

# Agile Methodologies



# Winston

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**@winstonyw**

**2011 ~ 2013**

# **Pivotal Labs SG**

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**Agile Software Engineering**

Test Driven Development • Pair Programming • Continuous Integration

**2011 ~ 2013**

# **Neo Innovations**

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**Agile Software Engineering**

Test Driven Development • Pair Programming • Continuous Integration

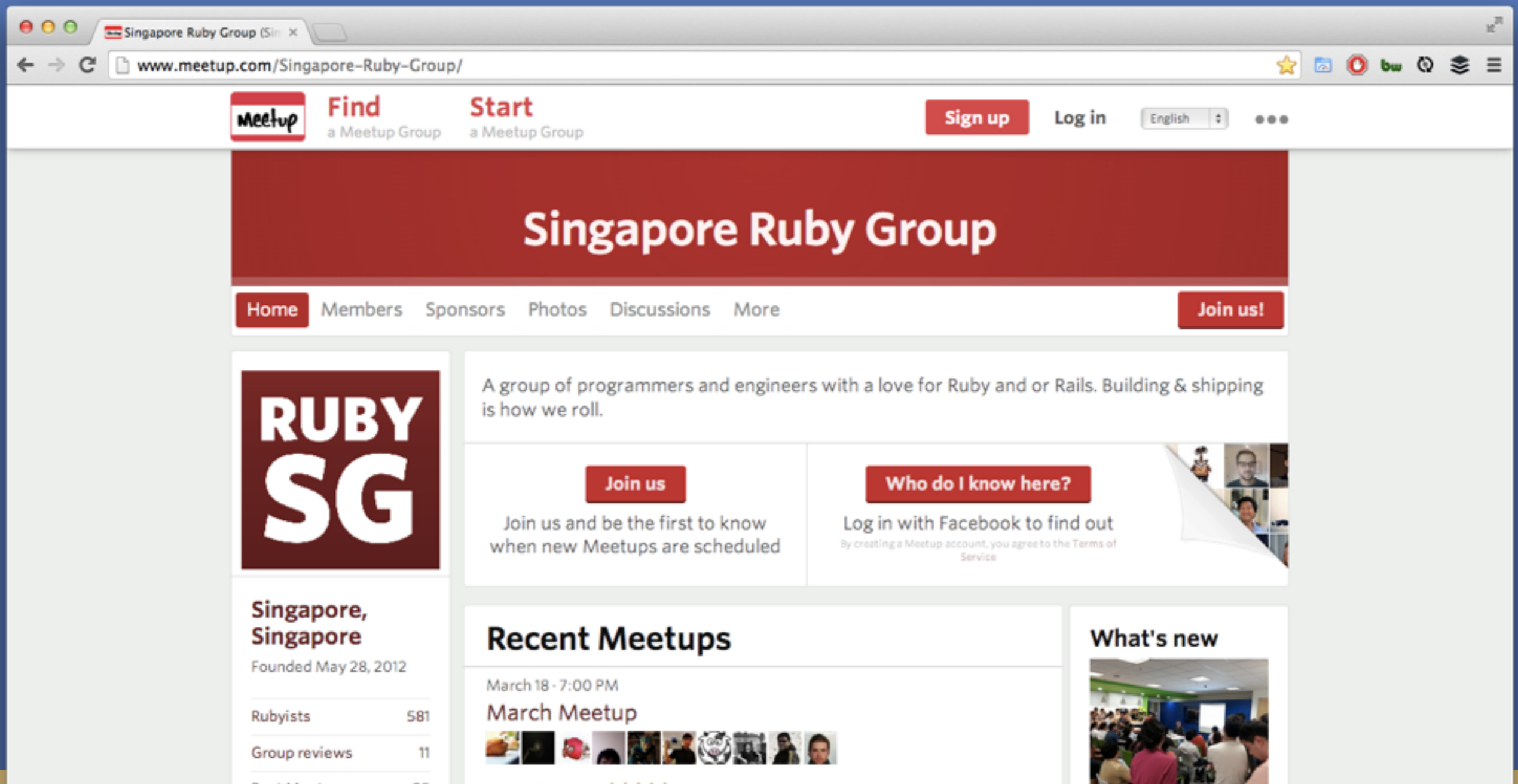
*Established*



*Since Nov 2013*

# SG Ruby Group

<http://www.meetup.com/Singapore-Ruby-Group/>



The screenshot shows the Meetup page for the Singapore Ruby Group. The browser's address bar displays the URL [www.meetup.com/Singapore-Ruby-Group/](http://www.meetup.com/Singapore-Ruby-Group/). The page features a red header with the Meetup logo, navigation links for 'Find a Meetup Group' and 'Start a Meetup Group', and buttons for 'Sign up' and 'Log in'. A language dropdown is set to 'English'. Below the header, a large red banner displays the group name 'Singapore Ruby Group'. A secondary navigation bar includes links for 'Home', 'Members', 'Sponsors', 'Photos', 'Discussions', and 'More', along with a 'Join us!' button. On the left, a sidebar contains a 'RUBY SG' logo, the location 'Singapore, Singapore', the founding