment bodies make decisions about healthcare funding. Most view healthcare information and communications technology (ICT)—including clinical, administrative, diagnostic, and imaging technologies—as a black hole that swallows millions of investment dollars with limited, visible returns. The relevance of healthcare ICT investment is not understood widely, and, in many cases, decision makers view ICT strategies as IT-centric and lacking in clinical relevance.

This paper proposes a model called P3 that will increase the visibility of returns on healthcare ICT investments and provide healthcare funders with a framework that guides them in making the right ICT investment decisions.

The Model

P3 stands for the three fundamental elements of healthcare ICT investment: practitioners, patients, and processes. All three are of equal importance and should be prerequisites to provisioning funds for healthcare ICT.

Practitioners

The P3 model is a vehicle that ensures healthcare ICT investment is driven by business and clinical needs. The presence of practitioners in a program's design further ensures that the right drivers are in place.

Under this model, major healthcare ICT investments are owned by a clinical champion and supported by the wider practitioner community. This support, however, should not be assumed; building support should involve sharing issues, innovations, and best practices from healthcare and other industries. Involving clinical practitioners—such as nurses, doctors, specialists, and allied health professionals—as supporters, owners, and champions is essential for establishing relevance, on-the-ground support, accuracy, and, ultimately, the success of ICT investments. Practitioners are engaged in the overall governance of ICT programs and play a role in the design, development, testing, and implementation of solutions.

Patients

Under the P3 model, patients are involved in baseline activities, clinical process definitions, and post-implementation evaluations. Patients are a central element of this investment model because they are a barometer in terms of the care they receive. Their confidence in the healthcare system is influenced by their experiences with doctors, clinicians, and other staff. For example, patients may recall an incident where the staff seemed confused about whether a particular test was ordered or result returned. Based on their experience, patients can affect healthcare outcomes, both within the hospital and across the entire healthcare community. As a consistent element of the care process, patients are essential to system design, development, and improvement.

Returns on ICT investment are realized only when all players—including patients—reap benefits from the investment.

Processes

Healthcare delivery involves processes and people. Medicine is a science, and adhering to processes and protocols is core to safe clinical practices. Any ICT investment must first take into consideration the clinical processes that will be targeted. Under the P3 model, process analysis has three stages:

1. An analysis of the current state should be undertaken by a team of observation specialists (preferably those who have had previous exposure to healthcare) to establish a baseline process.
2. The baseline process should be shared with the program governance group for analysis and feedback on potential areas of process improvement. It is important to note that many improvements may have nothing to do with ICT; they could involve redefining a process due to compliance, safety, or skills issues.
3. Potential process-improvement areas should be assessed in terms of the value ICT can offer. Potentially, issues of productivity, communication, or safety all should be addressed.¹

How Does P3 Deliver Value?

The issue of healthcare benefits and ICT is not new and, for some time, has been the subject of commentary in the healthcare sector. Healthcare participants place the core benefits into the following categories:

- Patient safety
- Quality of care
- Practitioner productivity
- Financial return

1. The Cisco Internet Business Solutions Group (IBSG) acknowledges the NTF Group for partnering with IBSG to develop and refine an observation-based research approach to assess areas of process improvement. This approach was applied to the Robina Hospital pilot, featured on page 5 of this paper, using the same observation-based research approach applied at Royal Prince Alfred Hospital and Children's Hospital at Westmead, both in Sydney, Australia.

- Practitioner satisfaction
- Patient satisfaction
- Policy compliance and process improvement

These categories are agreed on and supported by practitioners, patients, and the industry. The Australian Health Information Council,² in its briefing to health ministers in October 2007, noted that the benefits of e-health (taking a pragmatic view from the international experience) included:

- Increased workflow of the healthcare workforce (productivity and satisfaction)
- Improved access to appropriate care (patient safety and policy compliance)
- Increased safety and quality

The fundamental concern of decision makers is not about benefits; it is about the ability of healthcare organizations to harvest the benefits of ICT investments.

The core value of the P3 model is that it offers healthcare decision makers a how-to guide for making the right ICT investment decisions. It also offers a reference framework and calculation model to harvest the benefits often promised in ICT business cases, but often not delivered.

How-to Guide

Applying the P3 model involves three stages: design, development, and realization of benefits.

