

Testing Within the Software Lifecycle



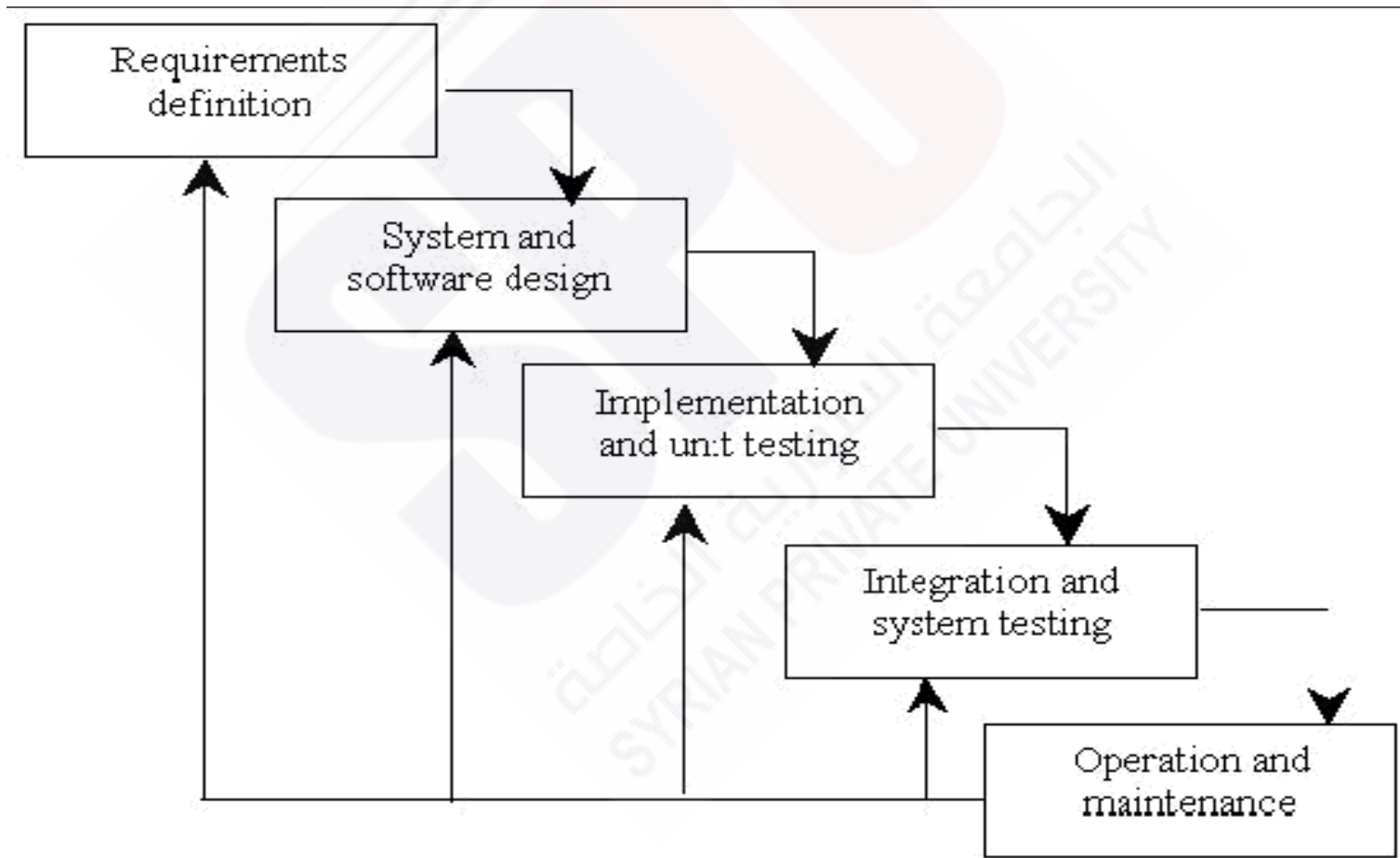
Testing Within the Software Lifecycle

1. Software Development Models
2. Test Levels
3. Test Types
4. Test Technique
5. Regression Testing



Software Development Models

Water Fall



Software Development Models

Water Fall

Advantages

- Simple and easy to use.
- Easy to manage due to the rigidity of the model – each phase has specific Deliverables and a review process.

