IMPLEMENTATION OF PROTOTYPING PROCESS MODEL IN TASK MANAGEMENT APPLICATION AND OBJECTIVE KEY RESULT CASE STUDY PT.XYZ

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ABSTRACT

Managing tasks in a company is a crucial thing to do, considering the number of functions that exist in that company. PT.XYZ does not have a task management application that causes task complexity to occur frequently for each employee so that the employee performance evaluation cannot be objective. One alternative solution proposed is to approve the task management application and objective key results by implementing the prototyping process model at PT. XYZ so that it can produce approval of application requirements, design data, design architectures, and design applications that can support objective employees.

INTRODUCTION

Task management on a project in a company is one of the essential things and can influence the performance of the company. The company's performance will be excellent when the companies internal is good too; usually, one of the supporting measures of company performance is employee performance. Many companies have not been able to assess employee performance objectively, PT One of them is XYZ, in running its business, PT.XYZ's employee performance appraisal is still done manually, namely, by filling out the employee performance appraisal form

conducted by the project team manager. It causes the high subjectivity of employee performance appraisal. Sometimes idle employees can get better performance scores than employees with the status of doing many tasks, provided they behave well with the team manager. In addition to being seen from the performance of employees, company performance can also be regarded based on the project working process that is on time with appropriate results. PT. PT. XYZ has difficulty in controlling the level of project progress, such as; when the project manager asks the project team about the percentage of project quality. Sometimes the project team cannot explain in detail the percentage of the project, causing the project to pass from the scheduled deadline. Many things can affect the delay in project work time, one of which is resource management that is not by the competencies or tasks that accumulate to only one employee while other employees are idle. Based on these problems, PT. XYZ requires a tool to manage all the work in PT. XYZ related to managing project tasks and tasks outside the project that can be used as an objective reference to assess employee performance. In solving the complexity of PT XYZ, the task management application, and the employee's main objective results are designed using a prototyping process model. The purpose of this study is to develop an employee task and key result management application with expected results in the form of functional requirements, non-functional requirements, data design, architectural design, and interface design.

LITERATUR REVIEW

Prototyping Process Model

Prototyping is an iterative process in developing systems where requirements are changed into working systems that are continuously being improved through collaboration between users and analysts(Aasinjery, 2020).The prototype is a process that allows software developers to create a software model. This method is best used if there is no maximum information about the desired system requirements(Yurinda, 2017). The purpose of the prototyping process model is to develop an initial software model into a final system.
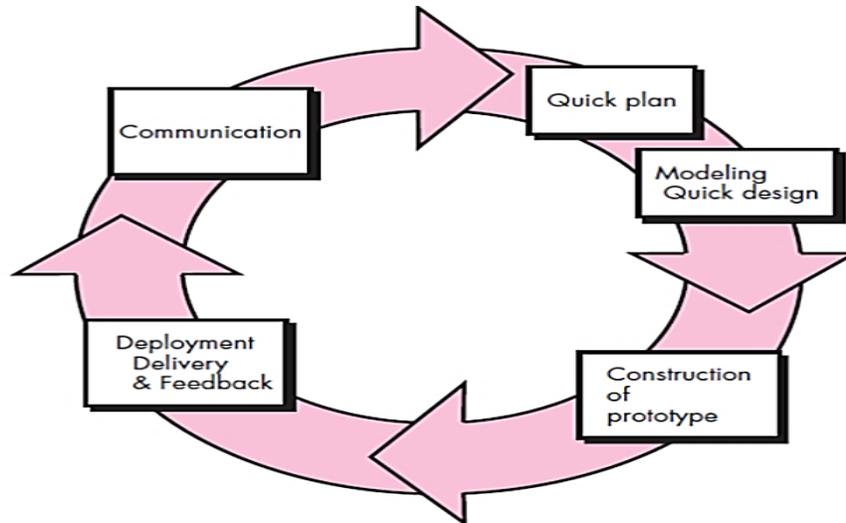
Fig 1. The Prototype Making Paradigm(Pressman, 2012)

The prototype development begins by communicating between the software development team and the stakeholders to define the overall goals of the software to be developed and the requirements specifications for the software (Pressman, 2012). Furthermore, rapid planning and modeling are carried out in the form of a quick design that will start the construction of prototype making. Then the prototype will be submitted to the stakeholders for further evaluation before being sent to the software makers. Make software following the prototype that has been evaluated will then be forwarded to the customer and if the application does not meet the needs of the customer, then the process returns to the beginning until the needs of the customer have been met.

