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INTRODUCTION TO SOFTWARE ENGINEERING

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ADAPTIVE SOFTWARE DEVELOPMENT (ASD)

- Adaptive Software Development is one of the earliest agile methodologies.
- It was a result of the work by Jim Highsmith and Sam Bayer on Rapid Application Development (RAD).
- This methodology interestingly validates the fact that it is quite normal to have continuous adaptation to the software development process.
- This validation removes the fear of the unknown and uncertainty often involved in any software development cycle.

HISTORY OF ADAPTIVE SOFTWARE DEVELOPMENT (ASD)

- Adaptive Software Development in software engineering is a classic example of *necessity is the mother of invention adage*.
- In the early 1990s, when Sam Bayer and Jim Highsmith were making the most out of RAD and creating RADical Software Development, they realized that these approaches were not enough.
- It was important to have a process that encouraged collaboration inside the organization as well as with the clients.
- They realized that they needed the process that makes all the stakeholders at ease with the inherent uncertainty of software development while making room for continuous, consistent, and genuine learning during the process itself.
- It is out of these needs that Adaptive Software Development came into being.

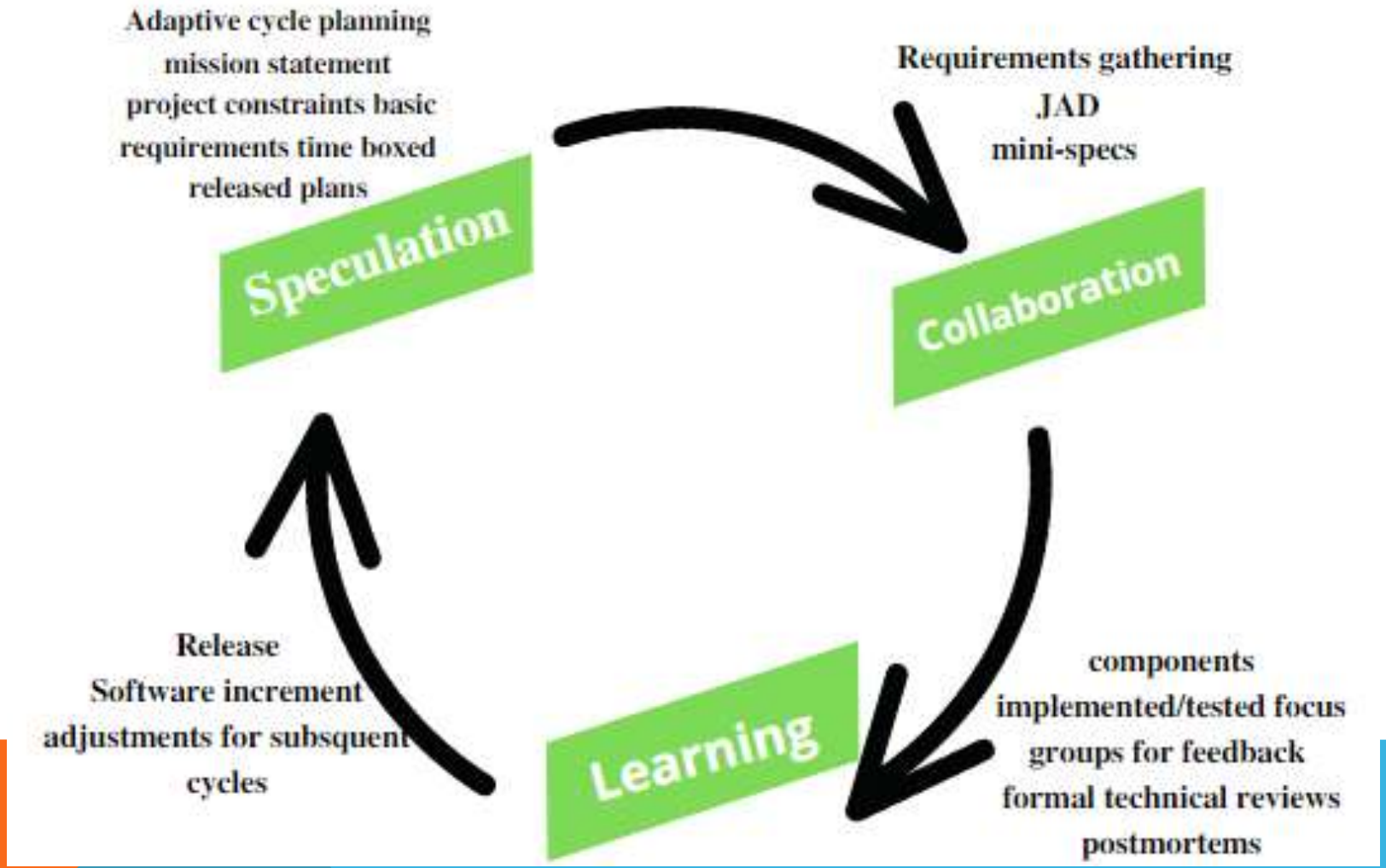
ADAPTIVE SOFTWARE DEVELOPMENT (ASD)

