

# Enterprise Architecture Planning with TOGAF ADM: A Case Study of a Heavy Equipment Rental Service Company

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**Abstract**—Strategic Information Systems (IS) and Information Technology (IT) planning play a vital role in aligning technological initiatives with business objectives, particularly in asset-intensive industries. This study aims to implement the TOGAF ADM framework to design a strategic IS/IT planning model for a heavy equipment rental company, demonstrating how enterprise architecture can align IT initiatives with business goals. PT. XYZ has not yet implemented an information system strategy for the company's needs in terms of management, leading to inefficiencies in business operations at PT. XYZ. A qualitative approach was used to obtain through in-depth interviews with company's owners and managers, observation data of company's IT asset also collected to describe organization's current IS/IT landscape and applies the TOGAF ADM phases to design an enterprise architecture that supports business-IT alignment. This study demonstrates how TOGAF ADM can provide a structured methodology for identifying business needs, defining architectural visions, and developing a roadmap for IS/IT improvements. Findings indicate that using EA frameworks such as TOGAF ADM enhances strategic planning capabilities, supports organizational agility, and provides a repeatable model for similar enterprises in the rental or industrial sector. The results offer valuable insights for practitioners and researchers interested in applying enterprise architecture to improve IS/IT strategic planning processes.

**Index Terms**—PT XYZ, TOGAF ADM, enterprise architecture, strategic planning.

## I. INTRODUCTION

In the era of globalization, the rapid advancement of information technology has significantly transformed business operations. Computers enhance information systems by providing more accurate and reliable outcomes [1]. To stay competitive, many companies have adopted technology to optimize core processes, influencing organizational structures and management practices [2]. However, without structured IS/IT planning, implementations often misalign with business objectives, resulting in inefficiencies. Strategic planning of

information systems is essential to ensure alignment with long-term business goals and to prioritize key processes [3]. To bridge the gap between IS/IT implementation and business needs, integration must be considered from the outset. Enterprise Architecture (EA) provides a comprehensive framework for planning, designing, and managing IS/IT infrastructure to support such integration [4].

PT. XYZ does not currently have an information system strategy or information technology to meet the company's marketing and management demands, resulting in long lines in the information system process and impeding business progress. Fig. 1. displaying amount of unit owned by PT. XYZ Over the past four years.

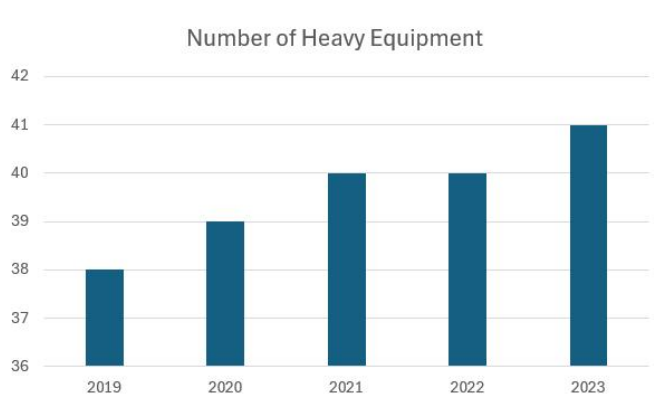


Fig. 1. Amount of heavy equipment by PT. XYZ.

Figure 2 displays data on the number of damaged equipment. The damage to heavy equipment increased enough that some of the assets possessed would be unable to be employed in field projects in 2023.

Based on Fig. 2, PT. XYZ requires a system capable of managing its assets. Consequently, an Enterprise Resource Planning system is required to oversee and manage the assets possessed by PT. XYZ. Based on the current conditions, it is essential to build and design an Enterprise Resource Planning system to improve asset's readiness and increase company's productivity.

This study implements TOGAF ADM for enterprise architecture, providing a complete approach for the planning, design, and implementation of enterprise information

architecture [5].

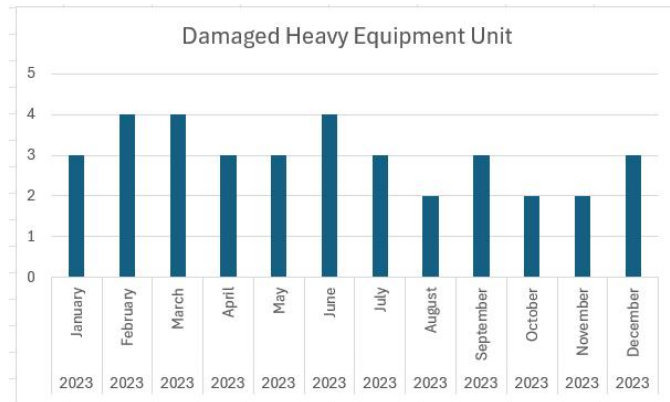


Fig. 2. Amount of damaged Heavy Equipment by PT. XYZ

TOGAF framework is widely utilized in a variety of industries, including banking, manufacturing, and education, due to its advantages, which include being more object-oriented, adaptable, and open-source [6]. There are several EA frameworks, including TOGAF, Zachman, and Federal Enterprise Architecture [7]. TOGAF features additional advantages when compared to other frameworks, such as Zachman and Federal Enterprise Architecture. TOGAF framework exhibits greater compatibility, flexibility, and adaptability in data architecture [8]. TOGAF is also a widely adopted and comprehensive enterprise architecture framework that provides a structured methodology for the development, implementation, and management of enterprise architecture [9].

This study focuses on several key phases of the TOGAF ADM—namely, the Preliminary Phase, Architecture Vision, Business Architecture, Information System Architecture, and Technology Architecture. These phases are selected to ensure a comprehensive and systematic alignment between business objectives, information systems, and supporting technological infrastructure, and critical for improving operational efficiency and adaptability.

