

# Issues in Internet Design and Development



Course of Instructions on Issues in Internet Design and Development

Week-2 Agile Methods

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# Agile Methods

## Agenda

- Software Project
- Software Development Life-Cycle
- Traditional Approach to Software Development
- Iterative Development
- Agile Methods
- Quiz
- Scrum
- Practical Task

# Introduction

Common Myth:

“Daddy, how is software made?” “Well, when a programmer loves an idea very much they stay up all night and then push to github the next day.”

– Sam Kottler

# Introduction

Reality:

“The bitterness of poor quality remains long after the sweetness of meeting the schedule has been forgotten.”

# What is a software project?

- Fulfil requirements
- Performed by people
- Constrained resources
- Planned
- Executed
- Controlled
- Timely delivery of the software product

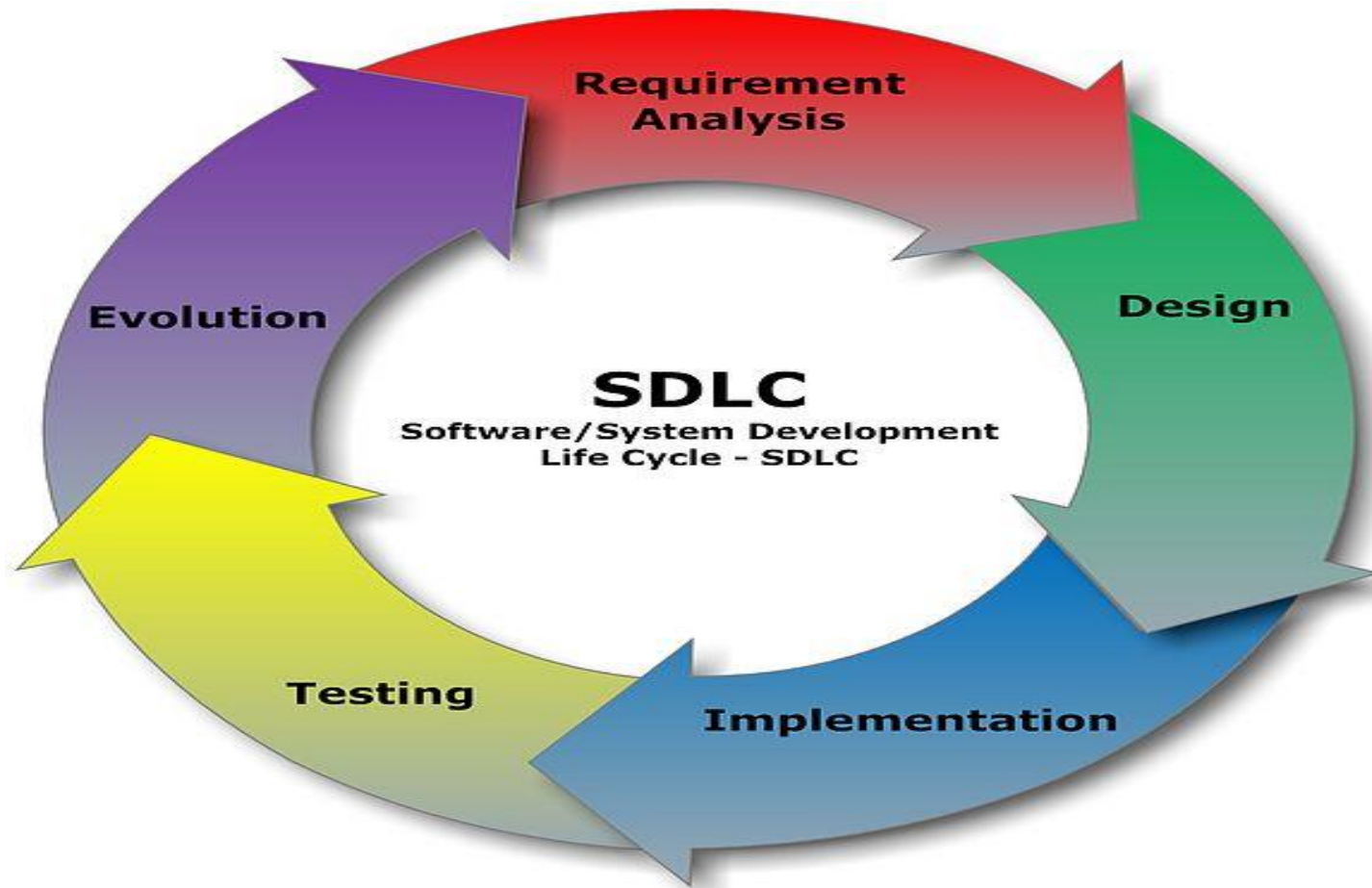
# How to deliver a Software Project Successfully

