

# Development of Enterprise Architecture Planning for School Based Management in Public High School

I Tresna S<sup>1\*</sup>, A Hadiana<sup>2</sup>

<sup>1</sup>Departemen Magister Sistem Informasi , Universitas Komputer Indonesia,Indonesia.

<sup>2</sup>Lembaga Ilmu Pengetahuan Indonesia, Indonesia.

E-mail: ihsantresna@gmail.com

**Abstract.** This research aimed to develop a strategic information system plan and make a priority information system architecture modeling in public high schools. This study used descriptive analysis method. Planning information systems by optimizing the role of Information and information technology systems is an effort to optimize organizational performance in school-based management that can provide more value in the context of improving the quality of education. Planning begins by defining the main function using value chain analysis. Enterprise architecture planning is used to model the information system architecture that has been chosen in information system planning, using four namely planning initialization, a review of the current condition of the company, a review of the company's plans in the future, and implementation planning. This foundation is made for system development and development-integrated information to be designed according to the stages. The results of this study are to produce an architectural enterprise blueprint for making instructions in developing information systems that are based on the priorities and roles of school-based management in organizations and directly affect business processes. It can be concluded that the developing strategic information systems and modeling information systems architecture in public high schools are important.

## 1. Introduction

School-based management (SBM) is the submission of authority given by the central government to the school level [1]. School-based management makes the manifestation of educational reforms that offer schools to provide better education and the process of managing resources effectively to achieve greater goals for schools and encourage decision-making directly in all components of the SBM requires stakeholders such as parents, students and school staff, both academic and non-academic to improve school quality [2]. School-based management is very important to do because in Law Number 20 of 2003 concerning the National Education System and the provisions of article 5 paragraph 4 concerning changes to Government Regulation Number 19 of 2005 concerning National Education Standards with the aim of ensuring secondary education in Indonesia goes according to national education standards [3].

Through the application of the principles of School-Based Management, it is expected that there will be a lot of education results can be significantly improved [4]. So, with School-Based Management, it is expected to be more capable and empowered in managing schools while sticking to national education standard policies. Development of a clear vision is shared by all stakeholders, continuous support and motivation given to all school members is a must [5].

At present, high school has not fully provided or implemented a staff management information system and management of facilities and infrastructure so there is no integrated information system between fields which makes it ineffective and inefficient. The purpose of making this enterprise architecture model is to produce a blue print of an information system design model that can be used as a reference and guide in developing integrated information systems in public high schools using the



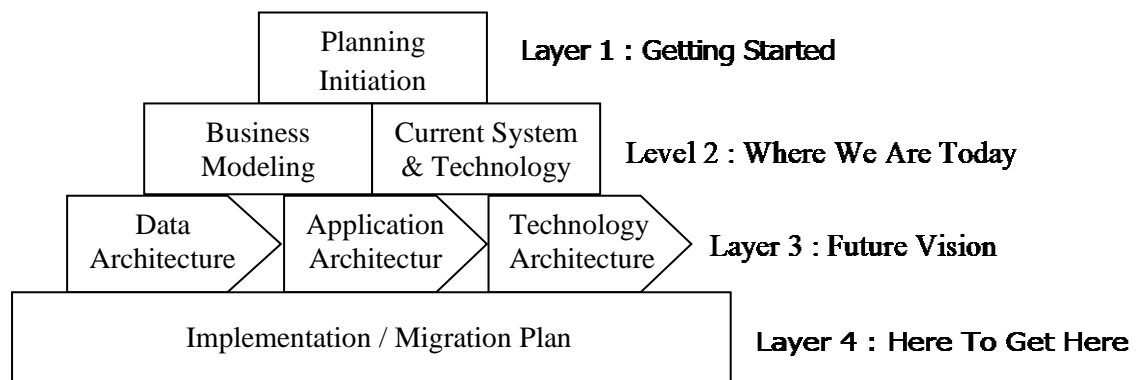
Enterprise Architecture Planning (EAP) method. The information technology system from the EAP is an information system that deals with the implementation of education, especially in the academic and general administration fields that took part in building an architectural information system. It is designed as a framework for having good alignment between business and technology. So, this design will use a web-based platform making it easier for integration.

**2. Method**

The methodology used is company architecture planning (EAP) which is based on School Based Management Integration of personnel management and management of facilities and infrastructure and processing and providing information sources. There are four steps that will be carried out in this study, namely planning for current company settings, renewal of future company plans, initial strategy, and planning for data collection related to documents, discussions, and interviews. This research was conducted at Public High School 1 Cikidang in Sukabumi , West Java, Indonesia. Collected data obtained from direct observation and interviews are problems, data architecture, and technology architecture. Then, this architectural framework is taken from unwanted libraries that are referenced by comparing the architectural works currently used.

