

System Development Methods

CT00046-3-2



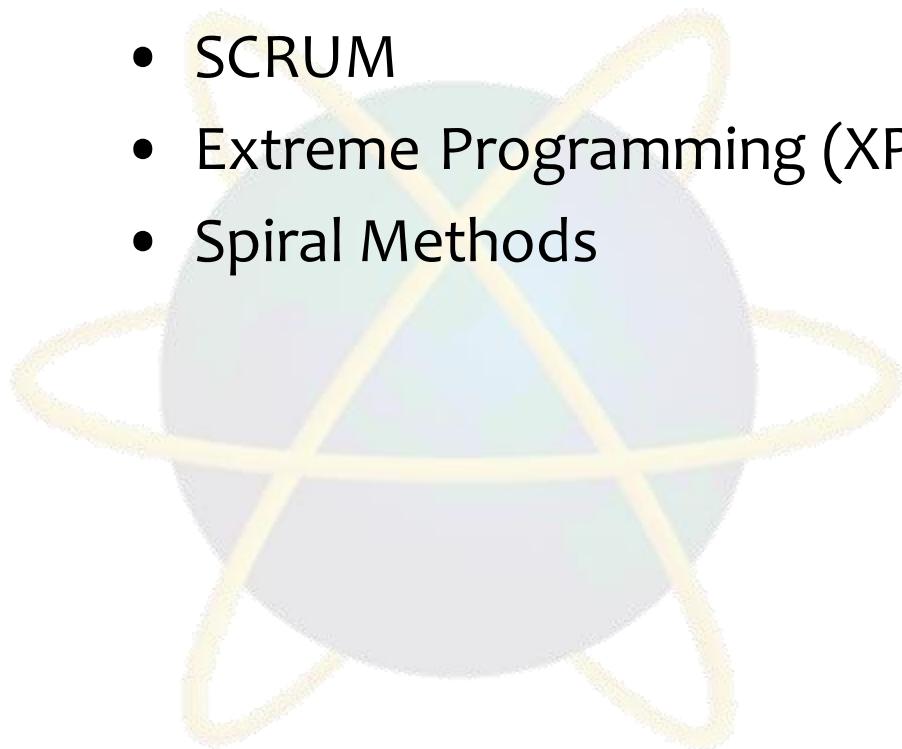
A • P • U
ASIA PACIFIC UNIVERSITY
OF TECHNOLOGY & INNOVATION

Process Oriented Methodologies

Topic & Structure of the Lesson

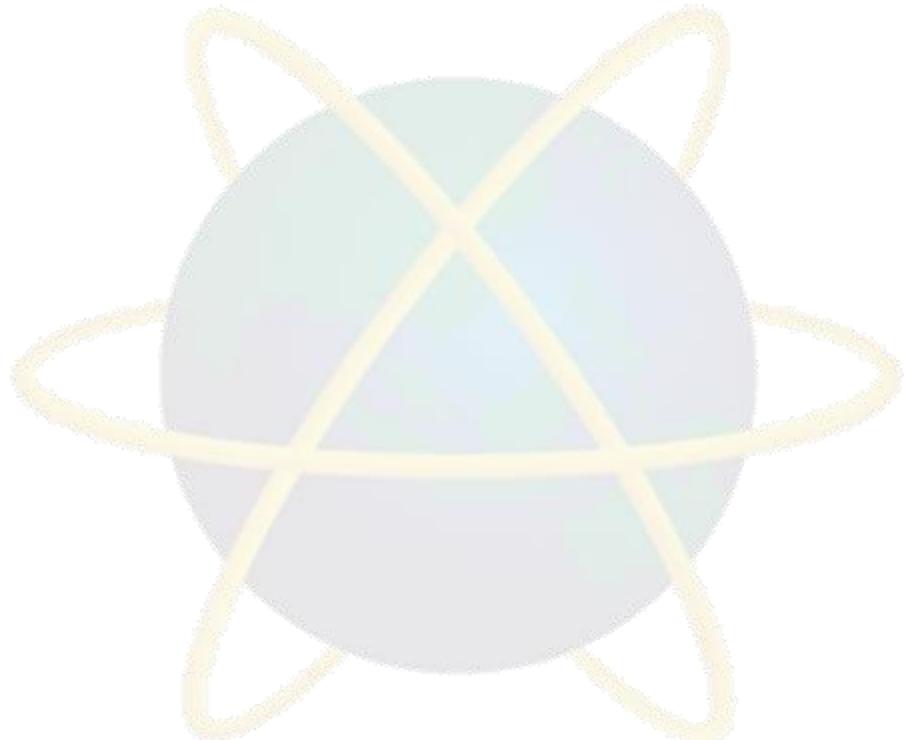
Process Oriented Methodologies

- Rapid Application Development (RAD)
- Rational Unified Process (RUP)
- SCRUM
- Extreme Programming (XP)
- Spiral Methods



Learning Outcomes

- By the end of this lecture, YOU should be able to :
