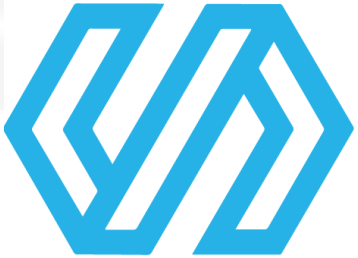
Software Development Lifecycle



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Agenda

1. Why we need SDLC?
2. Planning
3. Requirement Analysis
4. Design
5. Implementation (Coding)
6. Testing
7. Deployment and Maintenance

Agenda

8. SDLC models
9. Waterfall
10. V-Model
11. Agile Software Development
12. Scrum

How everything starts?

1. Customer has an idea and money
2. The customer contact software companies and receives different offers
3. The customer chooses one of the software companies
4. The customer meets software company representative (Product owner) and signs a contract

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Why we need SDLC?

- Convert an idea to working software
- Release the software to the clients and maintain it
- Effective SDLC = Effective company

Planning

- ✓ The customer and the product owner or project manager have a couple of meetings
- ✓ In these meetings can participate domain experts, sales people, senior members
- ✓ They define the application

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Planning

- ✓ Raw splitting of the application on different components
- ✓ Discussing the business idea and the need of the customer
- ✓ Risks associated with the project are discussed

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Requirement Analysis

- ✓ Whole team meets Product Owner and Customer
- ✓ More detailed discussion on each product component. Spliting components on smaller chunks with detailed explanation
- ✓ Defining actual requirements
- ✓ Project manager/ Product owner defines the requirements in the Project management system
- ✓ The written requirements are approved by the customer

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Design

- ✓ Software Requirement Specification document is a reference for the product design
- ✓ Product Architects work on a product architecture
- ✓ Usually more than one design for product architecture is created
- ✓ Risk assessment based on budget, time constraints, modularity, frameworks, programming languages, DB, servers, browser support, mobile etc.
- ✓ All is documented in Design Document Specification (DDS)

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Implementation/ coding

- ✓ Actual development starts
- ✓ Code is generated based on the DDS document
- ✓ Coding standards should be followed
- ✓ Work in pair
- ✓ Implementation of UI design
- ✓ QA engineers start building actual test cases
- ✓ QA engineers contribute to usability
- ✓ Finding cheap bugs
- ✓ Code reviews and Unit tests

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Testing

- ✓ Coding of the app has finished
- ✓ App is deployed on a testing environment
- ✓ Build version is verified
- ✓ Finding bugs and track them in PMS, BTS
- ✓ Retesting fixed bugs and new functionality
- ✓ Regression testing
- ✓ Acceptance testing by the customer

Deployment and Maintenance

- ✓ Released to the market/customers
- ✓ Deployment could be on phases – Alpha, Beta, Production
- ✓ Based on the feedback during the different phases corrective actions are taken
- ✓ Releases can have a downtime
- ✓ Releases can be major, minor
- ✓ In case of production bugs Patches/Hotfixes or Rollbacks are applied

