Cairo University
Faculty of Graduate Studies for Statistical Research

Advanced Agile Software Development

Course Code:SE206

Dr.Atef Raslan
Dr.Atef.Raslan@gmail.com

Agenda

- Introduction
- Agile vs. Traditional Method
- Agile Principles
- Agile Characteristics
- Agile Methodologies
- Extreme Programming (XP)
- SCRUM.

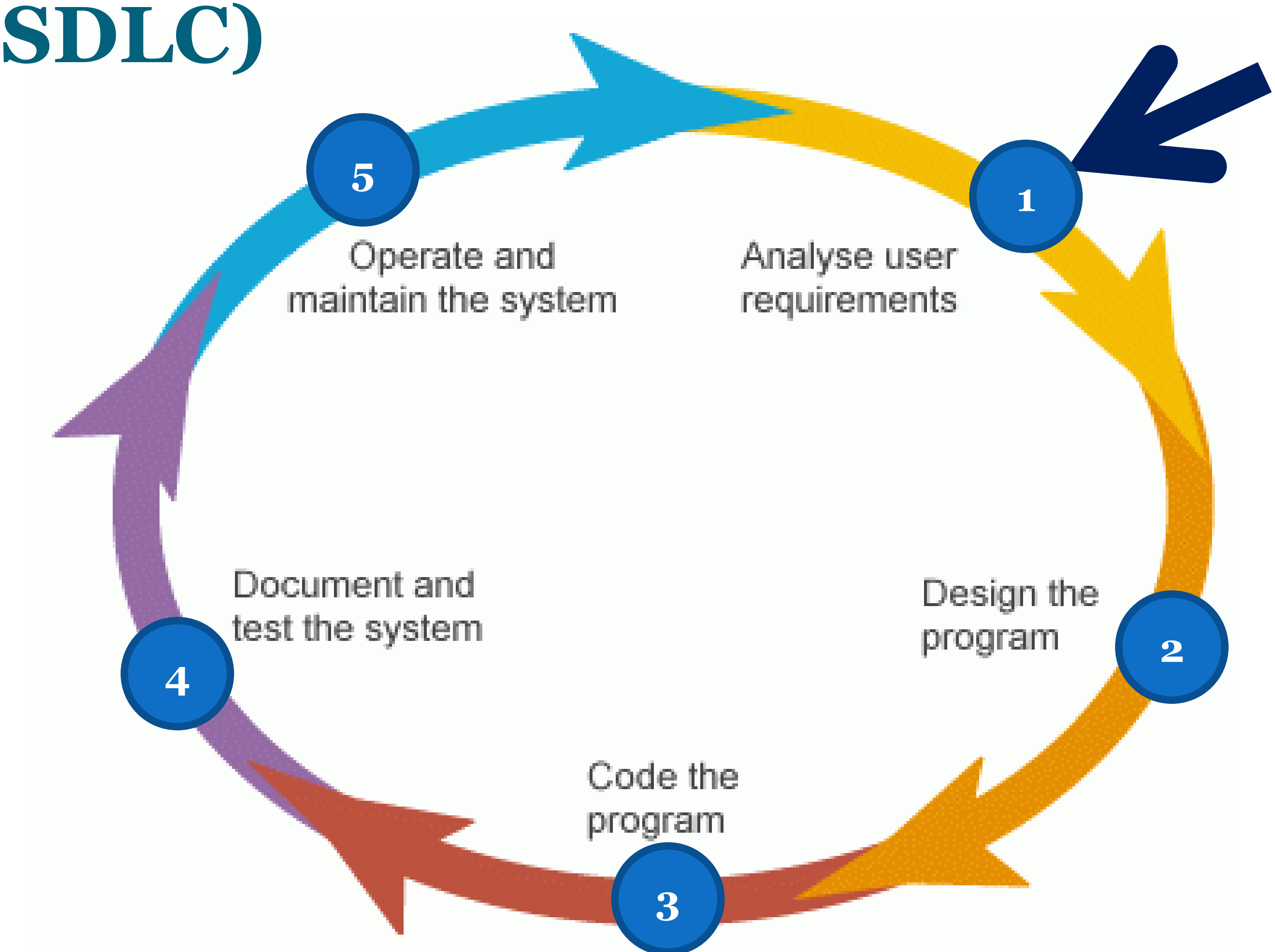
Contents

Topic
Review on agile development methods
Agile Effort Estimation Techniques
Feature Driven Development (FDD) methodology
Agile Model Driven Development (AMDD)
Dynamic Systems Development Method (DSDM)
Success Factors of Agile Software Development Projects
Enhancements in Scum using extreme programming
Evaluating the Implementation of Extreme Programming Practices