 - Identify and explain the underlying process based methodologies



Key Terms you must be able to use

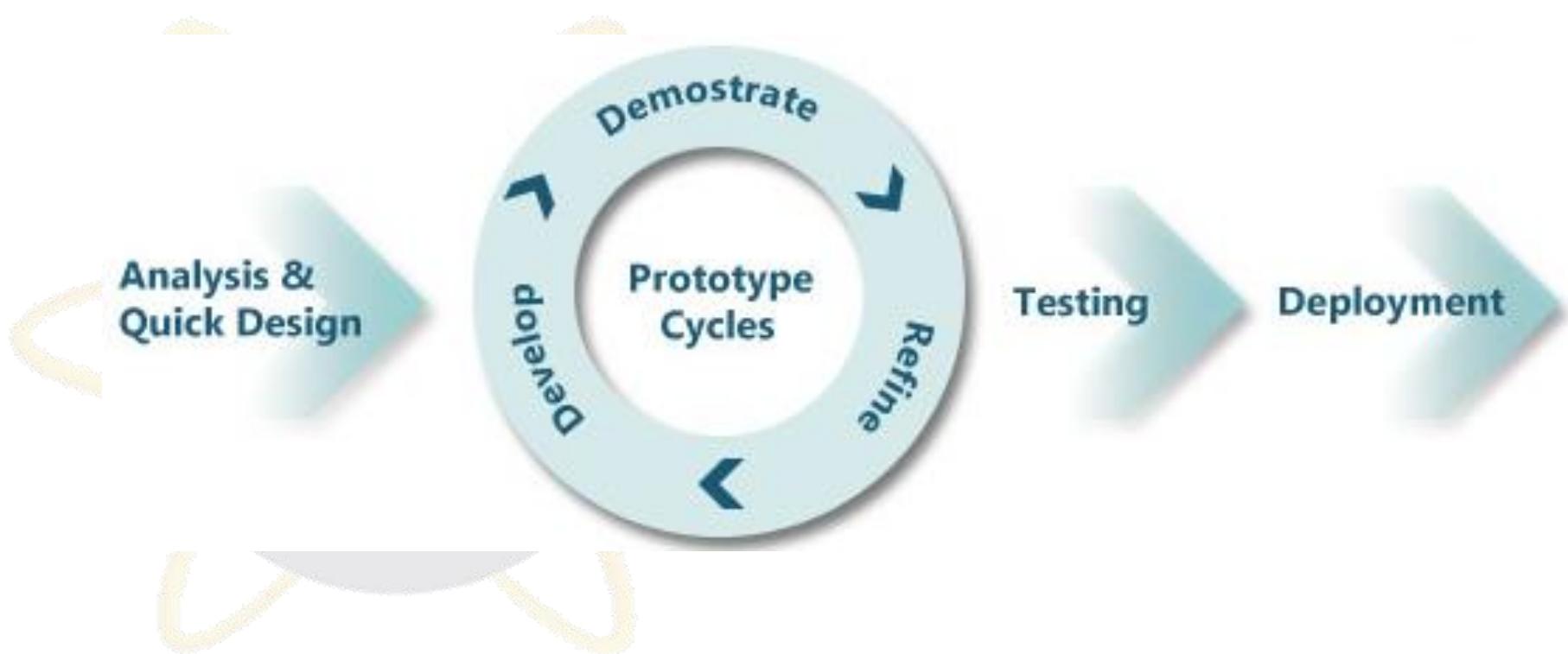
- If you have mastered this topic, **you should be able to use the following terms correctly in your assignments and exams:**
 - Process Oriented Methodologies
 - Rapid Application Development (RAD)
 - Rational Unified Process (RUP)
 - SCRUM
 - Extreme Programming (XP)
 - Spiral Methods

