IT Strategic Planning in a Pediatric Hospital: Overview of the Process and Outcomes

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Abstract

The role of Information Technology (IT) is increasing in health care, which necessitates applying strategic thinking and analysis when making IT investments. IT strategic planning allows hospitals to analyze their environment and develop an operational plan for IT implementation. This paper presents the framework and methodology used in IT strategic planning at a tertiary care pediatric hospital in Ontario. We describe a five-stage sequential process that captured the Current State of IT, defined the desired Future State, and mapped the work required to achieve the goals. Various tools and approaches were employed including review of existing documentation, internal stakeholders’ survey (n=111), 15 internal and external interviews, and 12 workshops. The process was informed by 230 individuals (12% of hospital community). Overall, there was consistency in the themes and concerns raised. Major challenges and lessons learned are highlighted, which would be helpful for hospitals engaging in similar effort in the future.

1. Introduction

With the increase in health care spending in numerous countries around the world, including Canada and the U.S. [1,2,3], executives and policymakers are turning to Information Technology (IT) for curbing the escalating costs of care. The promise of decreased costs through improved efficiency and patient safety is putting increased pressure on Information Systems (IS) departments in hospitals [2], as evidenced by the growing demand for IT solutions. Hence, it is important that IS departments have a clear vision and plan guiding their effective and efficient delivery of technology where most needed [4].

The implementation of IT in itself often involves large investments (i.e. capital and operating funds), which adds to the complexity of the situation. In fact, a recent Delphi survey of IT executives revealed that the lack of sufficient funds and the competing priorities for scarce resources within the hospital environment represent two of the top three critical IT management issues facing Canadian hospitals today [5].

In light of these conditions, hospitals are expected to make informed decisions in relation to their IT investments and be held accountable for them [6,7]. As per Glaser [7], “it is crucial that health care organizations apply strategic thinking, questioning, and analysis to their investments in information technology”. Therefore, it is critical to have a formal methodology for decision making when considering the implementation of IT.

IT strategic planning represents an opportunity for hospitals to analyze their internal and external environment, outline their IT needs, and develop an operational plan for IT implementation [7]. Despite the slower adoption of the strategic planning methodology in healthcare compared to other industries [8], hospitals are realizing the necessity and advantages of applying this approach in the context of IT. To date, little is known about the best practices in relation to IT strategic planning in hospitals, and the approach used in the process. With the exception of a few articles on strategic planning in the context of hospitals (e.g., [1,4,9]), limited information is available in the literature on the framework and methodology that may be applied by hospitals in the context of IT strategic planning.

In light of the absence of best practices related to IT strategic planning, this study addresses this gap and presents evidence on the IT strategic planning initiative and methodology undertaken at a tertiary care pediatric hospital in Canada. Specifically, we describe the
environmental factors that surrounded the process, focus on the framework and methodology that were used, and present a general overview of the resulting outcomes. We further shed light on the critical elements of IT strategic planning, discuss the lessons learned, and provide recommendations for hospitals that plan on engaging in a similar exercise in the future.

2. Literature Review

2.1. General overview

Strategic planning was first introduced in the 1960’s in the private sector with companies such as General Electric [8]. Its fundamental principle is that, in light of environmental changes (e.g., economic/social/technological), “…the leadership of the organization must periodically evaluate whether it should even be offering its present products and services, whether it should start offering different products and services, or whether it should be operating and marketing in a fundamentally different way” [8].

The healthcare industry was slower to adopt the strategic planning methodology, which was first introduced only 25 years ago [8]. Historically, health care organizations were stand-alone, not-for-profit institutions requiring only basic planning [8]. However, as health care evolved over time into a much more complex environment, it became evident that it would benefit from many of the corporate strategic planning processes [8].

IT strategic planning in hospitals represents one of the promising applications of strategic planning in healthcare. It consists of a formal approach that ensures the money allocated for IT is appropriately spent in line with the strategic priorities of a hospital [10]. IT strategic planning allows the development of a roadmap that supports a technology vision and direction, and illustrates the importance of IT in the overall strategic plan [4]. It may be used by a hospital leadership to “see” new IT opportunities [7], and minimize the risks associated with random implementation of technologies. The approaches used in the strategic planning process often involve a thorough review of the organization’s environment, mission, goals, strategies, capabilities, and competitive status [7].