**3. Results and Discussion**

Based on observations and interviews, the application of national standards for education to school-based management has not been implemented optimally. Information in personnel management and management of facilities and infrastructure are also less integrated. In this method the blueprint information system refers to the enterprise architecture planning (EAP) seen from the architecture with four (4) categories: business architecture, data, applications, and technology [6], [7], [8] (See Figure 1).



**Figure 1.** Layer component of enterprise architecture planning

*3.1. Implementation Plan*

*3.1.1. Planning Initiation*

Public high school as one of the organizers of formal education upper secondary level, its main business is to hold services education, in which the activities are related to the need for data or information services, which will be used to carry out their activities better and planned and controlled. Thus, the target of the information system and information technology from EAP that is created is an information system that is related and needed to support the implementation of the

main activities in the education process. The scope and objectives at this stage are information relating to the main academic activities, namely:

- a. New Student Admissions
- b. teaching and learning process
- c. Academic Release

3.1.2 Business Modeling

- Identify Business Areas

The main functional area for the public high school education model for activities mainly consists of New Student Admissions, teaching and learning process and Academic Discharge shows the value chain of the main activity for the model of education in high school over 1 field. The value chain provides a means to analyze the activities carried out by an organization (See Figure 2).

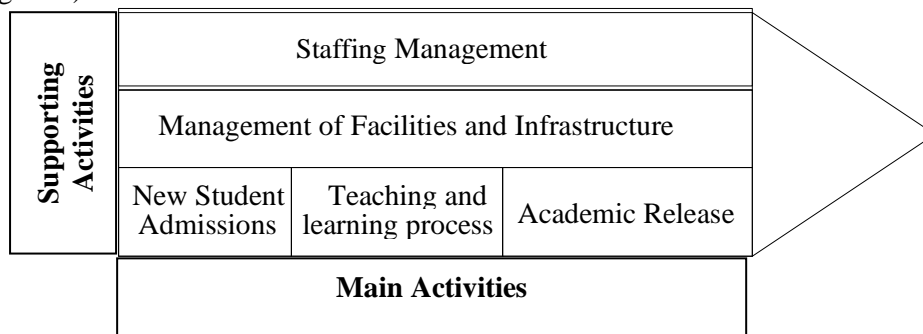


Figure 2. Value chain Public High School

3.2. Current System and Technology

Technology used every information system application runs a particular technology platform. Determining, defining, and documenting the platform used the best application that is being used [9]. Until now public high schools where research have not used information systems to support their business activities. Data processing is still manual and manual in the form of archives. Documenting and defining all technology platforms and systems used by the company today and providing references for long-term migration (See Table 1).

**Table 1.** Data preparation description

No	Data Processing	Data	Implementation Unit	Description
1	Academic Operational	- Student - Subject - Expertise Program Plan - Teacher - Value Curriculum result - Student Status - Transcripts - Instructional Media - Learn how to teacher	Assistant head of school curriculum	Spreadsheet and Word Processor
2	Management of facilities and infrastructure	- Recording of facilities and infrastructure	Assistant head of school vice principal Facility and Infrastructure	Spreadsheet and Word Processor
3	Management Employee	- Staffing Administration - Payroll - performance evaluation	Treasurer, headmaster and representative headmaster	Spreadsheet and Word Processor

### 3.3. Data Architecture

Identify possible candidates to support business entity [10]. Because data entities are needed to support business, the determination can be based on formulated business functions that focus on the main activities in the value chain in public high schools, there are several business entities that will be identified. Data architecture describes all data entities that will be generated, managed and used by all business functions or processes (See Table 2).

**Table 2.** List of data entities

<b>Business entity</b>	<b>No</b>	<b>Data entity</b>
New Student Admission	1	Student entity
	1	Academic calendar entity
	2	Study program entity
	3	Student entity
Academic Operational	5	Teacher entity
	6	Exam Entity
	7	Value entity
	8	Teaching and learning activities
Employee Management	1	Employee / teacher entity
	2	Payroll entity
	3	Performance entity
Management of Facilities and Infrastructure	1	Plan entity facilities
	2	Procurement entity
	3	Facility and infrastructure entity

### 3.4. Application Architecture

The design of the application architecture aims to define the main types of applications needed to manage data and support business functions in an enterprise. The application architecture does not design the system but defines it what application will manage data and provide information to users related to business.