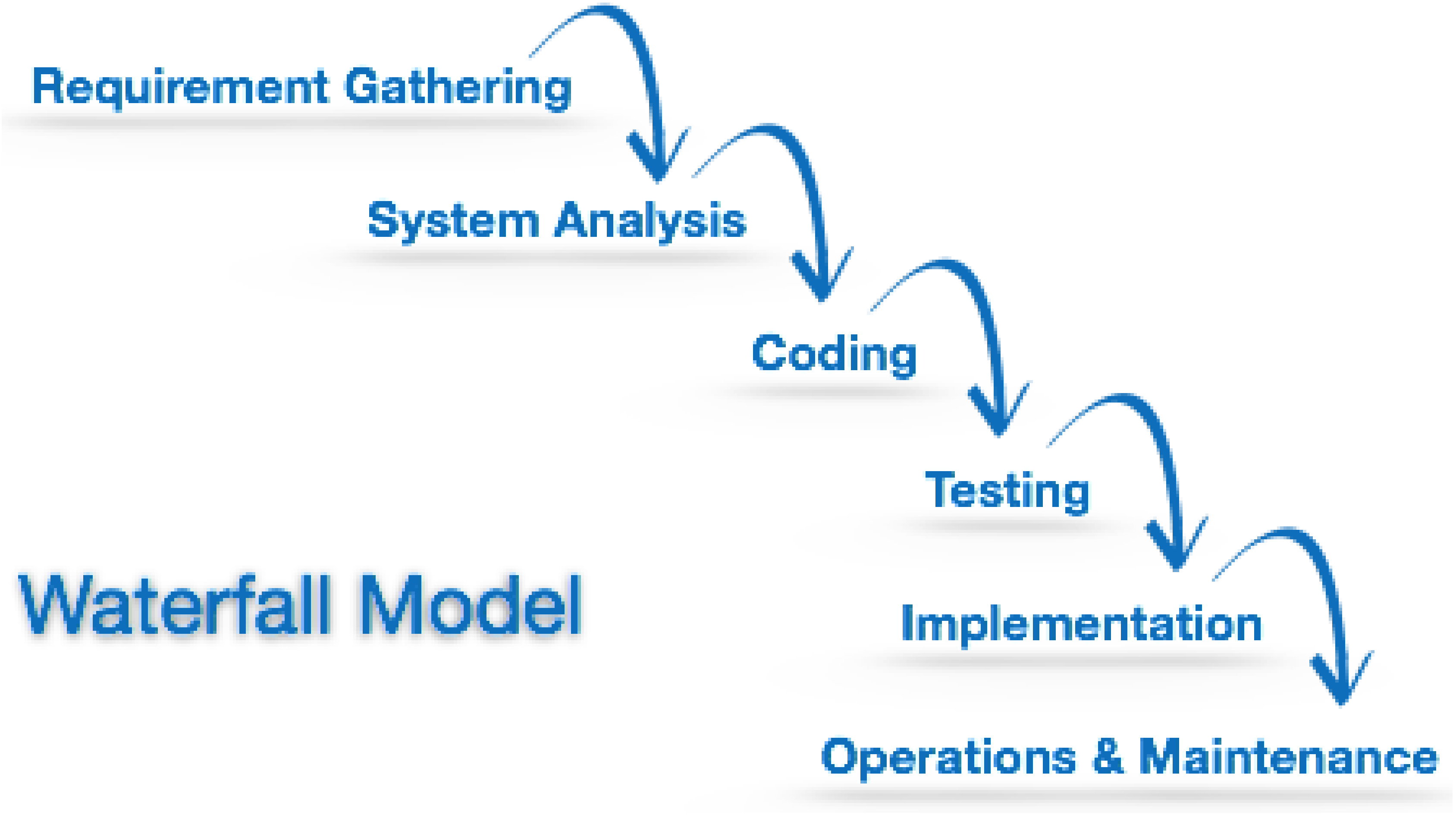
Assessment Methods

Assessment Item	Marks	Total
Final Exam	40	40
Mid-Term Exam	30	60
Quiz	10	
Assignments/Projects	15	
Attendance/Class Participation	5	
		100

Software Development Life Cycle (SDLC)


1
Analyse user requirements
2
Design the program
3
Code the program
4
Document and test the system
5
Operate and maintain the system

Waterfall development Model



Requirement Gathering

System Analysis

Coding

Testing

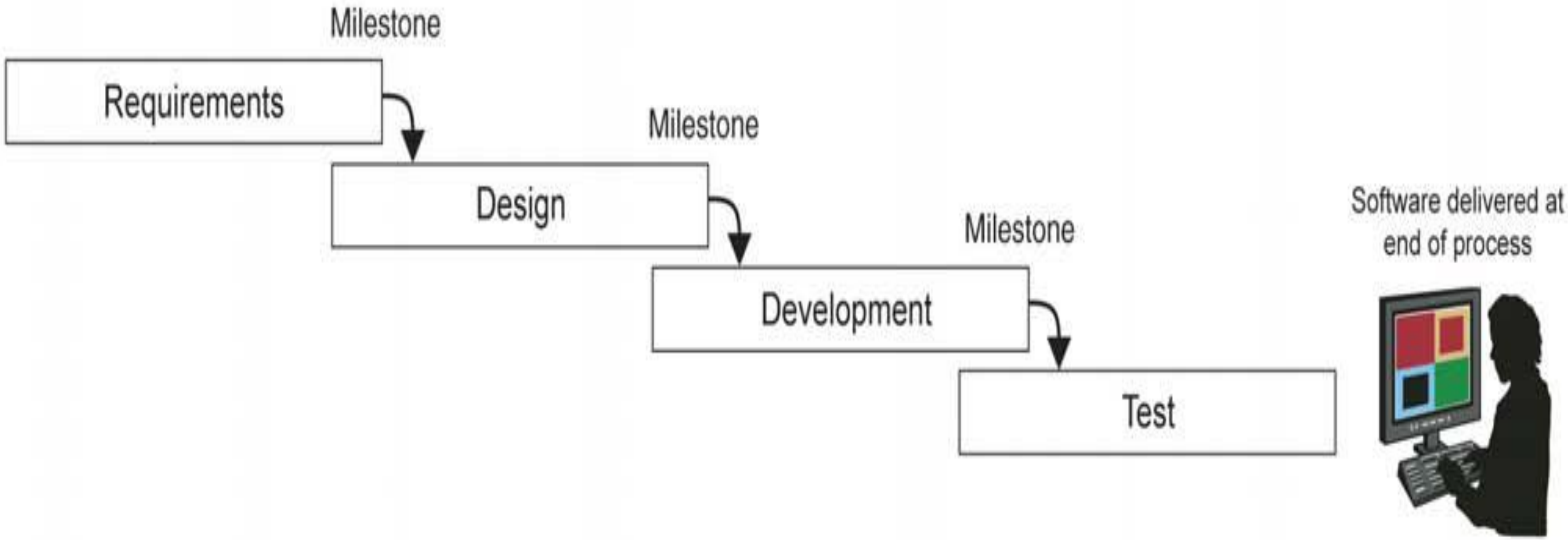
Implementation

Operations & Maintenance

Waterfall Model

Agile software development

Traditional Phases



Milestone

Requirements

Milestone

Design

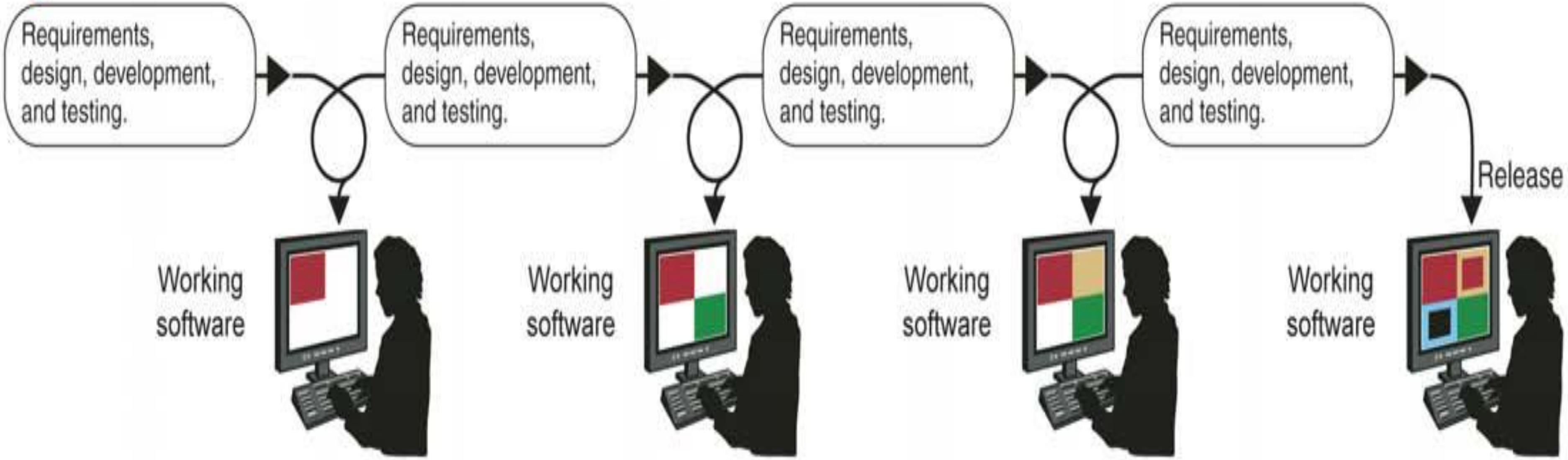
Milestone

Development

Test

Software delivered at end of process

Agile Iterations



Requirements, design, development, and testing.