A generic IT strategic planning methodology usually includes [7]: 1) Interviews with organizational leadership and management; 2) Development of a portfolio of needed applications and technical infrastructure; 3) Survey of current IT resources and identification of existing gaps; 4) Definition of priorities and development of budgets, timetables, and projects; and 5) Building of committees to gauge broad input and political support for the plan’s conclusions.

As previously indicated, no best practices exist in relation to IT strategic planning and evidence on its application and methodology in hospitals is limited. With the exception of Frey et al. [4] who presented the experience of Mayo Clinic in developing an IT strategic plan, prior research has focused on strategic planning in general in the context of hospitals (e.g., [1,11,12]), or focused on presenting guidelines for developing strategic information management plans ([13]) and strategic information systems in hospitals [9].

2.2. IT strategic planning elements and critical success factors

IT strategic planning involves creating a detailed framework to be used by hospitals in the development of well-aligned IT plans [7]. Combining the concepts of health strategy [14] and IT strategy [8], building an IT strategic plan includes four key elements:

1. A sequential process that necessitates understanding the strategic goals of the hospital, analyzing its current internal and external state, developing the future state and identifying existing gaps in relation to the desired state of IT, and describing the implementation plan.
2. Periodic group strategic thinking (brainstorming).
3. Data collection and analysis of information, which incorporate consensus and judgment.
4. A documented IT strategic plan.

In the process of IT strategic planning, certain critical success factors have been identified to increase the likelihood of its success. First, stakeholders’ involvement should be carefully considered in order to inform the strategic planning process with balanced points of view [8]. Involving individuals / groups who are willing to look in new directions enables the production of a better plan [8]. Examples include clinical/administrative/service departments, information management/technology department, management, employees, funding institutions, consultants, and IT vendors [14]. It is important however to maintain a balance between broad stakeholders’ engagement, capable of reflecting users’ needs on one hand, and having an appropriate core team capable of moving the IT strategic planning process forward [8].

Second, in order to maximize the support for IT strategic planning, it is critical that the IT plans and activities align with those of the organization [7]. Hence, the corporate strategic vision should be detailed enough [10], and the IT strategy discussed at the board level [7] to ensure such alignment. Corporate alignment was highlighted by Frey et al. [4] who noted that “technology is not an end unto itself, but rather an enabler for the strategic plan of the organization”.

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Third, special consideration for resource allocation has been discussed in the literature as a critical success factor in the strategic planning effort [10,13]. Brgil et al [13] highlighted the need to pay particular attention to available resources, qualifications of staff members, and costs (e.g., staff, consultants, implementation etc.) when developing the project portfolio. Davis and Adams [10] also emphasized the role of financial executives in the process, and reported the necessity to “frame the planning effort with guardrails, particularly financial guardrails”, and understand the capital and operating limits for IT spending.

Fourth, change management and strategic planning are clearly intertwined. IT strategic planning in itself may be perceived as a tool of change through the process and product of planning. Large-scale changes and transformations are often difficult to successfully implement in organizations [15]. IT strategic planning, if rigorously conducted, may assist organizations in successfully achieving these transformations. By engaging stakeholders, they may proactively manage the change to be introduced once the plan is adopted as they have had the opportunity to inform the strategic vision [16]. Broad communication of the developed plan is also critical to support the success of the strategic planning effort and resulting changes [13].

Last, implementation planning is considered as a critical factor in IT strategic planning. A strategic plan is usually developed with a 3-5 year time horizon [13]. Winter [14] and Frey et al. [4] discussed the importance of turning the IT strategic plan into a tactical plan, which reflects the respective vision, and translates the strategy into specific projects. Glaser [7] also indicated that the development of a tactical plan may be an outcome of IT strategic planning, which details project descriptions, timetables, budgets, and staffing plans.

This paper builds on the steps and critical success factors described above, and presents the process and outcomes of IT strategic planning at a teaching pediatric hospital in the province of Ontario. In the following sections, we describe the context and hospital setting, and present the IT strategic planning steps and methodology, and a general overview of the outcomes.