Design

The design stage requires a series of investigations to determine governance and scope, focus, and assessment.

Governance and scope:

- Sponsorship and support from a key champion and senior practitioners are critical to the success of the program. Decision makers must understand that the investment strategy is supported by key representatives of the business.
- Momentum is built by exposing clinicians to industry best practices regarding technology applications that improve quality and efficiency of processes.
- It is essential to receive agreement from all parties during the design stage regarding a high-level investment and a set of clinical objectives and processes the investment is targeted to achieve.
- All parties must understand the problem that the investment is trying to resolve or the opportunity that should be harnessed. Healthcare funding is a competitive business; therefore, a clear statement about who benefits from the investment also must be made.

2. "eHealth Future Directions," briefing report, Australian Health Information Council, October 2007.

Focus:

- The focus stage of the clinical process can be used to validate early assumptions about the scope and nature of the required investment.
- Focus work involves experts observing practitioners and patients during clinical processes.
- While the focus is primarily on the practitioners' execution process, patients also can be a great source of information.
- Focus work and the engagement of experts lower the risk of the proposed investment, as scope can be validated and return-on-investment (ROI) strategies refined based on live data instead of assumptions.
- The focus stage should be documented thoroughly (there should be no surprises), as observations are likely to gather unforeseen issues and opportunities.

Assessment:

- The governance group, guided by champion practitioners, must review the observation work and assess the scope of the program, approach, and investment strategy.
- Initial assumptions made about the scope of the program must be challenged, and new evidence must be supported by the observation work.
- A refined program and investment strategy must be agreed upon.

Development

The development stage requires establishing a program that will generate and harness core benefits. This stage involves two areas:

Analysis and build:

- Refine and analyze the scope of the program, focusing on areas where ICT could offer a solution.
- Analyze ICT and business-process changes that must be implemented.
- Identify the investment required to start the program.
- Define potential benefits and beneficiaries.
- Provide a baseline to measure the progress and success of the program.

Fine-tune and focus:

- Define benefit domains and agree on recipients; justify why these are priority areas for benefit returns (for example, why is quality a higher concern than cost as a focus area?).
- Define actual measures of success (targets and indicators).

Realization of Benefits

The following activities are required to help realize benefits from ICT investments:

- Estimate investment outlay in terms of capital and operational expenditures, including new and recurring expenditures.
 - Identify core domains that realize ROI. This usually includes a combination of patient safety, quality of care, productivity, practitioner and patient satisfaction, policy compliance, and process improvements.
- Define benefit-measurement indicators and lock in processes to implement these indicators. Common indicators may include enhanced computer access to:
 - Measure reduction in the time required to access patient test results and image reports, leading to better decision making by practitioners.
 - Measure reduction in the time required to access patient test results and image reports, leading to increased efficiency.
 - Increase the monitoring of test results, thereby improving diagnosis and reducing the need to order redundant tests.
 - Lead to more efficient patient care through streamlined processes for updating forms, progress notes, and/or charts.

Investment-model Project: Introducing Mobility into the Clinical Process of Hospital Ward Rounds

Mobility is about providing highly mobile clinicians with data, images, and support they need to make decisions at the point of care. This is the key focus of the FIDO³ project, funded by the Queensland Government in Australia.

The Problem

Robina Hospital is a medium-sized facility in Queensland, Australia. Robina has 170 beds, four wards, an ICU and outpatient facility, and a new emergency department. Clinicians making ward rounds must be able to deliver care at the patient's bedside, yet a wide range of services and the information required to make clinical decisions are not available at the point of care. The tools clinicians need to do their jobs are inflexible and "fixed" (not mobile). Patient records and pathology/X-ray results often are stored in computers at nursing stations. Other information such as patient notes is stored on one of two computers located in each ward and shared among many clinicians.

3. FIDO is the name given to the project by the Queensland Government and the FIDO governance board to give the project an identity and create awareness among the Australian healthcare community.

The inability to reference actual results or recent diagnoses can decrease the quality of decisions clinicians make and adversely affect patient safety. The impact of not having immediate access to critical patient information can be significant in other areas:

- Productivity, because practitioners spend more time chasing results and information and less time with patients.
- Ordering redundant tests.
- Patient confidence in the system, because they are asked multiple times for the same information.
- Staff dissatisfaction with not having the tools they need to do their jobs.