- Projects organize activities not addressed within the organization's normal operations
- Market demand
- Organizational need
- Customer request
- Technological advance
- Legal requirements

# How to deliver a Software Project Successfully

- Application of
  - Skills
  - Knowledge
  - Tools
  - Techniques to meet project requirements
- 
- Triple constraint - scope, time and cost
  - Deliver the required product, service or result within scope, time and within budget

# Software Development Life Cycle



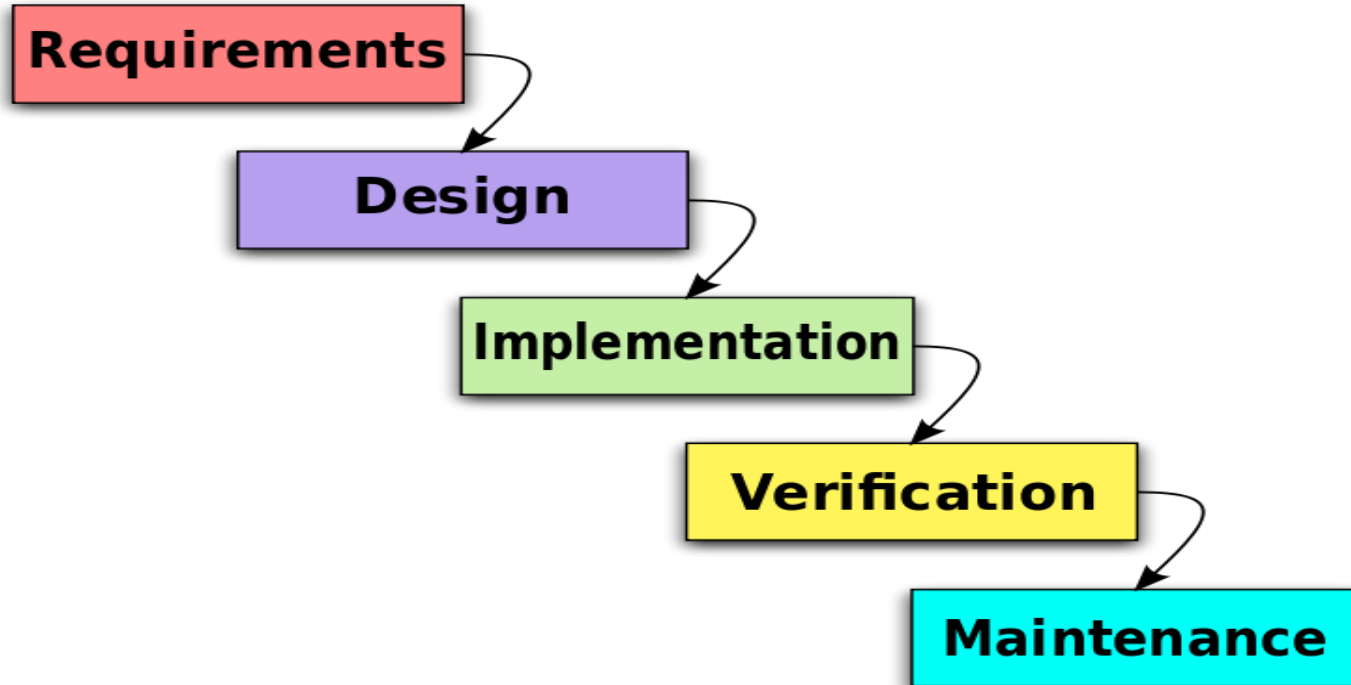


# Software Development Methods

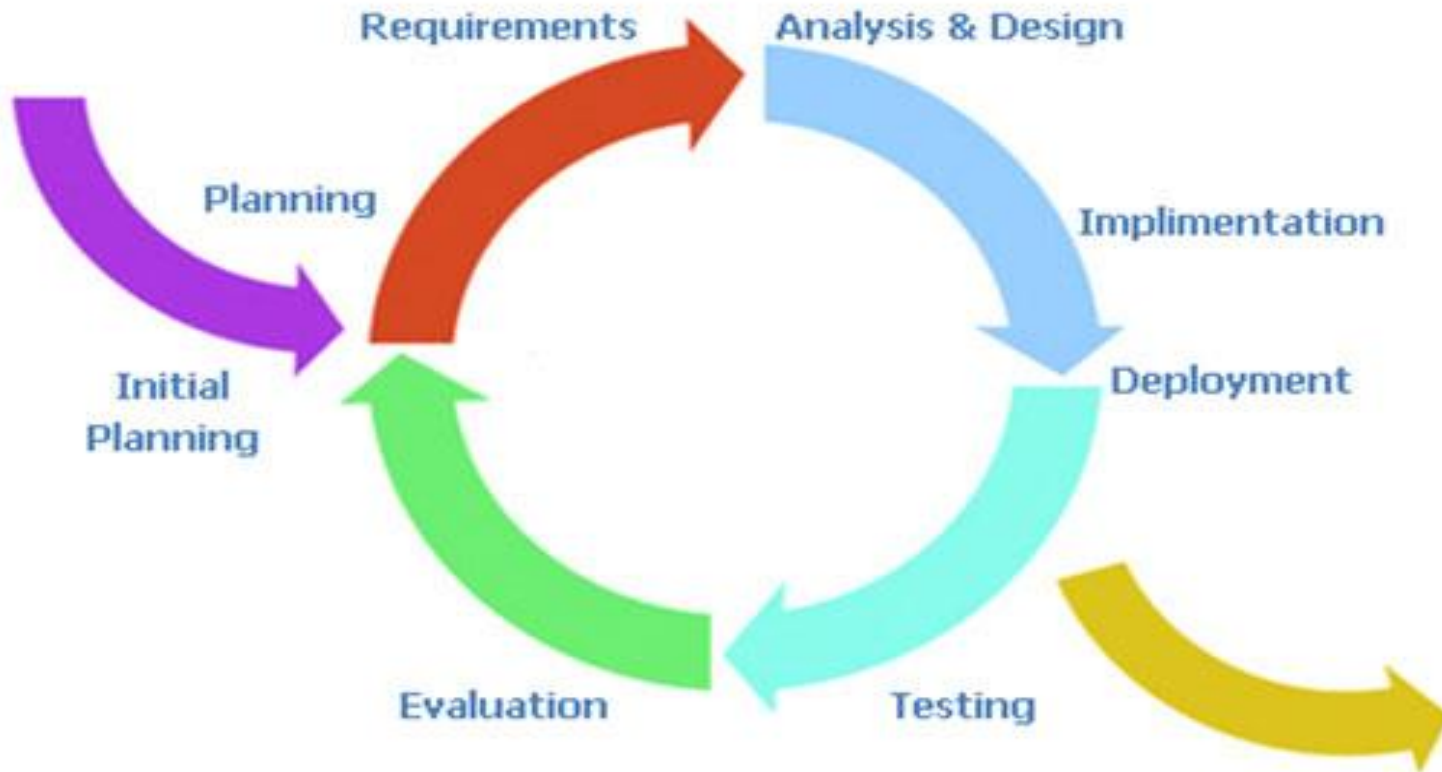
Various models exist to manage software projects:

1. Waterfall
2. Iterative (agile)
3. Formal methods

# Water-fall



# Iterative Development



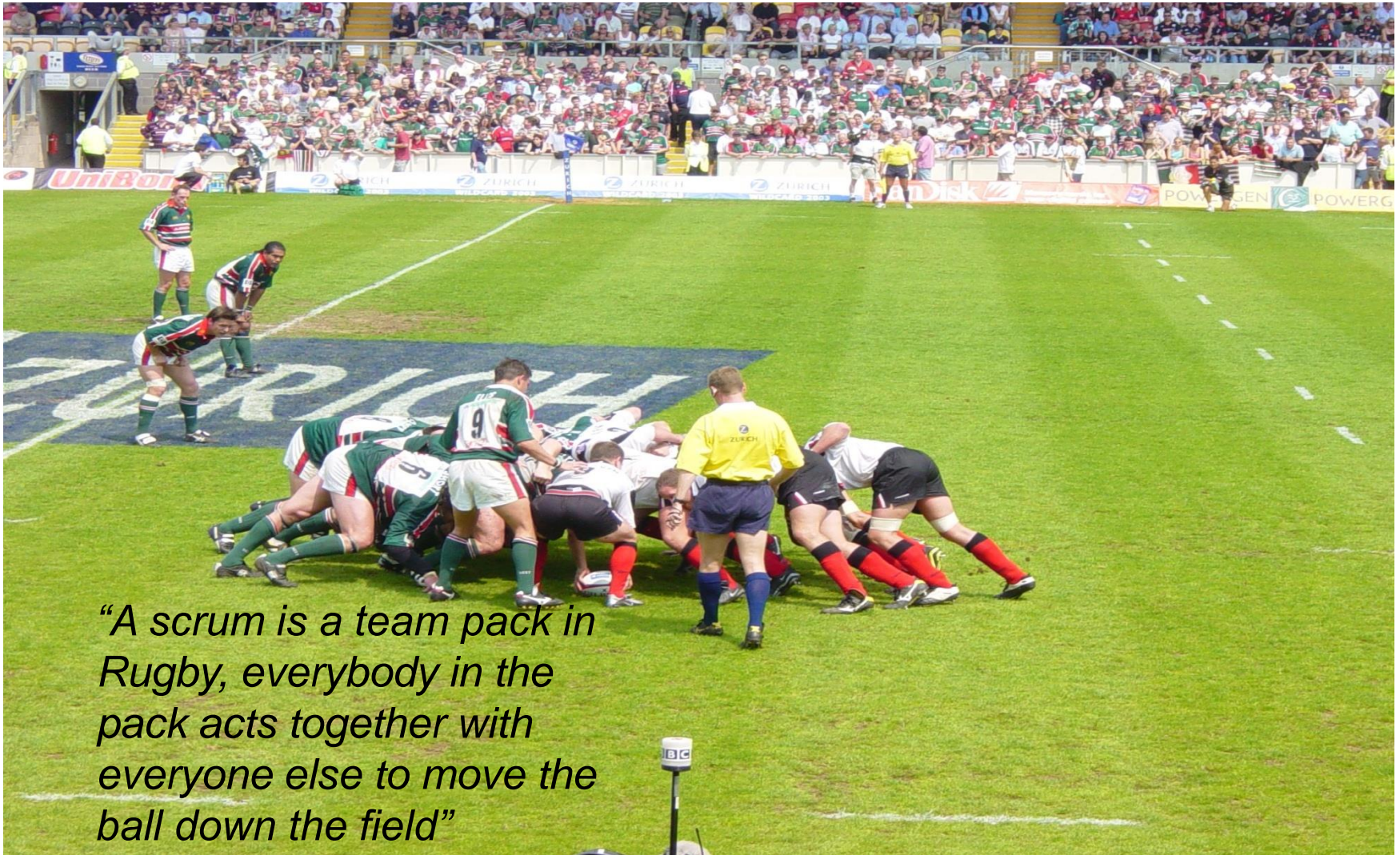
# Agile Methods

- Scrum
- XP
- Crystal
- Feature Driven Development (FDD)
- Lean
- Dynamic systems development method (DSDM)

# Quiz

- Chose a software development method for the library management system.
- Give five reasons and elaborate that why your chosen method is good enough for the development of library management system.

# SCRUM



*“A scrum is a team pack in Rugby, everybody in the pack acts together with everyone else to move the ball down the field”*

# SCRUM

- ***Lightweight Processes Are “Hot”***
- Small teams
- Incremental development