3. Context and setting

The IT strategic planning described in this paper was conducted in a 167-bed teaching tertiary care pediatric hospital located in Ontario. The hospital treats approximately 6,100 inpatients annually with an additional 200,000 children coming through the ambulatory clinics and emergency room; it employs approximately 2000 staff and 300 physicians. With an IS department consisting of 24 employees and a capital budget of $CAN 4.7 million in 2009/10, the hospital engaged in an IT strategic planning effort to align the IS department with the hospitals goals. This was especially important during a time of remarkable technology growth, which is complicated by constrained resources and competing demands.

The technological needs in a tertiary care hospital are significant. Nevertheless, being a pediatric hospital limits the population being served, which also results in a smaller hospital budget based on federal and provincial funding. In 2009, the hospital was struggling with the challenges felt across the healthcare sector in relation to IT: conflicting demands and priorities within the hospital; IT department budget cuts forcing it to do more with less resources; diverse group of clients with varying levels of technological expertise; and a growing IT department workload as existing technologies must be supported and new IT projects requested.

In light of these conditions, the hospital decided to engage in IT strategic planning in the summer of 2009 with the goal of producing a 5-year IT strategic plan that meets the needs of patients, care providers, administrators, and IT staff.

4. Framework for the IT strategic planning

Based on the literature and the expertise of an external consultant hired to assist in the IT strategic planning process, the hospital identified seven steps as essential in creating its IT strategic plan:

1. Development of a Table of Contents for the final report. The table of contents would be developed at the beginning of the strategic planning process. This ensures that all aspects of the plan are considered in subsequent steps, allowing a clear identification of the scope of the work to be done.

2. Development of the definition of the Current State. This step would involve the solicitation of stakeholders’ feedback through various approaches (e.g., interviews, survey, workshops) and review of existing documentation. The Current State reflects internal hospital state, and includes an external environmental scan with an understanding of how the hospital compares to its peers.

3. Development of the vision of the Future State. This step would also involve the solicitation of stakeholders’ feedback through a variety of approaches (e.g., interviews, survey, workshops) and the review of existing documentation. This allows the identification of the main themes included in the Future State of IT at the hospital.

4. Gap Analysis. This step would mostly rely on the expertise and experience of the external consultant with the Ontario healthcare community. Combining the external consultant experience and the information collected through the previous
steps, the Gap Analysis allows the integration of the theoretical gaps with the realities and complexities of the hospital environment.

5. Development of the Plan. Building on the four previous steps, a well-informed IT strategic plan would be developed with a clear understanding of users’ needs, the IT department finances and resources, and the identified gaps.

6. Communication and Approval. Once the vision of the Future State defined, and the plan under development, a second round of stakeholders’ engagement would be undertaken. This provides the opportunity to adjust the plan should relevant new information be gathered.

7. Implementation. The hospital envisioned that the plan be implemented in the Fiscal Year 2010/11.

5. Methodology

Based on the seven steps identified in the framework above, the hospital used a triangulation of data collection tools and approaches to support the IT strategic planning effort. Specifically, a sequential process of five stages was introduced (Figure 1), which focused on capturing the Current State, defining the desired Future State, and mapping the work required to achieve the desired goals. Information collected in each stage served as the basis for the next one.

Throughout the IT strategic planning process, there was an extensive internal and external stakeholders’ engagement (Figure 2) to ensure a rigorous assessment of the hospital needs, and a thorough understanding of its challenges and requirements. This also presented an opportunity for informing stakeholders and engaging them in the work of the IS department. In addition, as previously indicated, the hospital sought the expertise of an external consultant familiar with the healthcare environment in the province, and experienced with the IT strategic planning process.

5.1. Project initiation

The IT strategic planning project was kicked off in August 2009 by the hospital Chief Information Officer (CIO). The IS steering committee at the hospital agreed to oversee the project with the Partnership Council representing the staff perspective in the process. The committee included representatives of the major elements in the hospital including: medical and nursing staff, financial management, human resources management, planning and marketing, facilities management, clinical support services and IS staff. The first stage consisted of the project initiation during which the Table of Contents was developed (Appendix A); it served as a guideline for the subsequent stages.

5.2. SWOT analysis and stakeholders’ interviews

The second stage of the IT strategic planning process consisted of an analysis of the strengths, weaknesses, opportunities, and threats in relation to IT. It also presented the first phase of stakeholders’ engagement through a survey and interviews.