## II. RELATED WORK

### A. Enterprise Architecture

Enterprise Architecture (EA) refers to the fundamental blueprint for determining business and IT strategies to accomplish the company's goals. Enterprise architectures comprise principles, methodologies, and modeling techniques employed to design and implement an organizational structure, business processes, information systems, and infrastructure, including hardware, software, and networks aligned with the company's vision and mission to execute business strategy supported by information technology [10].

Enterprise architecture serves as a dynamic and strategic framework that facilitates the alignment of business and information technology (IT) strategies, enabling companies to manage complexity and drive sustainable information system strategic planning. Rather than being a static blueprint, EA integrates various organizational domains—including business

processes, information systems, applications, and technological infrastructure—into a cohesive architecture that supports the execution of long-term business objectives.

Empirical studies have demonstrated that EA capabilities significantly contribute to organizational benefits. For instance, [11] founded that dynamic EA capabilities positively influence process innovation and business/IT alignment, which in turn enhance organizational performance. Similarly, [12] proposed a business value realization model illustrating how EA practices can lead to improved strategic alignment and value delivery.

Furthermore, EA's effectiveness is amplified through its integration with IT governance frameworks. A study by [13] emphasized that combining EA with robust IT governance practices facilitates the successful adoption, improving agility and alignment between business and IT.

### B. Enterprise Resource Planning

Enterprise resource planning (ERP) is a comprehensive software system designed to support the development and realization of an organization's information system vision. The successful implementation of ERP is influenced by various factors, including product orientation, production strategies, order management, process streamlining, and scheduling efficiency [14].

The implementation of ERP systems can significantly enhance organizational performance by improving the accuracy of information exchange across departments, increasing responsiveness to customer needs, and supporting more effective decision-making and resource management. Furthermore, ERP systems contribute to cost reduction by minimizing operational expenses such as supervision and maintenance, thereby enhancing overall organizational efficiency [15].

ERP systems can expedite information acquisition through ERP integration. The integration capabilities of ERP encompass numerous domains as outlined as follow [16]:

#### 1) Financial information integration

ERP systems provide unified financial reporting by utilizing a centralized database and integrated system architecture, ensuring consistency and accuracy across all organizational departments.

#### 2) Customer order Information Integration

ERP can track the status and progress of customer orders from receipt by the sales department until the ordered goods are ready to be shipped.

#### 3) Standardization and increasing the repair process

ERP can adjust process standardization, including automation processes so that asset repair needs proper planning.

#### 4) Standardization of employee information

Standardization of information capable of managing employee work by implementing an attendance application log.

### C. IS/IT Planning

Information systems/information technology (IS/IT)

strategic planning serves as a critical mechanism for aligning technological initiatives with overarching business objectives, thereby enhancing organizational performance. This planning process involves the systematic identification of how IS/IT can contribute to achieving strategic goals, ensuring that technology investments are purposeful and value-driven. IS/IT planning also explains various tools, techniques, and frameworks for management to align IS/IT strategy with the business strategy [17].

Empirical studies have underscored the significance of strategic alignment between IS/IT and business strategies. For instance, [18] demonstrated that such alignment positively influences corporate performance, particularly in competitive sectors like electrical appliance distribution. Their research highlighted that companies implementing coherent IS/IT strategies experienced improvements in operational efficiency and customer satisfaction.

Furthermore, strategic planning in IS/IT encompasses the utilization of various tools and frameworks to guide decision-making and resource allocation. The Balanced Scorecard (BSC) approach, for example, has been adapted to measure and enhance information systems agility, providing a multi-dimensional view of performance across business contribution, user orientation, operational excellence, and innovation [19].

IS/IT strategic planning is responsible for overcoming rules for planning and evaluating IT work programs and determining future IS/IT capability needs [20]. In the context of the government sector, The Open Group Architecture Framework (TOGAF) has been instrumental in designing IS/IT strategies that address resource constraints and process inefficiencies. According to [6], in their research titled "SI/IT Strategic Planning at the Salatiga City Transportation Department Using the TOGAF Framework," aim to design an IS/IT strategy in Salatiga City, which currently lacks the resources to implement IS/IT, resulting in data and information inconsistencies and inefficient business processes.

Moreover, the role of strategic planning extends to small and medium-sized enterprises (SMEs), where it facilitates the adoption of information technology and contributes to improved organizational performance. SMEs with mature IS/IT strategic planning are more adept at implementing and leveraging technology, leading to enhanced operational outcomes [21].

In summary, IS/IT strategic planning is pivotal in aligning technological capabilities with business strategies, utilizing structured frameworks to guide implementation, and ultimately driving organizational performance across various sectors.

#### D. The Open Group Architecture Framework (TOGAF)

TOGAF was established in 1995 by the United States Department of Defense. The Open Group joined TOGAF in 1990. In 1995, a technical standard was developed for its use.

TOGAF provides methods and tools for receiving, producing, using, and maintaining Enterprise Architecture. TOGAF model are iterative process model supported by best practices and various reusable architectural assets [22]. TOGAF ADM approach generates a cycle of repetition and iteration for the entire process, between phases, and for every phase. Since TOGAF ADM is a broad approach, it can be tailored depending on business requirements [23].

The application of TOGAF (The Open Group Architecture Framework) presents significant potential for enhancing the efficiency, effectiveness, and strategic alignment of government and industry, including improved strategic alignment, better decision-making capabilities, increased operational efficiency, improved risk management, and greater interoperability of IT systems [24].

In addition, TOGAF also supports the development of frameworks that comply with international standards such as ISO/IEC 27001 for information security management. TOGAF can assist organizations in managing risk and ensuring that information security policies and procedures are implemented consistently and effectively [25].