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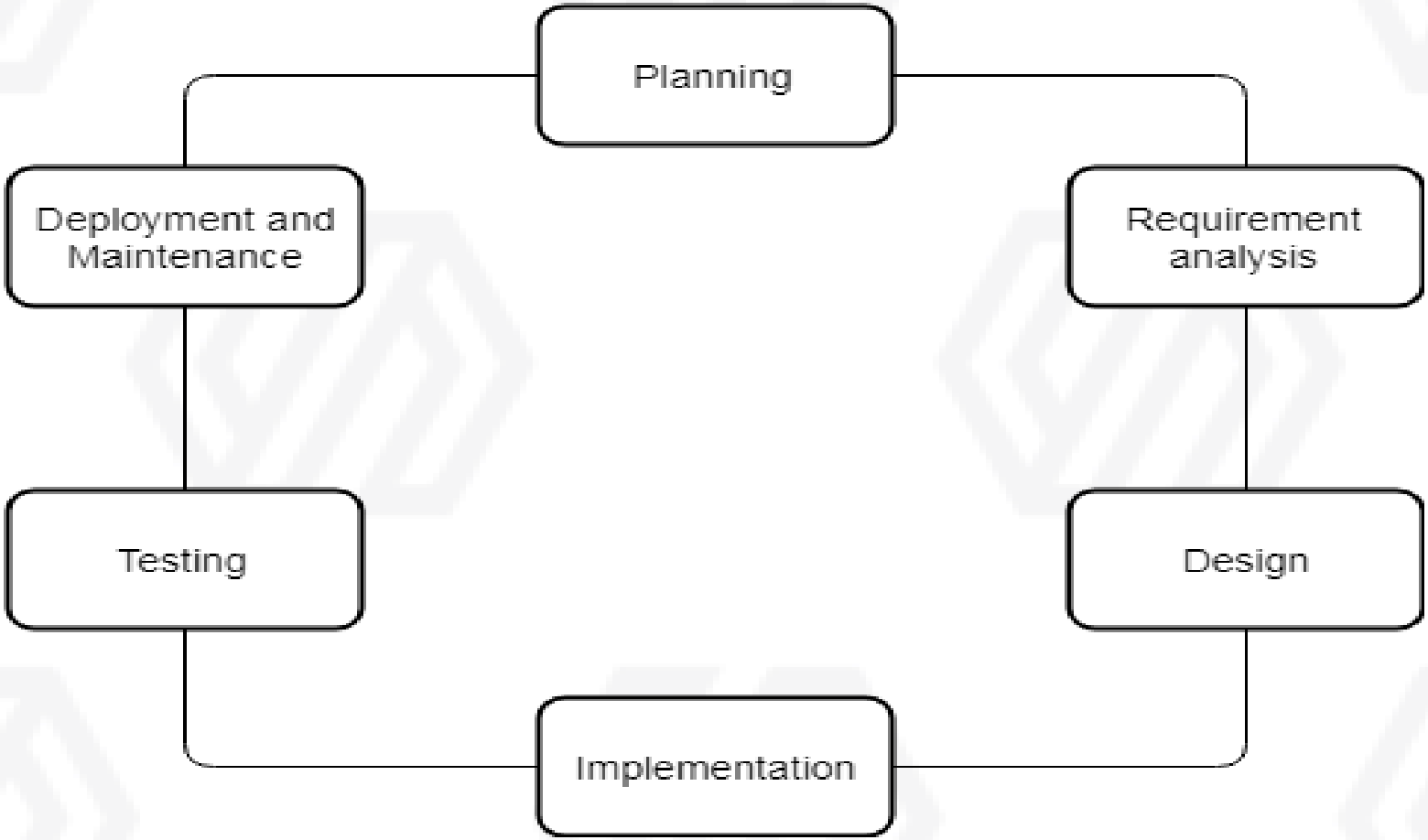
Deployment and Maintenance

- ✓ Code branches
- ✓ Our product can have multiple versions on production
- ✓ We should have separate branches in our source code for each production version

SDLC schema



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How Projects Really Work (version 1.5)

Create your own cartoon at www.projectcartoon.com

How the customer explained it

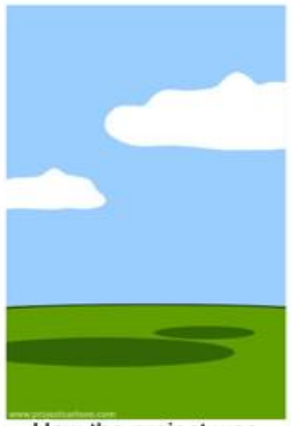
How the project leader understood it

How the analyst designed it

How the programmer wrote it

What the beta testers received

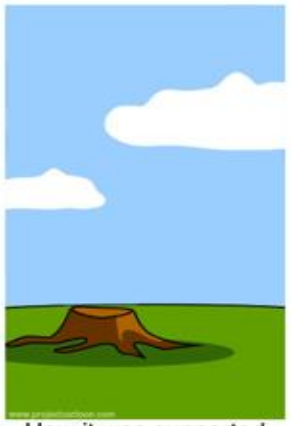
How the business consultant described it



