IT314 – Software Engineering [Lab Session I]

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Lab 1: Choosing Software Process Models

a) A simple data processing project.

For this project I would recommend the waterfall model as the project is simple and there are no changes in the requirements. It represents a high level view of the development process and sequence of process activities.

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

For this model I would recommend prototyping model as office staff has never used computers before and user interface is extremely important. This system is suitable for novice users and also the UI(user interface) is very important.

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

For this spreadsheet I would recommend using an incremental model as it is the most suitable for the given 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.

For this project I would recommend using an iterative, specifically agile model as it requires fast changing of the requirements and also in-house development team is available for all aspects of the project and it also allows user-citizen communication.

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.

Because needs for a specific system change quickly, an internal development team is available for all elements of the project, and it also provides for flexibility between employees and clients, I would advise employing the Agile Model or Iterative Model for this project.

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

I advise employing the Waterfall model. A safety-critical system is the anti-lock braking system. For the anti-lock braking system of the car to operate properly, the analysis and design requirements in the Waterfall Model must be scheduled without any errors prior to the system's implementation.

g) A virtual reality system to support software maintenance

The Spiral Model should be used for this system since it emphasizes risk assessment and iterative development. The Spiral model enables the team to identify and handle potential risks early in the process because the system's maintenance requirements and virtual reality components may change while being developed.

h) A university accounting system that replaces an existing system

Because the development team can create the new system incrementally, making sure that each increment replaces a certain portion of the previous system while keeping its functionality, I would advise choosing the incremental model for this system. This strategy makes the transition easier and causes less interruption.

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

Because they allow for continuing user feedback and iterative system improvements to ensure the system serves the demands of the passengers, I would advise employing the iterative model for this system.

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

I advise utilizing the Spiral Model for this system because it accurately captures the iterative nature of software development on projects with ambiguous requirements and uses continuous iteration to reduce risk and guarantee the system's quality.

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.

I would suggest choosing the agile model since it accommodates changes rapidly and places a greater emphasis on producing functional software than extensive documentation in situations where there is not enough time for formal documentation. Even if requirements are not fully specified, regular team participation and communication guarantee that system implementation stays in line with requirements.

l) Software for ECG machine.

Since continual testing is necessary for this type of medical equipment to ensure accuracy and user safety, I would advise utilizing the incremental model for this machine.

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

I would suggest employing the waterfall model because it offers an organized and systematic approach that is suited for small-scale, well-understood projects with set needs. needs should be stable and unlikely to change throughout the development process.