Working software

Requirements, design, development, and testing.

Working software

Requirements, design, development, and testing.

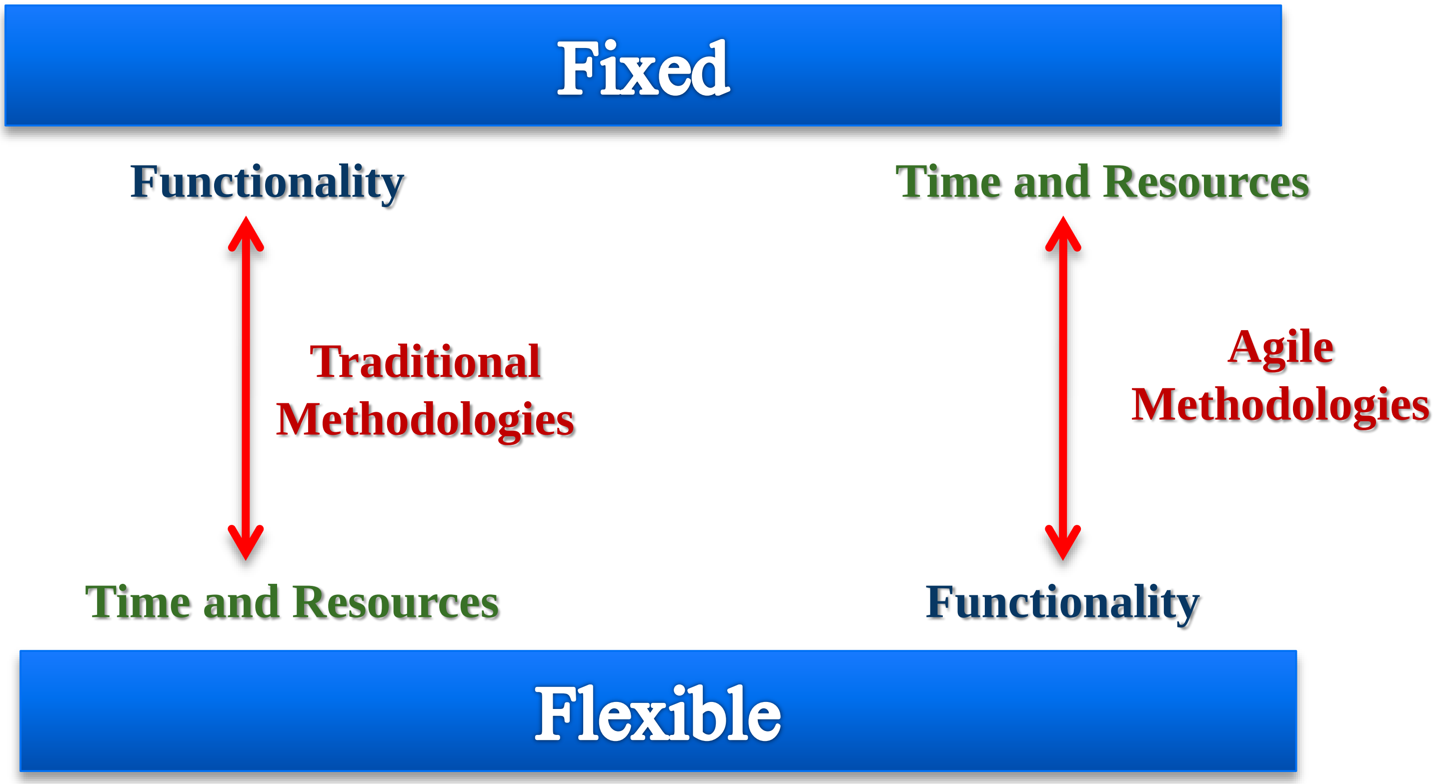
Working software

Requirements, design, development, and testing.

Release

Working software

Agile vs. Traditional Method



Fixed

Functionality

Time and Resources

Traditional Methodologies

Agile Methodologies

Time and Resources

Functionality

Flexible

Agile vs. traditional methodies; [John Hunt, 2006]

The Agile Manifesto

Individuals and interactions	over	Processes and Tools
Working Product	over	Comprehensive Documentation
Customer Collaboration	over	Contract Negotiation
Responding to change	over	Following a plan

That is, while there is value in the items on the right, we value the items on the left more.

www.agilemanifesto.org

Agile Definition

- Agile is a group of software development processes that are:
  - ***Iterative***
  - ***Incremental***
  - ***Self-organizing.***

Agile Principles

1. Our **highest priority is to satisfy the customer** through early and continuous delivery of valuable software.
2. **Welcome changing requirements**, even late in development.
3. ***Deliver working software frequently****, from a couple of weeks to a couple of months, with a preference to the shorter time scale.*
4. ***Business people and developers must work together*** *daily through the project.*

Agile Principles

5. *Build projects around* ***motivated individuals****. Give them the environment and support they need, and trust them to get the job done.*
6. *The most efficient and effective method of conveying information to and within a development team is* ***face-to-face conversation****.*
7. ***Working software is the primary measure*** *of progress.*

Agile Principles

8. *The **sponsors, developers, and users** should be able to maintain a constant pace indefinitely.*
9. ***Simplicity** – the art of maximizing the amount of work not done.*
10. *The best architectures, requirements, and designs emerge from **self-organizing teams**.*

Agile Characteristics

- ***Modularity*** **on development process level.**
- ***Iterative*** **with short cycles enabling fast verifications and corrections.**
- ***Time-bound*** **with iteration cycles from one to six weeks.**
- ***Adaptive*** **with possible emergent new risks.**
- ***People-oriented*****.**
- ***Collaborative*** **and *communicative* working style.**

Advantages of Agile

- The **incremental nature** of agile development **enabling to be realized early** as the product continues to develop.

- Small incremental releases are visible to the product owner and product team through its development which **help us to identify any issues early** and make it easier to respond to change.