Process Oriented Methodologies

- The proposed methodology can be applied to complex and distributed business processes.
- The business process is converted into functions in a system.
- Steps of Methods;
 - Business process is studied
 - Processes and tasks are broken down into smallest workable component.
 - Each sub-process can be assigned a time, cost and resources for it to complete.
 - This can be shown in planning charts such as Gantt Chart, PERT Chart, Task Breakdown Structure, etc.

Rapid Application Development (RAD)

- ‘Fast’ methodology for fast / urgent projects
 - Within days / weeks



Rapid Application Development (RAD) Techniques



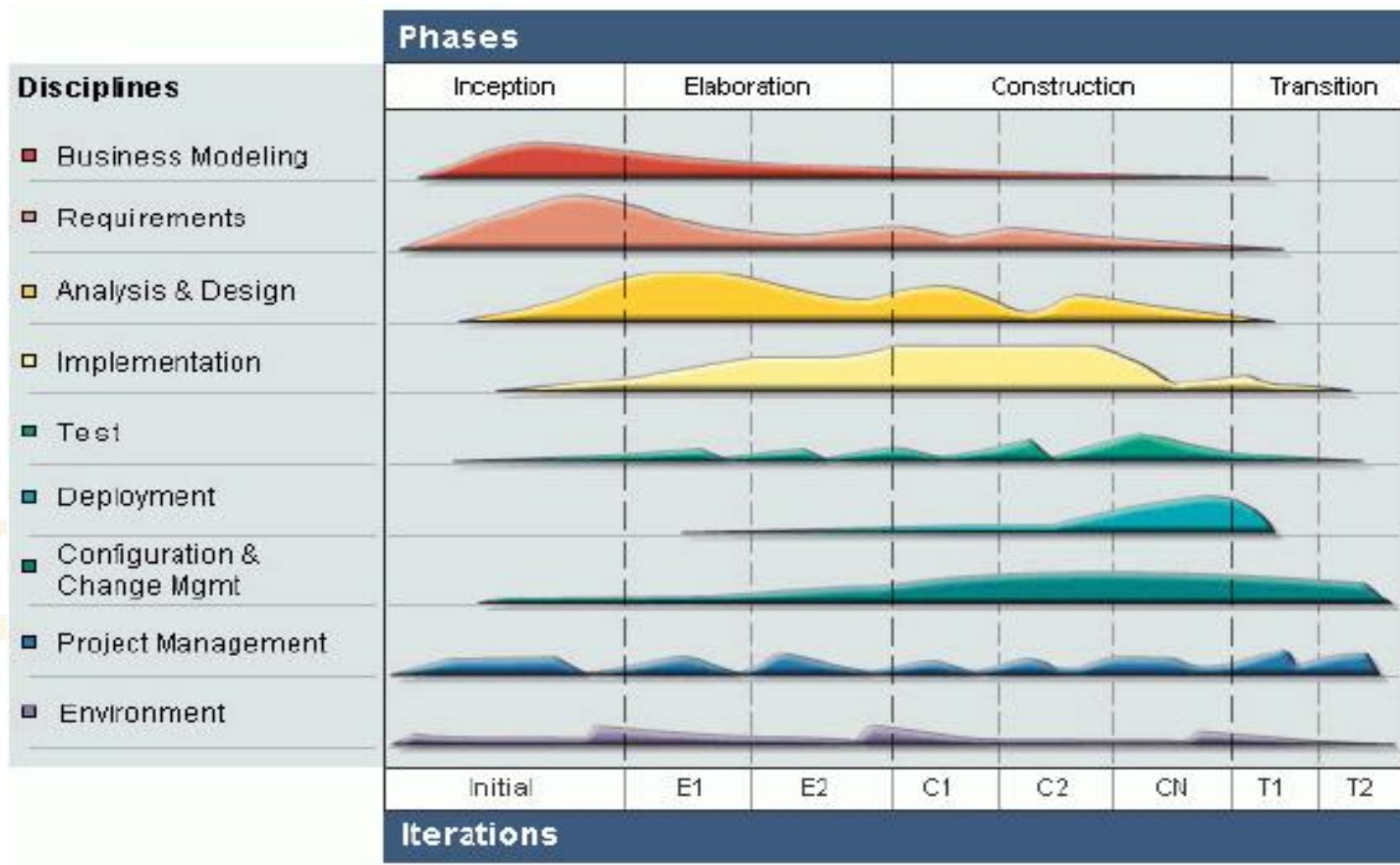
- Expert developers used
- Uses tools (CASE Tools) for faster development and testing
- Uses minimal planning, analysis and documentation
- Uses Prototype for user feedback & review, product development
- Iterative and Incremental design approach with prototyping
- Users are involved in development