date 'Founded May 28, 2012', and statistics: 'Rubyists 581' and 'Group reviews 11'. The main content area includes a group description: 'A group of programmers and engineers with a love for Ruby and or Rails. Building & shipping is how we roll.' Below this are two call-to-action boxes: 'Join us' (with the text 'Join us and be the first to know when new Meetups are scheduled') and 'Who do I know here?' (with the text 'Log in with Facebook to find out' and a note about terms of service). Further down, there are sections for 'Recent Meetups' (listing a 'March Meetup' on March 18 at 7:00 PM with a row of member avatars) and 'What's new' (featuring a photo of a group of people at a meeting).

Singapore Ruby Group (Sin x)

www.meetup.com/Singapore-Ruby-Group/

meetup Find a Meetup Group Start a Meetup Group Sign up Log in English

## Singapore Ruby Group

Home Members Sponsors Photos Discussions More Join us!

### RUBY SG

Singapore, Singapore  
Founded May 28, 2012

Rubyists	581
Group reviews	11

A group of programmers and engineers with a love for Ruby and or Rails. Building & shipping is how we roll.

**Join us**

Join us and be the first to know when new Meetups are scheduled

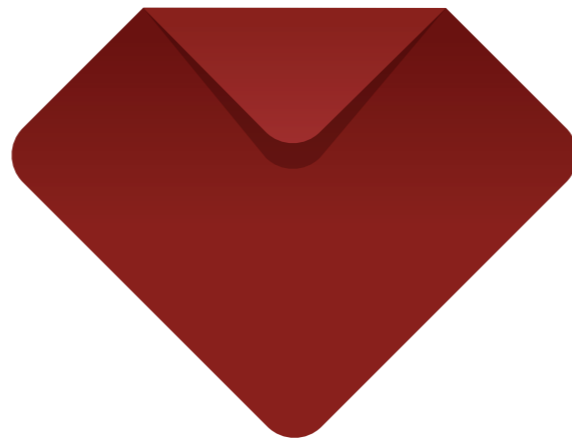
**Who do I know here?**

Log in with Facebook to find out  
By creating a Meetup account, you agree to the Terms of Service