Task Management

Task Management is an activity where an individual or team leader tracks a task throughout the system's life cycle and makes decisions based on system progress(Fauzan & Nugraha, 2017). Task Management is created using software that helps organize and manage tasks effectively by using functions such as task creation, planning, and assignment, tracking, and reporting(Rickayzen, 2004).

Objective Key Result

Objective key result or abbreviated as OKR is a simple approach to create alignments and involvement around. OKR is a simple, fast-paced process that involves each team's perspective and creativity. OKR exists to make alignments and adjust the rhythm for the organization. The aim is to make sure everyone goes in the same direction, with clear priorities, in a constant rhythm(Felipecastro, 2020).

So, as the name suggests, OKR has two components, namely: Objective is an impressive qualitative description of what you want to achieve. Objectives must be concise, inspirational, and interesting. An objective must motivate and challenge the team. And the second one, Key Result, is a series of metrics that measure your progress towards Objective.

ANALYSIS AND DESIGN

Communication

The communication phase is carried out by bringing together stakeholders with the development team, stakeholder interviews, and observations to discuss the functional and non-functional requirements of the application to be designed. In this case, PT. XYZ is represented by the project leader, systems analyst, and service-oriented architecture (SOA) developers as stakeholders. Based on the results of these communications, it can be identified what the functional and non-functional requirements of the software are.
Functional requirement :

- 		The software must be able to manage the project, starting from project scheduling (timeline), managing tasks, and making project progress reports.
- 		The software must be able to assess employee performance based on objective key results.
Non-functional requirement :
- 		The software can be accessed anywhere and anytime.
- 		The response time required by the software to access each feature is a maximum of 30 seconds.

Quick Plan

After the software requirements are agreed upon, the next step is a quick plan, which is to plan quickly about the planning of the task management software and OKR at PT. XYZ by describing the functional requirements of the software in the form of visual representation.
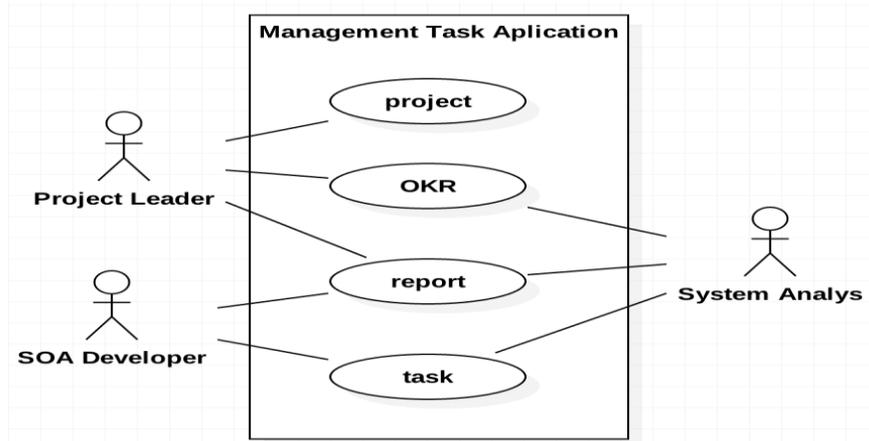
Fig 2. Use Case Diagram Application of Task Management and OKR PT.XYZ

The results of gathering needs at the communication stage, there are two functional requirements of the software, which are then reduced to four main use cases at the quick plan stage, namely project, task, OKR, and report, with the project leader, system analyst, and SOA developer as actors.