How the project was documented

What operations installed

How the customer was billed



How it was supported

What marketing advertised

What the customer really needed

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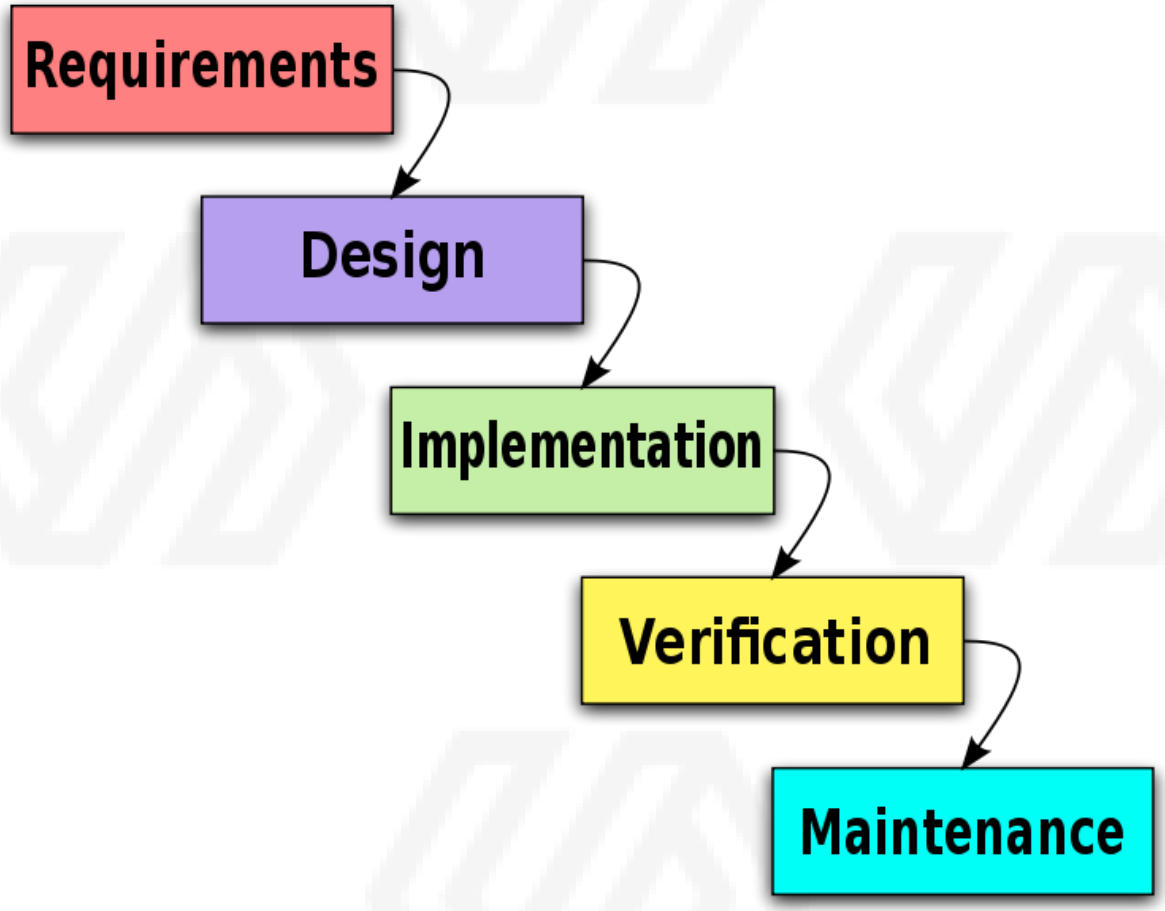
SDLC models

