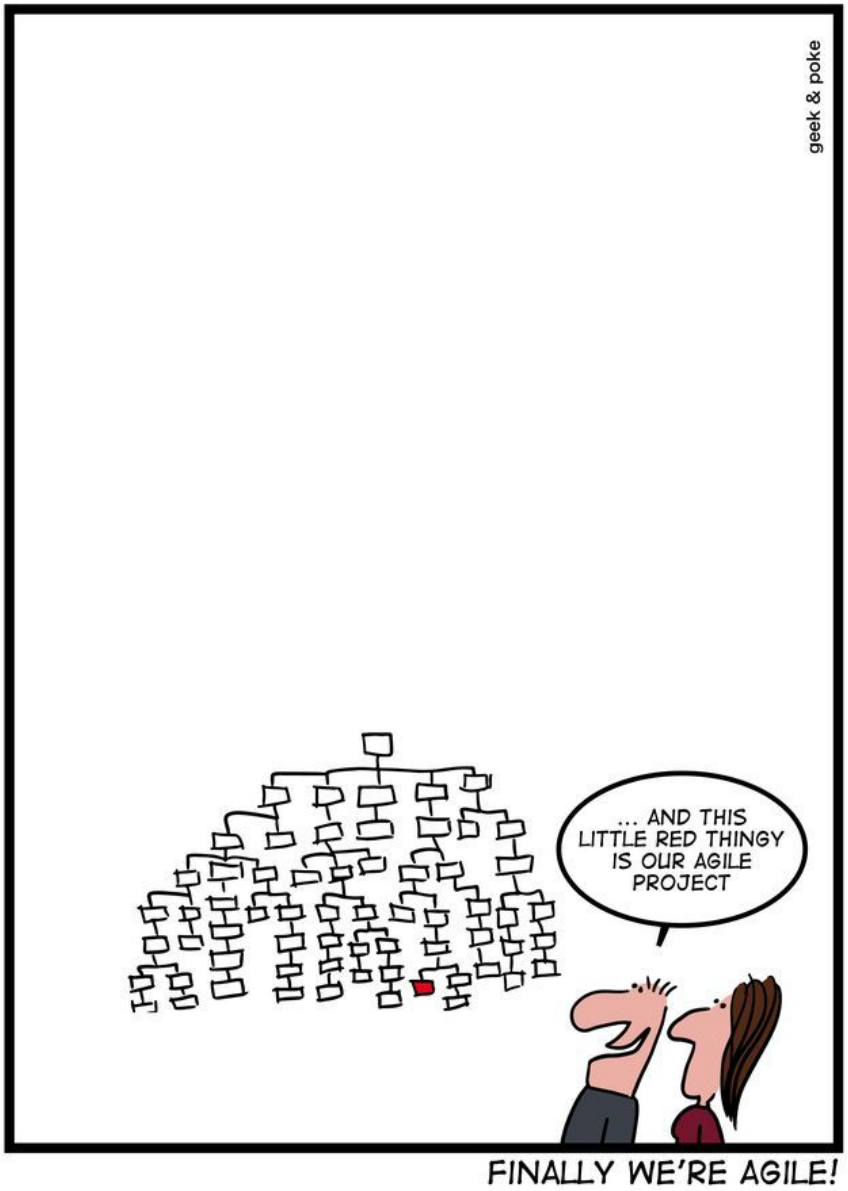
SIT217
Robotics Project

Week 1.2 –

Project Management, Waterfall and Agile



What is a Project?

A Project is a **temporary** endeavor undertaken to create a **unique** product, service or result.