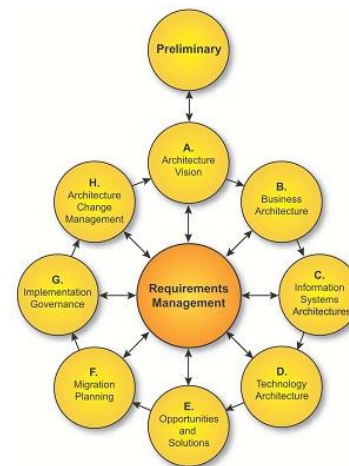


Fig. 3. The phases of the TOGAF ADM development process

The following are the phases in the development of EA using the TOGAF framework as seen in Fig. 3 [26]:

1) *Preliminary phase*

This phase comprises deciding how to conduct the planning. This phase can be utilized as a strategy for success in business architecture.

2) *Architecture vision phase*

This phase will ensure the consistency of enterprise architecture planning to fulfill Company's objectives and establish the extent of the architecture to be constructed based on the preparatory phase's foundation.

3) *Business architecture phase*

This phase focuses on corporate strategy, organization, and important information activities. PT. XYZ is currently

using UML diagrams to depict the flow of business process situations.

#### 4) *Information system architecture phase*

This phase focuses on discovering and selecting the capabilities that will support the company's enterprise architecture and application requirements. This step combines data architecture and application architecture to create a system capable of managing raw material procurement, manufacture, and sales.

#### 5) *Technology architecture phase*

This phase can explain the technical structure required to handle the Company's activities and can expand or improve the functionality of existing apps.

### III. RESEARCH METHOD

#### A. *Data Collection*

This study assesses a qualitative research approach to obtain a data sample for this study. Qualitative research is selected for its effectiveness in capturing in-depth and contextually rich insights into complex phenomena, making it well-suited for exploring the nuanced dynamics of the subject under study. [27]. This approach assesses the company's architectural state, encompassing organizational, business process, and IS/IT frameworks. Two methods were used in this research: Interviews and observation of the company's current condition.

Observation is implemented to observe and comprehend the company's current and ongoing business processes directly. Observation is also conducted to observe the current system of the company. Interviews are used to obtain information about the activities of the company PT. XYZ. Interviews were conducted with corporate representatives who were familiar with the business processes used at PT. XYZ. The interview yielded data on the organizational structure, company vision and mission, company strategy, tasks and functions of each division, challenges encountered, IT infrastructure, applications used, business processes, company strategy, and the company's demand.

#### B. *Framework Application*

This study intends to adopt Enterprise Architecture utilizing the TOGAF framework to enhance strategic management at PT. XYZ is to reduce the queue of information system procedures and facilitate business development. The framework used in this study is described in Fig. 4.

Figure 4. Describes that the structure TOGAF ADM is customized to ensure that the proposed solution is more effectively aligned with the organization's specific needs and strategic goals.

This study establishes the background based on the current problem and formulates the problem based on the research background. Research objectives and problem limitations must be established before the study can focus on the area defined from the research background. The purpose of this study is to create an enterprise architectural blueprint for strategic management using the TOGAF ADM Framework and to comprehend the elements utilized or necessary for the construction of an enterprise architecture at PT. XYZ. The

limitation of this research is that it employs a case study of PT. XYZ to offer recommendations and frameworks based on the strategic management practices of PT. XYZ.

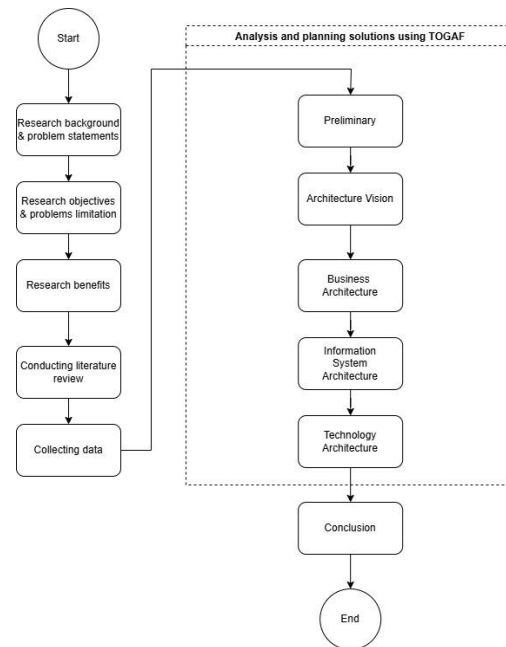


Fig. 4. The phases of the TOGAF ADM development process.

#### C. *Process Analysis*

The benefits of this research include increased efficiency in time and human resources (HR) when carrying out business activities and for the enhancement of business processes utilizing strategic management at PT. XYZ. The researchers searched for related sources, including books, journals, previous research, and websites. The researcher gathered data through direct observation and interviews to investigate the current business process documentation at PT. XYZ. Interviews were also performed with the President, Director, and other staff members to collect information that was not documented.

The acquired data is reviewed by the researcher. The researcher then examined solutions to the challenges identified. The researcher uses architectural work stages based on the TOGAF framework to overcome problems based on the background research. In addition to reviewing possible recommendations for improved implementation and sources for additional study, this article presents the findings obtained to find solutions to the problems that exist at PT. XYZ.

##### 1) *Preliminary phase*

Preliminary phase, the initial phase is preparation before establishing an Enterprise Architecture. This phase specifies PT. XYZ's strategy and the drivers of digital transformation projects, as well as the tools to be employed in architectural work. The results of this phase are determining the scope and approach for architecture development, describing the company's strategies, and

outlining the impact of enterprise architecture implementation on the company's operations.