Rational Unified Process (RUP)

- “plan a little, design a little, and code a little”
- Very careful development method, emphasis on quality of product and process.
- Extensive and exclusive use of UML, direct support for OO Programming.
- Takes a holistic approach of the system;
 - Architecture of the system determined
 - Task broken-down to smaller components.
 - Iterative & incremental approach applied to do all tasks.

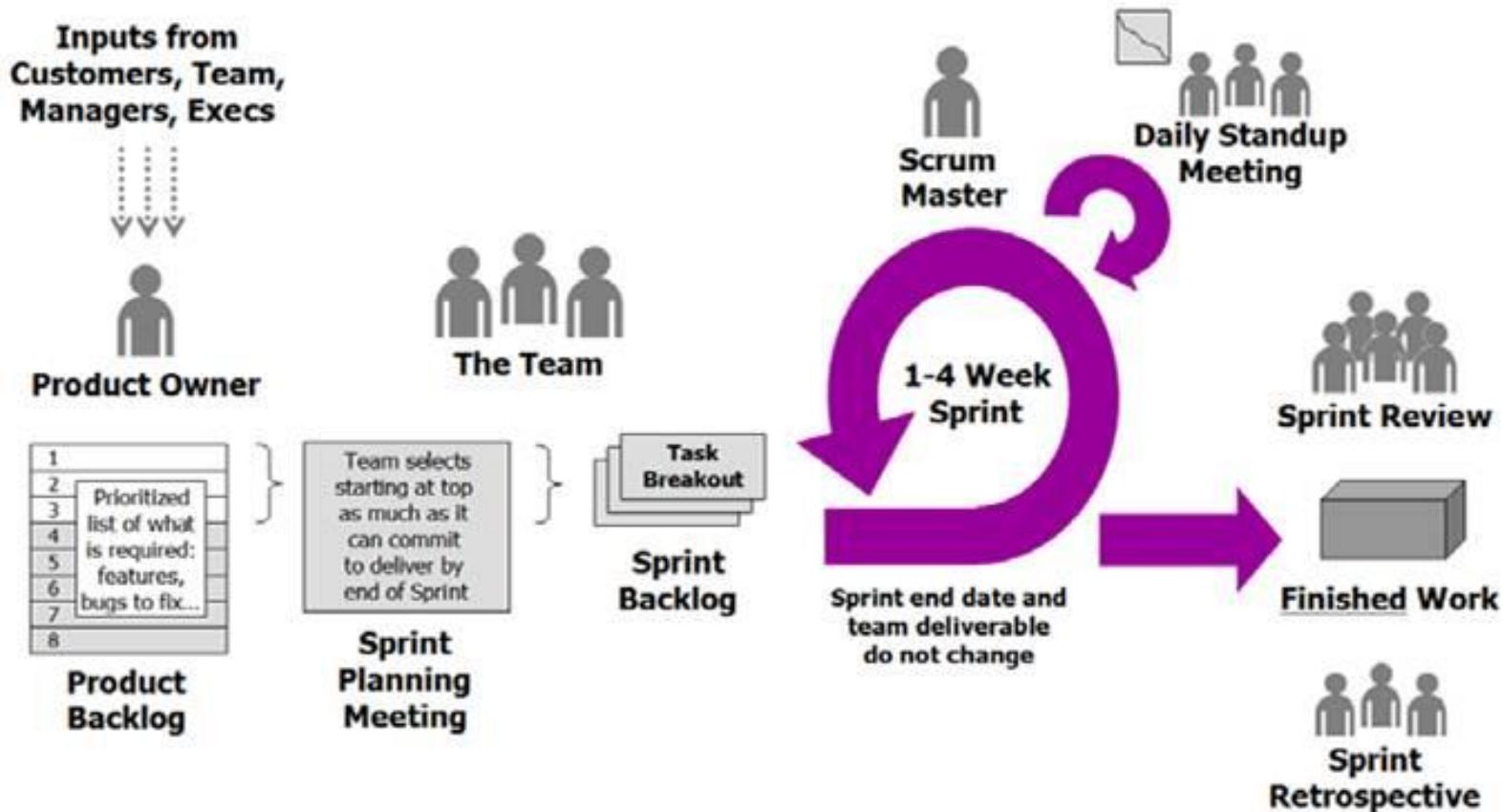
Rational Unified Process (RUP)





