IT314 : Software Engineering

Lab 1 Choosing Software Process Models

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Group 5

a) A simple data processing project.

- **Waterfall Model**

In this project, the requirements are clear and the outcomes are predictable. Since, only simple data processing is needed, Waterfall Model seems to be quite suitable for this project.

b) A data entry system for office staff who have never used computers before. The user interface and user-friendliness are extremely important.

- **Prototyping Model**

In this project, the users are involved throughout the design and the UI has to be quite good. Since, Prototyping Model provides us with these needs, it is the best model to be used.

c) A spreadsheet system that has some basic features and many other desirable features that use these basic features.

- **Incremental Model**

In this spreadsheet system, we can develop an initial implementation and with the feedback provided by the user, we can refine our design releasing various upgraded versions which would continue to use the basic implementation. Incremental Model provides us with this feature, hence it can be used to build this system.

d) A web-based system for a new business where requirements are changing fast and where an in-house development team is available for all aspects of the project.

- **Agile Model**

In this system, there are fast-changing requirements. Agile is suitable here, as it allows the flexibility towards this rapid change and regular updates of the system.

Apart from this, **Iterative Model** can also be thought of as a suitable model for this product. The iterative model prioritizes the requirements and accommodates changes which makes it suitable for this product.

e) A Web-site for an on-line store which has a long list of desired features it wants to add, and it wants a new release with new features to be done very frequently.

- **Incremental Model**

In this product, since a lot many features are required, we can implement the features and release the initial implementation for the use of the users. And after that, we can go on updating the software with timely changes and updates in various versions. For such updates, Incremental Model is used effectively.

f) A system to control anti-lock braking in a car.

- **Spiral Model/Waterfall Model**

In anti-lock braking in a car, risk reduction and safety are critical. Since the requirements are fixed and are not changing, Waterfall Model seems to be effective for the implementation of this system. Also, taking the factor of risk and safety into consideration, Spiral Model can be used for the implementation.

g) A virtual reality system to support software maintenance.

- **Incremental Model/Synchronize and Stabilize Model**

Since for the maintenance of the software, we need to check in for regular updates and release various versions to meet the requirements. So, for continuous updates Incremental Model can be used as it provides us with various releases of the software system.

h) A university accounting system that replaces an existing system.

- **Waterfall Model**

In this system, the requirements are clear and the outcomes are predictable. Because of the existing model, the requirements can be easily predicted. The requirements being stable and reusable, Waterfall Model seems to be quite suitable for this system.

i) An interactive system that allows railway passenger to find train times from terminals installed in stations.

- **Evolutionary Prototyping Model**

Here, we won't be able to access the large detail of input and output of the data and also the requirements of the system may change with time and we need to revise the model to get the appropriate output with the change in the input. Also the Evolutionary Prototyping Model allows users to interact with a working model of the system, providing valuable feedback to developers.

j) Company has asked you to develop software for missile guidance system that can identify a target accurately.

- **Spiral Model**

In the missile guidance system, the accuracy is much needed. Also, we need to take utmost care of the privacy and the security. Since, for the validation and

verification of the system has to be done thoroughly, Spiral Model is used for this system.

k) When emergency changes have to be made to systems, the system software may have to be modified before changes to the requirements have been approved. Choose a process model for making these modifications that ensures that the requirements documents and the system implementation do not become inconsistent.

- **Agile Model/Iterative Model**

In this system, there are fast-changing requirements. Agile is suitable here, as it allows the flexibility towards this rapid change and regular updates of the system.

l) Software for ECG machine.

- **Waterfall Model/Spiral Model**

In the software of the ECG Machine, it is clear that the requirements of the software are fixed and well-cleared. Because of this reason, the Waterfall Model can be effectively used in this product. Also, for this product, the safety is critical. Since, Spiral Model is a comprehensive model that reduces the risk and increases the safety and security, it can be used in this product.

m) A small scale well understood project (no changes in requirement will be there once decided).

- **Waterfall Model**

With on-hand good understanding of the project, it becomes clear that Waterfall Model can be used suitably in this case as this model provides implementation of the static requirements effectively.