Advantages of Agile

Agility refers to:

- Accept the changes
- Customer satisfaction
- Producing the right product

Agile Methodologies

- **Extreme Programming (XP)**
- **SCRUM.**
- **Dynamic Systems Development Method (DSDM)**
- **Feature Driven Development (FDD)**
- **Crystal Method.**
- **Adaptive Software Development(ASD).**
- **Unified Process(UP).**

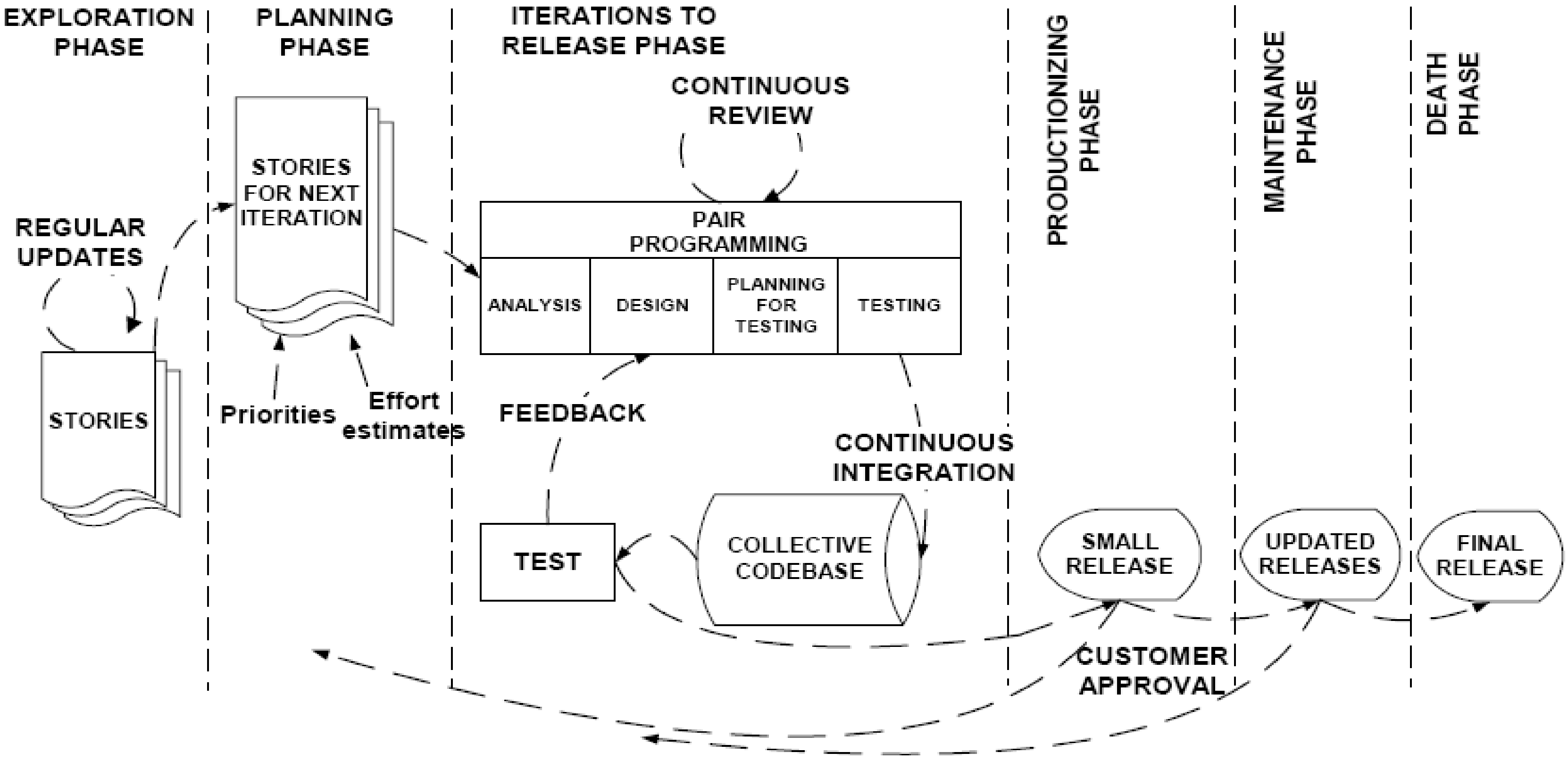
Extreme Programming (XP)

- ✓ Extreme programming methodology is best suited for use on a **new or incomplete projects** where the requirements are incomplete and expected to change frequently during the project.

- ✓ XP is more focusing on **actual development process**.

- ✓ XP was designed **for small project teams** between two to twelve team members.

