UTM

UNIVERSITI TEKNOLOGI MALAYSIA

SECJ2203: Software Engineering

Project Proposal

Improvising Current DBP Dictionary

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1. Introduction (CLO 1 – 2 marks)

Language difficulties are still considered as a barrier to getting information in today's globalised world since it is sometimes crucial and tough to meet the demand for translation by depending solely on human translators, it works by converting text from one language (source language) to another (target language) by utilising certain computer software. In the late 1990s, technologies like Machine Translation (MT) were gaining popularity considering their capacity to solve this problem. Machine Translation (MT) itself is the process of mechanically translating text from one language (the source) to another (the destination) without the use of human input.

The earliest systems consisted primarily of large bilingual dictionaries where entries for words of the source language gave one or more equivalents in the target language, and some rules for producing the correct word order in the output. However, presently the preponderance of MT systems has become disconcerting due to lack of performance and output quality which does not correctly match or translate into the expected result, given that in most cases there is not just one translation for an original text that may be considered correct. For instance, most modern websites or browsers resort to Bahasa Indonesia translations instead of Malay language which the inconsistency between the language's syntax and semantics has resulted in a profusion of confusing its phrases.

1.1 The Goal

In this schemed project proposal, a systematic consideration has been carried out in order to develop one of Intelligent English-Malay dictionaries which owned by Dewan Bahasa dan Pustaka to be more advance, and accurate by identifying the software process model; figuring out the software process specification, design and implementation, validation, and evolution (SDIVE). The implementation also includes a function that will provide specific features such as subscription, searching words, thesaurus, synonym/antonym, etc. In this case, the competitor system is Cambridge Dictionary with the intent to gain reference and insight into their products, what MT systems are currently most employed, their interface and architecture, the quality assessment procedures applied to determine how they work, and which of these systems offer the best results. Therefore, we could improve the old system the way easier based on its functionality and requirements needed

To go into more details, there are a few objectives of the study case which are

expected to be attained by the end of the project:

- Develop or upgrade the usefulness of the existing English-Malay dictionary to be more efficient, specific, and accurately translated.
- Add some more features on the existing website such as membership, searching words by audio and image, mobile apps paid subscription, grammar, and sentiment word analysis.
- Reduce the complexity of the specific dictionary-driven rules for syntactic ordering
- Reduce the ambiguous Malay words sources
- Make the interface look more professional, attractive, and persuasive to be visited by a user.
- Add a new expansion of new words that are popularly used among the generation Z and alpha.

1.2 The Scope

Technology to be used to develop the system.

The proposed system aims to introduce a convenient experience to the targeted users thus making the selection of technologies in the system is critical. The usage of the technologies should match the systems requirements and stakeholder demand. In addition, the current technologies demand a lot of upgrading because they are either old technologies or not sufficient with the system's main functions. Therefore, we will implement technologies suggested by the stakeholders which are PHP technology, cloud server, and Maria DB technology. PHP technology is full of powerful features, it helps to develop and create dynamic and interactive web pages. It is also widely used among web application developers because of its open-source technology. Not just that, the PHP technology runs on an Apache web server which works perfectly with most operating systems. The cloud server is a virtual server that runs in a cloud computing system. We will implement the amazon web server (AWS) because it offers flexibility, cost efficient and secure. Maria DB is the database server used in the system. Also, its open-source relational databases are most often used in many projects.

Software products module & functions.

The expected system will consist of two main versions: paid version and the free version. Both versions introduce the fundamental service but the paid version contains some professional features. The user could take advantage of the system through mobile applications or the website. The proposed system introduces fundamental features for both versions. In the beginning, the main Module includes the main system features like logging in, searching by text, Thesaurus, Synonym & Antonym and offline mobile apps. On the other hand, the main Module paid version introduces more advanced features like Membership Subscription, Searching Words by Audio and image. The translation module for the free version offers a variety of essential features like Translation of English-Malay-English by word and sentence. But the paid translation module comes with powerful features like sentence grammar API generation, Web browser library and Image-to-text. The last module which is the Sentiment & Data Analytics module is a paid version consisting of advanced Sentiment Word Analysis and popular word analysis of words which are not in the Dictionary.