Scrum Methodology

- A ‘team-work’ based methodology.



Scrum Methodology

Key Concepts

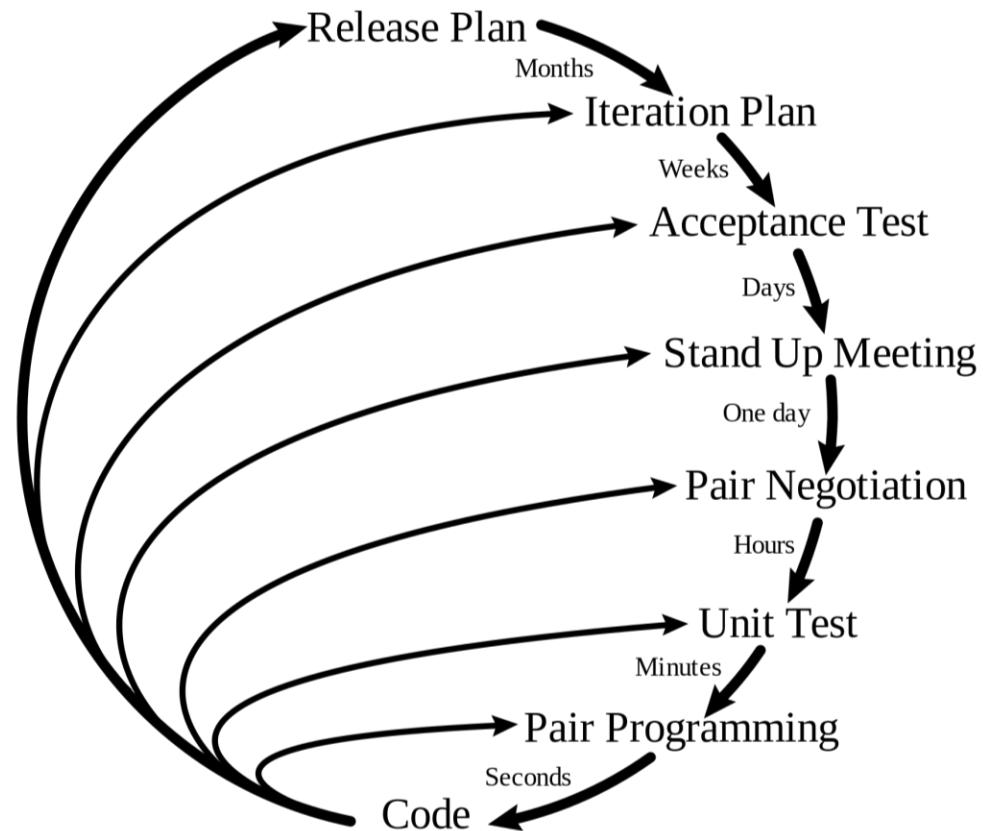


- **User Stories** – developer & user come up with general concept of the system
- **Product Owner** - determines that the business requirements are met
- **Development Teams** are from mixed skills
- **Scrum Master** helps to solve the ‘gaps’ in the project such as solving problems or giving ideas.
- **Sprint** – a cycle of a task to be performed in the project.
- **Backlogs** – this need to be for the project to be completed.