Modeling Quick Design

Use case diagrams that have been made at the quick plan stage are revealed in more detail at the fast plan modeling stage, the purpose of which is to clarify the detailed specifications of software requirements into software features, as well as to know the access rights of each actor involved in the software. Figure 3 explains the full features of the use case project. Figure 4 explains the detailed scope of the use case task. Figure 5 explains the detailed features of the use case report. Figure 6 describes the completecharacteristics of the OKR use case.
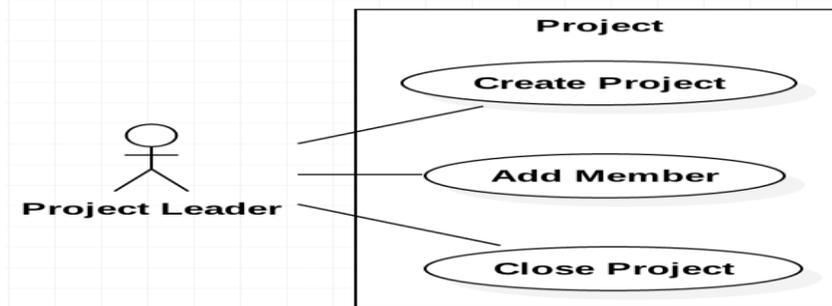

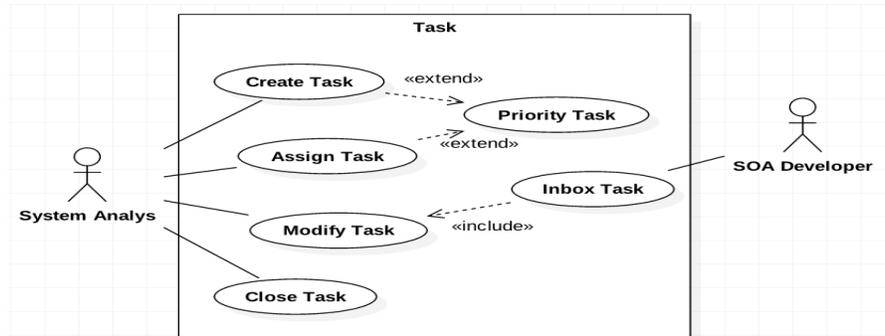**Fig 3.**Detailed Use Case Diagram of Task Management and OKR Application PT. XYZ Use Case Project

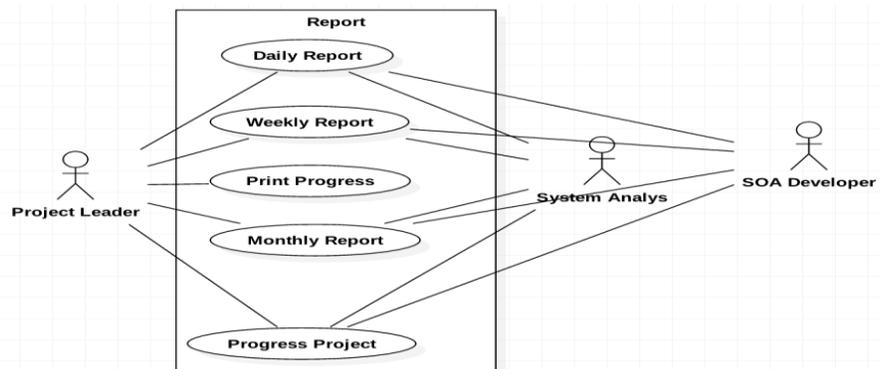**Fig 4.**Detail Use Case Diagram Application Task Management and OKR PT. XYZ Use Case Task

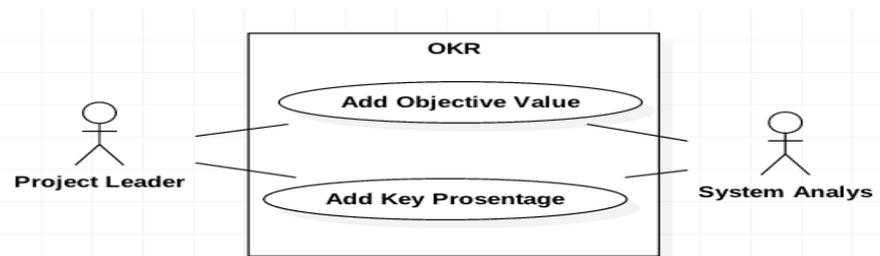**Fig 5.**Detailed Use Case Diagram of Task Management and OKR Application PT. XYZ Use Case Report

Fig 6. Detailed Use Case Diagram of Task Management and OKR Applications PT. XYZ Use Case OKR