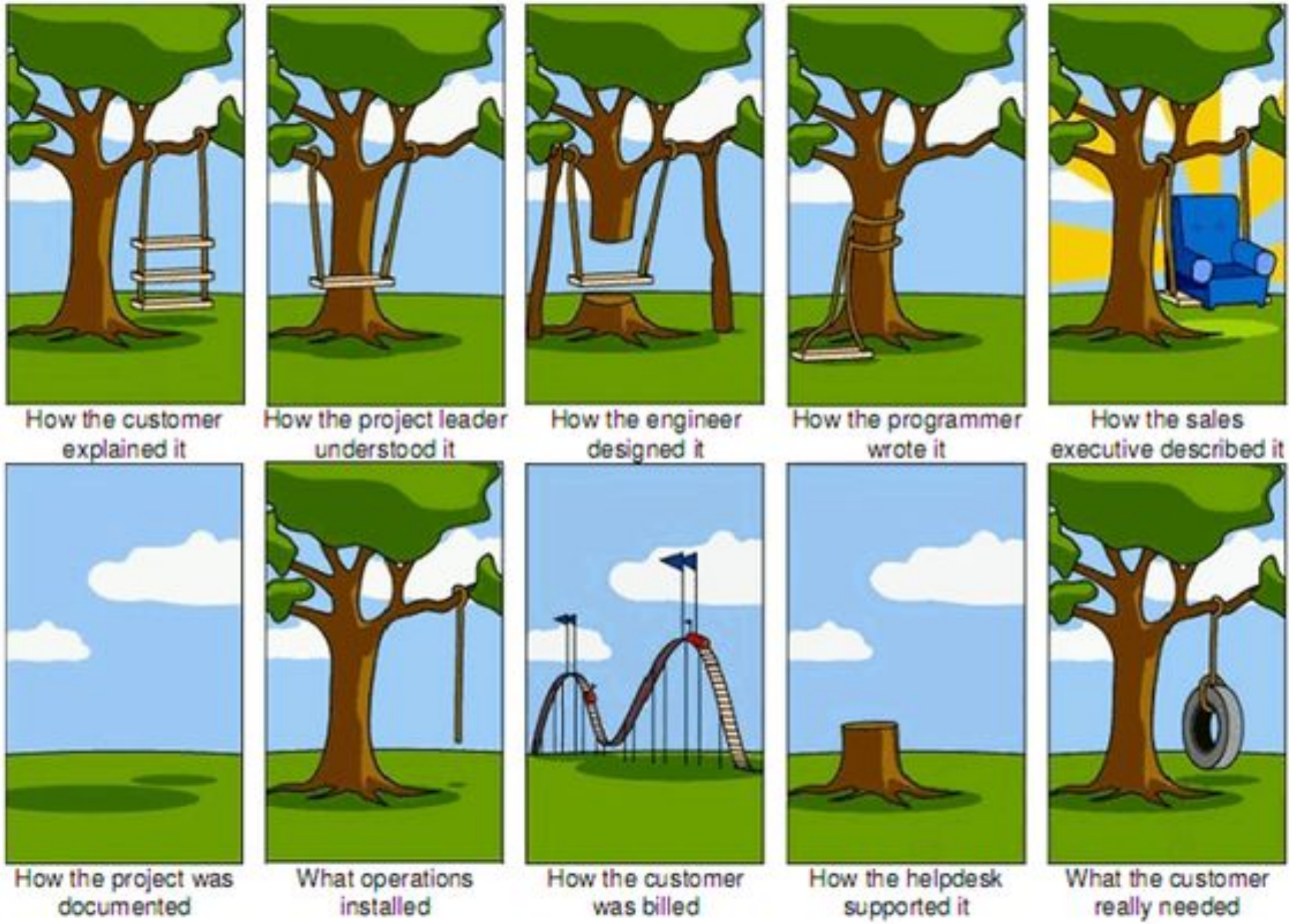
What is a Project?

A Project is a **temporary** endeavor undertaken to create a **unique** product, service or result.

- Temporary -> It has a defined **beginning** and **end** in time, and therefore defined scope and resources.

- Unique -> It is not a routine operation, but a specific set of operations designed to accomplish a **singular goal**.

