Practical Enterprise Architecture as an ICT Strategy for De La Salle Philippines

Allan B. Borra[1] and Emmanuel S. Iluzada[2]
[1]Assistant Professor, College of Computer Studies, De La Salle University
[2]MSIT Student, College of Computer Studies, De La Salle University
Corresponding Author: emmanuel.iluzada@dlsu.edu.ph

Abstract: With the rapid evolution of technology and its unavoidable integration with the management of schools, it is necessary to build long-term strategies that would sustain the education business with technology as its catalyst. In order for the institution to stay relevant and thrive in the education arena, it is imperative to have a long term ICT strategy. At the heart of the ICT Strategy is Enterprise Architecture. The purpose of Enterprise Architecture is to optimize across the institution, the often fragmented legacy of processes into an integrated environment that is responsive to change and supportive of the delivery of the business strategy.

The chosen test bed for this research is De La Salle Philippines (DLSP). It is chosen for its network of schools, which has the challenge of integrating or unifying its business and ICT processes. The overall strategies of DLSP are motivated by institutional, internal and external drivers, including the ASEAN integration.

The Open Group Architecture Framework (TOGAF) is the chosen Framework for the research with explicit focus on Architecture Development Iteration and Architecture Context Iteration of the Application Development Method (ADM). TOGAF is proven to be an enabler for achieving the right balance between ICT efficiency and business innovation and has been implemented in major universities around the world.

As an output, the research will propose ICT Strategies that are patterned to the main components of TOGAF: architecture vision, architecture iterations, baseline and target architecture, along with the other main inputs and outputs required by the focused parts of the Architecture Development Method (ADM). It seeks to contribute to the body of knowledge in the arena of ICT strategic planning for universities.

Key Words: Enterprise Architecture; Architecture Development Method; Reference Model; Architecture Context Iteration; Architecture Definition Iteration

1. INTRODUCTION

1.1 ICT Strategic Planning

Information and Communication Technology (ICT) has been a fundamental part of every modern and emerging institution around the world. With its rapid progression year after year, it is necessary to build strategies that would uphold and sustain it and its key processes. There's a need to develop the infrastructure and capabilities to support the digital education strategy (Oxford University IT Services, 2015). In order for the institution to stay relevant, it is significant to have a long term ICT Strategy.

It is common among thriving universities the challenges on its ICT services. There's a continuous challenge in the maintenance of their underlying ICT infrastructure which makes it exposed to future significant risks (Visser, 2012). The way researches are done and kept in our time has been changed drastically and will continue to change. Therefore, there is a continual risk for data loss or threat on data integrity. Moreover, faculty and most especially the technology-savvy students have rising expectations and these will continue to rise (Visser, 2012; Ishak, et.al. 2013). Financially, most Universities will need to have robust mechanisms to ensure that all spending on ICT is well managed and prioritized to support strategic goals. Most universities have a large proportion of total yearly institutional spending on ICT spent by departments, which makes it a constant challenge to draw together and sustain a single collective view of total spending (Dhugga, 2011).

1.2 Enterprise Architecture and TOGAF

These are just some of the many ICT related challenges that needs to be addressed, and a long term ICT Strategy is the proposed solution. At the heart of the ICT Strategy is an Enterprise Architecture. The purpose of Enterprise Architecture is "to optimize across the institution, the often fragmented legacy of processes into an integrated environment that is responsive to change and supportive of the delivery of the business strategy" (The Open Group, 2011).

The Open Group Architecture Framework (TOGAF) is the chosen Framework for the research with explicit focus on the Application Development Method (ADM), and its two iterations: Architecture Context Iteration and Architecture Definition Iteration. TOGAF is proven to be an enabler for achieving the right balance between ICT efficiency and business innovation and has been implemented in major universities around the world.

The study aims to propose an ICT Strategy for De La Salle Philippines (DLSP). DLSP strives to "improve the quality of education and make it more accessible and equitable through rationalized educational agenda and sharing of capital intellectual resources" (SGV, 2012). The overall strategies of DLSP are motivated by institutional drivers, internal drivers, and external drivers, including the ASEAN Integration. With Enterprise Architecture utilizing TOGAF as its key framework, the researcher believes that this is the appropriate resolution to achieve DLSP's strategic goals.