2) *Architecture vision phase*

Architecture vision phase describes the most advanced level of architectural vision. Working on this architecture vision begins with defining the architecture target's requirements through requirements management, identifying and mapping existing problems, and developing the PT. XYZ business model, mapping the organizational structure based on its function, and providing an overview of the target architecture. This phase produces the following outputs: the company's vision and mission, stakeholder mapping matrix, Requirement management, Business Model Canvas, Organization Decomposition Diagram, Solution Concept Diagram, and Company's Organizational Structure.

3) *Business architecture phase*

Business architecture phase. This phase establishes the enterprise architecture, which will be used in the Information System Architecture and Technology Architecture phases. It explains the structure, functions, and business processes based on the architectural vision developed during the Architecture Vision Phase. This phase also specifies the existing status of enterprise architecture and the architecture goals to be met. This phase produces the following outputs: Functional Decomposition Diagram, Business Service/Function Catalog, Organizational/Actor Catalog, Business Process Diagram, Business Interaction Matrix.

4) *Information System architecture phase*

Information systems architecture phase, this phase establishes the data and application architectures. It also shows how apps that support business processes interact with the data utilized and generated by those operations. The results of this phase are: Application Portfolio Catalog, Application Use Case Diagram, Application/Data Matrix, Conceptual Data Diagram, Data Entity/Business Function Matrix.

5) *Technology architecture phase*

Technology architecture phase intends to provide a full description of the technological capabilities of the software and hardware used. This phase specifies the objectives that will be achieved while carrying out the company's business procedures. The results of this phase are Technology Portfolio Catalog, Technology Architecture Platform, and Infrastructure Topology.

Table 1 illustrates flaws in the operations that involve the office management and mechanics division. Researcher summarized and conducted a solution to revise the current issue. Office management faced there's no application automatically integrated, resulting in manual procedures utilizing Ms. Office, as there is no supportive application that integrates with the operator and mechanic divisions for assessing employee performance. Management also manually records the total number of heavy equipment available and undergoing repair or project due to the lack of an application, which means the

completion process takes a long time. The mechanical division lacks an integrated application to ascertain the availability of replacement parts and workshop equipment, resulting in technicians spending considerable effort locating or replacing unregistered items.

Table 1.

The Current Problem in Each Division	
Company's Division	Challenges
Office Management	There's no application automatically integrated, resulting in manual procedures utilizing Ms. Office, as there is no supportive application that integrates with the operator and mechanic divisions for assessing employee performance. Office Management manually records the total number of heavy equipment available and undergoing repair or project due to the lack of an application, which means the completion process takes a long time.
Mechanic	Lacks an integrated application to ascertain the availability of replacement parts and workshop equipment, resulting in technicians spending considerable effort locating or replacing unregistered items

IV. RESULT

This study focused on the strategic management implementation in PT. XYZ. All the data were collected using qualitative research approach consist of observation and interviews. The researcher conducted interviews with internal management who understood the business flow and requested the requirements of IS/IT strategic planning. The researcher also examined and observed the current system and technology implemented by PT. XYZ. The complete result of the interviews is shown in Table 2, and the result of observations is shown in Table 3.

Table 2.

Interview Results		
Question	Result	Division
Can you explain how the business process flow at PT. XYZ?	Client contacted the office to ask about the availability of heavy equipment units. Then, the company provides available heavy equipment and explains rental prices to potential customers.	Director
	If the client agrees, the client pays a down payment and the company makes a work contract based on the duration of the project.	
	The company does project surveys with clients to assess field conditions during project execution. Then, company fulfills the	

	projects outlined by the clients.	
	Upon project completion, the customer is required to remit the outstanding balance for PT. XYZ in full.	
What are the current challenges faced by the company?	Companies cannot figure out the specific location of heavy equipment in the field in real time.	Director
	Companies need to know the precise position of heavy equipment working on a project to enable effective monitoring.	Office Management
	No system can map damage to heavy equipment, resulting in repairment can be completed rapidly.	Mechanic
What solutions are needed in this company?	Companies need a system that can identify the location of their heavy equipment to obtain information about the movement and use of heavy equipment.	Office Management
	The company wants a monitoring unit system for checking heavy equipment repairs so that heavy equipment repairs can be completed more quickly.	Mechanic
What is the current condition of the information system at PT. XYZ?	Currently, PT. XYZ not yet implementing an information system. Resulting PT. XYZ uses features such as Microsoft Excel. PT. XYZ also uses a landing page website in the form of Blogspot to provide company information.	Office Management
How is the information system development plan at PT. XYZ?	The information system development plan at PT. XYZ is moving towards integration between applications to facilitate business processes and monitoring in the company.	Office Management
What is the current condition of Information Technology Infrastructure at PT. XYZ?	PT. XYZ obtained two computers and four laptops for the company's administration and data report processing needs. In addition, PT. XYZ also has a printer to print company documents and an internet router for the company's internet access needs.	Office Management
What is the information technology infrastructure development plan at PT. XYZ?	PT. XYZ plans to append components to support information system needs such as Web Server, IoT Server	Office Management
In implementing	Able to enhance corporate processes and provide novel	Director

IS/IT strategy planning at PT. XYZ, what do you expect from the system?	customer experiences through services integrated with cutting-edge systems.	
	Reducing existing manual processes in the company so that existing business processes in the company become more efficient.	Office Management
	Minimize losses and accelerate the repair of heavy equipment assets.	Mechanic

Table 3. Observation Results

Device Type	Specification
PC Client	Operating System: Windows 10 RAM: 4 GB Storage: 512 GB
Printer	Print, Scan, Copy
Router	Cable Router

Based on the interviews, as shown in Table 2, PT.XYZ intends to implement an information system to identify the company's heavy equipment condition and depict damaged heavy equipment, allowing for expedited repairs by mechanics. PT. XYZ also wants an integration between applications to facilitate business processes and monitoring, resulting in enhanced corporate processes and providing novel customer experiences through integrated services with the latest systems. Table 3 depicts observations of current technology specifications of PT. XYZ is outdated and needs to be improved. This enhancement is necessary to elevate system performance to meet the specified requirements and acquire desired result.