Alan Chapman - history of the project management tire swing



Project management

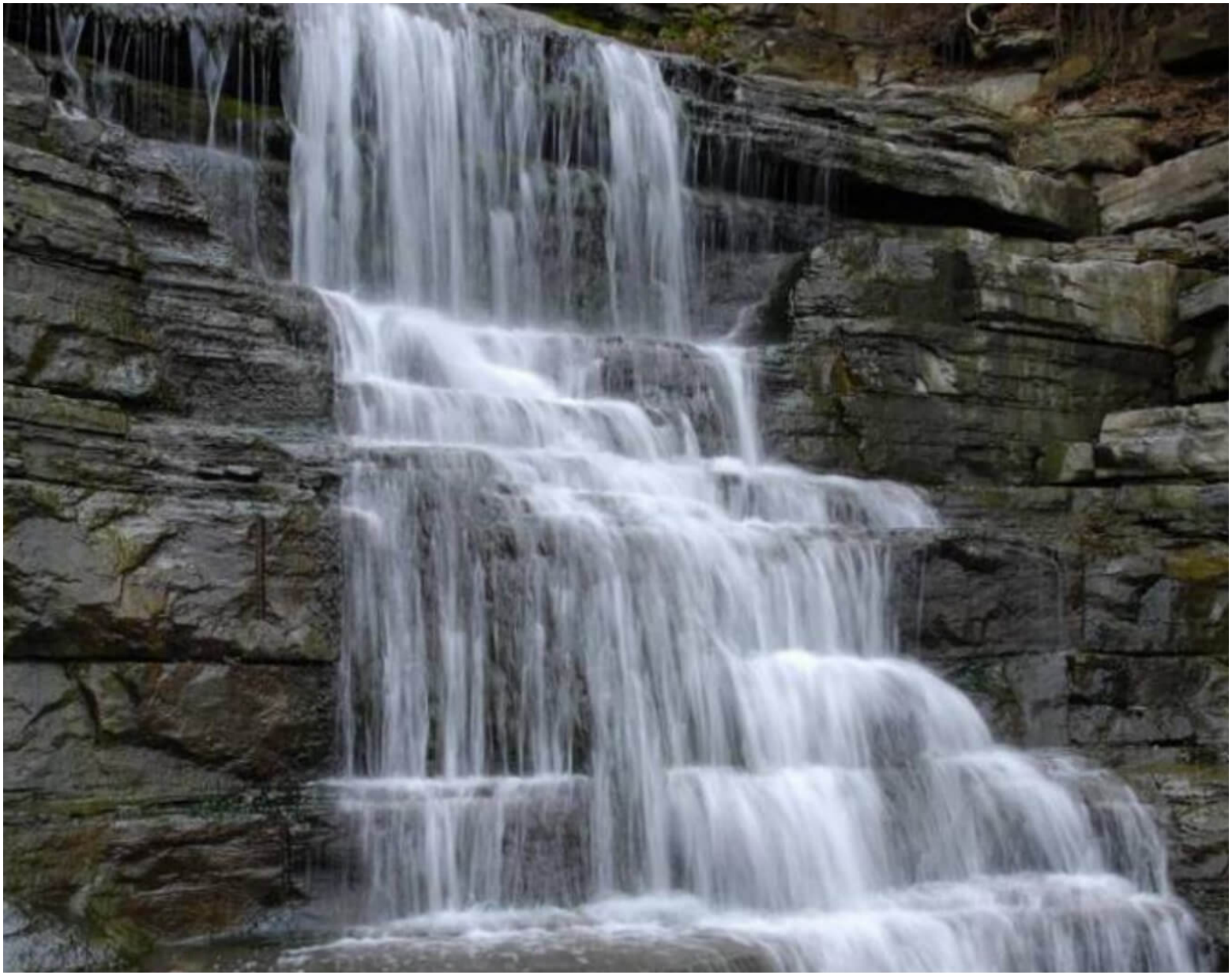
Project management, is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.