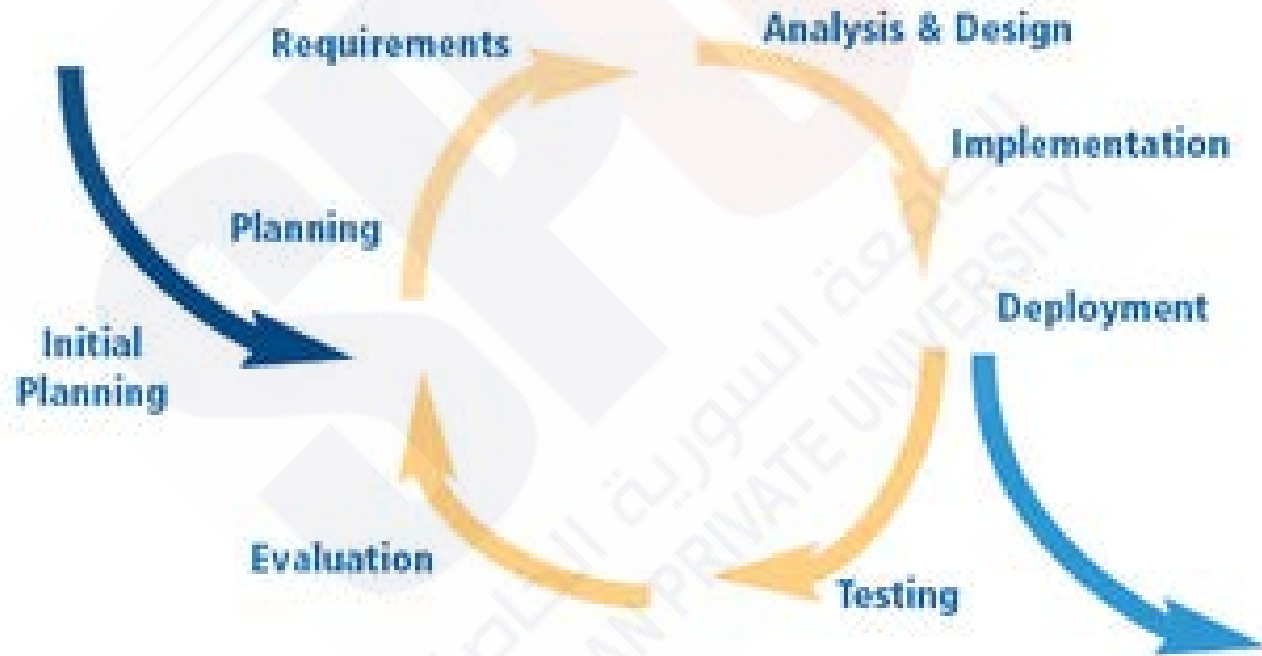
Disadvantages

- It's difficult to respond to changing customer requirements.
- Adjusting scope during the life cycle can kill a project
- No working software is produced until late during the life cycle.



Software Development Models

- **Incremental or Iterative Mode**



Iterative Development Model (Wikipedia)



Software Development Models

Incremental or Iterative Mode

Advantages

- corrective actions can be taken at the end of each iteration due to tangible output