- Time-boxed scheduling
- Adaptive and agile.

# SCRUM

- Negates the philosophy:
  - *systems development process is a well understood approach that can be planned, estimated, and successfully completed.*

## ***The Philosophy of SCRUM***



# What is SCRUM ?

- Scrum is an agile, lightweight process to manage and control development work.
- Scrum is a wrapper for existing engineering practices.
- Scrum is a team-based approach to iteratively, incrementally develop systems and products when requirements are rapidly changing
- Scrum is a process that controls the chaos of conflicting interests and needs.

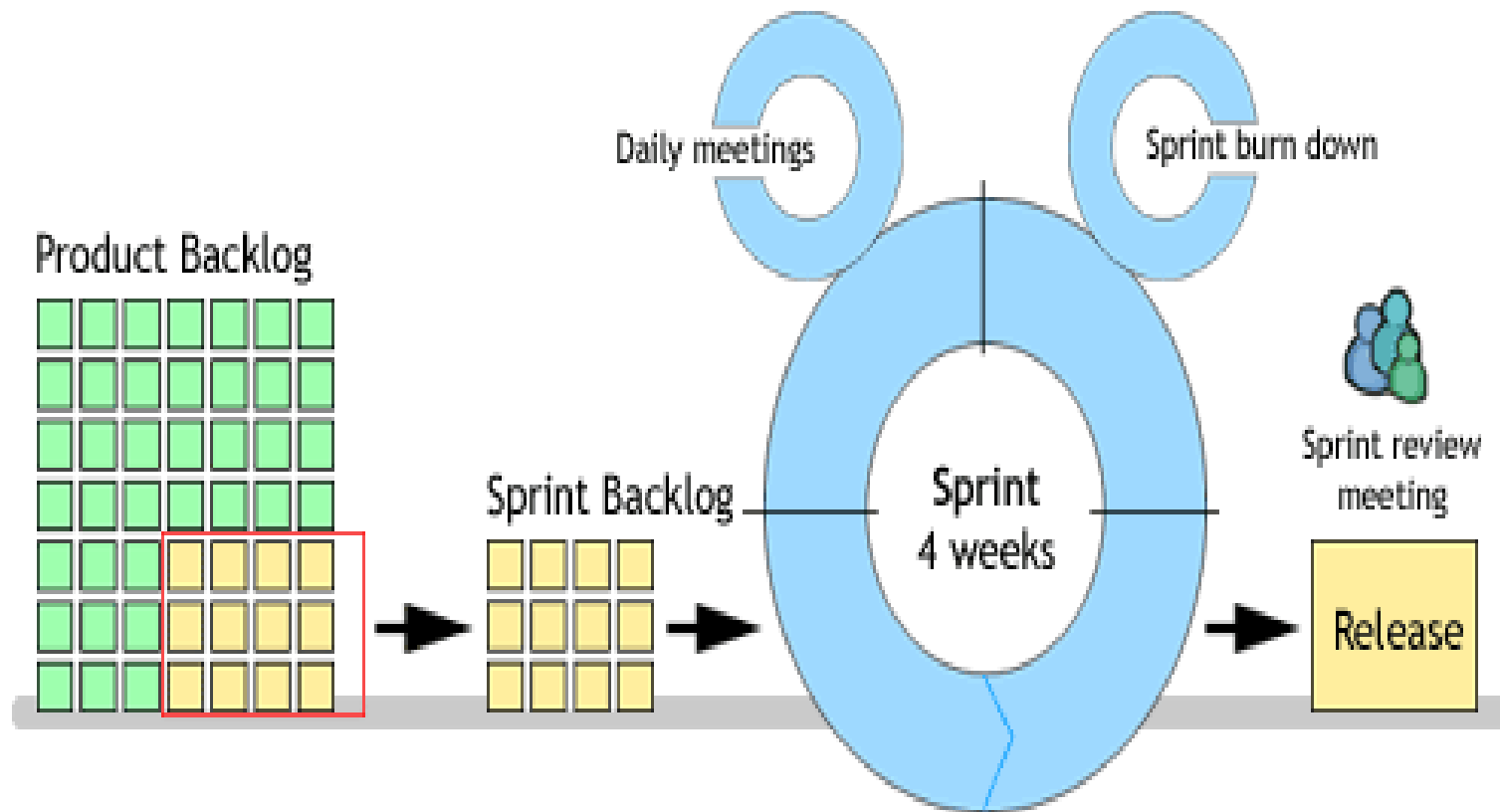
# What is SCRUM ?