In this lecture we will discuss…

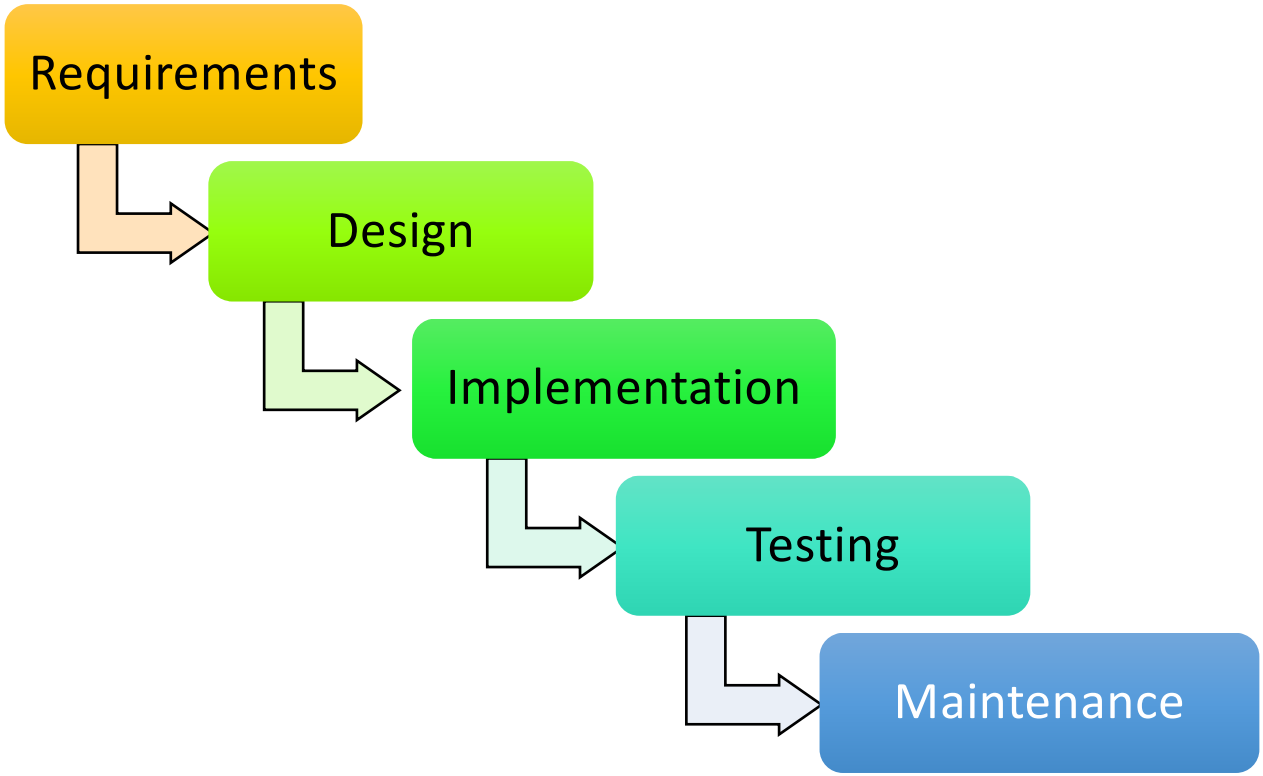
Project management approaches in IT/Software/Robotics/…