### Recent Meetups

March 18 - 7:00 PM  
**March Meetup**

What's new



# REDDOT

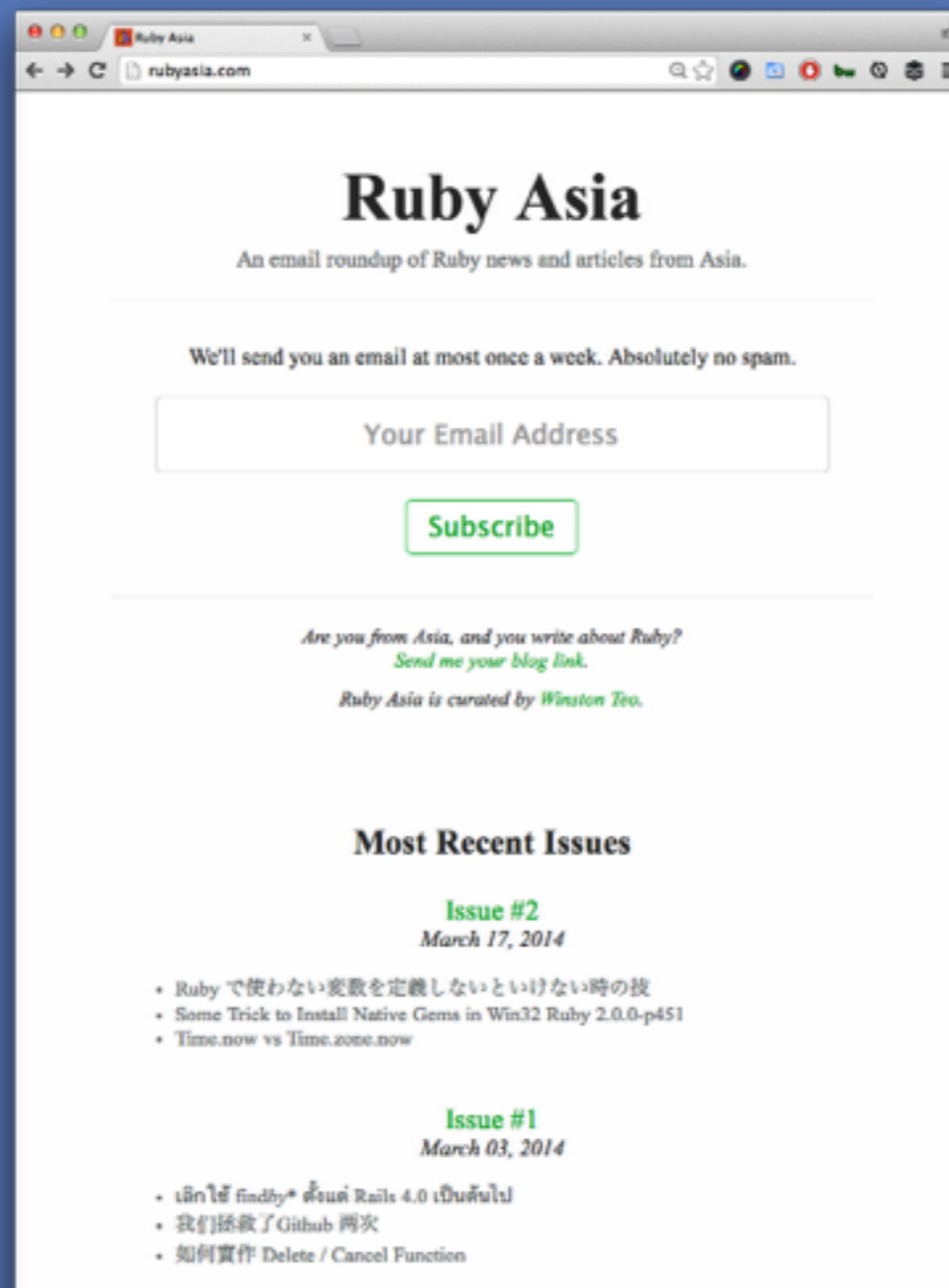
RUBY CONFERENCE

June 26-27, 2014  
Singapore

<http://www.reddotrubyconf.com>

# RubyAsia.com

A fortnightly newsletter for Ruby news and articles from Asia



**Why do  
Software Projects  
Fail?**

**PLANNING AND ESTIMATING  
IS**

**DIFFICULT**

# Why Are Software Development Task Estimations Regularly Off By A Factor of 2-3

<http://www.quora.com/Engineering-Management/Why-are-software-development-task-estimations-regularly-off-by-a-factor-of-2-3>