First, existing documentation provided insight into the Current State. Specifically, previously developed reports (e.g., past projects implementation, hospital readiness, employee satisfaction etc.), the hospital strategy documentation, and external best practices were all reviewed prior to stakeholders’ engagement. Over twenty documents were consulted including the Local Health Information Network (LHIN) strategy ([18]) the level of maturity of the hospital’s technology compared to other health sciences centers in Ontario ([19]), and the Electronic Medical Records (EMRs) adoption model developed by the Health Information and Management Systems Society (HIMSS) analytics ([20]) These documents were leveraged to develop the

Figure 1. Sequential five-stage IT strategic planning process adapted from HealthTech [17].

Figure 2. Internal and external stakeholders’ engagement adapted from HealthTech [17].

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questions that were further used in the survey and workshop presentations, and inform participants about technology trends within the health care sector.

Second, the survey, which was administered online, represented the preliminary step for engaging stakeholders and collecting information about their perspectives and expectations of IT. It later revealed to be an integral source of input for the IT strategic planning project. The survey included eight open-ended questions that addressed the vision and expectations of IT, strengths and weaknesses of the current IS department / services, top IS gaps and requirements, impacts of EMRs and electronic documentation etc. A copy of the survey instrument may be obtained upon request. Access to the survey was open to all interested staff and physicians in the hospital over four weeks (Sept-Oct 2009). Respondents were given the choice to identify themselves and their departments/units. The feedback from the survey was further used to drive the discussion in the workshops and inform the Current State and Future State definitions.

Third, a total of 15 interviews were conducted over a period of four weeks (Sept-Oct 2009) with the hospital executive team, key external stakeholders (e.g., representative from E-Health Ontario, CIO of the LHIN), and senior staff in the IS department. Each interview lasted around one hour during which respondents presented their thoughts on the Current State in relation to IT investments and services, their perspectives of the challenges and opportunities facing the IS department at the hospital, and their expectations of the department in the future.

5.3. Workshops and visioning

In the third stage of the IT strategic planning process, workshops with internal and external stakeholders were held. Key existing internal committees at the hospital (i.e. clinical, non-clinical, and IS) were identified by the IS steering committee and the CIO, and further leveraged whenever possible to conduct the workshops. The workshops ranged in size between two and 30 participants. Examples of targeted committees and groups included the nursing advisory committee, the professional advisory committee, the e-clinical documentation team, vendors, physicians, operations directors, project managers, senior business systems analysts etc.

A total of twelve workshops were conducted over a period of one month (Oct 2009), including the vendor day, which were facilitated by the external consultant. Each workshop lasted 2-3 hours (45 minutes for presentations and the remaining for discussions) during which the following agenda was addressed:
- Introduction and workshop objectives
- Level setting – understanding IT in health care and how the hospital compares to other health centers
- “What was heard” – initial findings from the survey guided the discussions
- Discussion and feedback – introduction and discussion of further thoughts
- Conclusion – next steps

In the introduction and level setting, the participants learned about the Current State and how the hospital compares to other centers. These also provided an opportunity to gain an understanding of the technology expertise of participants, which ensured that the discussions remained at a level comfortable for them to engage and provide their feedback. The remaining three sections of the workshops were interactive and provided a forum for the participants to give their feedback on the survey results and add comments based on their experience at the hospital.

In light of the significant technology investments already made in the hospital, it was also critical to understand how these investments could be leveraged and ensure that the hospital’s direction is in line with that of its partners. Hence, as part of the workshops, a vendor day was held to assist in understanding the strategic direction of its technology partners. Six major vendors participated including Gartner, Eclypsis, Epic, IBM, Cisco, Microsoft, and HP.

5.4. Analysis and modeling

In this stage, analysis was conducted based on the stakeholders’ feedback obtained in the previous stages, the internal documentation, and the available standards and best practices. This led to the development of a final document (100+ pages), which was reviewed and approved by the executive committee at the hospital.

During the stage of analysis and modeling, the H1N1 epidemic hit Canada, and the hospital was particularly affected in light of the younger vulnerable population it serves. Hence, the IS department refocused its efforts on the emergency department, which delayed the final report delivery by one month.

