CHAPTER 3 : AGILE METHODOLOGIES

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3.1 Introductions

Agile methodology is a project management technique in software development process.

In agile methodology communication and collaborations plays an important role.

A typical Agile methodology process would follows:

- Listen for user stories from the customer
- Draw a logical workflow model to gain an appreciation for the business decisions represented in the user story
- Create new user stories based on the logical model
- Develop some display prototypes
- Using feedback from the prototypes and the logical workflow diagrams, develop the system until you create a physical data model.
3.2 Main Stages in Agile project:

**Define initial requirement:**
Business will come up with a high level requirements to the project.

It is not necessary to have all the requirement finalized and clear in this stage.

**Prepare high level use cases:**

Project business analyst will have further discussion with client to have a deeper understanding to come up with high level use cases.

These use cases will be discussed with the clients to finalize the requirement at a higher level.
Prepare High Level Plan:

Once the high level business cases are approved and finalized, Project Manager will prepare a high level plan.

Normally the initial plan has a short planning horizon and mainly covers the plan till the first prototype completes.

Begin Iteration:

This phase is where all the teams involved in the project start their planning and designing phase.

Build and Unit Test:

Development test build and unit test the prototype in this stage.
System Test:

Testing team performs the testing of the prototype as per their test cases and test plan prepared in previous stages.

User Evaluation:

Once the prototype passes the system test, representatives from the client evaluate the prototype against the requirements and the use cases.

They also access if they want more functionality to be added to the product.
Are more changes required?:

This is not a stage but a decision point in the project life cycle:

Where client decides whether they need more changes to the products or not based on the evaluation done in the last stage.

Prototype may go into one more iteration if client want more changes to the product.

If they are happy with the product and are ready to accept this as a final product, then the product may go the final round of system test.
Refine Requirement / Use case:

If client decides to make propose changes after the User Evaluation stage, requirements and in turn user cases need to be refined as per the change request.

Development and testing team will use these changes use cases to refine their design and test plan.

Final System Test:

Once the customer approves the prototype as the final product, a final system integration test might be required to check the integration of the product with client environment and other application.

User also might want to do a final assessment of the product with all the other application integrated to it.
Product Release:

Once final test is done, product is ready to be released and deployed at the client location.

Training and demo might be required for the wider user group along with the user manuals.
3.3 Various Agile Software development methodologies

Under this broad term of 'Agile Software Development' there are other approaches.

Each approaches has its own ideas, communities and leaders.

It is important to understand that Agile is not a specific methodology, but a higher concept representing and Iterative approach with newly defined underlying principles.

It is with each approach you can see the specific deliverables and concepts for how to work the process.
The approaches such as:

- eXtreme programming
- Scrum
- Agile modeling
- Adaptive software development
- Crystal clear and other crystal methodologies
- Dynamic systems development methods
- Feature driven development
- Agile unified process
eXtreme Programming:

eXtreme Programming works on the principle of Simplicity, Communication and Feedback.

The application is designed such that it is adaptive to changing requirement and is simple.

Lot of client interaction and communication in team are key factors which help in development of adaptive application.
Scrum:
In Scrum, a list of all the deliverables for the project, named backlog, is identified and is continuously updated.

Project is divided into small units named sprint, lasting 2-4 weeks generally.

Deliverable, which is visible and usable increment, is decided for each sprint.

Active communication in the team and follow-up using the backlog help and ease the development.
Agile Modeling:
Agile Modeling is used for modeling and documentation of software systems.

It involves the software values, principle and practices which lead to software development in more flexible manner.

Adaptive Software Development (ASD):
Adaptive Software Development life cycle comprises of three phases:
Speculation
Collaboration
Learning
Speculation
User requirements are understood and an adaptive cycle planning is conducted.

Collaboration
Effective collaboration with customer is very important.

Communication, teamwork, individual creativity are a part of effective collaboration.

Learning
Learning cycles are based on the short iterations with design, build and testing.
Crystal Clear and other Crystal methodologies: Crystal family of methodologies is people-centric and focuses on enhancing the work of people involved.

The logic is to start with small tasks and then build them up into larger ones.

The overhead activities are reduced and efforts are diverted to work building. It’s a collaborative process involving tracking and iterations.

Dynamic Systems Development Methods (DSDM): DSDM is based on Rapid Application Development (RAD) and can be used for projects which have tight schedule and budget.
Feature Driven Development (FDD):
The main purpose of FDD is to deliver tangible, working software repeatedly in a timely manner.

The development process involves 5 activities:
Develop Overall Model,
Build Features List,
Plan by feature,
Design by feature,
Build by feature.
Agile Unified Process (AUP):

It differentiate Development Release iterations from Production Release iterations.

It works on building up a model, implementing, testing and deploying it and then followed by configuration management.

The focus is on the covering the high-value activities rather than covering every possible thing.
### 3.5 Advantage and Disadvantage of Agile Methodology:

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
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<tbody>
<tr>
<td>No Detail requirement needed</td>
<td>Smaller Planning Horizon</td>
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<tr>
<td>Early benefit to the user/business</td>
<td>Lesser design and documentation</td>
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<td>Face to face communication</td>
<td>Need clear customer vision</td>
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<td>Less time to market</td>
<td>Necessity of experienced and senior resources</td>
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<td>Less cost to customer</td>
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<td>High Quality</td>
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