- Scrum is a way to improve communications and maximize co-operation.
- Scrum is a way to detect and cause the removal of anything that gets in the way of developing and delivering products.
- Scrum is a way to maximize productivity.
- Scrum is scalable from single projects to entire organizations.

# SCRUM Advantages

- **Flexible Deliverables** – contents of deliverables are dictated by the environment.
- **Flexible Schedule** – deliverables may be required sooner or later than initially planned.
- **Small Teams** – max 6 members.
- **Frequent Reviews** – team progress is reviewed as frequently as environment complexity and risk dictates.
- **Collaboration** – intra & inter – collaboration is expected during project.
- **Object Oriented** – each team will address a set of related objects with clear interfaces and behavior.

# SCRUM Process



# SCRUM Key Concepts

- **Product Backlogs:**
  - In scrum requirements are written from the perspective of end-user.
  - Such requirements are known as User Stories.
  - Collection of user-stories is called product backlog.
- **Release Backlogs:**
  - Collection of selected user stories for a release.
- **Sprints Backlogs:**
  - Collection of release items.
  - Not more than 30-days.

# SCRUM Key Concepts

- Burn-charts Backlogs:
  - To monitor progress of the sprints.
  - Show day-by day progress of work done in the sprints and overall release.
  - Burn-out velocity (Measures the average rate of productivity day by day).
  - Daily Scrum.
  - Sprint retrospective.
  - Team can reflect on the areas of improvement.

# SCRUM Phases

- Pregame:
  - Planning
  - Architecture
- Game:
  - Sprints
- Postgame:
  - Closure

## SCRUM Phase Steps

- Planning:
  - development of comprehensive backlog list.
  - definition of delivery date and functionality of one or more releases.
  - selection of the most appropriate release for immediate development.
  - mapping of product packets for backlog items in the selected release.
  - definition of project team(s) for the building of new release.
  - assessment of risk and appropriate risk controls.
  - review and possible adjustment of backlog items and packets.
  - estimation of release cost and schedule.



# SCRUM Phase Steps

- Architecture:
  - review assigned backlog items.
  - identify changes necessary to implement backlog items.
  - domain analysis.
  - identify any problems or issues in developing or implementing the changes.