Though this is the case in the institutions of some developed countries, the Philippines has a lot to catch up on the aspect of ICT Strategic Planning. In the case of De La Salle Philippines, a Lasallian network of schools, there are perceived challenges like the lack of unified formal structure for the management and governance of ICT, the lack of clear linkage between DLSP's ICT strategic goals and the individual school's ICT strategic goals, and the lack of ICT resource sharing and some other gaps on education delivery (SGV, 2012).

1.3 Relevant Literature

Top universities that are also technologically advanced are one in the goal of developing an ICT Strategic Plan that promotes technological teaching tools for improving teaching practices and to develop globally competitive teaching tools and services (Maton, 2010; Deighton, 2014; Oxford, 2015). Members of the academic community are tapped to continuously contribute in improving the ICT capability of the institution (Minho, 2012), which is collated into an ICT Strategic Plan.

The discipline concerned with ICT Strategic Planning is called Enterprise Architecture (EA). EA can be described as: "a coherent whole of principles, methods, and models that are used in the design and realization of an enterprise's organizational structure, business processes, Information systems, and infrastructure." (Lankhorst, 2005). EA has been successfully used in the commercial sector for over 15

years as of this writing and is now developing momentum in institutions as an important management instrument in supporting them to meet their strategic goals (Nottingham, 2012).

1.4 Scope and Objective

This guideline will be specific to De La Salle Philippines and its network of schools and will not tackle specific challenges of other Philippine universities. Data gathering will be conducted within the Lasallian network of Schools in the Philippines.

The research will primarily use The Open Group Architecture Framework (TOGAF), which is the de facto global standard for Enterprise Architecture. Its core concepts are derived from ISO/IEC 42010:2007 (Walker, 2013)

The research will first identify the current existing ICT strategies and the overall strategy of De La Salle Philippines, which is covered by the Architecture Context Iteration (Preliminary Phase and Architecture Vision). It will then create a long term ICT strategy proposal that is focused on the Architecture Definition Iteration of ADM. It will not thoroughly tackle the entire 9 phases of the ADM, but will focus on Phase A (Architecture Vision) to Phase E (Opportunities and Solutions). The researchers believe that these two are the practical and most useful application of the ADM. Figure 2 shows the ADM and the two iterations.

In identifying the existing ICT strategies, data gathering will be conducted in the form of interviews and existing documents. Also, there will not be any system development and actual implementation would be optional.

Data validation will be conducted through literature, case study, interview and focus group discussion to subject matter experts (ICT Director, School Administrator, Network Administrator, Database Administrator, and Systems Architect). If ever there will be participants that will not come from the ICT or administrative background (like students and faculty), the researcher will ensure that their participation is chosen based on experience and that the information they will contribute is viewed in general.

2. METHODOLOGY

The research paper focuses on Architecture Development Method (ADM), specifically on the Architecture Context Iteration and Architecture Definition Iteration. ADM is the core of TOGAF and has the step-by-step approach for developing an Enterprise Architecture. The ADM includes establishing an architecture framework, developing architecture content, transitioning, and governing the realization of architectures (but the latter will not be thoroughly discussed). All of these activities are carried out within an iterative cycle of continuous architecture definition and realization (The Open Group, 2011).

This method utilizes different ways for data gathering like review of information sources such as academic journals and ICT strategic plans of other institutions. From the gathered data, best practices and suitable frameworks would be incorporated in the ADM.

3. RESULTS AND DISCUSSION

In a study done by SGV & Co. in 2012 for DLSP, the following pertinent data were derived:

[1] The La Salle network has spent over 1 billion in ICT from 2008 to 2012. Bulk of the spending went to hardware (40-50%) and personnel costs (20-30%).

[2] 25% of the key institution processes (management, donors and grants, research, class scheduling, scholarship, among others) are either not enabled by ICT or have very minimal ICT intervention.

[3] Current staffing is heavy on user support (operational) and thin on back end system support (strategy and development) when compared to industry benchmarks. The network of schools also lacks the right level of ICT management skills (Figure 1).