1) Preliminary Phase

This phase involves the initiation and preparation stage of architectural planning, including the identification of the architectural concepts to be applied. The results of this phase are the identification of architectural principles that will be used as requirements and determining business goals as shown in Table 4 and Table 5.

Table 4. Architecture principles table

Principles	Description	Principle Type
Standardization and documentation of business process flows	Standardized and well-documented business activities, flows, and regulations.	Business Principles
Efficiency and faster processes	The established infrastructure can rapidly accommodate corporate demands with seamless scalability, which led to enhancing efficiency and flexibility for future business growth.	Business Principles
Data Sharing	All information is organized and can work in unison to avoid duplication and enhance data oversight and validation.	Data Principles
Integrated process	Current applications integrate	Application



	existing business processes with organizational requirements, facilitating enhanced digital collaboration and oversight.	Principles
Agile and user-friendly application	The developed application must be efficient to minimize time consumption and user-friendly to ensure accessibility for all individuals.	Application Principles
Collaboration between systems and applications	Software and hardware must adhere to established communication standards to enable interaction and collaboration between systems and applications.	Technology Principles
Implementing the latest and advanced technology	Applying advanced and sustainable technology to ensure reliability.	Technology Principles

Table 5.  
Business goals table

Requirement Business	Description
Latest and adaptive IT infrastructure	Adaptive IT infrastructure enables companies to quickly adapt to changes in business demand, regulations, or the latest technologies.
Integrated application system	An integrated application system can provide usability to companies such as smooth data and information flow between various applications in the company, and enable company to adapt to changing business needs.
Implementing Unit Management System for heavy equipment assets	The company need a system that can monitor units based on categories such as temperature, pressure, fuel level, and other performance factors so that this information can help identify potential problems or necessary maintenance before serious damage occurs.

Table 4 and 5 depicts that The Director of PT XYZ emphasized the urgent need for implementing strategic planning in Information Systems and Information Technology (IS/IT) within the company. This urgency is driven by the fact that many competitors have already adopted IS/IT strategic planning, making it a key motivator for PT XYZ to avoid falling behind in terms of technological advancement and revenue generation. Furthermore, the rapid development of increasingly sophisticated technologies offers significant opportunities to enhance the efficiency and speed of PT XYZ's business processes.

## 2) Architecture Vision

This phase involves organizing stakeholders using stakeholder matrix mapping, identifying the company's business model, delineating organizational functions, outlining business activities, and conducting high-level modeling for the given solutions. This depicts the outcomes of corporate planning to outline the vision of IS/IT planning.

- Stakeholder matrix mapping

Stakeholder matrix mapping is designed to determine the position and involvement of stakeholders in the planning of this project. Table 6 shows the mapping of company stakeholders with the duties and authorities of each division. Each stakeholder contains a class with various key concerns based on job description and roles. In key players consist of the Director, Vice Director, and the Manager. This position has a significant role in halting, sustaining, and advancing a project. Engaging this group is typically facilitated by ensuring consistent and transparent communication. In practice, key players can set strategic planning priorities, support ongoing planning, and ensure that strategic planning is embedded into all organizations' visions. Then in keep informed consist of Office Management, Operator and Mechanic. This class is affected by the architectural planning, as it will directly affect their job, although it does not significantly alter the planning itself. As a result, an effective approach is required to disseminate regular and comprehensive information such as email updates, discussion forums, and socialization sessions.

Table 6.  
Stakeholder matrix mapping

Stakeholder	Key Concern	Class
Director	Planning and implementing company's strategies and ensuring the strategies are in line with the company's vision and mission, receiving reports in the form of results from the implementation of company strategies from the vice president.	Key Players
Vice President	Collaborate with the director to develop the company's strategy and offer insights to the director in planning the strategy to be implemented.	Key Players
Manager	Implement business strategies as planned and determined by the board of directors, control and monitor all business activities including office management, mechanics, and operators.	Key Players
Office Management	Providing management services to the office such as waybills, and vehicle certificates, receiving and managing relations with customers, receiving and managing transactions with employees, and making reports in the form of financial reports, employee reports, and reports related to heavy equipment	Keep Informed

Operator	vehicles. Operate heavy equipment vehicles, conduct field surveys to be visited, and understand the various types of heavy equipment to be used.	Keep Informed
Mechanic	Repairing damaged heavy equipment vehicles, carrying out maintenance on heavy equipment vehicles, and conducting field visits to check or repair heavy equipment.	Keep Informed

• Organization decomposition diagram

Organization Decomposition Diagram is a diagram based on the company's business functions. Figure 5 shows the results of the diagram to be applied as references in strategic planning. Based on the Fig. 5, Office Management Division is responsible for financial management, organizing personnel within the company, office and field logistics inventory. Meanwhile, Field division is responsible for the operation of heavy equipment on projects in the field and also the repair of heavy equipment either in the field or in the workshop. This division consists mechanics and operators team. Last, IT & development division is responsible for technology and information infrastructure, system data security, software management, and development.