XP Life Cycle



XP values

Respect

Communication

Courage

Feedback

Simplicity

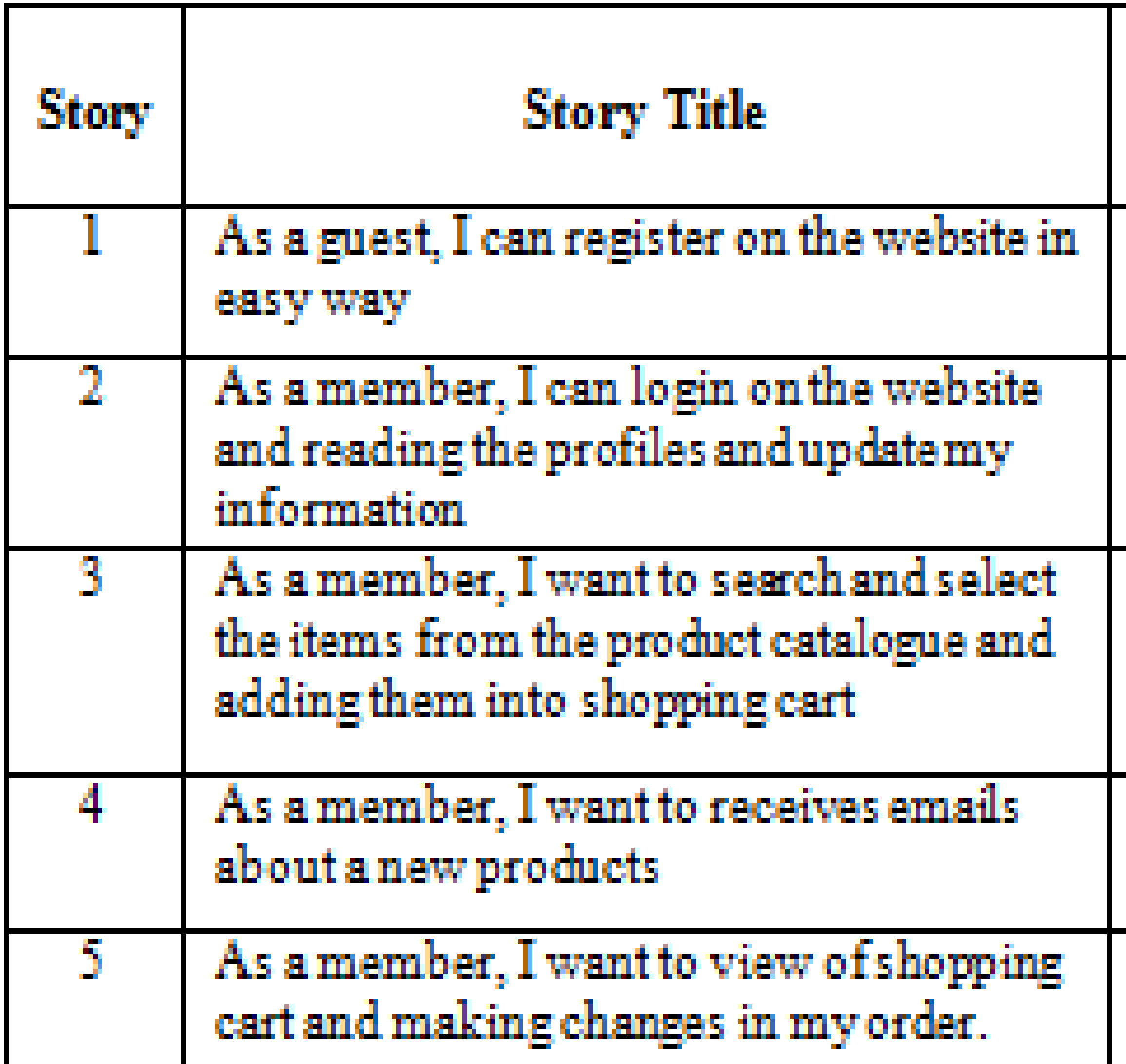
XP Documents

- **User story cards**

Login Page	priority	5
As a member, I can login on the website and reading the profiles and update my information . **Constraints:** Must use the validation checks		
	Effort Est.	13 pts

XP Documents

- **Task list**



Story	Story Title
1	As a guest, I can register on the website in easy way
2	As a member, I can login on the website and reading the profiles and update my information
3	As a member, I want to search and select the items from the product catalogue and adding them into shopping cart
4	As a member, I want to receives emails about a new products
5	As a member, I want to view of shopping cart and making changes in my order.

XP Documents

- **CRC cards**

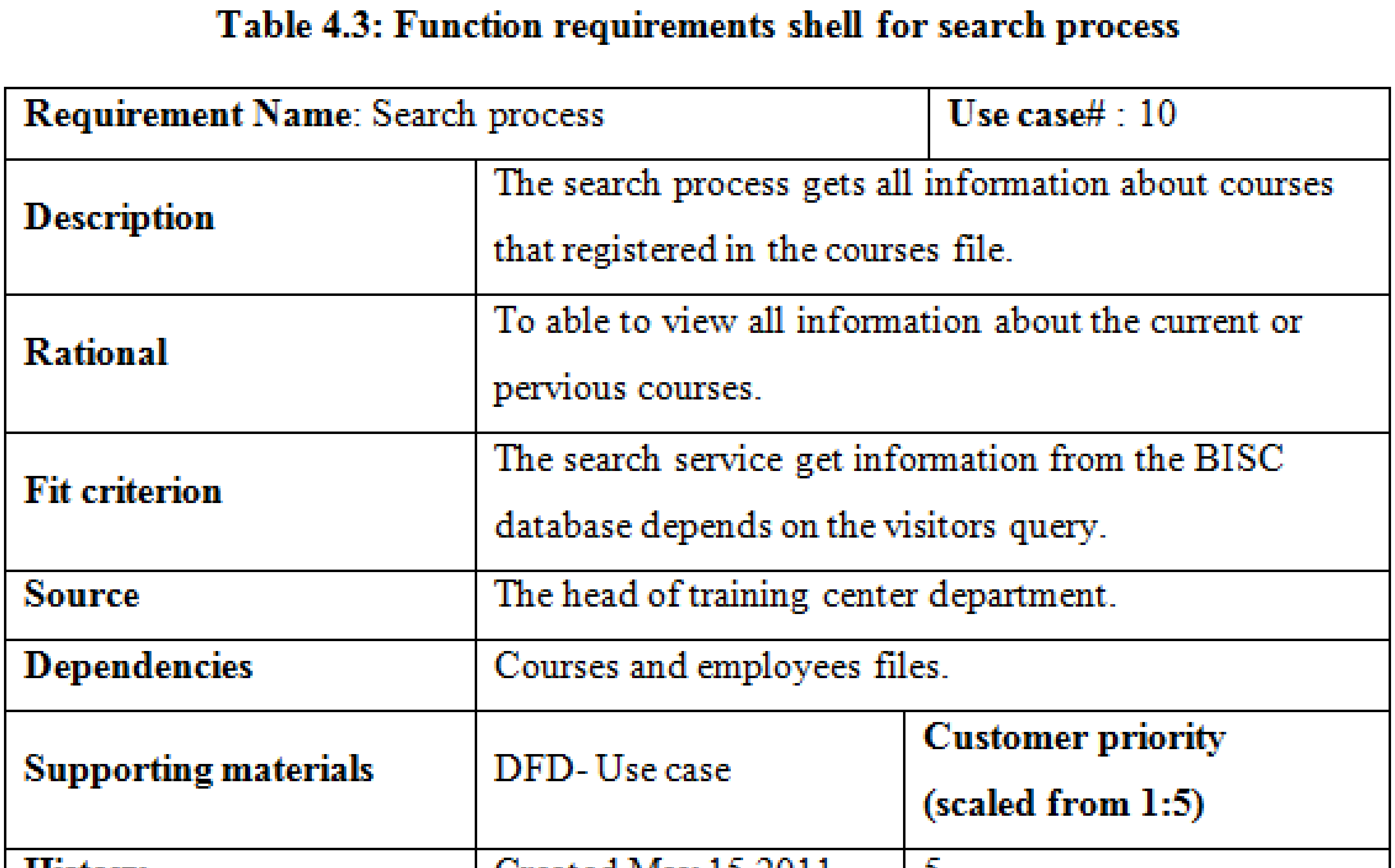


Table 4.3: Function requirements shell for search process

Requirement Name: Search process		**Use case#** : 10
Description	The search process gets all information about courses that registered in the courses file.	
Rational	To able to view all information about the current or pervious courses.	
Fit criterion	The search service get information from the BISC database depends on the visitors query.	
Source	The head of training center department.	
Dependencies	Courses and employees files.	
Supporting materials	DFD- Use case	**Customer priority (scaled from 1:5)**
History	Created May 15 2011	5

XP Documents

- **Customer acceptance tests**

Page title	**Register page**		
Field title	**Password**		
Data selected	**Type of test**	**Expected output**	**Actual output**
A	Abnormal	Rejected	✓
A23$aghgh78	Normal	Accepted	✓

XP Documents

XP Roles

- **Manager**, owns the team and its problems. He or she forms the team, obtain resources, manage people and problems, and interfaces with external groups.

XP Roles

- **Coach,** teaches team members about the XP process as necessary, intervenes in case of issues; monitors whether the XP process is being followed. The coach is typically a programmer and not a manager.

XP Roles

- **Tracker,** regularly collects user story and acceptance test case progress from the developers to create the visible wall graphs. The tracker is a programmer, not a manager or customer.

XP Roles

- **Programmer,** writes tests, design, and code; refactors; identifies and estimates tasks and stories (this person may also be a tester)

XP Roles

- **Tester,** helps customers write and develop tests (this person may also be a programmer)

XP Roles

- **Customer,** writes stories and acceptance tests; picks stories for a release and for an iteration.