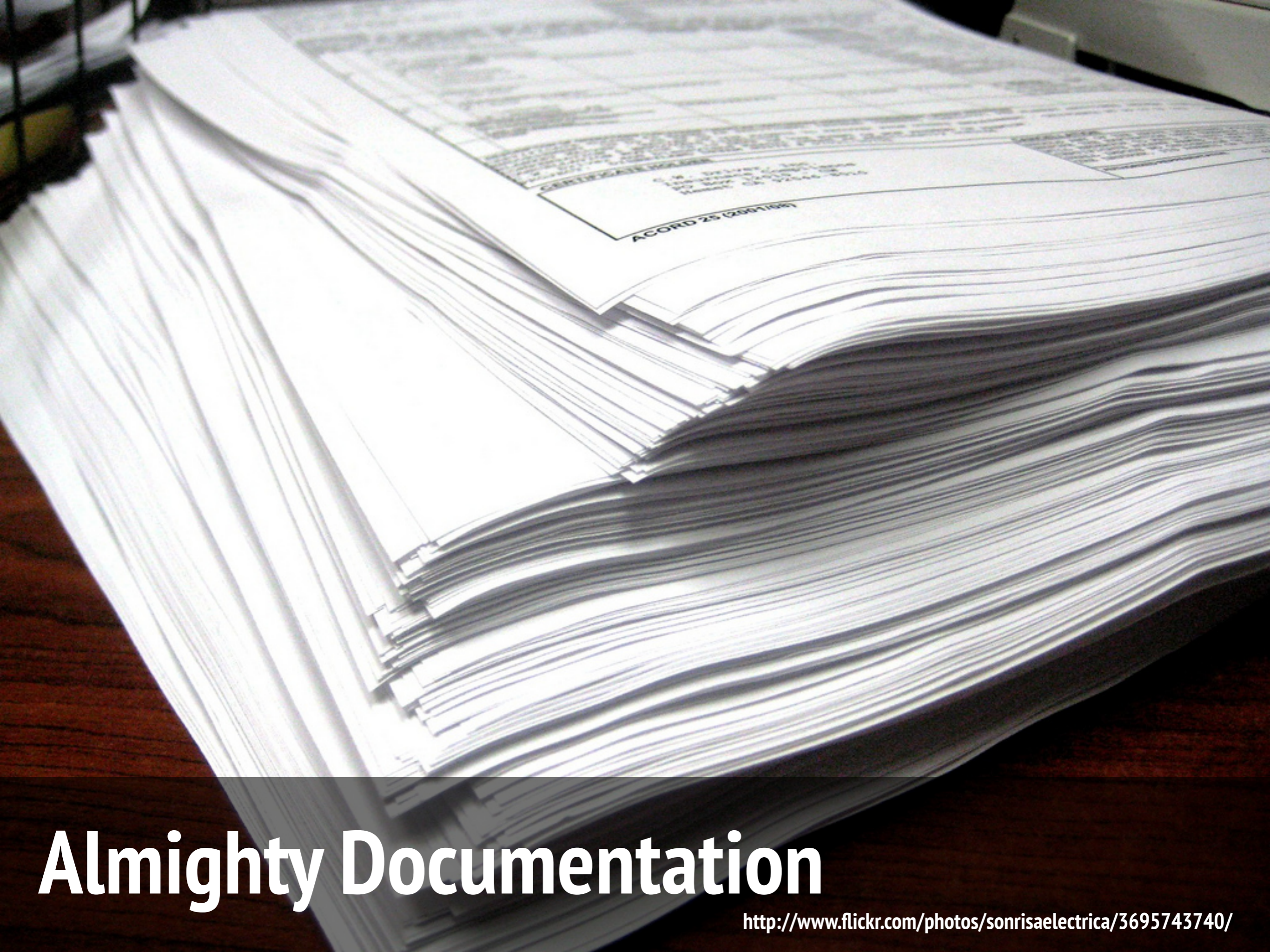
The screenshot shows a web browser window displaying a Quora page. The browser's address bar shows the URL: [www.quora.com/Engineering-Management/Why-are-software-development-task-estimations-regularly-off-by-a-factor-of-2-3](http://www.quora.com/Engineering-Management/Why-are-software-development-task-estimations-regularly-off-by-a-factor-of-2-3). The Quora page header includes the Quora logo, a search bar, and navigation links for 'Write', 'Home', and 'Winston'. The main content area features the question: **★ Why are software development task estimations regularly off by a factor of 2-3?** with tags for 'Engineering Management', 'Computer Programming', 'Estimation', 'Product Design (software)', 'Project Management', 'Software', 'Software Engineering', 'Software Testing', 'Certified Scrum Master, Agile', and 'Time Management'. Below the question, it indicates '207 Answers' and '27+ Comments'. The first answer is by Winston Teo, an Agile Engineer, who has started with 'Is it the developer's fault? Is it a management issue? Bad methodology, or lack thereof? Or is it ingrained in the nature of the process?'. Below his answer is a text input field with the placeholder 'Add your answer, or answer later.' The second answer is by Michael Wolfe, a Startup founder, who has received 7745 votes. His answer begins with 'Let's take a hike on the coast from San Francisco to Los Angeles to visit our friends in Newport Beach. I'll whip out my map and draw our route down the coast:'. Below his text is a map showing a route along the California coast from San Francisco to Los Angeles, passing through cities like Eureka, Redding, and Susanville. On the right side of the page, there are sections for 'Related Questions' (e.g., 'Mathematics: What are the worst times to be off by a factor of 2?', 'Errors: Would you rather be off by a factor of 2, or kicked in the face with a shoe?'), 'Share Question' (with links to Twitter and Facebook), and 'Question Stats' (indicating 4 monitors, 101621 topic followers, and 557903 views).



