

IT314 Software Engineering

Lab Report 1

Nancy Patel

202101491

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Group 6

a. A simple data processing project.

Waterfall Model:

- The requirements for the data processing project are well defined. It only requires taking inputs, processing that data and then giving the output.
- This a small scale project and so it does not require much time to execute and so the waterfall model is best suitable
- For example, a teacher wants to collect the data of marks of all the students in his class then by using this model, he can simply collect the data, process it (like finding average marks or the least marks and so on) and then get the required results.

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:

- Firstly, it is mentioned that the office staff has never used computers before, hence, they do not have much knowledge regarding that area.
- Now, due to the lack of experience, it is suitable to use a prototyping model which allows to build a prototype on various levels and then to evaluate it and only move forward if the client requirements are fulfilled.
- Also, it is mentioned that User Interface and user-friendliness are very important which is one of the key factor of prototyping model.

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

Incremental Model:

- This model will allow to breakdown the development process into multiple phases. In each phase a different functionality can be added.
- This model will allow to develop the basic features for data entry in spreadsheet in earlier versions of development and get user feedback on it.
- For the later versions, these basic features can be easily incorporated along with additional advanced features which can use these basic features.

- 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:

- Agile model is best suitable as it has an in-house development team which is available for all aspects of the project.
- For the new business, there is a need to develop based on user feedback and so agile model can be useful as it follows an iterative approach.

- 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:

- The incremental model allows the developing team to break down the process into multiple phases and adding required features in each phase.
- Also, the website for online store has various users, so their feedback is equally important for each version of the project.

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

Spiral Model:

- For the anti-lock braking in a car, the safety of the passenger is very important. Hence, using the Spiral Model, we can do the risk assessment frequently.
- Also, the process is iterative as it requires adding new features based on experience or incidents. So, the multiple iterations allow to enhance the system logically.

- g. A virtual reality system to support software maintenance**

Incremental Model:

- The virtual reality system requires various ideas for exploration and then deciding the best among them. To do so, incremental model allows multiple prototypes which can be experimented on and then find the most suitable one.
- VR relies on the user experience so it is necessary to take user feedback for each development made.
- VR is a very hard project and so it needs to be broken down into simpler versions so that the developing team find it easier to implement.

- h. A university accounting system that replaces an existing system**

Waterfall Model:

- As there is an already existing system, it is easier to find the changes to be made and the new requirements needed. Hence, there is already a fix set of requirements which makes the waterfall model the best option for this task.
- This model is logical and intuitive and very easy to execute.

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

Evolutionary Prototype:

- The required system must be interactive with the users and so their feedback and experience matters the most, thereby making the prototyping model the best suitable choice.
- With evolutionary prototyping, the developers can continuously update and adapt to the everchanging user requirements.

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

Spiral Model:

- Developing a software for missile guidance system is a very high risk project and so it requires risk assessment at every step.
- Also, the requirements can frequently change based on experiments and so we require an iterative model.
- The testing for each iteration is also very necessary due to the high risk factor involved. Thus, Spiral model is best option for this.

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:

- Agile model allows to focus on the code and the users.
- It also follows an iterative approach which allows to change the system based on new requirements.

l. Software for ECG machine

Waterfall Model:

- The requirements for the ECG machine software are clear and well-documented and according to medical regulations.
- Waterfall Model also involves a testing phase which ensures the correct working of the machine.

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

Waterfall Model:

- Waterfall model is well suited for small scale projects with a limited time duration.
- Also, as the requirements are already fixed and will not be changed, waterfall model becomes very easy to implement for this project.