Customer List ...
Make Selections for Report ...
Create Customer List from Selections
Customer Status:
Jobsite Location in which Cities:
Jobsite Location in which Zip Codes:
Jobsite Location in which Counties:
Orange
Washington
Where Jobsite Location Lot Size is:
Where Jobsite Location Bed Size is:
Where Service is:
Fall Cleanup
Holiday Lighting
Irrigation System Maintenance
Landscape Maintenance
Where Service Charge is:
Where Service is:
Taxable
Non-Taxable
Where Service Estimated Manhours is:
Select ALL SERVICES

XP Practices

- **Sit together**, the whole team develops in one open space.
- **Informative workspace**, place visible wall graphs around the workspace so that team members (or other interested observers) can get a general idea of how the project is going.
- **Pair programming** , refers to the practice whereby two programmers work together at one computer, collaborating on the same design, algorithm, code, or test.

XP Practices

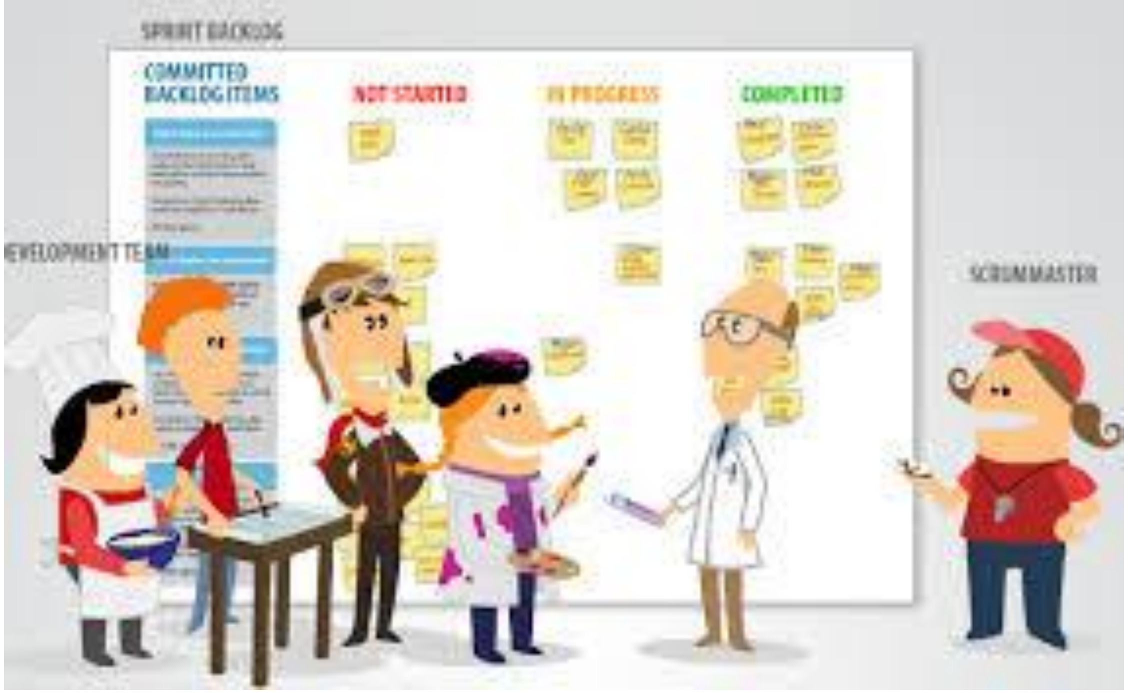
- **Stories**, the team write short statements of customer-visible functionality desired in the product. The developers estimate the story; the customer prioritizes the story.
- **Weekly cycle**, at the beginning of each week a meeting is held to review progress to date, have the customer pick a week’s worth of stories to implement that week (based upon developer estimates and their own priority), and to break the stories into tasks to be completed that week.

XP Practices

- **Slack**, in every iteration, plan some lower-priority tasks that can be dropped if the team gets behind such that the customer will still be delivered their most important functionality.
- **Test-first programming,** all stories have at least one acceptance test, preferably automated.
- **Continuous integration**, programmers check in to the code base completed code and its associated tests several times a day.

XP Practices

- **Daily Meetings**, in these meetings, the team stands in a circle (standing is intentional to motivate the team to keep the meeting short).