- Waterfall approach
- Agile approach
  - Scrum

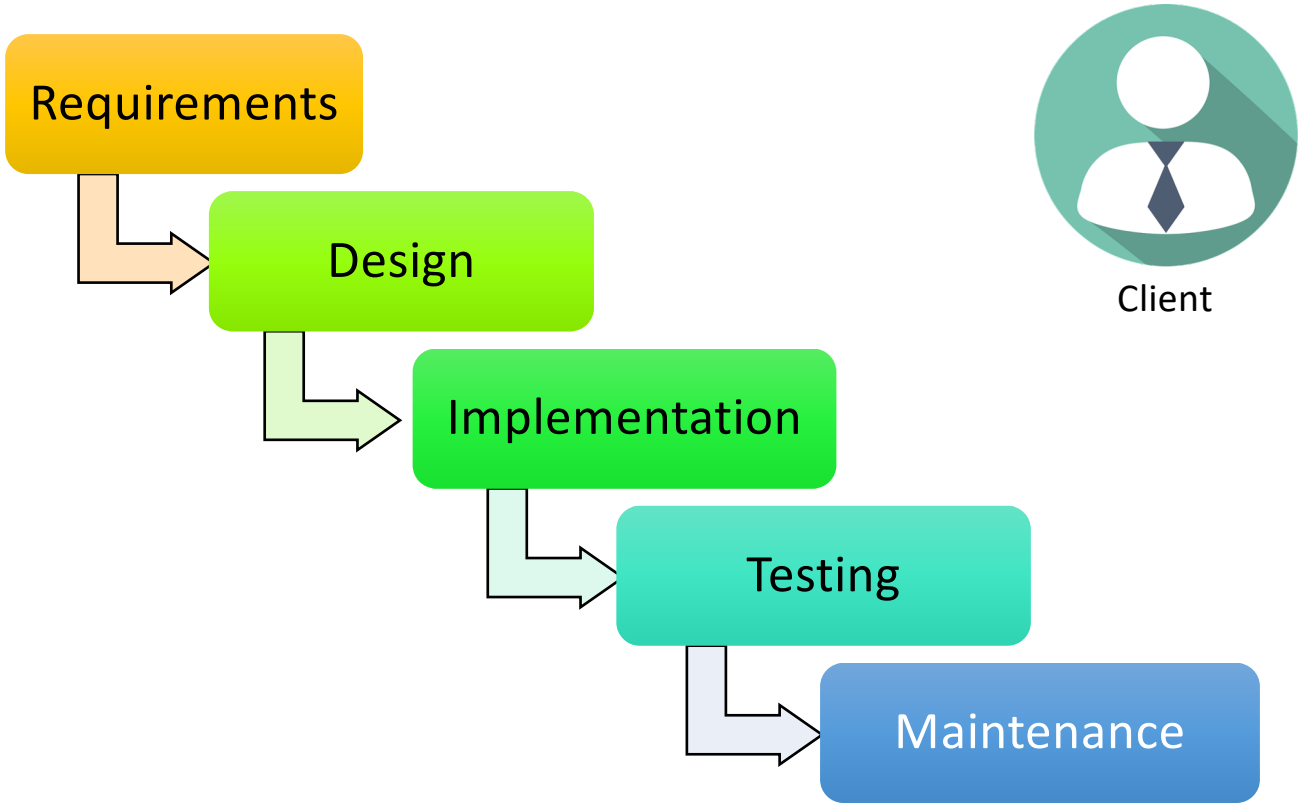
The Waterfall approach



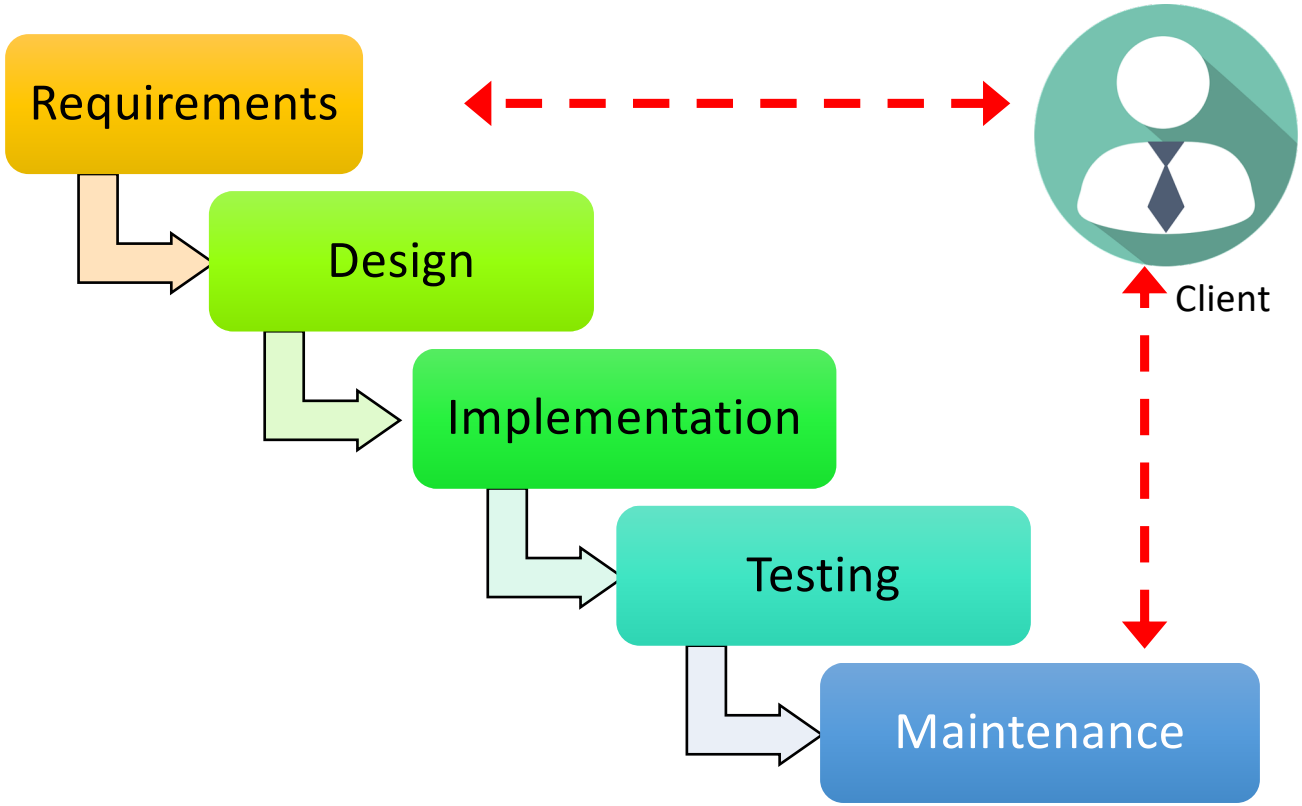
Project Management and Waterfall



Project Management and Waterfall



Project Management and Waterfall



Waterfall approach

- Pros
  - Straight forward process
  - Would suite situations where the outcomes are clear (and unlikely to change)
- Cons
  - Sequential process, each phase needs to complete before moving on to next
  - Lengthy process to get to first prototype
  - Very difficult to change
    - A small change may affect the whole process
  - In IT world outcomes/goals may change frequently!
    - Customers usually are uncertain of what it is exactly that they want
  - Customer involvement in the process is very low