# SCRUM Phase Steps

- Sprint:
  - set of development activities conducted over a predefined period(1 – 4 weeks).
  - speed and intensity of sprint is driven by selected duration of sprint.
  - each sprint consists of following:
    - Develop
    - Wrap
    - Review
    - Adjust

# SCRUM Phase Steps

- Develop:
  - defining changes needed for the implementation of backlog requirements into packets.
  - opening the packets.
  - performing domain analysis.
  - designing, developing, implementing, testing and documenting the changes.

## SCRUM Phase Steps

- Review:
  - all teammates meet to present work and review progress.
  - risk is reviewed and appropriate mitigations defined.
  - new backlog items may be introduced and assigned to teams
  - time of next review is determined.

# SCRUM Phase Steps

- Wrap:
  - closing the packets.
  - creating an executable version of changes and how they implement backlog requirements.

## Sprint Rules

- Total focus—no *unwanted* diversion
- NO interruptions/changes from the outside
- New work may be uncovered by the team

## What Happens During a Sprint?

- Frequent, short Scrum Meetings
- Each team produces a visible, usable increment
- Each increment builds on prior increments
- Clearly defined deliverables and responsibilities
- Each team member buys into the assignment

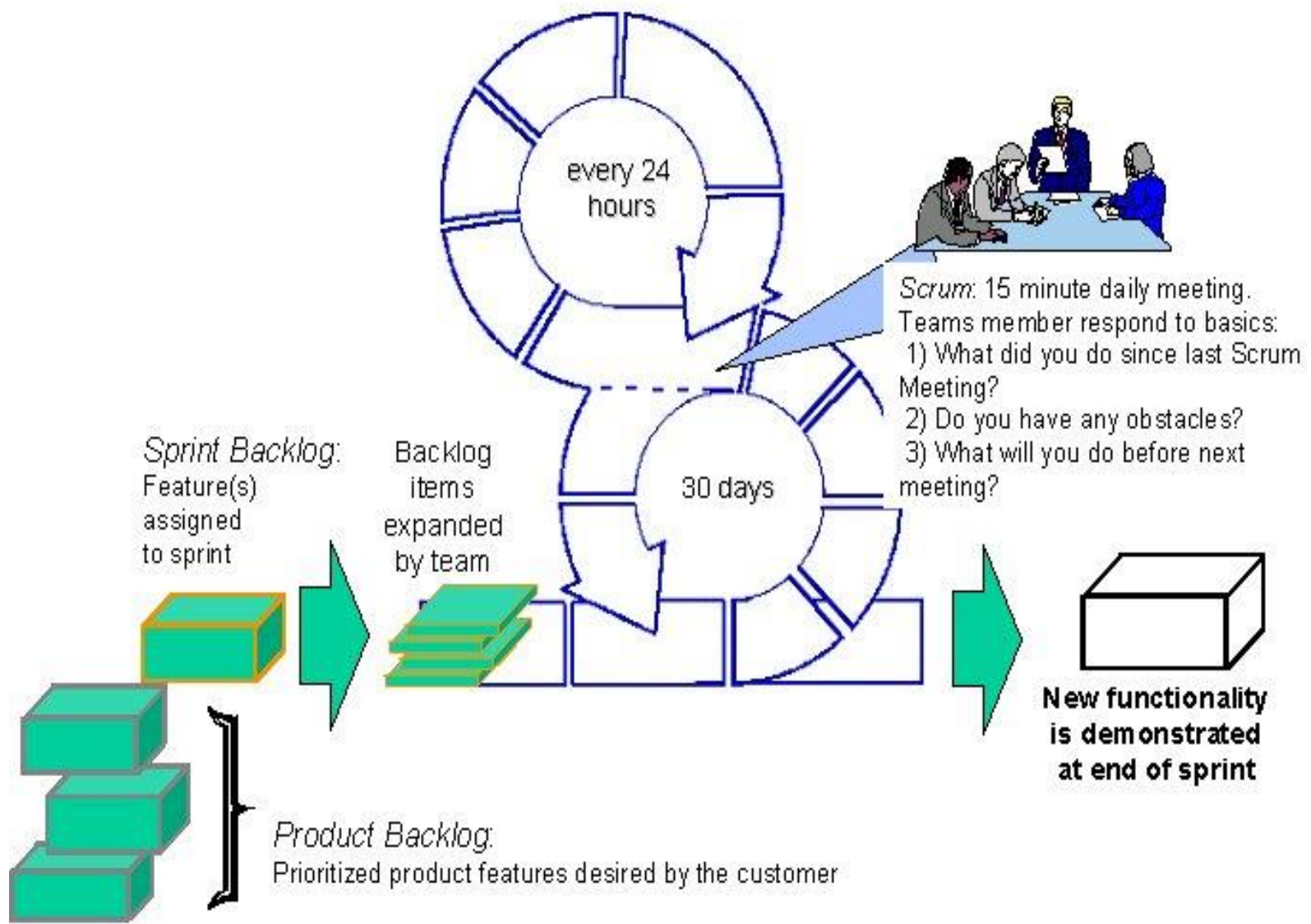
## What's a Scrum Meeting?

