

Assigement 1- ASDM

Pooja Sampat Gadadare

Q1 .Discuss the prototyping model. What is the effect of designing a prototype on the overall cost of the project?

Prototype model

A prototype means a preliminary model of anything which gives us a rough idea about the basic functionalities that the real model would have. The prototyping model follows the same strategy.

In the prototyping model, we first take a note of the initial requirements of the user about the software, create its prototype and release it to the user for evaluation. This prototype does not perform all the functionalities that the final software would perform but it depicts all of them. The prototype is concerned with the designing part of the software and not the implementation part. Now, the user evaluates and gives reviews regarding it, if he is satisfied with the model or not. If any further additions or modifications are to be made, then again the changes in the design of the model are made, or else the **prototype model** is finalized and forwarded for development. After that, it is coded, tested and deployed and then maintained afterward as required.

Advantages of using Prototype Model :

1. This model is flexible in design.
2. It is easy to detect errors.
3. We can find missing functionality easily.
4. There is scope of refinement, it means new requirements can be easily accommodated.
5. It can be reused by the developer for more complicated projects in the future.
6. It ensures a greater level of customer satisfaction and comfort.
7. It is ideal for online system.
8. It helps developers and users both understand the system better.
9. Integration requirements are very well understood and deployment channels are decided at a very early stage.
10. It can actively involve users in the development phase.

Disadvantages of using Prototype Model :

1. This model is costly.
2. It has poor documentation because of continuously changing customer requirements.

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3. There may be too much variation in requirements.
4. Customers sometimes demand the actual product to be delivered soon after seeing an early prototype.
5. There is certainty in determining the number of iterations.
6. There may be incomplete or inadequate problem analysis.
7. There may increase the complexity of the system.

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Q2. Compare iterative enhancement model and evolutionary process model.

Iterative Enhancement Model In Software Engineering

The iterative enhancement model in software engineering combines elements of the linear sequential model with the iterative philosophy of prototyping. In this model, the software is broken down into several modules which are incrementally developed and delivered. Firstly, the development team develops the core module of the system. After that, it is refined into increasing levels of capacity of adding new functionalities in successive versions.

When it is used the first increment is often a core product i.e basic requirements are addressed but many supplementary features are undelivered. The core product is used by the customers. As a result of use or evaluation, a plan is developed for the next increment. The plan addresses the modification of the core product to meet the needs of customers, and the delivery of additional features and functionality. This process is repeated following each delivery of increment until the complete product is produced.

Advantages of Iterative Enhancement Model:

- The feedback from early increment improves the later stages.
- The possibility of changes in requirement is reduced due to the shorter time span between the design component and its delivery.
- Users get benefits earlier than the conventional approach.
- Smaller sub-projects are easier to control and manages.
- File priority features are incorporated in early deliverables.

Diadvantage of Model:

- Programmers may have more productive working on one large system than on the series.
- The development cost of the total product is higher.
- The time period for the delivery of the entire functionality is higher.
- Planning of delivery increments is critical to success.
- Wrong planning results to diaster.

When to Use Iterative Model:

- Model is used where risk of long project can not be taken.
- This model is for businesses where time is of essence.

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Evolutionary Model

The evolutionary model is an iterative model as they are characterized in a manner that enables software engineering to develop a complete version of the software. Such models are applied because the requirements often change. So, the end product will be unrealistic, for a complete version is impossible due to tight market deadlines. It is better to introduce a limited version. Thus, Software engineering can follow a process model that has been explicitly designed to accommodate a product that gradually competes over time.

Advantages of the Model:

- Risk analysis is better.
- It supports changing environment.
- Initial operating time is less.
- Better suited for large mission-critical projects.
- During the life cycle software is produced early which facilitates customer evaluation and feedback.

Disadvantage of the Model:

- Management complexity is more.
- Not suitable for smaller projects.
- Can be costly to use.
- Highly skilled resources are required for risk analysis.

Where to use Evolutionary Model:

- Very useful for large projects.
- Well suited for projects using object-oriented development.
- When a client prefers to have the product in increments so that he can began using the specific characteristics as they are provided rather than waiting for the entire thing to be manufactured and delivered, this model is frequently adopted.

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Q3. As we move outward along with process flow path of the spiral model, what can we say about software that is being developed or maintained.

The product advances to a more complete state as work spirals outward, and the level of abstraction at which work is conducted decreases (i.e., implementation specific work accelerates as we move further from the origin).

Explanation:

One of the most significant models for the Software Development Life Cycle that supports risk handling is the spiral model.

In diagrammatic form, it resembles a spiral with several loops. The spiral's precise number of loops is unclear and varies from project to project. A phase of the software development process is referred to as each spiral loop.

The project manager might alter the precise number of phases required to build the product depending on the project's risks. The project manager plays a crucial role in the spiral model of product development since they dynamically set the number of phases.

The waterfall model's methodical, managed elements are combined with the idea of iterative development in the spiral model. Iterative and sequential linear development models, or the waterfall model, are combined to create the spiral model, which places a strong emphasis on risk analysis.

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Q4. Explain the Scrum Agile methodology.

Scrum Agile methodology

Scrum is a framework of rules, roles, events, and artifacts used to implement Agile projects. It is an iterative approach, consisting of sprints that typically only last one to four weeks, with the objective of continuously improving a product. This approach is commonly used in software development and ensures that your Scrum teams deliver a version of the product regularly.

Scrum was designed using a software model that follows a set of roles, responsibilities, and meetings. It can be used for any complex project but works best when the result is a concrete product rather than a service. Jeff Sutherland and Ken Schwaber are credited with creating Scrum as a framework for project management.

Scrum in Agile requires particular roles and responsibilities. The Scrum process includes the following steps:

- **Product owner:** The product owner represents the customer's best interest. This person has the ultimate authority over the final product.
- **Scrum master:** This person is a facilitator, responsible for arranging the daily meetings, improving team interactions, and maximizing productivity. The project manager often takes on the role of Scrum master, but they can delegate it to anyone on the team who is a Scrum expert and strong facilitator.
- **Backlog:** The backlog is a prioritized list of tasks and requirements included in the final product. It's the responsibility of the product owner to create the backlog.
- **Sprint:** A sprint is a set timeframe for completing each set of tasks from the backlog. Every sprint should be the same length. Two weeks is typical, but a sprint can be anywhere between one to four weeks long, depending on the team and project needs.
- **Daily meetings:** A Scrum project team is expected to meet every day to discuss progress. These meetings are typically referred to as a daily Scrum or daily stand-up.
- **Review:** This is a meeting where development teams show the work that was completed in an individual sprint and focus on how they can deliver a better product.
- **Retrospective:** In the retrospective meeting, the team reviews their overall system and processes and how they can be improved for the next sprint.

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Q5. Explain the utility of Kanban CFD reports.

CFD charts are a powerful tool that Kanban teams can use to measure flow and analyze trends about a team's performance. Think of a CFD chart as a storyteller. It paints a picture of how workflows through your Kanban system within a period.

The fundamental purpose of the cumulative flow diagram is to demonstrate the stability of your workflow. Analysis of the CFD should tell you what areas need your focus, in order to maintain continuous process improvement. It enables you to improve your overall productivity and efficiency.

CFD / BENEFITS

- Flow investigation is not limited by test instrumentation.
- Improved performance predictions.
- Comprehensive flow data is available.
- Flow visualisation provides greater understanding of flow behaviour.
- Identification of problem areas and minimising their effects.