Project management in IT

Waterfa

- Pros
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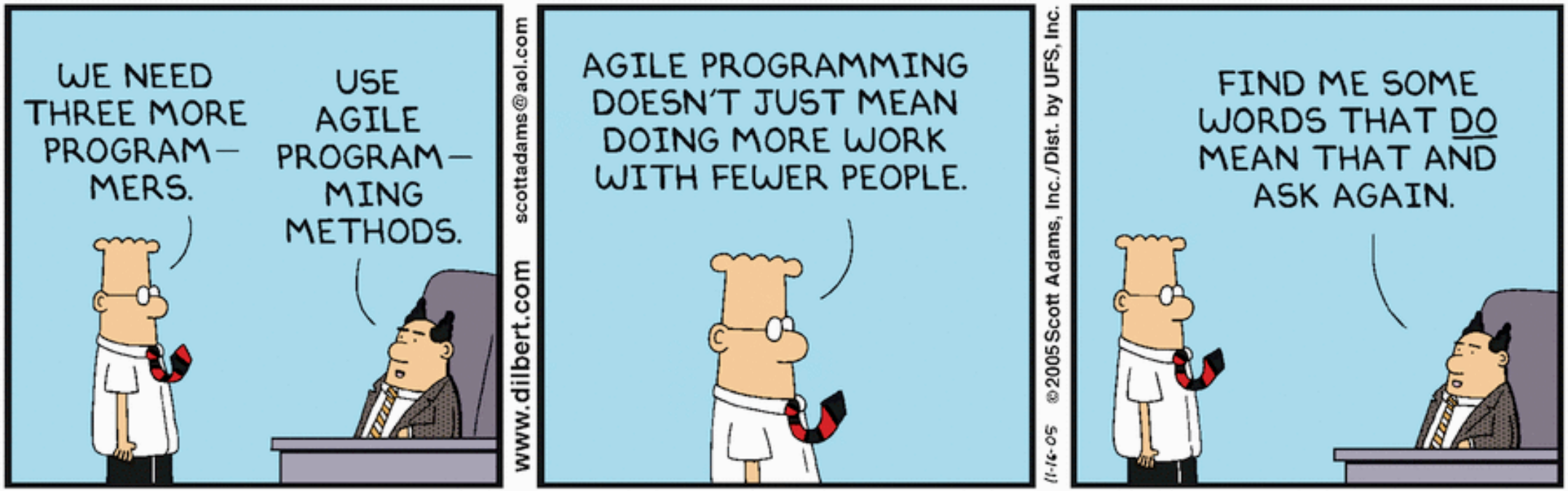
Agile


WE NEED THREE MORE PROGRAM— MERS.
USE AGILE PROGRAM— MING METHODS.
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AGILE PROGRAMMING DOESN'T JUST MEAN DOING MORE WORK WITH FEWER PEOPLE.
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FIND ME SOME WORDS THAT DO MEAN THAT AND ASK AGAIN.

Agile

- Agile is a movement or culture
- Provides opportunities to assess the direction of a project throughout the development lifecycle
  - Does this through **iterative** incremental cadences of work (known as sprints)
- Agile, No. Agility, Yes!
- Spot the difference with waterfall already?

History lesson - Agile Manifesto

- In 2001, a group of distinguished software engineers/researchers got together to discuss better ways to run software development projects
- They ended up with a set of **values** & **principles** that represent the core of agile project management.
- It is now known as **Agile Manifesto**

Agile Manifesto - Values

- Individuals and interactions vs. processes and tools
- Working software vs. comprehensive documentation
- Customer collaboration vs. contract negotiation
- Responding to change vs. following a plan

Agile Manifesto - Principles

1. Our highest priority is to **satisfy the customer** through **early and continuous delivery** of valuable software.
2. **Welcome changes**, even late in development. Agile processes harness change for the customer's competitive advantage.
3. **Deliver working software frequently**, from a couple of weeks to a couple of months, with a preference to the shorter timescale.
4. **Business people and developers** must **work together** daily throughout the project.

Agile Manifesto - 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.
8. Agile processes promote **sustainable development**. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.