[4] There is no formal unified structure to govern ICT initiatives at the DLSP levels. There is also an unclear monitoring of school's ICT initiatives to DLSP's objectives.
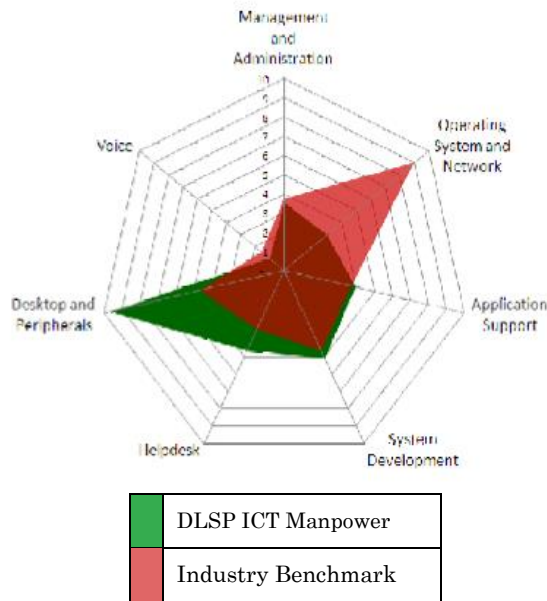
Fig. 1. Comparison of DLSP ICT Manpower and the Industry Standard/Benchmark

Figure 2: Architecture Development Method (ADM) with various iterations

In addressing these challenges, the goal is to utilize ADM (Figure 2), which would focus on five phases: Architecture Vision, Business Architecture, Information Systems Architecture, Technology Architecture, Opportunities and Solutions. Other phases will be discussed only in passing: Migration Planning, Implementation Governance, and Architecture Change Management. The first 5 phases and first 2 iterations were identified as the practical phases of the ADM and this was decided due to time constraints. At the beginning of the method is the Preliminary phase, which measures the current capability of the institution in terms of ICT and this phase would be done only once. The Requirements Management is a floating phase in the method that would be consulted from time to time as needed in each phase.
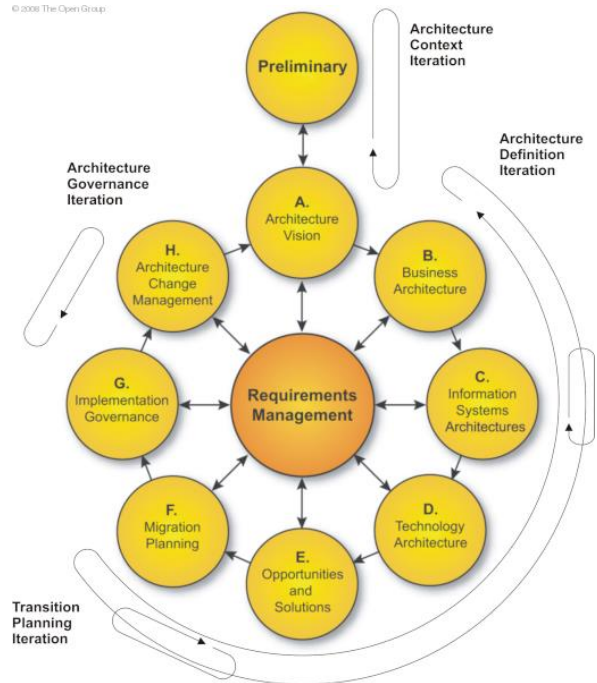
4. CONCLUSIONS

To come up with a concrete long-term ICT strategy, there is a need to have a thorough assessment of where DLSP is now when it comes to its ICT capabilities (Baseline architecture and Gap Analysis). Then, it would be followed by a series of definite steps or phases for building the entire Architecture Framework. But the practical applications of EA that the researchers pinpointed are the 5 phases that tackles the Architecture Definition and Architecture Context iterations of ADM. The researcher concludes that this process is the most viable, attainable and practical solution to the ever-growing challenge of ICT management in the network of schools that would eventually lead to an effective and thriving education delivery.

5. ACKNOWLEDGMENTS

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