# Waterfall

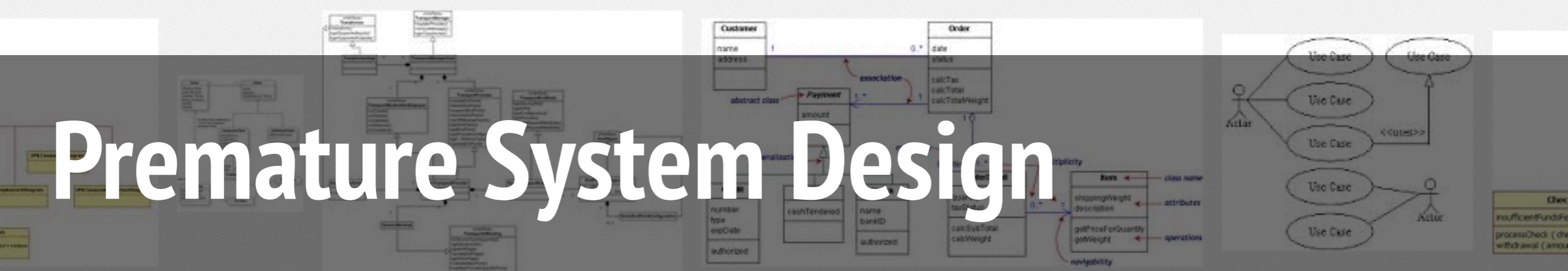
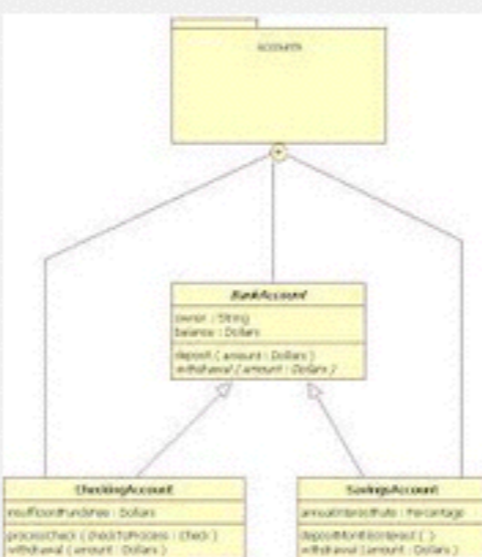
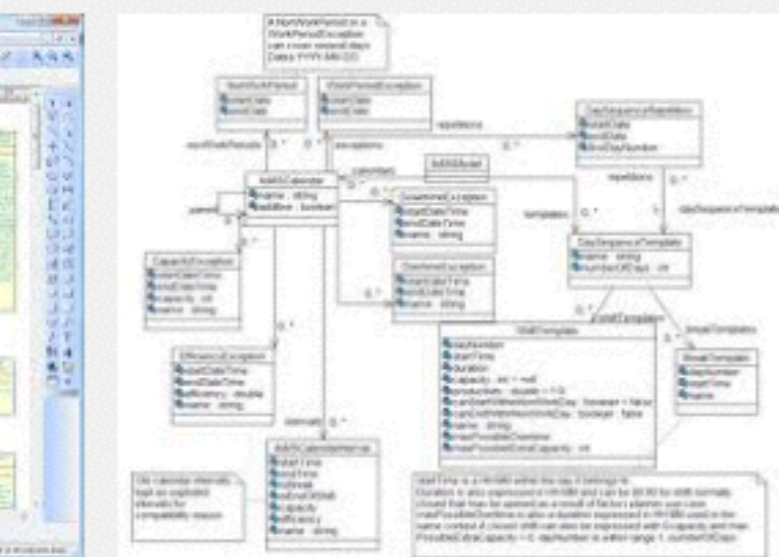
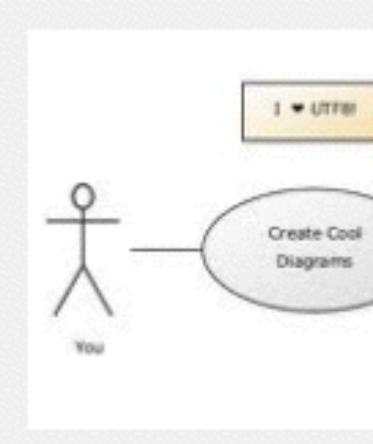