The LHIN strategy and eHealth Ontario strategy documents provided information necessary to align the hospital with the regional vision. The Ontario Hospital Association (OHA) website [19] provided the benchmark information to compare the hospital’s technological maturity to other regional hospitals. And the HIMSS analytics EMR adoption model [20], which details the applications required to reach a fully functional Electronic Health Record (EHR), presented a roadmap for EMR delivery at the hospital. The hospital was identified at stage 2, which informed the Future State of applications prioritization.
5.5 Plan development and approval

The final development of the IT strategic plan, based on the data collected in the previous stages, mostly involved the external consultant and the IS leadership in the hospital. It consisted of two parts: a strategic plan and a tactical plan.

The strategic plan specified the long-term objectives of the hospital and focused on determining the strategic directions in relation to IT and the most important initiatives that would be undertaken. Prioritization criteria were identified in order to facilitate the selection of the most important initiatives. Five principles guided the process, which revealed to be very challenging: people-centeredness, inclusiveness, practicality, alignment with the hospital strategy, and outcomes orientation. The prioritization also took into consideration the strategic directions of the hospital.

The tactical plan defined the short-term objectives that clearly mapped to the strategic directions above. Specifically, the goals, objectives and success indicators were identified for each of the strategic directions presented above.

In the process of the plan development, it was critical for the hospital to specify what would be required to achieve the respective objectives. For this purpose, the hospital committed a capital budget of $CAN 5 million per year, in addition to the creation of a data center. Staffing growth was also planned with an increase in IT operating budget of 5%. It is important to note that while the plan was under development, a second round of stakeholders’ engagement took place. Requests had been received from the committees that participated in the workshops to be consulted again once the final recommendations prepared. Therefore, presentations were made to inform the participants of proposed changes and give them the opportunity to offer feedback prior to finalizing the IT strategic plan.

6. Results

6.1. Stakeholders’ feedback

Extensive stakeholders’ engagement throughout the IT strategic planning process provided insightful and valuable information to the process. The IT strategic plan development was informed by 230 individuals representing 12% of the hospital community. Interestingly, the feedback from the survey, interviews, and workshops showed significant consistency in the themes and concerns raised.

6.1.1. Survey. A total of 111 surveys were completed by respondents from 38 departments / units in the hospital. Among those who identified themselves, half were clinicians. The results were grouped by themes as indicated in Table 1. When analyzing the responses, “access to information” was the most reported theme referring to how the IS department would support the delivery of care at the hospital. Nevertheless, the respondents recognized certain issues that should be carefully considered and addressed in relation to the access to information online: 1) security and privacy; 2) remote access; 3) user training and support; 4) ease of use of selected solutions; and 5) sufficient hardware and handheld access.

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Major Themes</th>
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<tbody>
<tr>
<td>1. How can the hospital leverage technology to better meet the needs of our patients (children and their families)?</td>
<td>Access to Information and Communication facilitated by EHR; More or improved hardware; Technology to support patient experience</td>
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<tr>
<td>2. When you look 3 to 5 years down the road, what is your vision and what are your expectations of Technology to support effective, high quality patient care, processes and flow?</td>
<td>Access to information and communication facilitated by EHR; Handheld devices to integrate technology into care process; More or improved hardware; Integration of information (not only clinical); Support; Specific application requests</td>
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<td>3. What are the top one or two strengths of the current hospital IS systems and processes? What is working well?</td>
<td>Strong and helpful IS team; Project management team is good; Specific applications appreciated</td>
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<tr>
<td>4. What is / are the top one or two IS challenges/weaknesses? What isn’t working so well?</td>
<td>Insufficient IS resources; Wireless services; Support services; Hardware; Get it done!</td>
</tr>
<tr>
<td>5. What are the top one or two IS and technology gaps? What is missing?</td>
<td>Remote Access; EHR; Insufficient IS resources</td>
</tr>
<tr>
<td>6. What are your top one or two requirements of the hospital IS services? How could technology help you do your work more effectively / efficiently?</td>
<td>Specific applications requested; EHR; Remote Access; Support services</td>
</tr>
<tr>
<td>7. What do you see as the biggest challenge / impact resulting from the introduction of electronic clinical documentation, electronic medication records and electronic health records: (a. For you? b. For the hospital? c. To the delivery of care?)</td>
<td>Increase in funding; Project management team is good; Strong and helpful IS team</td>
</tr>
<tr>
<td>8. What support would you expect would be required / needed to successfully implement electronic clinical documentation, electronic medication records and electronic health records: (a. For you? b. For the hospital? c. For the delivery of patient care?)</td>
<td>Training; Support services; Hardware; Additional resources</td>
</tr>
<tr>
<td>9. Additional Comments:</td>
<td>Specific application &amp; solution requests; Get on with it!</td>
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6.1.2. Interviews. Fifteen key stakeholders’ interviews were completed; twelve with the hospital executive staff and three with external stakeholders. The responses were analyzed and summarized as follow. First, the IS department / services could support the hospital in meeting its corporate objectives by delivering the EHR; frustration was mounting due to lack of progress at this level. Second, the participants indicated that there had been an increase in funding over the past few years, which rectified the historical under funding of IT at the hospital; no further increases were expected with the prevailing economic climate.
Third, half of the interviewees referred to the failure of the initial Computerized Physician Order Entry (CPOE) project, attributed to poorly managed implementation and insufficient computer literacy among physicians. They indicated their frustration with the slow rate of delivery of IT projects. Fourth, the participants brought up the fact that the hospital had the same requirements as other teaching hospitals, and yet had a smaller budget and number of IT staff. Therefore, they saw the pressing need to develop partnerships to address these constraints. Fifth, the interviews revealed that ad hoc methods for requesting and prioritizing IS projects had been in place for a while with a tradition of not saying “No”. Sixth, technology would not be successful on its own without considering the people and processes; otherwise, failure would be result (e.g., CPOE project). Last, it was indicated that delivering systems and applications was not enough without having fundamentals (e.g., skills to use it, hardware to access it, redundancy, training, support, privacy and security).