Key services and activities that will be performed during system development.

In completing this project, there are certain activities that need to be held during the system development. Listed below are the crucial activities and services:

- Requirement analysis.
- Design and development.
- Testing.
- Implementation.

During the requirement analysis phase, our experts will identify the problem from the current system, identify the requirements and acknowledge the system functional requirement requested by the stakeholder in order to accomplish the goal of this project. After that, our team will provide documentation and plan out clear methods on how to execute each task. In the design and development phase, our team will design and develop the system functionality according to the requirements mentioned so that it can later be tested in the testing phase. Not just that, an attractive yet practical interface will also be implemented on the website and mobile application so that users can easily navigate through it. Throughout the testing phase, all of the existing and additional functions are tested in terms of their performance and behaviour. There are several methods used while testing the functions namely the user acceptance test. Lastly, the implementation phase is where the functions will be enhanced and implemented in the final product.

1.3 Project Duration

We plan to carry out the project in the duration of 11 weeks. All of the tasks are listed in Table 1, a work breakdown structure. The activities are divided and planned to be done separately in 6 sprints every sprint is estimated to take time for 2 weeks each except for the beginning phase which only takes 1 week time.

2. Software Process Model (CLO 3 – 8 marks)

2.1 Goal of the Software Process Model

Software process model is a logical sequence of actions for describing, developing, implementing, and testing software systems. The system process model aims to provide direction for methodically organising and directing the actions that must be completed in order to reach the final product and project objectives. In addition, the business module is responsible for assigning tasks that are required to design the system correctly. It organises the flow of the input and the output in each task. The business module draws a visualisation for each task. It also plans the sequence of the tasks to maintain systems productivity.

2.2 Incremental Model

The ideal software process model in this project is the Incremental model. This model is selected because, in this project, we need to pass through 4 phases that are the requirements, design and development, testing and implementation phases. Besides, an incremental model is suitable for our project as we have clearly comprehended and understood the major requirements that need to be implemented for the existing system. Not only that but since there is a certain risk on some of the features and functions, hence the incremental model is recommended to be used in this project as the risk can be managed easier. The risky part will be identified and handled during the iterations.