- ASD is a development methodology that encourages continuous learning throughout the software development project.
- ASD strongly advocates a software development process that is fun to be in as well as natural or organic.
- Adaptive Software Development is a method to build complex software and system.

ADAPTIVE SOFTWARE DEVELOPMENT (ASD) LIFE CYCLE

- The adaptive life cycle is an evolution of the spiral life cycle that started during the mid-1980s.
- The major problem with the spiral life cycle was its reliance of predictability.
- Though RAD was less predictable and deterministic, the mindset of the practitioners of the spiral life cycle was still not changed.
- The adaptive life cycle in Adaptive Software Development tries to address this issue of changing the mindset by way of reflection and naming the phases during this process exactly as per that reflection.
- These phases of the adaptive life cycle that accept uncertainty and chaos as "normal" during the software development process are

1. Speculation
2. Collaboration,
3. Learning.


Adaptive cycle planning
mission statement
project constraints basic
requirements time boxed
released plans
Speculation
Requirements gathering
JAD
mini-specs
Collaboration
components
implemented/tested focus
groups for feedback
formal technical reviews
postmortems
Learning
Release
Software increment
adjustments for subsquent
cycles

SPECULATION

- Speculation phase carefully and intentionally removes the factor of planning that often brings with it lots of unnecessary baggage and tension.
- This phase gives the teams full liberty to welcome and accept the outcomes without the fear of the unknown or uncertainty. It totally eliminates the toxic need to be right all the time, putting all the stakeholders at ease.
- In the speculation phase:
    - ✓ A project mission statement is defined
    - ✓ Creation and sharing of the general idea of the goals to be achieved take place
    - ✓ Teams adopt the tools that would assist them in adapting and changing as per the requirements during the entire cycle of the project.

SPECULATION

- Mostly, the speculation phase finds itself divided into two steps.
  - ✓ project initiation
  - ✓ adaptive planning

Project initiation

- The first step of initiation involves stuff that serves as the project's foundation.
- This includes project management information, mission statement and other essential tools and information.

SPECULATION

Adaptive planning:

In adaptive planning, different product features get assigned to the different teams as per their expertise and skills.

This requires the teams to decide:

- Time box for the project
- Number of development cycles
- Amount of time each cycle would take as per the unanimously decided timebox
- A theme and objective for the cycle
- Assignment of components for each cycle
- A task list for the project

SPECULATION

The purpose of the speculation phase is:

- To remove the unnecessary burden of planning
- To create space for innovation by making the entire process open-ended
- To keep the planning at its most minimum or essential
- To set an appropriate framework for the end product
- To allow exploration and experimentation with each new speculation phase with small iterations.

COLLABORATION

- The collaborate phase is the phase in which developers actually perform the development work.
- This phase is about group emergence.
- It is about coming together of diverse experiences, knowledge, and skills.
- This forms a collaborative environment where diversity serves as the building block for creativity and innovation during the entire development cycle.

LEARNING.

- The Learning part of the Lifecycle is vital for the success of the project.
- Team has to enhance their knowledge constantly, using practices such as-
  - Technical Reviews
  - Project Retrospectives
  - Customer Focus Groups