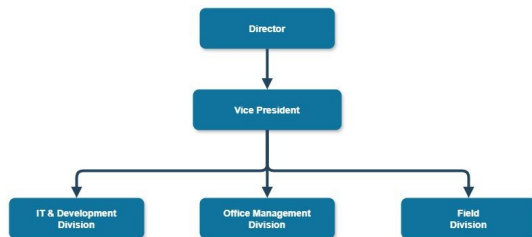


Fig. 5. Organization Decomposition Diagram

3) Business Architecture

In Business Architecture phase, researcher discusses current business in the PT. XYZ and formulate strategies to improve the existing business process conditions. This phase contains Functional Decomposition Diagram that illustrates the overall view of the business processes that occur within the company's functions as explained in Fig. 6.

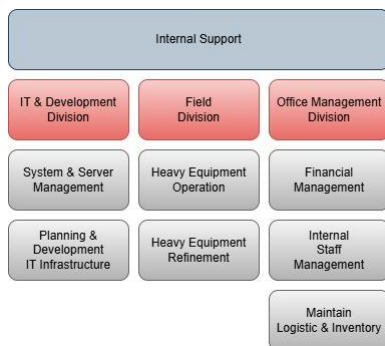


Fig. 6. Functional decomposition diagram.

Figure 6 illustrates the organizations' demands to design a module system by each division. In the IT and Development

Division, information technology systems are meticulously designed and developed following the requirements of the organization. Then, the Field Division is responsible for executing management functions, including the maintenance and repair of heavy equipment assets, as well as the operation of heavy equipment by client requirements. The last is the Operational Division, This division has the task of managing the company's finances, such as recording and reporting the company's finances, managing employee data such as recruitment, employee contracts, processing leave, resignation applications and administration of correspondence and managing and maintaining the condition of the company's assets. This phase also contains the Business Interaction Matrix explains connections across business functions and relationships between functions in PT. XYZ is depicted in Table 7.

Table 7. PT. XYZ Business Interaction Matrix

	Office Management Division	Field Division	IT & Development Division
Office Management Division		Request budget, Request employee, Request asset.	Request budget, Request employees, Request asset.
Field Division	Monitoring assets on site.		
IT & Development Division	Request service and maintenance system.	Request maintenance system.	

Table 7 illustrates that the interaction between divisions is bidirectional; however, it remains uneven. To address this issue, a centralized request system—covering budget allocation, staffing, and asset management—is required in the form of an Enterprise Resource Planning (ERP) system. Furthermore, maintenance activities can be integrated into the IT division's unified internal service portal. The ERP system is intended to facilitate more efficient and integrated interdepartmental interactions, promoting balanced collaboration and reducing the risk of miscommunication.

4) Information System Architecture

In this phase, the researcher explains that the result in the Business Architecture phase determines the required application and data architecture.

• Application portfolio catalog

The challenges confronted by PT. XYZ currently along with the company's failure to capitalize on potential profit enhancement, stems from inadequate IT and IS infrastructure that does not conform to established standards. Table 9 depicts current application architecture conditions at PT. XYZ company.

Table 8. Current application condition catalog

Application Description	
Website landing page	
Main function	Website application functions as a landing page, providing company information, and as a communication channel between the company and external parties. This website also



System type	provides a list of available assets and the rental price of each unit.
User Feedback	Web-based Application by Blogspot The current application's data remains outdated due to the absence of a mechanism capable of synchronizing it, resulting in an output of outdated information.
Microsoft Office	
Main function	All divisions use Microsoft Office applications, including Word and Excel, for work documentation, data management, and reporting.
System type	Desktop Application
User Feedback	-

Table 8 depicts that the organization currently owns two applications: a Website landing page by Blogspot and Microsoft Office. A website landing page is intentionally designed to convey comprehensive information about the company and to function as a communication interface between the company and external stakeholders. User feedback describes that the data in the current website page remains outdated because there is no mechanism to synchronize it, causing to outdated information. Therefore, implementing a data integration architecture based on Application Programming Interfaces (APIs) that provides a secure and efficient data exchange interface. This approach aims to ensure that the data displayed on the website is sourced directly from back-end systems, thereby guaranteeing that the presented information remains accurate and up to date.

• Application portofolio target

Application portfolio targets are designed to discover application requirements based on the results of current application conditions. Table 10 illustrates the Application Portfolio target planning of PT. XYZ.

Table 9. Application Portfolio Target of PT. XYZ

Application	Function	System	Status	Division
ERP Human Resources Module	Staff management application	Website	New	
ERP Finance Module	Financial management application	Website	New	Office Management
ERP Inventory & Assets Management module	Company-owned assets management application	Website	New	
Unit Management System	Heavy equipment monitoring and management application	Website	New	Field Division
ERP Helpdesk module	IT service support and monitoring application	Website	New	IT & Development Division
Web Landing Page	Company profile web-based application	Website	Upgrade	

Table 9 illustrates the requirements of the Application Portfolio Target by implementing a new ERP system in any division that is involved with the business process with a Web-based system. Table 9 also illustrates an enhancement of the Web Landing Page for the Company profile web-based application.

• Application use case diagram

Application use case diagrams help illustrate the interactions between applications and users. This interaction mapping comprises one or more application functions accessible to users. This diagram elucidates the actors with access, based on the current apps and functions. Based on the business functions in the target application portfolio, here is a basic example of how a user would interact with the application as seen in Fig. 7. It describes a diagram illustrating the modular components that will constitute the target application architecture for PT. XYZ. The diagram above consists of Internal Module, Unit Management System Module, and Helpdesk Module. Internal Module assigned for Office Management Division is Focuses on internal office management, especially administration and human resources functions.