Extreme Programming (XP)

- Very flexible methodology.
- Effective Programming / coding approach.
 - For projects involving heavy coding / software building
- Uses most of the Agile Principles



Extreme Programming (XP)

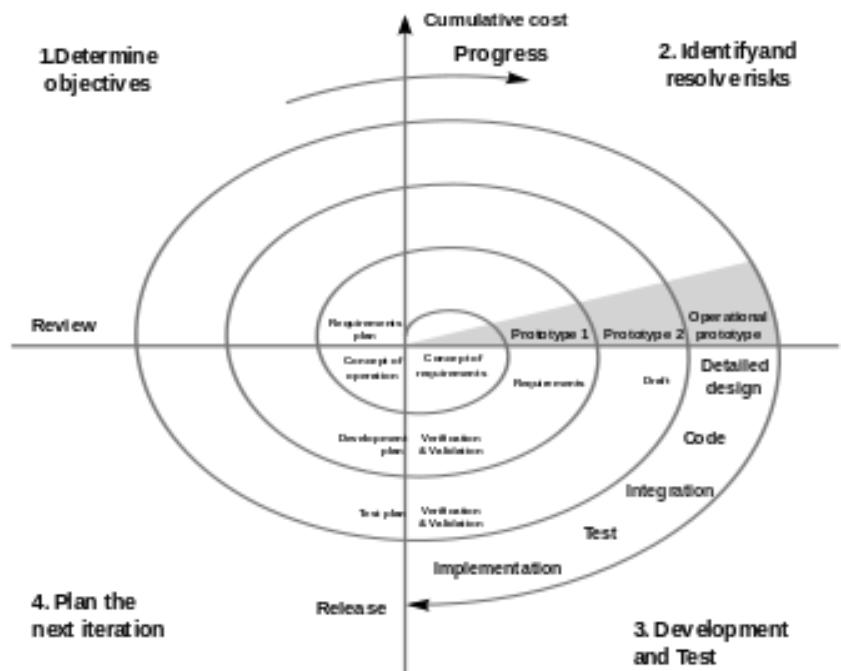
Techniques

- Small and frequent "releases" in short development cycles
- Development team – fully integrated
 - Pair programming, stand-up meetings
- Test driven development
 - Close user involvement , testing
- Accept changing requirement at any time
- Simplicity in everything
 - Tries to simplify all processes
- Produce high quality software.
- ... and other Agile Principles applied.



Spiral Methods

- “Risk-driven” process model. The next steps to be done is determined based on the ‘Risk’ pattern.
- For projects which has high risk;
 - Unclear / unfixed requirements
 - Projects has too many independent components
 - Projects have too many stakeholders which don’t agree with things.



Spiral Methods

Phases

- **Planning Phase**

- Requirements are gathered.
- Specification are set.

- **Risk Analysis**

- Identify risk and alternate solutions.
- A prototype is produced

- **Engineering Phase**

- Software is **developed**
- Through **Testing** carried out.

