

Inno Biologics Sdn Bhd Production and Management System

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Abstract: *Inno Biologics Sdn Bhd is an organization that gives services for manufacturing product which related to biopharmaceutical. Recently, worker in Production Departments of Inno Biologics having problem with managing their production and team involved as well as raw materials used for the production. This is because there are too many different process will be run in a certain production that uses similar raw materials, thus this lead to problems in terms of ordering and using the raw material. Therefore, Inno Biologics Sdn Bhd needs computerized and centralized production by having raw materials management system to manage their problems in a systematic manner. Inno Biologics Sdn Bhd Production and Raw Materials Management System will provide all information regarding the raw materials and status of the raw materials so that worker are able to be up to date of raw materials availability. Through this system, workers are also able to communicate with each other. This system is developed using RUP methodology that can ensure the user requirement is fulfilled and MVC architecture to support the methodology in organize the process of system development. The system is fully developed according to requirement gathered in the analysis phase. The functionalities are tested by using black box testing in order to prove the capability of the system.*

Keywords: inventory, web applications, management.

1.0 Introduction

Inno Biologics Sdn Bhd is an organization that gives services for manufacturing product related to biopharmaceutical. Biologics provide many types of services which are Hybridoma Technology and Antibody Production, Protein Expression in Mammalian Cell System, Bioprocess Development, cGMP Manufacturing, Training, Development and Consultancy. There are many departments in Inno Biologics Sdn Bhd but for this project, only Protein Science, Process Science, Bio-manufacturing, Facility Engineering, Quality Assurance, and Quality Control will be included to use the system. Each department consists of a number of sub-divisions. For example, Process Science has three sub-divisions named Filtration, Purification and Bioreactor.

Even though, Inno Biologics Sdn Bhd provide a job scope to each of the department that are well understand by the workers. In the production department, the engineers are well known on what they need and do not need. However, ability to do this work from scratch every time there is production allocated without assistant give a lot of pressure to the engineers. The problems arise as inventory in the current system is too separated and not completed. Therefore, sometimes they have to gather information of inventory from each departments or person in charge as sometimes they use same inventory for different production.

The objectives of this project is to analyze problems faced by the worker (manager, engineer and technician) of Inno Biologics Sdn. Bhd which in the management of production and raw materials, to design and develop a system that could help assists worker in organizing production and raw materials from current implementation based on requirement specified by Inno Biologics Sdn. Bhd and to test the system's functionalities that follows user requirement using an appropriate testing technologies.

This project will only cover requirement gathering of production and inventory for certain departments which include department of Protein Science, Process Science, Bio-manufacturing, Facility Engineering, Quality Assurance, and Quality Control, consists only raw materials needed for production development, meant to be used by

manager, technician and engineer in the production department and generating financial budget and inventory for finished product will not be in the system range.

The significance of this system is to help all users to keep up to date for the inventory availability with an online web-based system, to assist the process of buying inventory to be much easier and comfortable than the current implementation and provide a system that suitable and specifically design for the Inno Biologics Sdn Bhd work flows.

2.0 Methodology

The methodology that was implemented for this system is Rational Unified Process(RUP). The justification for the chosen methodology is because RUP using iterative approach that let change in requirement to be done while developing. It is also flexibility to be change based on organization's size. Therefore, it is easier for the process development as the RUP can be implement in any type of organizations thus there is no limit to what RUP can provide. As RUP responses on requirement changes, this helps developers to produce and focused on functionalities that follow the user requirements where user can satisfied with the result produce by the system.

3.0 Result

Table 1 shows the comparison of the existing system with the proposed system, IBPRaM.

Table 1. Comparison of the existing system and proposed system

Functionality	POS Maid	inFlow Inventory	Upkeep Work Order and Task Management	Inno Biologics Sdn Bhd Production and Raw Materials Management (IBPRaM)
Manage workers	/	/	/	/
Manage task			/	/
Manage order request and approval			/	/
Manage Stock	/	/		/

Figure 1 shows a few of interfaces from IBPRaM system.



Figure 1. User Interface of IBPRaM System

4.0 Discussion

All of the objectives of IBPRaM system has been achieved through the development process. Table 2 shows the objectives and achievement of this project.

Table 2. IBPRaM Objectives and Achievements

Objectives	Achievements
To analyze problems faced by the worker (manager, engineer and technician) of Inno Biologics Sdn. Bhd which in the management of production and raw materials.	Able to conduct requirement elicitation using interview and document analysis method in order analyze problems faced by the worker.
To design and develop a system that could help assists worker in organizing production and raw materials from current implementation based on requirement specified by Inno Biologics Sdn. Bhd.	The system is designed using RUP methodology with regular checking on the user requirements. This system is developed using PHP language with Laravel framework that has management system for production and raw materials.
To test the system's functionalities that follows user requirement using an appropriate testing technologies.	The system is tested using black box testing using Equivalence Partitioning method. All of the testing is performed based functional requirement and system behaviour.

5.0 Conclusion

IBPRaM System was developed to help Inno Biologics Staff to overcome the problem with their raw materials inventory as well as their production management. This system involved three types of user which manager, engineer and technician. Manager has a lot of functionality to manage their engineer and technician, while engineer has a lot of functionality to the production process and company's supplier and technician has more capability on viewing information in the system such as profile, stock and etc.

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