6.1.3. Workshops. The feedback from the workshops was analyzed across three groups in light of their differences in priorities and concerns: clinical; non-clinical; and IS. First, clinicians recognized that IT can support the delivery of care by reducing repetition in data entry and collection, thus freeing time to spend with patients. They also indicated the need for implementing EMRs, especially that data are distributed in various systems that are not connected. They referred to the need to better define the relationship between the IS department and other departments in the hospital (partnership to deliver solutions). Ongoing support, sustainability and availability of applications, and lack of consistency and standardization regionally, provincially, and nationally were major concerns.

Second, participants in the non-clinical group raised their concerns over their inability to define where they fit in the hospital priorities, and their frustration over the low rate of IT delivery (e.g., plans for EHR and CPOE 15 years ago). They indicated a communication breakdown between the IS staff and end-users, transparency issues (users’ frustration at not understanding IS priorities and progress), and the need for an enterprise architecture (i.e., several projects were cancelled at the last minute due to their impacts on other departments). A need for clearly defining an EHR was also perceived as essential to understand the complexity of its implementation. The vendor day showed consistency in the themes discussed: patient empowerment expected to change the dynamics of care delivery; future convergence of business and clinical intelligence; health care expected to learn from the banks and airlines experience with IT; telehealth, remote health, connectivity, and collaboration anticipated to transform the delivery of care.

Third, the IS groups that participated in the workshops (e.g., project managers, senior business systems analysts) demonstrated concerns over the capacity of the IS department to support the same suite of systems as larger regional hospitals, with only 10% of their staff and budget. They referred to challenges in work distribution within the IS department in the absence of a consistent model to manage IT projects. Several participants also voiced their concern that the IS department was in a state of “hyperchange” (i.e. doing too much) resulting in little actual progress. Communication should be improved internally and with other departments in the hospital. Last, in light of the absence of an enterprise architecture document, unexpected project complexities and delays were being observed; stakeholders should have clear understanding of the current environment and the impact of proposed changes in order to minimize these challenges.

6.2. The IT strategic plan

As a result of the planning effort, a five-year IT strategic plan (2010-2015) was developed that aimed at taking the hospital to a higher EMR stage. The plan kick off was done in March, 2010, and the implementation was expected to take place during the fiscal year 2010/2011. Five strategic directions were identified and guided the definition of the IT priorities:

1. Positioning technology as an enabler – ensure that hospital needs drive IT directions with IT as enabler for providing access to information and achieving clinical and corporate goals.
2. Achieving HIMSS EMR stage 5 – align with the provincial and LHIN strategies and invest the resources necessary to achieve stage 5 by 2015.
3. Balancing service delivery needs – pursue and assess opportunities for leveraging infrastructure and resources within and beyond the hospital through shared services, partnering, and outsourcing to meet IT needs.
4. Developing a transparent governance structure – develop a more understandable decision making approach and reorganize human resources to support a service-oriented culture aligned with customer needs.
5. Focusing on patient and family needs – lay the ground for a patient-centered role in electronic patient record (EPR) management once internal systems, processes and infrastructure are in place to enable patient / family access to EPR.