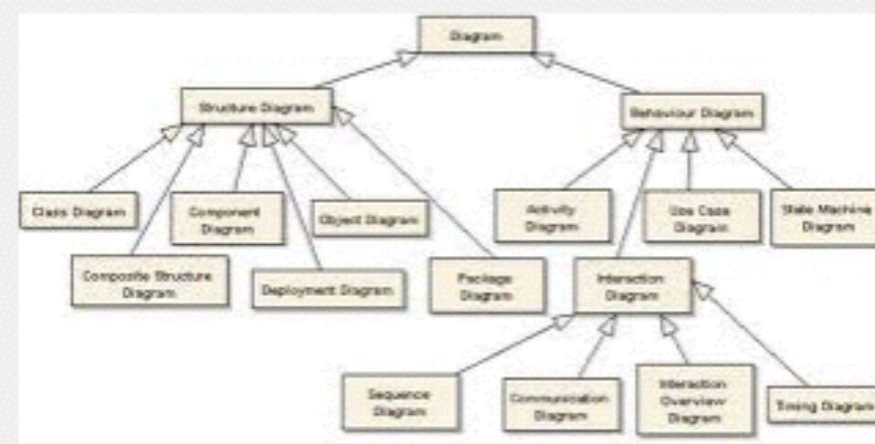
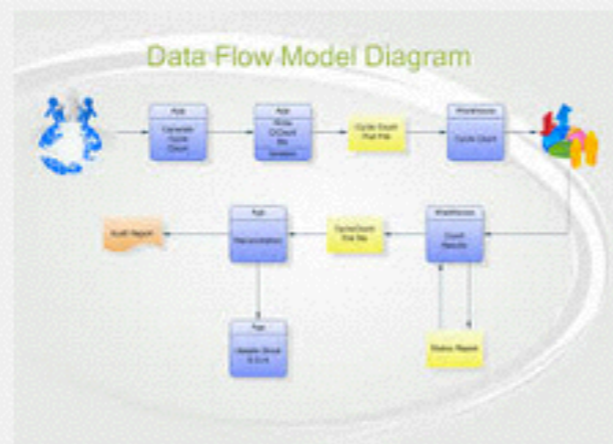
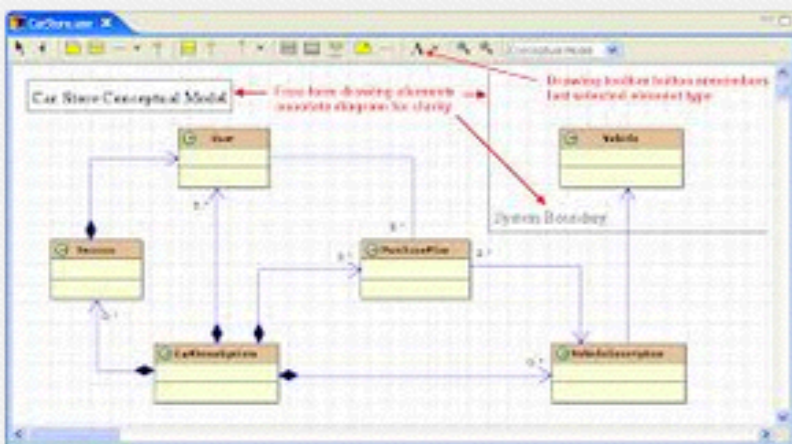
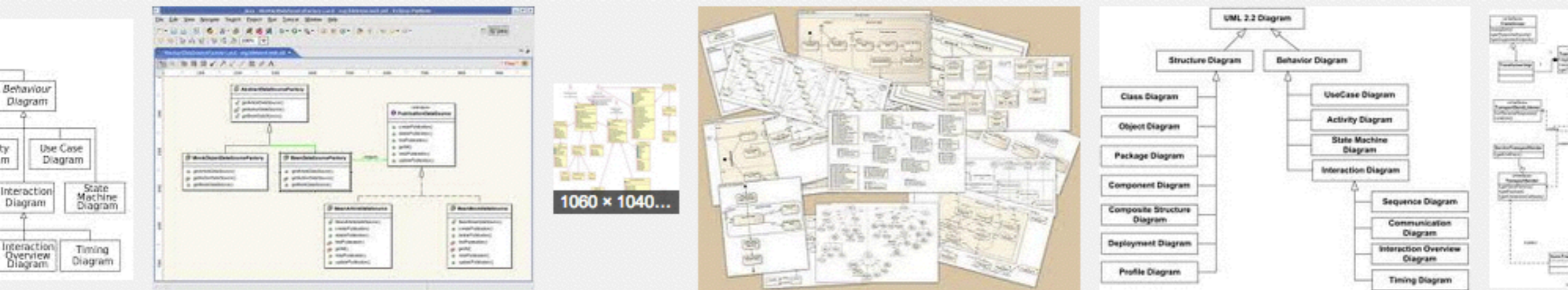
<http://www.flickr.com/photos/mcbridejc/8885815845/>