Agile Manifesto - Principles

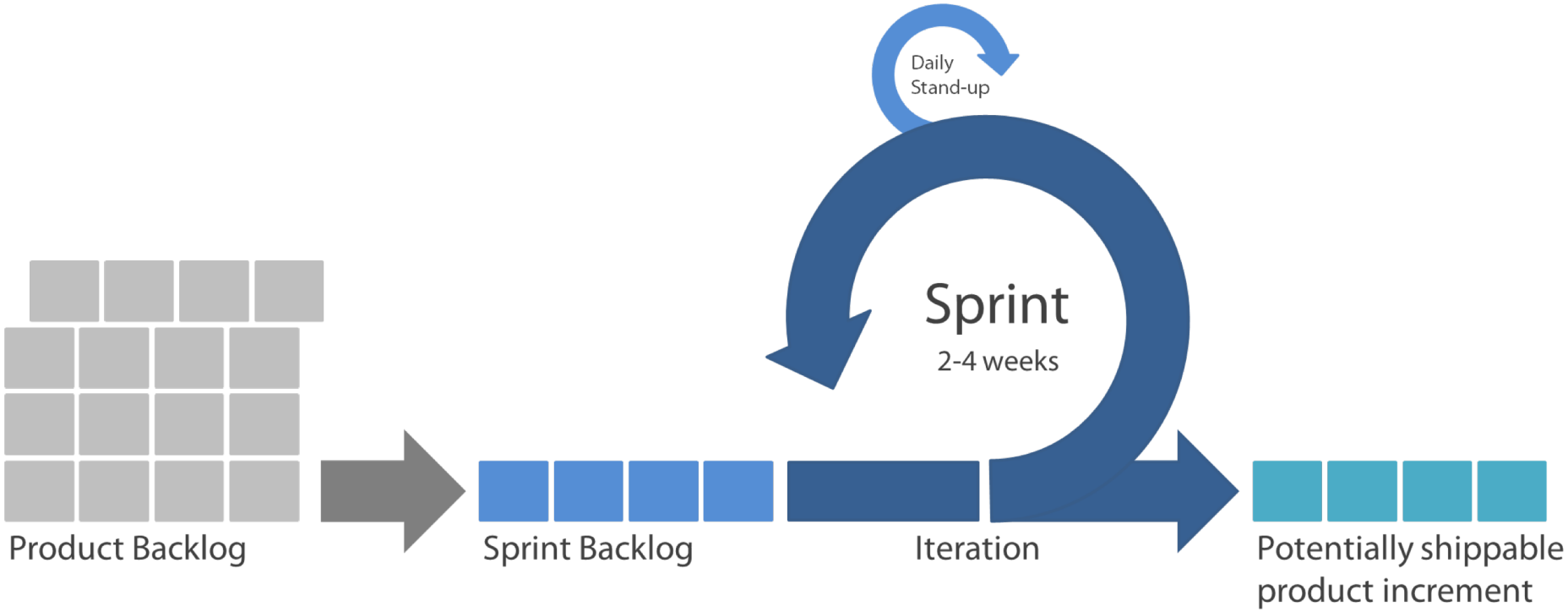
9. Continuous attention to **technical excellence and good design** enhances agility.
10. **Simplicity** - the art of maximizing the amount of work not done-is essential.
11. The best architectures, requirements, and designs emerge from **self-organizing teams**.
12. At regular intervals, the team **reflects** on how to become **more effective**, then **tunes** and adjusts its behavior accordingly.

Agile is not …

- Not Planning – but there is lots of planning involved about being efficient for what needs to be produced now
- Nor discipline – there is discipline, but focused on what we need to produce
- Nor documentation – there are lots of documentation, but focus on what needs to be documented


Agile Scrum

Agile Scrum


Daily
Stand-up
Sprint
2-4 weeks
Product Backlog
Sprint Backlog
Iteration
Potentially shippable
product increment

Agile Scrum

- Scrum is a framework within which people can address complex **adaptive problems**, while productively and creatively delivering **products** of the highest possible **value**.
- Scrum itself is a simple framework for effective team **collaboration** on complex products.

Individuals and interactions vs. processes and tools
Working software vs. comprehensive documentation
Customer collaboration vs. contract negotiation
Responding to change vs. following a plan

Agile Scrum

- Scrum relies on a self-organizing, cross-functional team.
  - Self organising -> There is **no overall team leader** who decides which person will do which task, or how to solve a problem
  - Team decides as a whole on those issues
  - Team is cross functional -> **Everyone** is needed to take a feature from idea to implementation

Individuals and interactions vs. processes and tools
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We will continue our Agile journey in the coming weeks