For each of the strategic directions above, the goals, objectives and success indicators were determined. For example, for “achieving HIMSS EMR
stage 5 (i.e. having a closed loop medication administration), one of the goals was to implement the technology portions of the medication management plan. In this case, the objectives were to plan for unit dose equipment implementation, and implement the General Electric Centricity upgrade. The success indicators included planning kick off in September 2010, and going live in February 2011.

As part of the Future State of IT, and in line with the third strategic direction, a number of partnerships were identified critical to allow the hospital to be successful and sustainable with respect to IT. This vision of partnership included: Partnership with other centers in the region that would help defray costs; partnership between the IS department and other departments in the hospital; technology as a partner in the delivery of care (i.e. a tool rather than an end by itself); and IS as a partner with the hospital administration to support meeting corporate objectives.

7. Discussion

The role of IT is increasing in health care (e.g., growth in IT innovations, increasing demands by providers and patients for IT solutions), which necessitates applying strategic thinking and analysis when making IT investments. This paper presents the methodology and results of IT strategic planning conducted at a tertiary care pediatric hospital in Ontario. The approach relied on a triangulation of methods and used several tools to solicit stakeholders’ feedback that informed the resulting plan. Consistency in the themes communicated by the stakeholders was remarkable. By the end of the first round of stakeholders’ engagement, the team had a clear understanding of the Current State, and a vision of what would be required to meet users’ needs in the future.

The strategic planning effort took into consideration the critical success factors discussed in the literature. Stakeholders’ engagement was done throughout the process, which supported change management. Different perspectives were combined to develop a balanced and complete picture that would provide a solid platform for the IT strategic plan. Alignment of the IT plans and activities with those of the organization was supported by interviews conducted with the hospital executive committee members and workshop sessions. Special consideration to resources allocation was evident by capital and operating budgets increase and projected staffing growth. Implementation planning was also addressed by the development of a tactical plan detailing the planned projects.

Among the advantages of a strategic plan is its use in communicating a vision to the entire organization. Continuous presentations were used to inform the largest audience about the IT strategic planning underway. Some committees simply absorbed the information, while others used it to comment on their own priorities and concerns. By including information on the Current State of IT, industry best-practices and ongoing challenges in each session, users became more informed about the work done. This allowed them to realize the need for changes and be better prepared for them. In addition, given the nature of the Canadian health care system and the accountability to the public sector for appropriately spending the tax money, IT strategic planning supports a better prioritization and execution of IT projects. Hence, IT inefficiencies would be reduced, allowing more money to be spent on the care process, which would ultimately benefit patients.

The vendor day proved to be a success and was very effective at inspiring the project team to think beyond traditional problems and solutions, and examine the experience of the airline and banking industries to find other successful models of technology delivery. The participation of all the senior management team in this workshop provided the time needed to brainstorm and explore alternate solutions outside the normal daily activities, leading to rich discussions and new ideas.

The involvement of the external consultant was pivotal in the IT strategic planning exercise. It projected independence and objectivity, and contributed expertise in the planning process. Seeking external expertise may be constructive when the external party demonstrates technical knowledge of computer systems and systems analysis, as well as knowledge about the health care organization. The consultant can act as a source of technical information and facilitator, but should not be affiliated with any equipment manufacturer or software firm. Hospitals should be cautious however as not to hire the consultant “to do” the planning – instead assist in the process and ensure the methodology proposed is compatible with its culture and strategic priorities.

Three primary challenges surfaced during IT strategic planning, which may be reflective of similar situations in other hospitals:

1. **Focusing on solutions before truly understanding the problems.** Many participants recognized the identified challenges for several years and believed they had the solutions before beginning the strategic planning process. This may result in force-fitting predefined solutions. Hence, it is important to leverage all the information collected to truly understand the problem within the broader context and explore alternative solutions.

2. **It is easier to plan based on past experiences than to be truly strategic.** Even when the Current and Future States are well defined, it is much easier to revert to traditional planning mechanisms than to think “outside of the box”. This tendency, which was observed in this case, should be carefully
addressed. For a strategic plan to be truly successful, it requires that the appropriate people be brought together with open minds to revisit the data and available information, along with their judgment and experience, for effective brainstorming of how things might be improved.