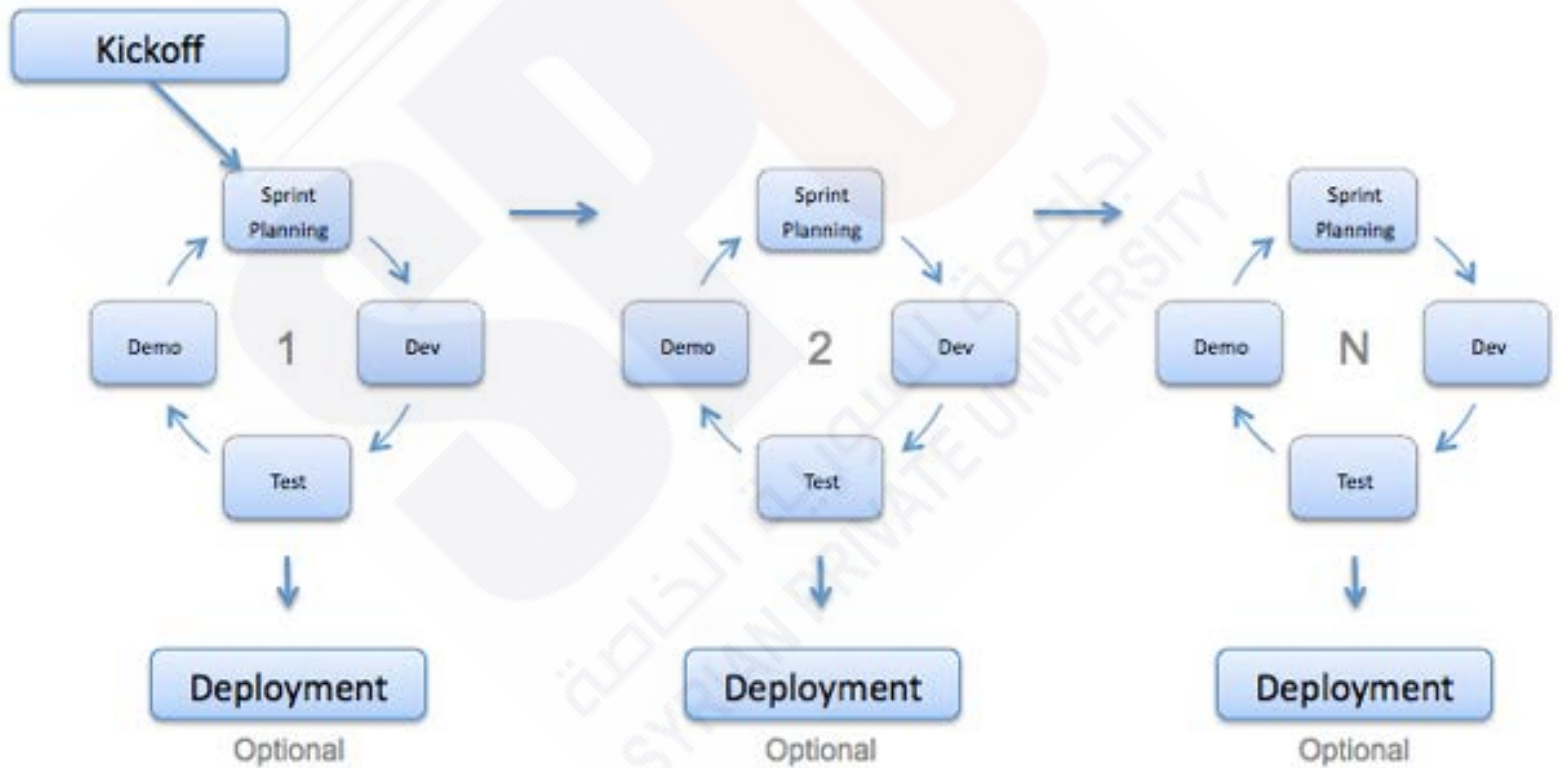
Disadvantages

- The project requires a very efficient change control mechanism to manage changes made to the system during each iteration.
- Over head of communication to provide feedback for each iteration