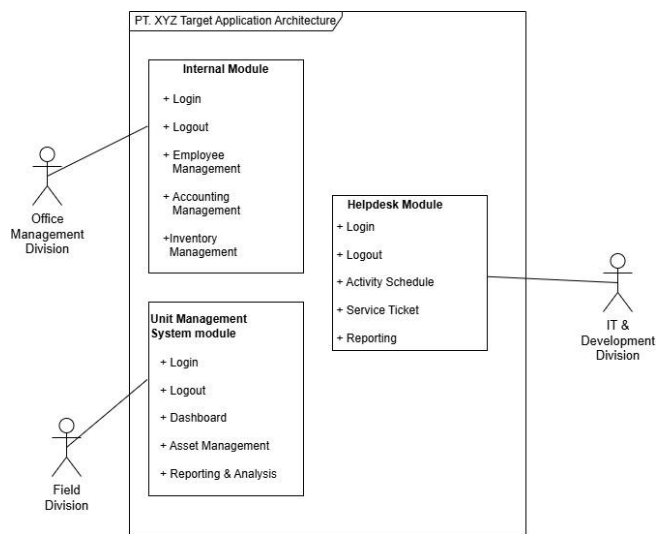


Fig. 7. Use case diagram application PT. XYZ

Unit Management System Module is designed for monitoring and managing assets in the field as well as reporting unit performance. And Helpdesk module is assigned to support IT service functions, including help ticket management, activity scheduling, and reporting.

#### 5) Technology Architecture

This architecture defines the technology catalog, application technology platform, and infrastructure topology, and aims to include new devices to improve the infrastructure at PT. XYZ, and to thoroughly review the technology architecture with the application of the architectural principles used. This phase consists Technology Portfolio Catalog, Technology Architecture Platform, and Infrastructure Catalog.

##### • Technology portfolio catalog

Technology Portfolio Catalog describes the components or devices that require addition or modification to meet the specifications of PT. XYZ as depicted in Table 11. Table 11 presents the results of the technology requirements assessment, which includes the selection of up-to-date technologies such as operating systems, web servers, server operating systems, database systems, programming languages, and development frameworks. These selections were made based on identified needs and observations derived from the Information System Architecture.

Table 11.  
Technology Portfolio Catalog result

Component	Technology
Operating System	Windows 10
Web Server	Google Cloud Server
Server Operating System	Linux Ubuntu Server
Programming Language	PHP
Programming Framework	Laravel
Database System	DB Oracle Server

Windows 10 chosen as the Operating System standard because support latest update and commonly used by enterprise to support informations system demands. Google cloud chosen as web server because support scalability, high availability, security, and integration. Ubuntu Server were chosen as Server Operating system because has stable system, open source, cost-efficiency and wide compactibility to PHP, Laravel, and Oracle. Ubuntu and Google cloud also support with Elasticity in Technology Architecture from TOGAF ADM which is Auto-scaling namely enables automatic horizontal scaling to handle increasing user loads without manual intervention.

PHP and the Laravel framework were selected as the primary programming language and development platform due to their proven stability in business applications, ease of integration with other systems, and cost-effectiveness. These characteristics make them highly suitable for developing modular and scalable application architectures that align with the target architecture principles defined in the TOGAF framework.

Oracle Database was chosen as the database management system because of its enterprise-grade capabilities, including the ability to reliably manage large volumes of data, execute

complex transactions, and maintain high performance under substantial workloads. Its robustness and high availability features make it well-suited for mission-critical business systems such as Enterprise Resource Planning (ERP) platforms.

##### • Technology architecture platform

Technology Architecture Platform outlines the structure and functions present at each layer, including Client Interface, Network, Application, Application Integration, and Database. Below is a description of PT. XYZ's Technology Architecture Platform as illustrated in Fig. 8.

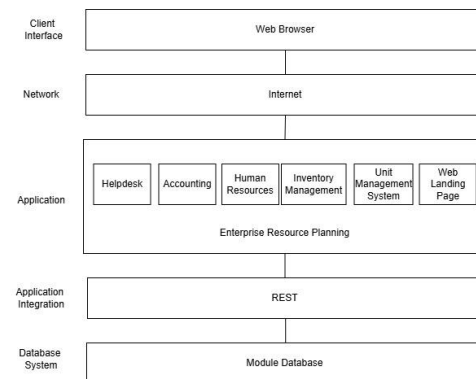


Fig. 8. Baseline Technology Architecture Platform

Figure 8 explains the architecture of the technology for the baseline enterprise architecture. The results presented above demonstrate a clear layered architecture, which facilitates ease of testing and maintenance when system issues arise. This architecture also supports a modular and segmented ERP design, enabling individual modules to be developed, replaced, or modified independently. Consequently, the system can be easily adapted to evolving business requirements.

In addition to the aforementioned results, several critical aspects warrant further consideration. The implementation of Master Data Management (MDM) and a Shared Service Layer for global entities is crucial to prevent data inconsistencies between modules, eliminate duplication, and avoid potential conflicts during system modifications. Moreover, the adoption of database replication is vital, entailing the creation and maintenance of database replicas across multiple servers or geographic regions to ensure data accessibility, consistency, and scalability. This approach also supports the implementation of high availability and fault tolerance mechanisms, thereby reducing the risk of system unresponsiveness during peak traffic or in the event of system failures.

##### • Infrastructure Topology

This stage illustrates the integration of ERP databases hosted on the server with those already existing in the database.

Figure 9 depicts the infrastructure topology at PT. XYZ company.