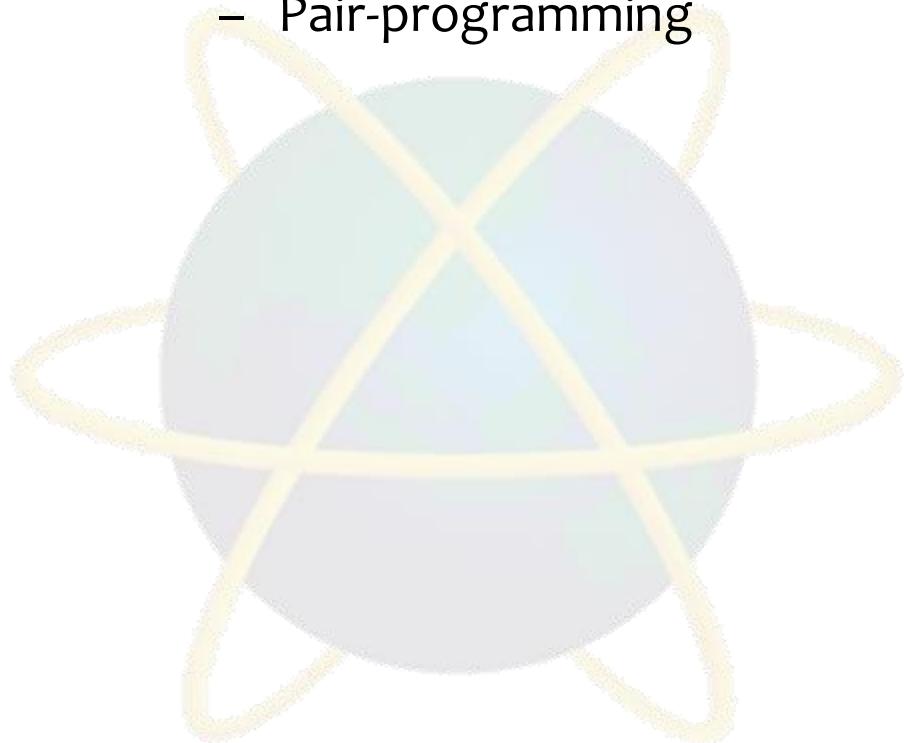
- **Evaluation phase**

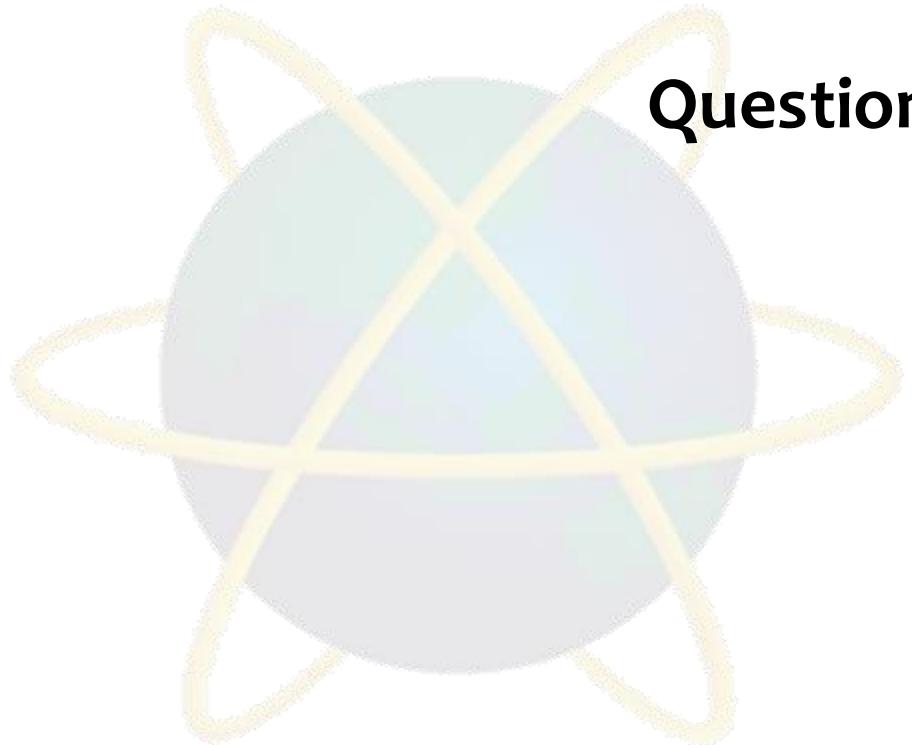
- Allows the customer to evaluate the output of the project to date before the project continues to the next spiral.



Quick Quiz

- Briefly explain the following techniques;
 - Iterative approach
 - Incremental approach
 - Pair-programming





Question & Answer

Next Session

- System Development Planning – Part-1



Tutorial

1. Draw a table and show how the methodologies that you have learned is adopting Agile Principles. **Example;**

Agile Principles	RAD	XP	SCRUM		
Customer satisfaction	Yes	No	No		

2. Discuss TWO **disadvantages** of each methodologies you learned in this slide.