

# CH3 - THORIQULHAQ

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## 6 CHAPTER 3

### SYSTEM DEVELOPMENT METHODOLOGY

#### 3.1 Introduction

The methodology used to develop Power Plants Performance Monitoring System In PT PLN (Persero) UP3 Pamekasan will be briefly discussed in this chapter. Justification of the selected methodology and explanation of how the methodology is being applied throughout the development will be discussed. The technology used will also be briefly described here. Last but not least, the system requirements analysis for both hardware and software will be listed.

#### 3.2 Methodology Choice and Justification

The methodology of systems development is a standardized process to perform all the necessary steps to analyze, design, implement and maintain a system efficiently. There are so many various kinds of system floating methods that can be used, this can also be adjusted to the needs or requirements. According to the system requirements, Agile methodology is the suitable software development approach we use to develop Power Plants Performance Monitoring System In PT PLN (Persero) UP3 Pamekasan.

Basically, Agile works by breaking the project down into small pieces of user functionality, prioritizing them, and then delivering them in 2 to 4-week cycles known as iterations or sprints. Before each cycle begins, the team defines work goals. By default, the highest priority items will be defined based on the Product Owner's analysis of the customer's priorities. In this way, the product can be continuously improved and the development process also improved (Project Management Academy, n.d.).

With Agile Methodology, we can quickly implement any feedback from consumers in the next iteration. Whether it's about adding features or bug fixes. As a result, the quality of the software will improve and increase because it is more in line with consumer desires. In addition, if there is a lot of feedback, we can be flexible in choosing whether to make changes in each iteration. So, we don't have to follow a plan from start to finish. This is an added point for the developers themselves. Finally, each Agile methodology has regular iterations that focus on incremental development. So, our software development will be more predictable and we can also know the various expenses well. As a result, business risk will be reduced.

### 3.3 Phases of the Chosen Methodology

The phases of chosen methodology which is Agile software development life cycle will be discussed in this section. The phases include Requirement Analysis, Design, Development, Testing, Deployment and Review. The flow phases of the Agile software development life cycle model are depicted in Figure 3.1.



Figure 3.1 Software Development Life Cycle Model of Agile

### **3.3.1 Requirements**

Requirement is a stage where the development team and also clients or stakeholders design what is needed in a software to be made. More specifically, the client or stakeholder will determine the backlog as well as user stories. While the development team will turn off whether the feature can be developed.

### **3.3.2 Design**

Design is the stage where all the analysis results of system that have been carried out previously and the discussion of system specifications is applied to a system's design or blueprint.. The blueprint itself can be interpreted in more detail as a system design that is ready to be developed, beginning with implementation, system analysis, and system support personnel. Features and operations of the system are also described in detail. Making a prototype is also part of the design stage. The prototype will demonstrate the basic idea of how the application should look and work.

### **3.3.3 Development**

Development is the stage where the software development process begins. The development team will begin building the entire system by writing code with the programming language that has already been chosen. The software development process is usually divided into several units or modules for large projects and then assigned to several development teams. For example, the database admin will create the necessary data in the database, the front-end developer is in charge of creating a GUI to interact with services or logic that has been developed by the back-end. The software development process will be carried out based on predetermined requirements and procedures.

#### **3.3.4 Testing**

Testing is a stage in which the software that has been developed is tested or checked, which is the responsibility of the quality control department, so that any bugs that are still discovered can be fixed immediately and the software's quality is maintained.

#### **3.3.5 Deployment**

Deployment is a stage that must be completed in order to ensure the quality of the developed software by testing the system's quality. If the produced system meets the requirements, the software will be ready for development.

#### **3.3.6 Review**

Review is the stage where we get user feedback. Whether it's about bugs that weren't found during testing or feedback about adding features if needed. From here it could be a new software development life cycle to fix bugs, define an iterative development plan, or add features in future releases.

### **3.4 Technology Used Description**

This section will briefly explain the required tools and technology used for the development of the proposed system which is Power Plants Performance Monitoring System In PT PLN (Persero) UP3 Pamekasan will be briefly discussed in this section.

Table 3.1 Technology Used For Proposed System Development

Technology	Description
Operating System	
macOS Monterey	Operating System
Documentation	
Google Drive	Cloud Storage
Design	
Draw.io	UML Diagram Editor
Figma	UI and UX Design
Software Development	
Visual Studio Code	Code Editor
DataGrip	Database Management
Stack	
Laravel	PHP Framework
Vue JS	JavaScript Framework
Tailwind CSS	CSS Framework
Inertia JS	JavaScript Library
MySQL	Database
Network	
Amazon Elastic Compute Cloud (Amazon EC2)	Cloud Hosting

### **3.5 System Requirement Analysis**

This section will briefly discuss the system requirement analysis for both hardware and software that required to develop the Plants Performance Monitoring System In PT PLN (Persero) UP3 Pamekasan. The integration of hardware and software is critical to the overall system development process.

#### **3.5.1 Hardware Requirements**

- (a) Intel Pentium 4 or later for Intel Processor, AMD Athlon or later for AMD Processor and Apple M1 or later for Apple Processor
- (b) Minimum 2 GB RAM memory.
- (c) Internet connection required

#### **3.5.2 Software Requirements**

- (a) Windows 8 or later for Windows Operating System, macOS Sierra 10.12 or later for Mac Operating System and Ubuntu 14.04+ 64-bit for Linux Operating System.
- (b) Google Chrome 54 or later, Microsoft Internet Explorer 11 or later, Mozilla Firefox version 48 or later and Apple Safari 15.4 or later

### **3.6 Chapter Summary**

This chapter describes the software development methodology that will be carried out to solve the existing problems. Planning for software development is carried out as well as possible and systematically to ensure that the development process runs smoothly. Not only is it important in the development process, it is also important to ensure users get satisfaction when using the product. Also, the specifications of both hardware and software are explained clearly and in detail to ensure that the project will be developed accordingly.

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