- Short (15 - 30 min) frequent meetings, facilitated by the Scrum Master
- One activity – Scrum Master asks each attendee 3 questions



## What Are The 3 Questions?

1. What have you completed (relative to the Backlog) since the last Scrum meeting?
2. What got in your way of completing this work?
3. What will you do between now and the next Scrum meeting?



## At the End of a Sprint?

- Status meeting with all stakeholders.
- Increments are delivered.
- Surprises are reported.
- ANYTHING can be changed, work can be added, eliminated, re-prioritized.
- New estimates and team assignments are made for the next Sprint.
- The project can be cancelled.

***“Experience from earlier increments allows better estimates and planning as project progresses. It's always easier to estimate shorter development periods”***

## SCRUM Phase Steps

- Closure:
  - release is declared closed when management team feels that the variables of Time, Competition, Requirements, Cost and quality suggests a new release to occur.
  - Integration, system test, user documentation, training material preparation, marketing material preparation, etc.

## Benefits?

- Requirements churn is managed—not avoided!
- Market input is incorporated—not eliminated!
- Customers see on-time delivery of increments, which refines requirements and improves input.
- Relationships with customers and marketing develops, trust builds, knowledge grows.

# SCRUM Roles and Artefacts

## -Roles

- Product Owner
- Scrum Master
- Project Team

## -Artefacts

- Product Backlog
- Release Backlog
- Sprint Backlog
- Burn-down Charts

# SCRUM Roles

## -Product Owner

- Possibly a Product Manager or Project Sponsor
- Decides features, release date, prioritization

## - Scrum Master

- Typically a Project Manager or Team Leader
- Responsible for enacting Scrum values and practices
- Remove impediments / politics, keeps everyone productive

## - Project Team

- 5-10 members; Teams are self-organizing
- Cross-functional: QA, Programmers, UI Designers, etc.
- Membership should change only between sprints

## Practical Task

- Form a group of 6 fellows.
- Chose a Scrum Master of your group.
- Chose 1-designer, 2-developers and 2 testers.
- Prepare user stories for the library management system and arrange them in product backlog.
- Select user stories from the product backlog into the three releases.
- Select a release from the release backlog.
- Prepare the sprint backlogs from the selected release.
- Prepare an imaginary burn-chart of the sprint backlog.
- Conduct a daily scrum meeting.



## Recommended Readings

- Agile Manifesto

(<http://www.agilealliance.org/the-alliance/the-agile-manifesto>)

- Schwaber, K., Beedle, M., Agile Software Development with Agile Software Development with Scrum. Prentice-Hall, 2001.