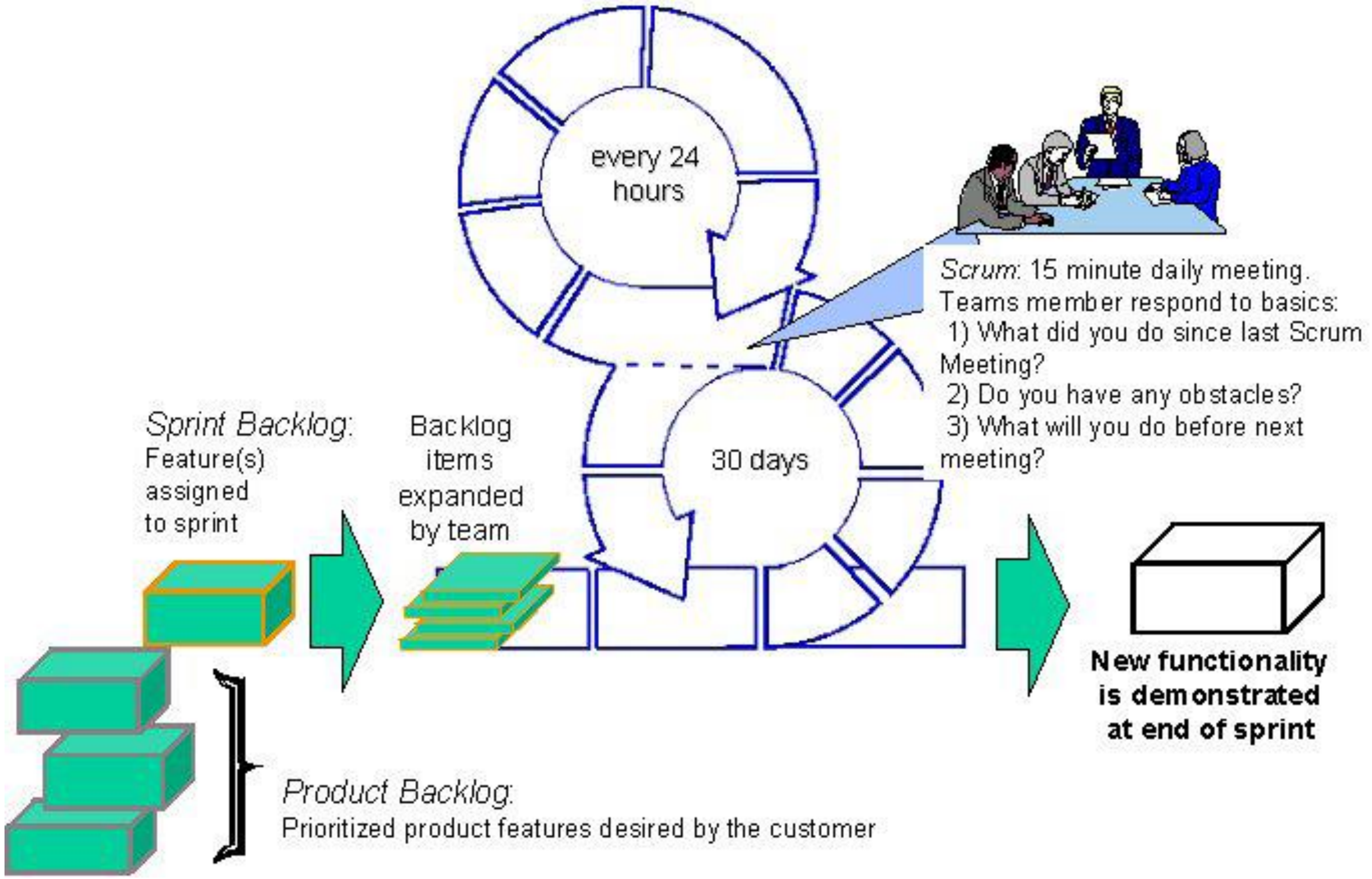


SCRUM

- ✓The main idea of scrum is that systems development involves **several environmental and technical variables** (e.g. requirements, time fame, resources, and technology) that are likely to change during the process.

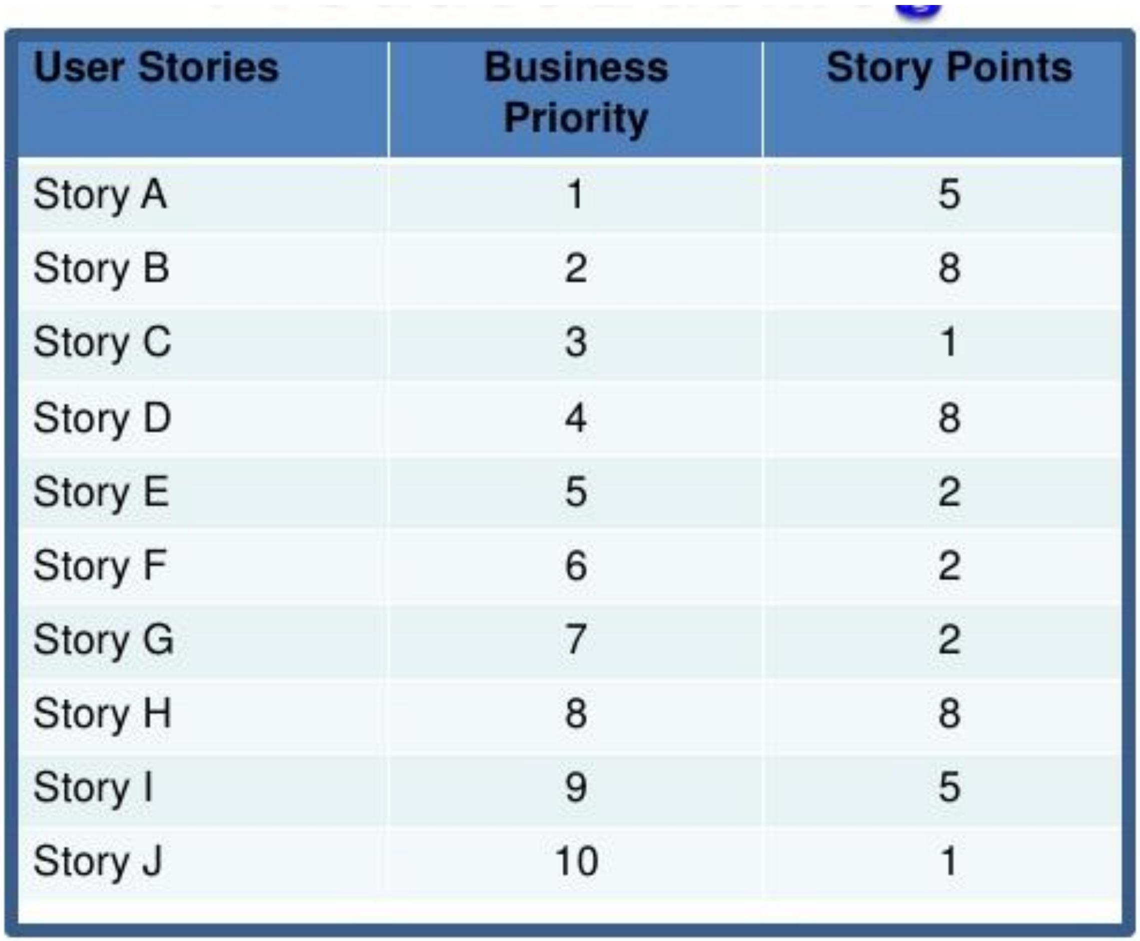
- ✓ The scrum is a method suitable for small teams of less than 10 persons.
- ✓The scrum is a method suitable for Distributed teams.

Scrum Process


every 24 hours
Scrum: 15 minute daily meeting.
Teams member respond to basics:
1) What did you do since last Scrum Meeting?
2) Do you have any obstacles?
3) What will you do before next meeting?
Sprint Backlog:
Feature(s) assigned to sprint
Backlog items expanded by team
30 days
New functionality is demonstrated at end of sprint
Product Backlog:
Prioritized product features desired by the customer