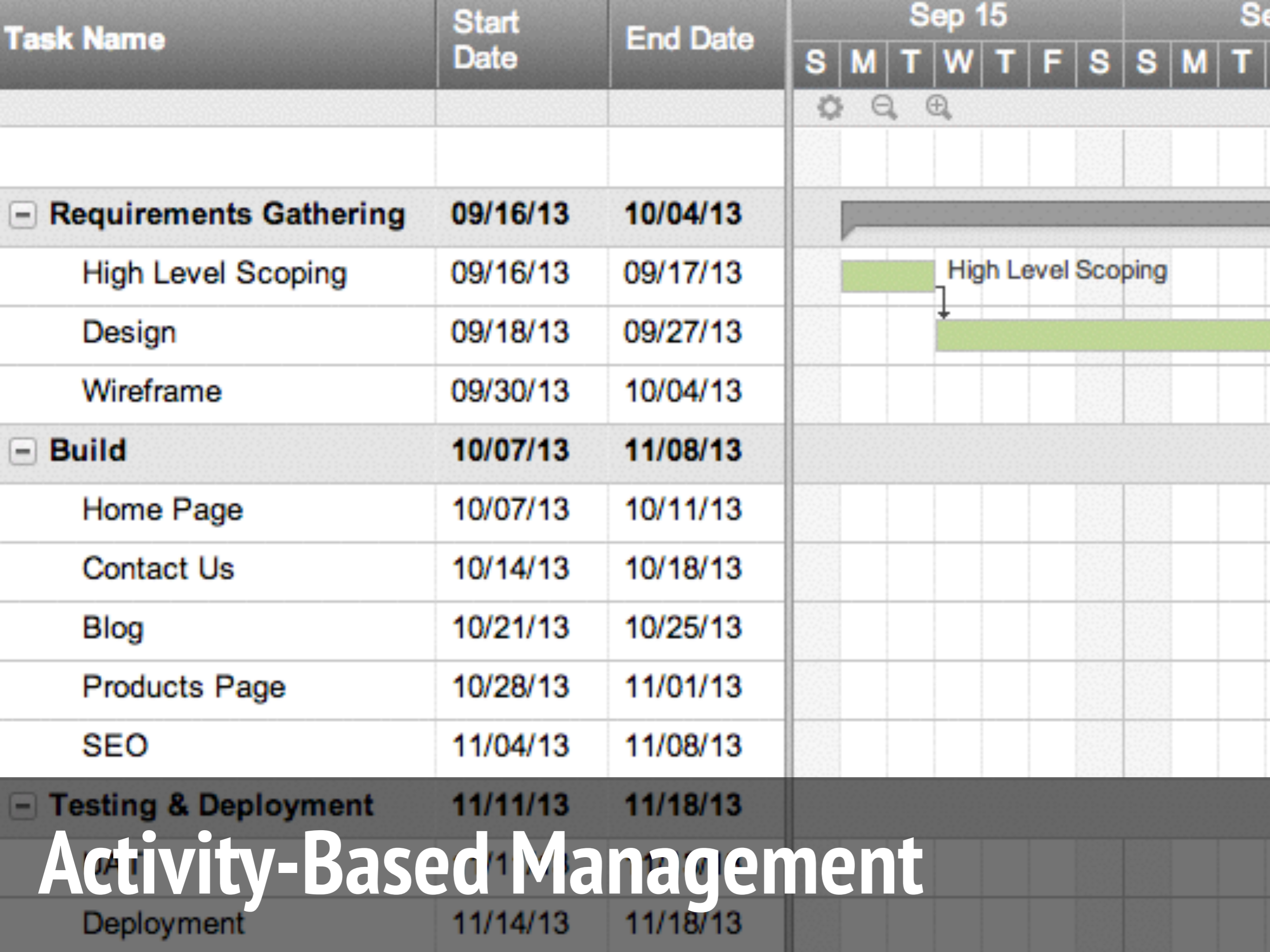
# Problems with Traditional Planning & Estimation