1. Waterfall model
2. V model
3. Incremental model
4. RAD model
5. Agile model
6. Iterative model

Waterfall



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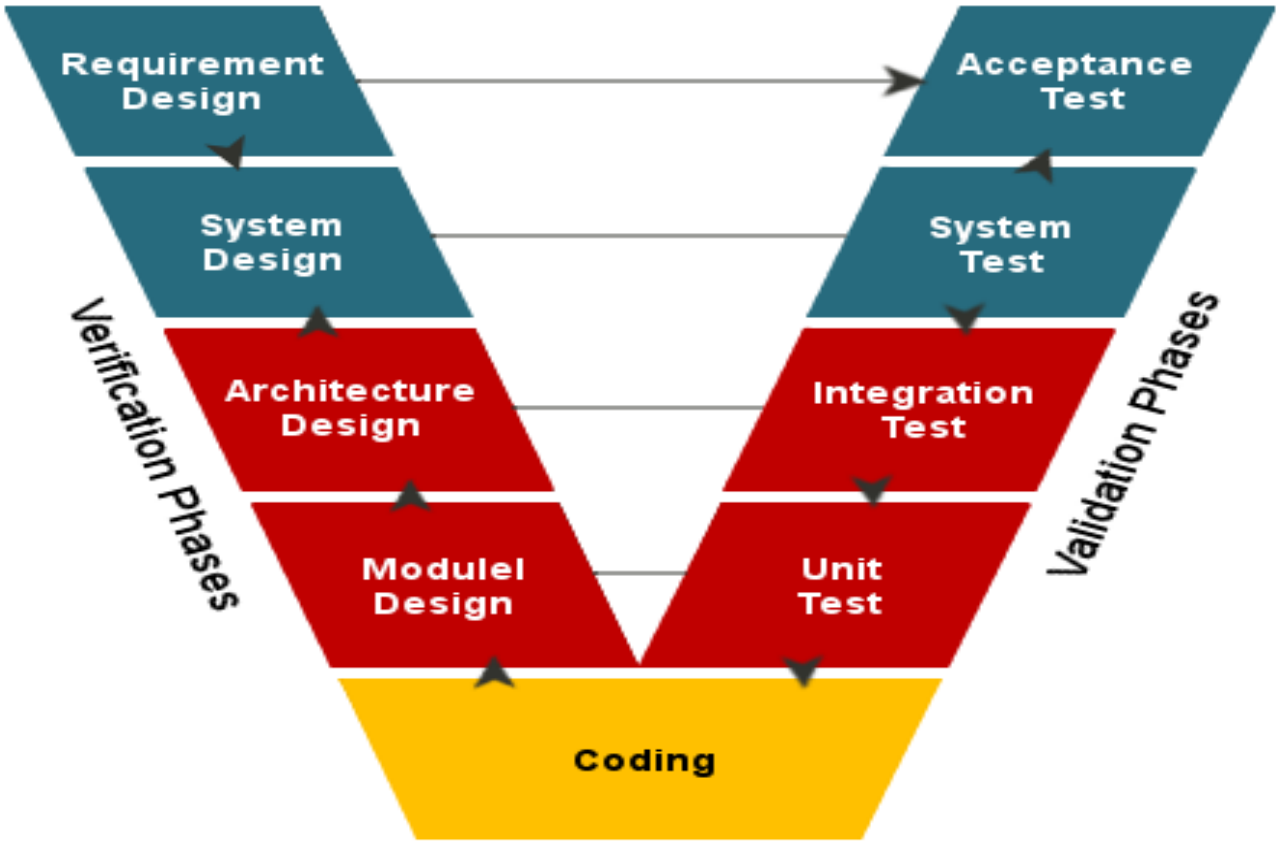
Waterfall

- Each phase starts once the previous is completed
- Old SDLC model – cannot meet current market needs
- Cost of fixing issues is high
- Increased time to market
- Simple to understand
- Planning is hard and estimations are not correct
- Late feedback from the client
- High risk the project to fail before go live