3. **Resourcing requires a team with clinical, technical, organizational and analytical skills.** The process outlined required a team combining technical, clinical, organizational and analytical skills. Finding team members with enough of these skills can be challenging. Leveraging business analysts along with experienced IT leaders with healthcare expertise is a cost-effective solution.

The framework and methodology used in this study may be applied in other hospital settings considering IT strategic planning. The thoroughness of the approach adopted supports its generalizability. Although the results may appear specific to this tertiary care pediatrics hospital, they also represent the current health care environment in hospitals in Canada and other developed countries. For example, the fragmentation of applications and systems in hospitals and their struggle in achieving a comprehensive EHR has been observed in several industrialized countries [21]. The need for information access while addressing the associated challenges (e.g., integration, security), managing demands and expectations for IT services, and recognizing IT as a key stakeholder in major hospital decisions have been discussed in the context of Canadian hospitals [5]. Hence, in light of the similarity in challenges and concerns, other hospitals may learn from the effort and the experience of this hospital in IT strategic planning. They may adopt a similar framework and methodology in their settings while taking into consideration the major critical success factors.

It is important to underscore the lessons learned in the process of IT strategic planning, which may be helpful for other centers engaging in a similar exercise:

1. **Create research tools amenable to analysis.** The survey instrument used in this project was originally designed to gather basic stakeholders’ feedback, but its success resulted in it playing a larger role within the IT strategic planning project.

2. **The IT strategic planning project highlighted the importance of various users’ perspectives.** Hearing from all involved stakeholders produces an objective view of existing issues, and supports solutions to identified challenges as the project leads are considered independent and neutral.

3. **You cannot communicate too much.** There were participants who heard about the project regularly through committee meetings. Rather than getting bored by the message, they seemed to learn more about the IT strategic planning effort and IS department with every presentation.

4. **The investment of time is significant and it is critical to leverage existing opportunities wherever possible to minimize the impact on stakeholders.**

5. **Grounding the final product in existing models is an effective way to justify priorities.** If models such as the HIMSS EMR adoption stages are available, it is wise to leverage this evidence and time investment to gain support for the final plan.

Last, it is important to note that existing research in the area of IT strategic planning is limited. This might be attributed to the relative recency of the concept of strategic planning and IT application in healthcare. Future studies may present evidence from other settings undergoing IT strategic planning in order to support the development of best practices in this area. Furthermore, future research should investigate the effectiveness of various IT strategic planning approaches and their long-term impact on the performance of IS departments and the success in IT implementation projects.

8. **Conclusion**

As per Dwight Eisenhower, “In preparing for battle I have always found that plans are useless, but planning is indispensable.” The process followed in the development of the IT strategic plan is as valuable as the resulting plan itself. Engaging staff and stakeholders as active participants in the definition of the hospital’s IT requirements enhances their support of the work done. Adopting an evidence-based IT strategic plan supports hospital decision making processes going forward and ensures alignment with hospital priorities. The framework and methodology identified in this paper may be used as guidelines for other hospitals planning on engaging in a similar exercise in the future.

9. **References**


Appendix A – Table of Contents

1. Current State
   a. Industry benchmarks/parameters
   b. Evidence based experience/lessons learned
   c. Stakeholders
   d. IT/IS current state assessment (baseline)
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      ii. Hardware
      iii. Network
      iv. Servers
      v. Vendors
      vi. Firewall
      vii. Privacy
      viii. Help desk
      ix. Policies, procedures and processes
      x. Human Resources
      xi. Investment
      xii. Alignment

2. Future State
   a. Vision, Mission, Mandate
   b. Guiding Principles
   c. Foundational Elements
   d. Alignment
      i. CHEO Strategic Directions
      ii. Clinical priorities
      iii. Champlain LHIN
      iv. E-Health Ontario
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      iii. Skills
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3. Process
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   b. Project Management (Office)
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   d. Risk Management
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   g. End User (clinical) satisfaction

4. Technology
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   b. Connectivity
   c. Responsiveness
   d. Accuracy
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6. Timelines
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7. Emerging Issues

8. Recommendations and Cost Implications

9. High Level Implementation (Tactical) Plan

10. Communication Plan

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