Scrum Documents

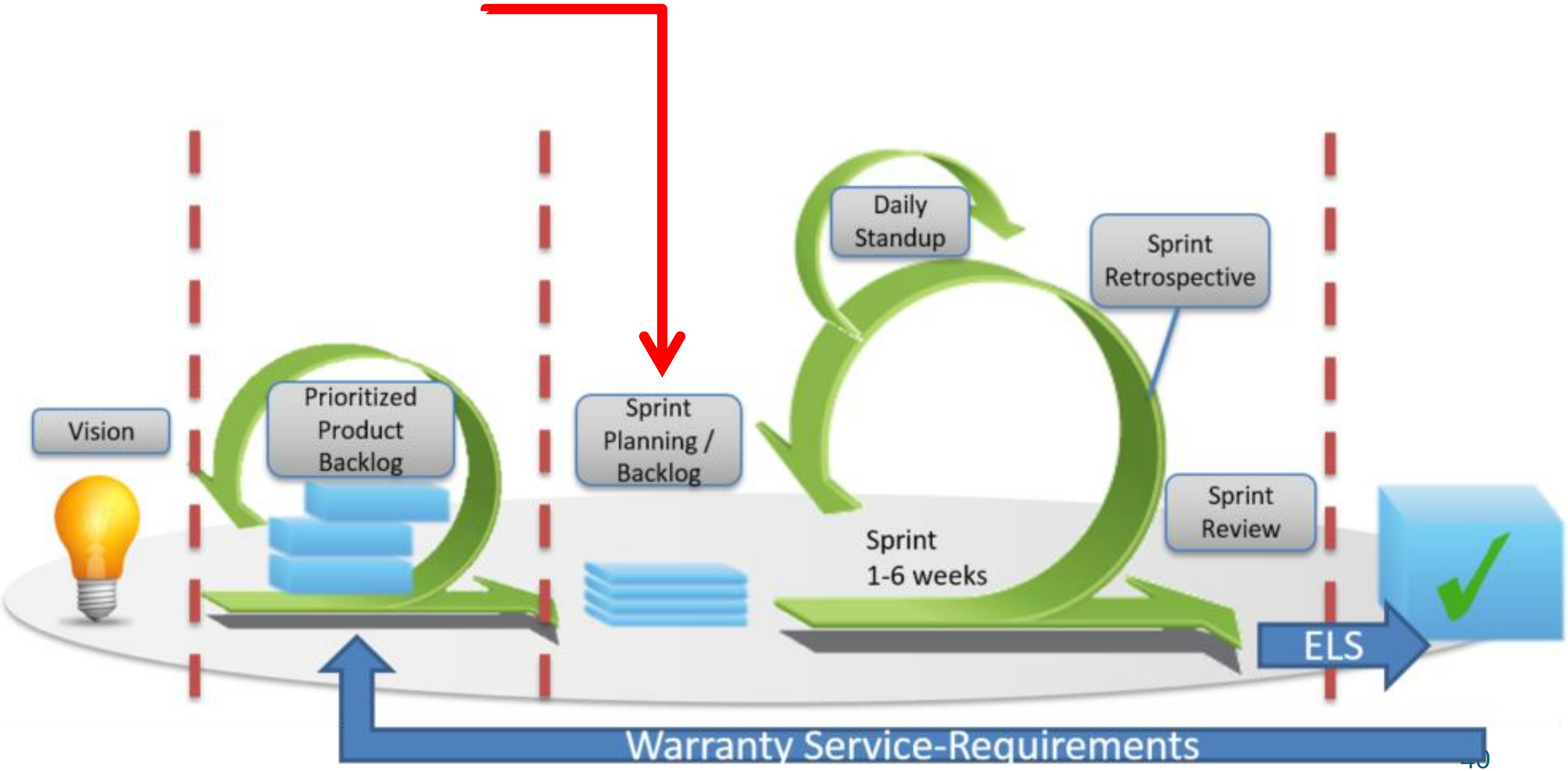
Product Backlog



User Stories	Business Priority	Story Points
Story A	1	5
Story B	2	8
Story C	3	1
Story D	4	8
Story E	5	2
Story F	6	2
Story G	7	2
Story H	8	8
Story I	9	5
Story J	10	1

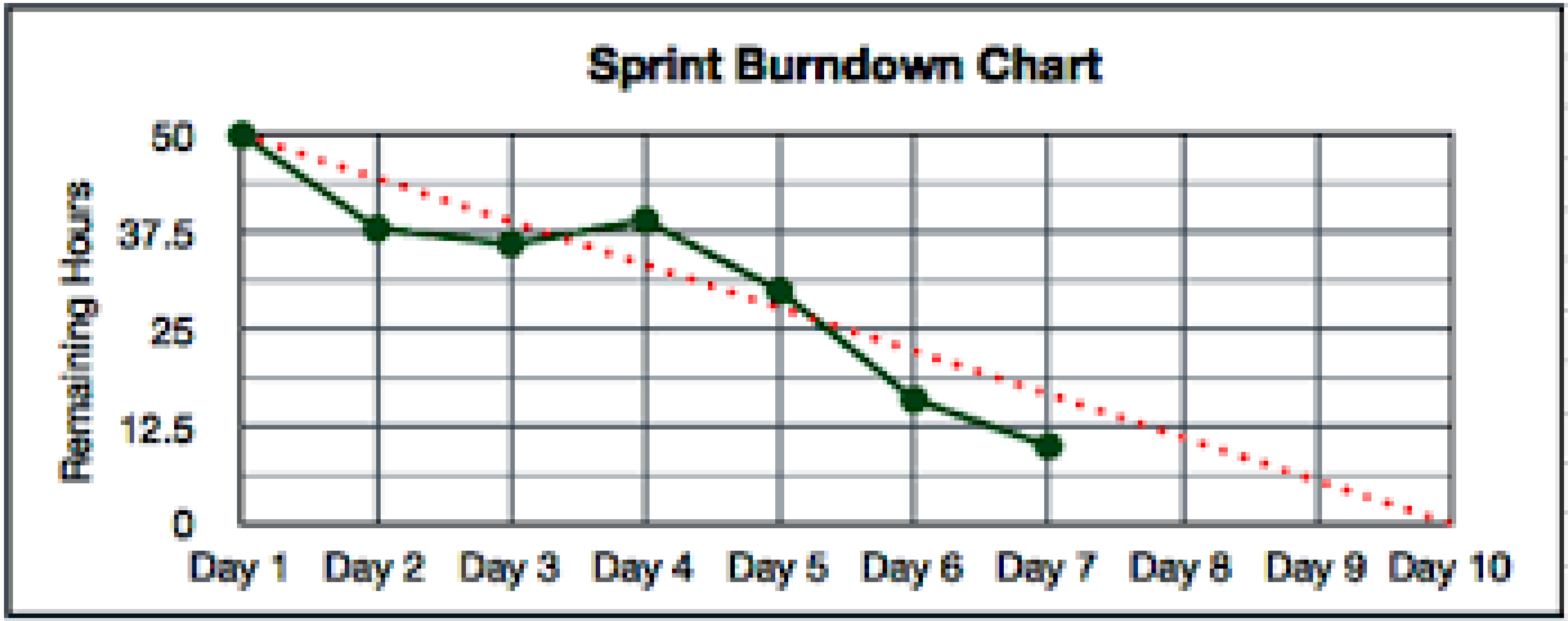
Scrum Documents

Sprint Backlog


Vision
Prioritized Product Backlog
Sprint Planning / Backlog
Daily Standup
Sprint Retrospective
Sprint 1-6 weeks
Sprint Review
ELS
Warranty Service-Requirements

Scrum Documents

Sprint Burndown chart



Scrum Roles

- **Product Owner,** the person who is responsible for creating and prioritizing the Product Backlog, choosing what will be included in the next iteration/Sprint, and reviewing the system (with other stakeholders) at the end of the Sprint.

Scrum Roles

- **Scrum Master,** knows and reinforces the product iteration and goals and the Scrum values and practices, conducts the daily meeting (the Scrum Meeting) and the iteration demonstration (the Sprint Review), listens to progress, removes impediments (blocks), and provides resources.

Scrum Roles

- **Developer**, member of the Scrum team. The Scrum Team is committed to achieving a Sprint Goal and has full authority to do whatever it takes to achieve the goal. The size of a Scrum team is seven, plus or minus two.

Thanks