V-model



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V-model

- “V” stands for Verification and Validation
- Association between each phase of testing and development
- Testing is Validation phase
- Development is Verification phase

Agile Software Development

Describes an approach to software development under which requirements and solutions evolve through the collaborative effort of self-organizing and cross-functional teams and their customer(s)/end user(s) (Wiki definition)

Agile Software Development

Principles:

1. Customer satisfaction by early and continuous delivery of valuable software
2. Welcome changing requirements, even in late development
3. Working software is delivered frequently (weeks rather than months)
4. Close, daily cooperation between business people and developers
5. Projects are built around motivated individuals, who should be trusted
6. Face-to-face conversation is the best form of communication (co-location)

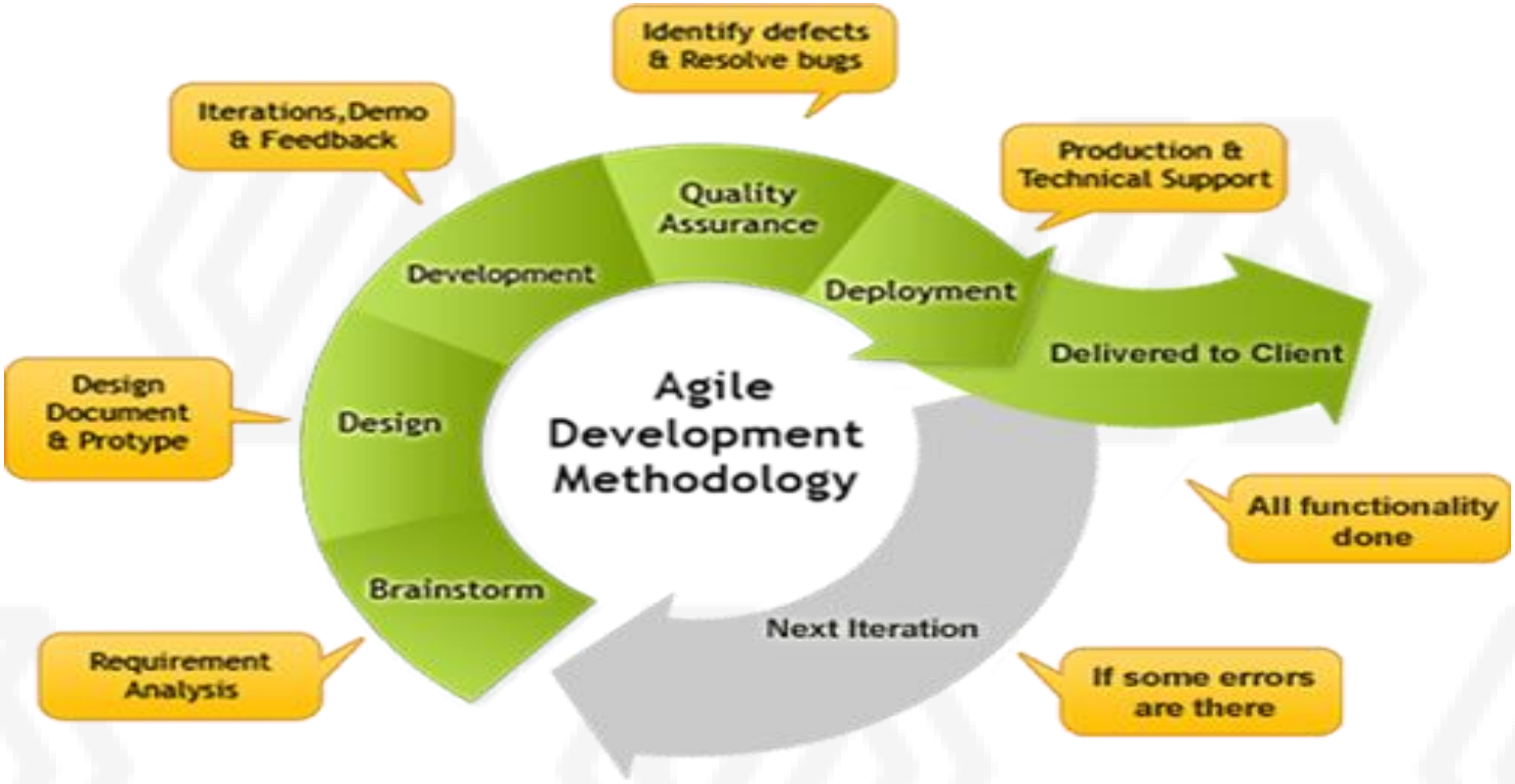
Agile Software Development

Principles:

7. Working software is the primary measure of progress
8. Sustainable development, able to maintain a constant pace
9. Continuous attention to technical excellence and good design
10. Simplicity—the art of maximizing the amount of work not done—is essential
11. Best architectures, requirements, and designs emerge from self-organizing teams
12. Regularly, the team reflects on how to become more effective, and adjusts accordingly

Scrum

Agile methodology implementation



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Scrum

Roles

Product owner

Scrum master

Team

Ceremonies

Sprint planning

Sprint review/demo

Sprint retrospective

Daily scrum meeting

Artefacts

Product backlog

Sprint backlog

Burndown charts

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Product owner

- ✓ Defines the features of the product
- ✓ Decides on release date and content