Detailed features of the application are well defined in the previous use case diagram; next is to identify what data is input for the application and how the relationship between the data. Figure 7 explains the task management and OKR entity-relationship diagram in PT.XYZ, there are seven entities, namely T_Project, T_Project_Team, T_Employee, T_Login, T_Task, T_Task_Detail, and T_Ref_Priority.
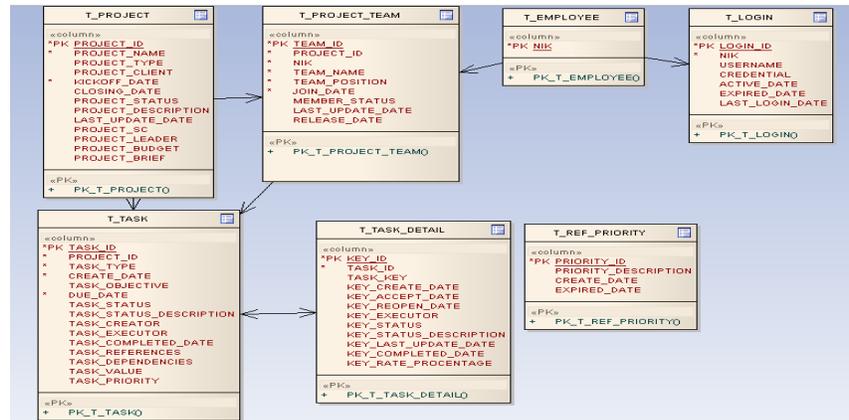
Fig 7.ER Diagram of Task and OKR Management Applications at PT. XYZ

The application will run well if supported by a correct and good architecture. After the identification of the data is made, the next important thing to design is the software architecture, on the platform as to whether the application can run well. Figure 8 explains the task management and OKR application architecture design at PT. XYZ. The app designed can be a web application or a mobile application that is connected by a service bus using the REST API or SOAP WSDL to a database and or FTP server. This architecture will be useful for controlling the data traffic that enters the application.
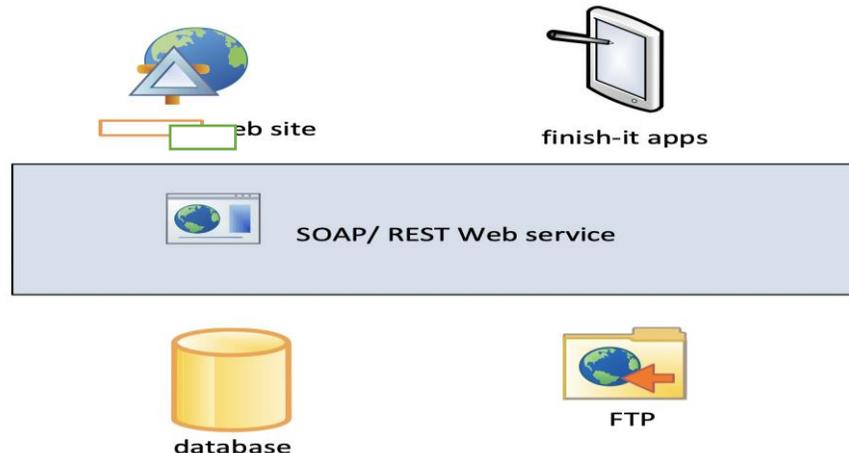