Strategy

As part of the FIDO project, the value of P3 was demonstrated through wireless technology and mobile devices to facilitate anytime-anywhere access to information for Robina clinicians. The following P3 strategies were applied to the project:

Governance and scope:

- The program is owned by the director of general medicine, who chairs all governance meetings and plays an active role in the design of the program, including processes, scope, and solutions.
- The project's scope was developed and submitted to the observation group for further analysis.
- Senior practitioners signed off on all clinical process designs.

Focus:

- A team of experts was brought in to establish baseline maps and perform detailed observations of the processes, including outcomes and time measurements associated with key process steps.
- Observation work was documented and made available to all program participants for comments.

Assessment:

- The program's scope was revised based on findings from the observation work.
- The updated scope was agreed on by practitioners, and a strategy for realizing benefits was revised.
- An investment panel agreed to fund the program and approved the ROI strategy. Target benefits were identified.

Development

Analysis and build:

- The scope of the program was analyzed, and an assessment was made on the positive impact of ICT using input from participating clinicians about clinical process optimization and safety.
- Practitioners made ward rounds across the entire hospital as they searched for relevant information or tried to make contact with the wider clinical team. Given the highly mobile nature of the process, wireless technologies and mobile devices were considered as an appropriate connectivity model.
- Extensive surveys of the site and building were conducted to ensure that clinicians would be connected whenever and wherever their ward rounds took them.
- With a strategy in place to address connectivity requirements, the issue of mobile access to information required a resolution. A medical-grade tablet (a tablet PC that can be wiped down, sterilized, and includes other health-specific features) was considered the best solution for improving ward-round processes.
- Business processes were reassessed, taking into consideration changes in tools before the wireless medical-grade tablets were introduced.
- Benefit domains were agreed on, starting with a list of common domains. The list was narrowed down based on outcomes of the observation work.
- A set of indicators was developed, and decisions were made about how to use proxy indicators for particular benefits. For example, less time spent accessing information may lead to more time spent with the patient, improving quality of care.
- After analysis, development of new capabilities commenced.

Fine-tune and focus:

- Prototype solutions were tested by senior practitioners, and additional refinements were made where changes were required.
- Practitioners signed off on a value statement, taking ownership of the proposed value proposition.
- The value proposition stated that the wireless technologies and devices would improve patient safety, satisfaction, and quality of care. At the same time, an increase in policy compliance led to improvements in staff productivity, satisfaction, and safety.

Realization of Benefits

With development complete, the scope of the program enables practitioners to:

- Conduct ward rounds using medical-grade mobility devices to access the patient administration system, radiology reports, pathology results, and clinical knowledge bases.
- Access data anywhere within the wireless network.
- Access the majority of the information they need at the bedside.
- View the most recent patient data.
- Still use a desktop PC when large amounts of data input are required. The medical-grade mobility devices, however, are fine for actions such as reviewing pathology results.

Practitioners respond to programs that have clinical benefits as a primary driver. While they find it acceptable that clinical benefits may generate financial savings, they see this as a secondary gain. Initial indications from the Robina project show process improvements and significant benefits for clinicians:

- Improved patient safety and quality of care
- Increased adherence to clinical processes
- Increased practitioner productivity

Conclusion

Practitioners, patients, and processes all are critical elements that contribute to the success of healthcare ICT investment strategies. Return on investment is an important concept in healthcare; as the cost of healthcare increases, its importance grows. Benefits or ROI can be delivered to targeted beneficiaries, and the impact of healthcare investments can be calculated using the P3 model.

The P3 model is a valuable tool for board members searching for a way to systematically assess whether they are receiving value from their healthcare ICT investments. Healthcare funding is a competitive business, and decision makers often have to weigh an ICT business case against the need for new medical devices, additional practitioners, or new healthcare facilities. The P3 healthcare ICT investment model provides healthcare boards with a framework for their decision-making processes, using a how-to guide that can help them pursue the right investments.

Notes

More Information

The Cisco Internet Business Solutions Group (IBSG), the global strategic consulting arm of Cisco, helps CXOs and public sector leaders transform their organizations—first by designing innovative business processes, and then by integrating advanced technologies into visionary roadmaps that address key CXO concerns.

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