Software Development Models

- Agile



Software Development Models

Agile

Advantages

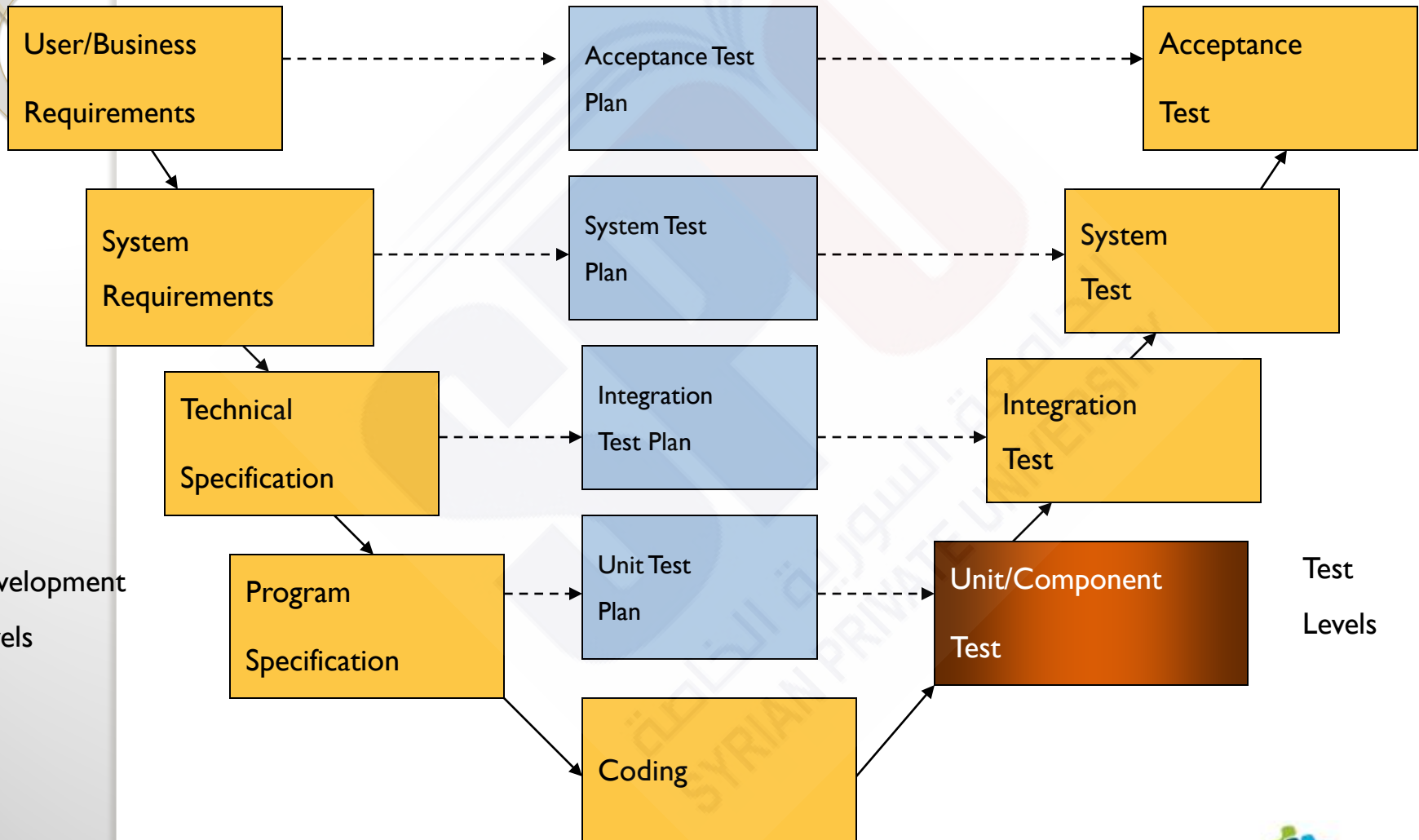
- Adapts to change easily Decrease time to market
- Has been very successful when collaborating with creative teams
- Increased collaboration eliminates last minute surprises

Disadvantages

- Need Flexible Mindset , with Exhaustive collaboration .



Test Levels



Development Levels

Test Levels

Test Levels

- Unit Testing (Component Test)
 - Unit testing of software applications is done during the development (coding) of an application
 - The goal of unit testing is to isolate each part of the program and show that the individual parts are correct. Unit testing is usually performed by the developer.



Test Levels

- Unit Integration Test
 - The goal of unit Integration testing is to integrate some dependent units to check correctness of communications and data formats among them .
 - Usually made by Development in code phase



Test Levels

- **System Test**
 - System testing is the testing of a complete and fully integrated software product.
 - Usually Done by independent testers to check that customer scenarios (business) is fulfilled as requested (needed) .



Test Levels

- **System Integration Test**
 - In case of system communicates with other systems (external) , then this level of testing checks correct communications , messages , data , dependencies are correct between systems .
 - Usually Done by independent testers to check that customer scenarios (business) is fulfilled as requested (needed) .



Test Levels

- User Acceptance Test
 - Made by Customer (representative) on delivered (beta) system to check it's functions , usability in a pre-prod Environment
 - Usually by customer or a 3rd party to decide if customer acceptance criteria are met