Figure 9 illustrates a hybrid-cloud infrastructure with basic security principles (VPN, firewall) to ensure accessibility from anywhere while protecting sensitive information for internal use. There exists a distinction of access between public users and internal users; for instance, firm personnel can access the system via VPN, granting internal users more extensive access permissions than public users. And also, Modules like

databases and web servers are hosted in a centralized cloud environment, facilitating enhanced scalability and monitoring. After designing enterprise architectures, the results are translated into a blueprint that serves as a reference for the IS/IT strategic management planning process. Based on Fig. 10, Enterprise architecture design consists of the enterprise architecture scope, parties involved in PT. XYZ services, business architecture in the form of expected business needs, information System architecture consisting of proposed applications and data, and technology architecture, technology development plans to be used.

The results illustrated in Fig. 10 emphasize the importance of an enterprise architecture blueprint as a reference in developing information systems and technology (IS/IT) planning strategies. This blueprint serves as the foundational framework for formulating IS/IT strategic planning and will be presented to the board of directors as well as other stakeholders involved in the planning and development process.

The author identified key findings by comparing the company's conditions before and after the implementation of the TOGAF blueprint, as presented in Table 12.

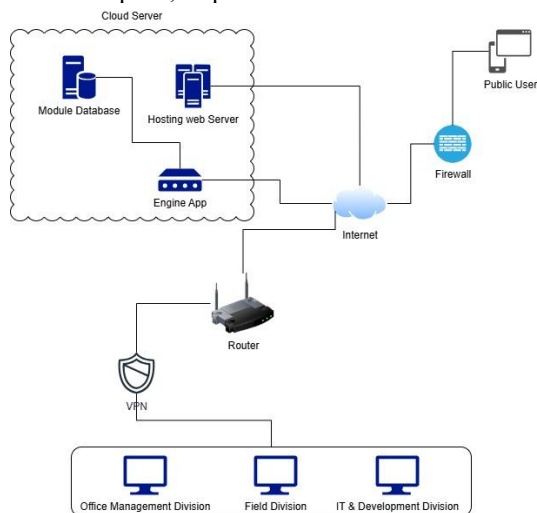


Fig. 9. Infrastructure topology baseline platform.

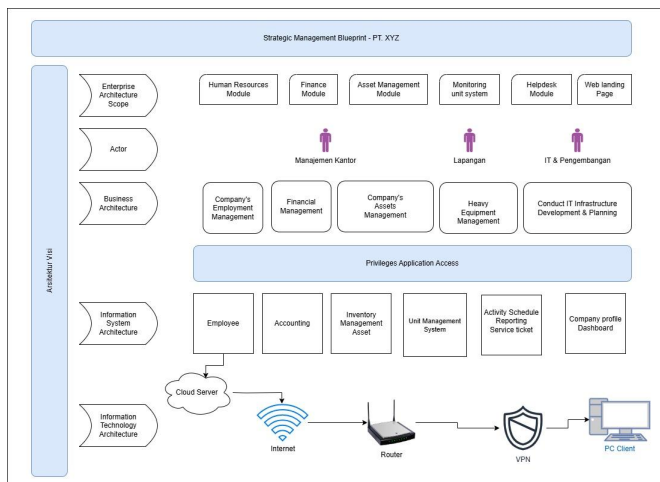


Fig. 10. Enterprise architecture blueprint PT.XYZ.

Table 12. Comparison Table TOGAF

Field	Before TOGAF	After TOGAF
Asset management	Manual	Integrated through Unit Management System Module
IT Service	Ad-hoc, undocumented	Centralized through Helpdesk Module
Internal Request Process	Via email / paper	Automated via Internal Module
Data Visibility	Separately per division	Consolidated through dashboard and reporting
Decision Making	Slow and lacks of real-time data	Data driven through analytical reports

As described in Table 12, by implementing IS/IT strategic planning by TOGAF can improve asset management and maintenance workflow, transparency and operational efficiency in handling IT issues, strengthen the coordination between divisions, and increase the accuracy of business strategy. However, Organizations are urged to involve important success factors in this strategic planning:

1) *Top Management Support*

Leadership commitment is essential for resource allocation, strategic direction, and decision-making. Without this support, the IT strategy diverges from the fundamental business plan.

2) *Business-IT alignment*

The IS/IT strategy must align with the company's long-term objectives and business trajectory to create solutions that enhance the company's value proposition.

3) *Availability of resources*

Strategic planning is likely to be ineffective if it is not supported by qualified human resources, appropriate technological infrastructure, and adequate financial resources.

4) *Performance measurement and evaluation*

The effectiveness of strategic planning should be evaluated using key performance indicators, including user satisfaction, implementation efficiency, and the adaptability or flexibility of the system to changing requirements.

V. CONCLUSION

This research provides a blueprint design for implementing strategic management at PT. XYZ. Implementing this strategic planning system enables PT. XYZ is to improve asset management and maintenance workflow, enhance operational efficiency in handling IT issues, strengthen the coordination between divisions, and increase the accuracy of business strategy.

In addition, the implementation of this planning also establishes an integrated system, facilitating the alignment of business processes with current activities and enhancing the quality and efficiency of services.

However, this research also discovered several challenges, for instance, stakeholders' support is important for resources,

strategic vision, and future decisions. Therefore, stakeholders possess vital roles in leading and organizing this strategic planning for it to be successful. Also, the availability of resources is important, such as competent professionals, adequate infrastructure, and sufficient funding to prevent mismanaged planning from affecting the deviation from business objectives. Additionally, there are several restrictions on this study. First, this study concentrates on strategic management planning at PT. XYZ from an internal perspective. Second, this research uses the TOGAF ADM framework up to the Technology Phase, as the case study has not progressed to other stages within the TOGAF ADM framework.

Future research will emphasize the customer or client aspect to enhance customer satisfaction during transactions with the organization and employ the TOGAF ADM framework in further stages to enhance existing systems and improve system planning for studies in the future.

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