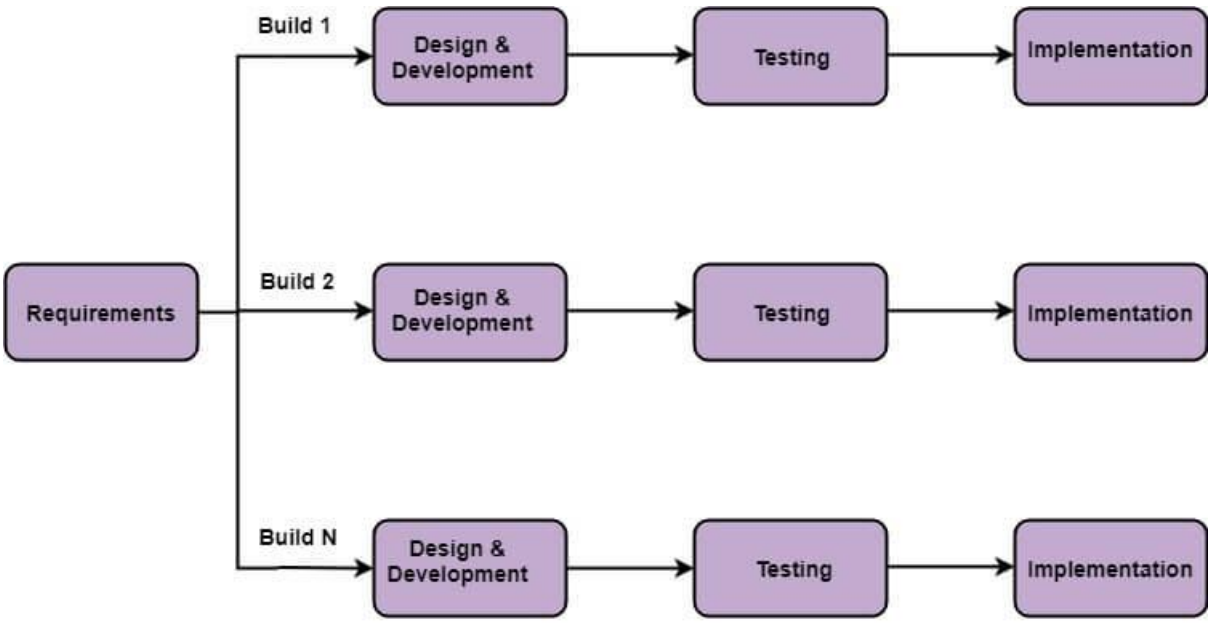

Figure 1: Incremental Model Software Process Model

Basically, an incremental model is a system development model in software development based on software requirements which are split up into several functions or increments so that the development model is gradual. Using the incremental model can help us to reduce costs before reaching the level of initial productivity and accelerate the process of creating a system function. The image above shows us how the requirements are divided into 3 or N stages depending on the needs in accordance with its priority. Each increment or requirement later can be evolved into a better system where it finally can reach the goals of the demand system which in this case is the Malay-English dictionary. In this model, we need to first define the requirements, prioritise, and understand what we need to accomplish before assigning the requirements to increments. Later in the design and development phase, we are going to deliberate on the design implementation or how to fulfil the requirements, etc. After considering those increments, we also have to do prototyping or testing where software modules are integrated logically and tested as per phase to make sure that it meets all the requirements. Once it is validated, we can decide whether the system is incomplete or need some other changes before going to the next increments and repeating the same phases by developing each stage into a better system. We could see the incomplete model as the feedback and evolved those requirements based on the previous design implementation. When it is completed, we can finally deliver our new system to the users.

2.3 Detailed Activities

Table 1: Work Breakdown Structure Planning

Phase	Duration (Week)	Sprint	Person in Charge	Work Breakdown Structure
Beginning	1	1	Mr. Nazran	● Kick-off Meeting ● Project Planning
Design and Development	2	2	Mr. Nazran	Module: Subscription, Searching Words, Thesaurus, Synonym & Antonym, Mobile application. ● Requirement analysis ● Design and development ● Testing ● Implementation
	2	3	Mr. Mohand Alaa	Module: Translation English-Malay-English, Sentiment Word Analysis. ● Requirement analysis ● Design and development ● Testing ● Implementation
	2	4	Ms. Yen Thong	Module: Analysis – New Word, Analysis – Popular Word. ● Requirement analysis ● Design and development ● Testing ● Implementation
Transition	2	5	Ms. Yen Thong	● System commissioning ● User acceptance test (UAT)
	2	6	Ms. Anatasya	● System commissioning ● Final acceptance test (FAT) ● Training and technology transfer ● System installation

The work breakdown structure planning for improvising the current DBP's dictionary is as shown in Table 1. There will be a total of 6 sprints in completing this project where each sprint tackles different aspects of deliverable modules and functions, project planning and the transition of the system itself. In Sprint 1, our team will start with a kick-off meeting whereby we will brief, discuss and do project planning in 1 week. Next, we will utilise 2 weeks to complete Sprint 2. In Sprint 2, the modules and functions that are going to be worked on are subscriptions, searching words, thesaurus, synonyms, antonyms and mobile application. In order to execute this module, our team will go through 4 main phases in the incremental model which are requirement analysis, design and development, testing and implementation. Furthermore, Sprint 3 will also be worked on in 2 weeks, where the modules are translation English-Malay-English and sentiment word analysis. Sprint 4 is the last sprint in the Design and Development phase where the team will complete the analysis – new word and analysis – popular word module in 2 weeks. In the transition phase, there will be 2 sprints for a total duration of 4 weeks. During the phase, the activities held are system commissioning, user acceptance test (UAT), final acceptance test (FAT), training, technology transfer and system installation.