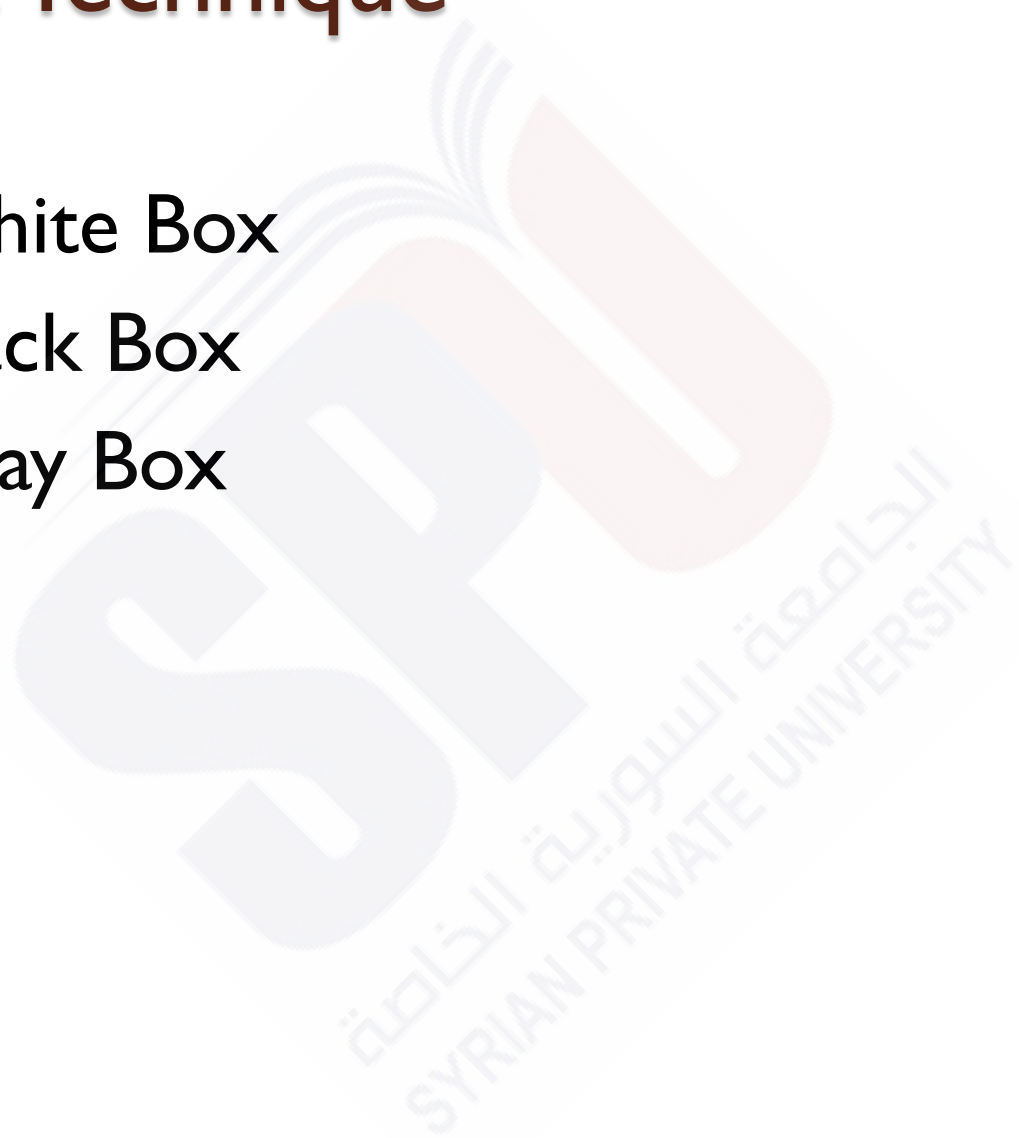
Test Types

- Functional Testing
- Non Functional Testing
 - Performance
 - Usability
 - Compatibility
 - Security
 - Accessibility



Test Technique

- White Box
- Black Box
- Gray Box



Test Technique

- **White Box**
 - Testing technique based on knowledge of the internal logic of an application's code and includes tests like coverage of code statements, branches, paths, conditions. It is performed by software developers.



Test Technique

- **Black Box**
 - A method of software testing that verifies the functionality of an application without having specific knowledge of the application's code/internal structure. Tests are based on requirements and functionality. It is performed by QA teams.



Test Technique

- **Gray Box**
 - A combination of Black Box and White Box testing methodologies: testing a piece of software against its specification but using some knowledge of its internal workings. It can be performed by either development or testing teams.



Regression Test

- Type of software testing that seeks to uncover software errors after changes to the program (e.g. bug fixes or new functionality) have been made, by retesting the program.
- It is performed by the testing teams.





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