- ✓ Responsible for the profitability of the product (ROI)
- ✓ Prioritizes features according to market value
- ✓ Adjusts features and priority every iteration
- ✓ Accepts or rejects work results

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Scrum master

- ✓ Represents management to the project
- ✓ Responsible for enacting Scrum values and practices
- ✓ Removes impediments
- ✓ Ensures the team is fully functional and productive
- ✓ Enables close cooperation across all roles and functions

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Team

1. Pigs
2. Self organised
3. 5-9 full time members
4. Cross functional (Devs, QAs , UI Experts, DB)

Requirements

They come in the form of User stories

1. Who are we building it for, who the user is? — ***As a <type of user>***

2. What are we building, what is the intention? — ***I want <some goal or objective >***

3. Why are we building it, what value it bring for the user.? — ***So that <benefit, value>***

Product Backlog

- ✓ Prioritized list of user stories, containing short descriptions of all functionality desired in the product
- ✓ Product owner is mainly responsible for the backlog but the team can add user stories/tasks also
- ✓ It is constantly growing and changing
- ✓ The product owner is responsible for the product backlog prioritization

Sprint Planning

- The team picks items from product backlog that they can commit to complete
- Sprint backlog is created
  - List of tasks necessary to achieve the work
  - Task are identified and each item is estimated
  - Scrum master does NOT decide for the team
- Team self-organises to meet the goal
  - Tasks are NOT assigned by manager
- High-level design is considered

Sprint Backlog

- ✓ List of tasks the team needs to address during the sprint
- ✓ Tasks are estimated by the team
- ✓ Team members sign up for tasks, they are not assigned
- ✓ Remaining of the estimated work is updated daily
- ✓ Only team can change it