Fig 8. Task Management and OKR Application Architecture at PT.XYZ

Construction of Prototype

The next step after the quick design modeling has been completed is a construction of the prototype, at this stage, software construction will begin, marked by designing the interface as a prototype application. Figure 9 shows the main page display of the application. Figure 10 shows the interface after a successful user login, where users can immediately see what tasks they have to do. **Figure 11** shows the interface of the project progress.
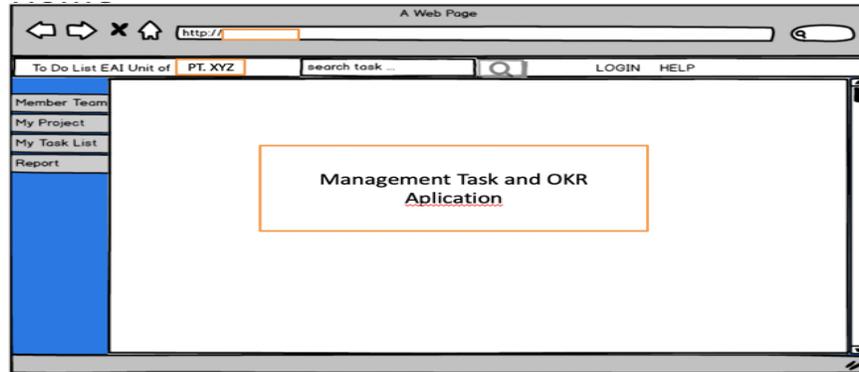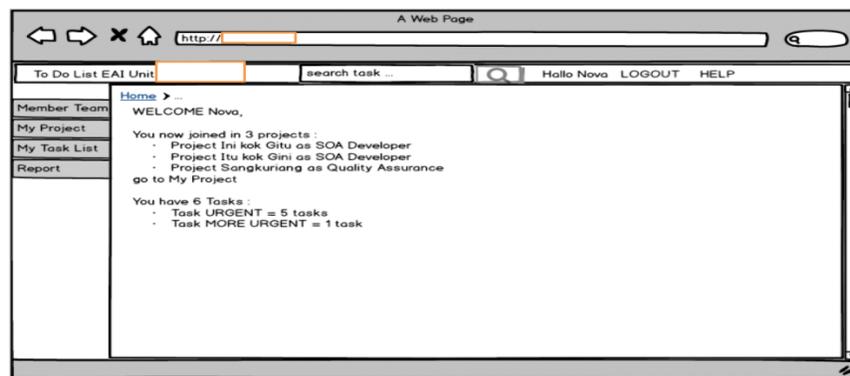
Fig 9. Main Page Interface
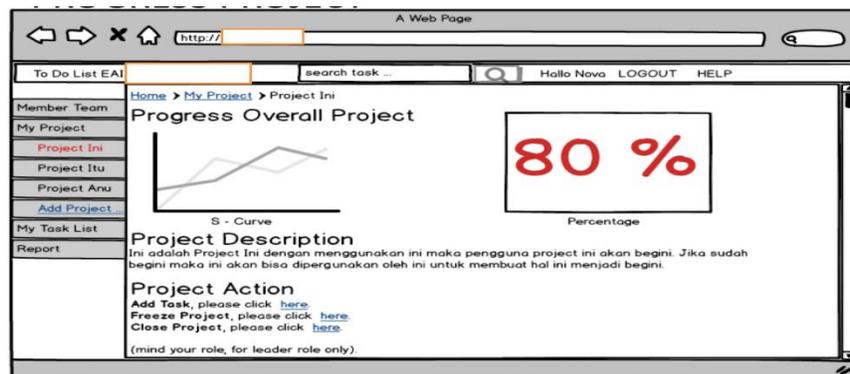

Fig 10. Display Task User Interface

Fig 11. Display Progress Project Interface

Deployment Delivery & Feedback

The next step after the construction of the prototype is deployment delivery, and feedback can be done by looking at the application testing documents against the user or user acceptance testing. Table 1 shows the results of testing the user.

Table 1. User Acceptance Testing

	Project SC	Project Leader	System Analyst	SOA Developer	Quality Assurance
New Employee	√	√	×	×	×
Edit Employee	√	√	×	×	×
New Project	√	√	×	×	×
Edit Project	√	√	×	×	×
Update Status Project	√	√	×	×	×
New Task	√	√	×	×	×
Filtering Show Task	√	√	×	×	×
Edit Task	√	√	×	×	×
Accept Task	√	√	√	√	√
Reassigned Task	√	√	×	×	×
Completed Task	√	√	√	√	√
Reopen Task	√	√	×	×	×
Report	√	√	√	√	√

CONCLUTIONS

Based on the results of research that has been done, it can be concluded that the design of task management and OKR applications at PT. XYZ has been carried out by implementing a prototyping process model following the stages of communication, quick plan, quick plan modeling, construction of a prototype, and deployment delivery and feedback. The results of the design in the form of identification of application requirements, data design, architectural design, and interface design.

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