#### 3.4.1. List of Candidate Application

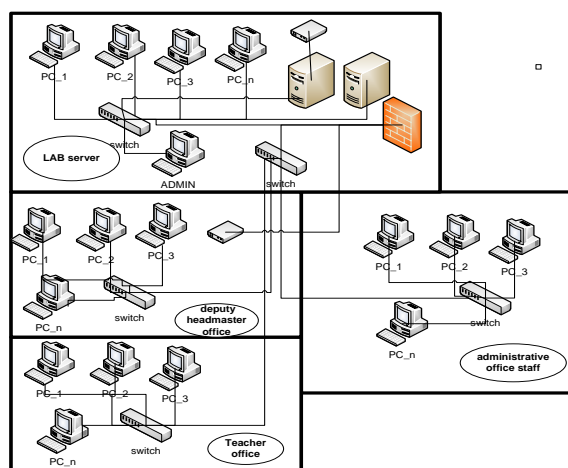
The construction of application architecture begins by identifying candidate applications needed to manage data and support business processes with information technology support (See Table 3).

**Table 3.** List of Application Candidates

Item	Business Function	Information System	Application Code	Application System
1	New Student Admission	New student Admission System	APL-1.1	new student registration application
			APL-1.2	Processing Application
			APL-2.1	New student exam results
			APL-2.2	Curriculum Application
2	Academic Operational	Academic Operational System	APL-2.3	Student Registration Application
			APL-2.4	Application Value Processing
				Reporting application
				Academic
3	Management of Facilities and Infrastructure	Facilities and infrastructure System	APL-3.1	Application plan facilities
			APL-3.2	procurement item application
			APL-3.3	application of facilities and infrastructure

*3.5. Technology Architecture*

Management expects current technology to be more optimized for system development and use [11]. Where applications and data are placed in one location and can be accessed by all users / users, so that data and information sharing can be carried out among organizational units in need. This location is expected to be managed by a unit that is responsible for managing information resources, namely the information resource unit or computer center and information system (See Figure 3).



**Figure 3.** The proposed computer networks

#### 4. Conclusion

Conclusions that can be given based on corporate architecture planning can be concluded that analysis results at high school using the value chain can formulate the main activities and supporting activities and produce the results obtained are that applications that have so far reached eleven applications that strongly support the organization's business functions. Produce an implementation plan blueprint that can be used as a guideline in the development of information system applications that support the function school-based management, management staff, facilities and infrastructure.

#### Acknowledgments

The author realizes that without the support of all parties, the author cannot complete this research. The author also wants to show his gratitude to Universitas Komputer Indonesia that have provided insight and expertise that are very helpful in research.

#### References

- [1] Saeid Moradi, Sufean Bin Hussin, Nader Barzegar. 2012, School-Based Management (SBM), Opportunity or Threat (Education systems of Iran), International Conference on Education and Educational Psychology. 2143 – 2150.
- [2] Bashimane Mollootimile & Thulani Zengele, 2015, The Advent of School Based Management In the 21st Century, Journal of Social Sciences and Humanities **10**(2)
- [3] Dikdasmen.kemdikbud, 2016, Basic and Secondary Education Quality Assurance Handbook
- [4] Ikhfan Haris, 2016, Conceptualizing School Improvements Dimension within the Context of School-Based Management, International Journal of Social Sciences & Educational Studies, **2**(4)
- [5] Suseela Malaklolunthu, Faizah Shamsudin 2011, Challenges in school-based management: Case of a 'cluster school' in Malaysia. Procedia Social and Behavioral Sciences **15** 1488–1492
- [6] E. Nowakowski, M. Farwick, T. Trojer, M. Häusler, J. Kessler, and R. 2017, Breu, "Enterprise Architecture Planning:Analyses of Requirements from Practice and Research," in 50th Hawaii International Conference on System Sciences, pp. 4847–4856
- [7] Svyatoslav Kotusev, 2016, The History of Enterprise Architecture: An Evidence-Based Review,Journal of Enterprise Architecture – **12**(1).
- [8] Aier, S, and Gleichauf, B, 2010, Applying Design Research Artifacts for Building Design Research Artifacts: A Process Model for Enterprise Architecture Planning. Global Perspectives on Design Science Research 6105, pp.333–348.
- [9] Titus Kristanto, 2016, Enterprise Architecture Planning Untuk Proses Pengelolaan ManajemenvAset Dengan Zachman Framework, Jurnal Ilmiah Teknologi Sistem Informasi, **2**(2)
- [10] Kholiq Budiman, Toni Prahasto, and Amie Kusumawardhani,2018, Enterprise Architecture Planning in developing A planning Information System: a Case Study of Semarang State University, E3S Web of Conferences 31, 11002.
- [11] A. M. Ernst and A. W. Schneider, "Roadmaps for Enterprise Architecture Evolution," in Workshop on Patterns in Enterprise Architecture Management (PEAM), 2010, pp. 253–266.

Reproduced with permission of copyright owner. Further reproduction prohibited without permission.