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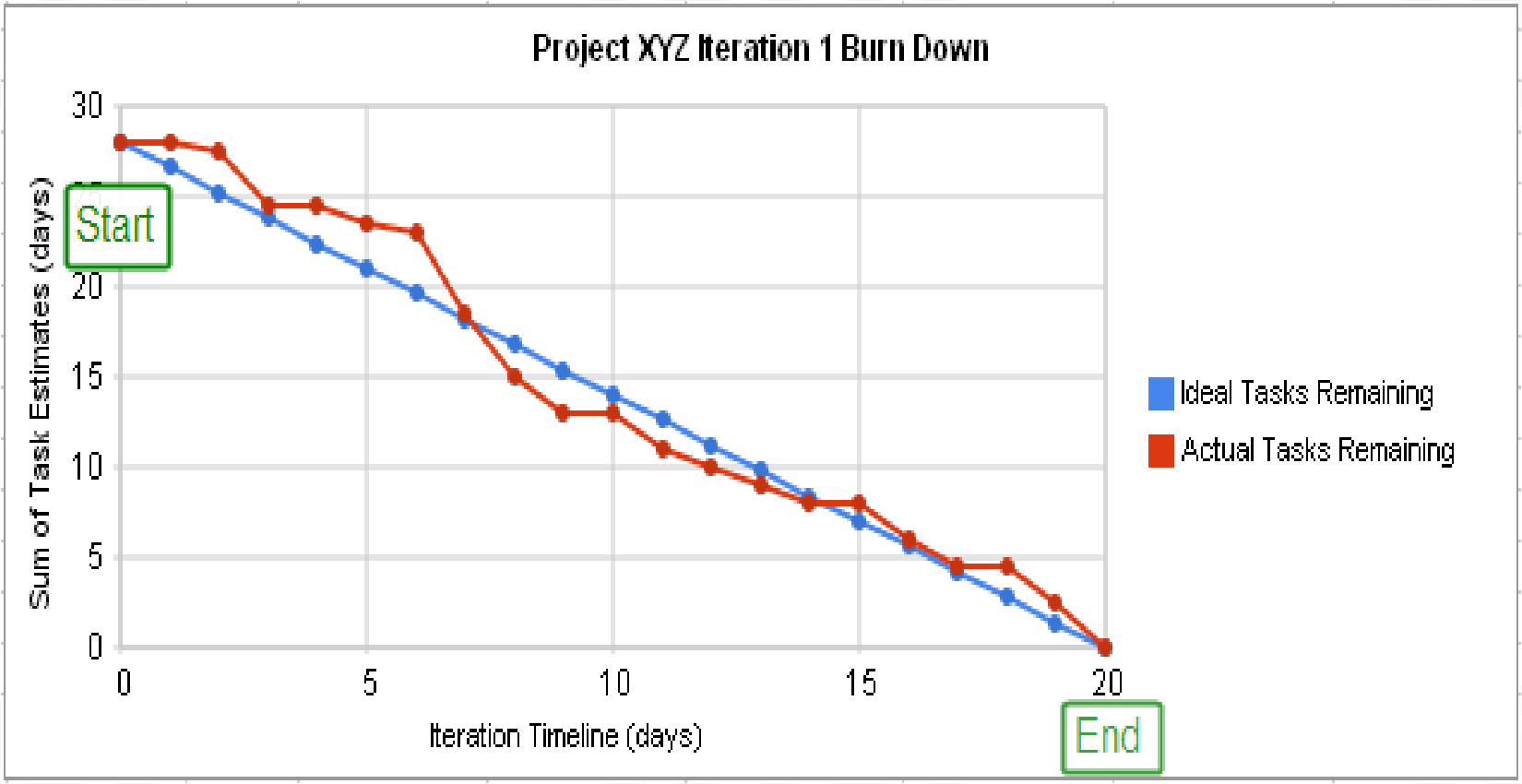
Burn down chart



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Sprint Review

- Team presents what is done during the sprint
- Typically takes the form of a demo of new features or underlying architecture
- Informal
  - 2-hour prep time
  - No slides
- Whole team participates
- Product owner(s) sign(s) off stories

Sprint Retrospective

- ✓ In the sprint retrospective the team has the chance to discuss improvements for the next sprints

- ✓ The main questions are:

  What we did well?

  What we need to improve?

  What we will commit to improve next sprint?

- ✓ 2 hours maximum

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Daily Standup

- Happens everyday at a fixed time
- 15 minutes long stand up meeting
- 3 questions are answered by every team member
  - What did I do yesterday?
  - What do I plan to do today?
  - Do I have some blocker?
- Only one team member can speak at a time
- Specific issues are resolved offline

Q & A

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THANK YOU

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