# Almighty Documentation

<http://www.flickr.com/photos/sonrisaelectrica/3695743740/>





# Activity-Based Management

**Estimation  $\neq$  Commitment**



**Wrong Perception of Estimation**



**vs.**



# No Customer Collaboration

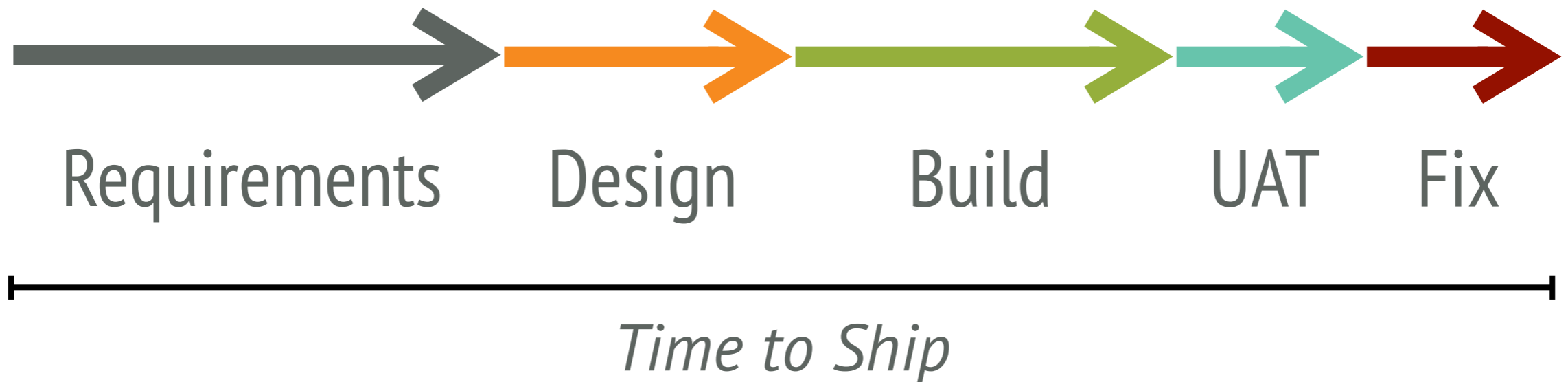


**This project will be  
completed by Christmas.**

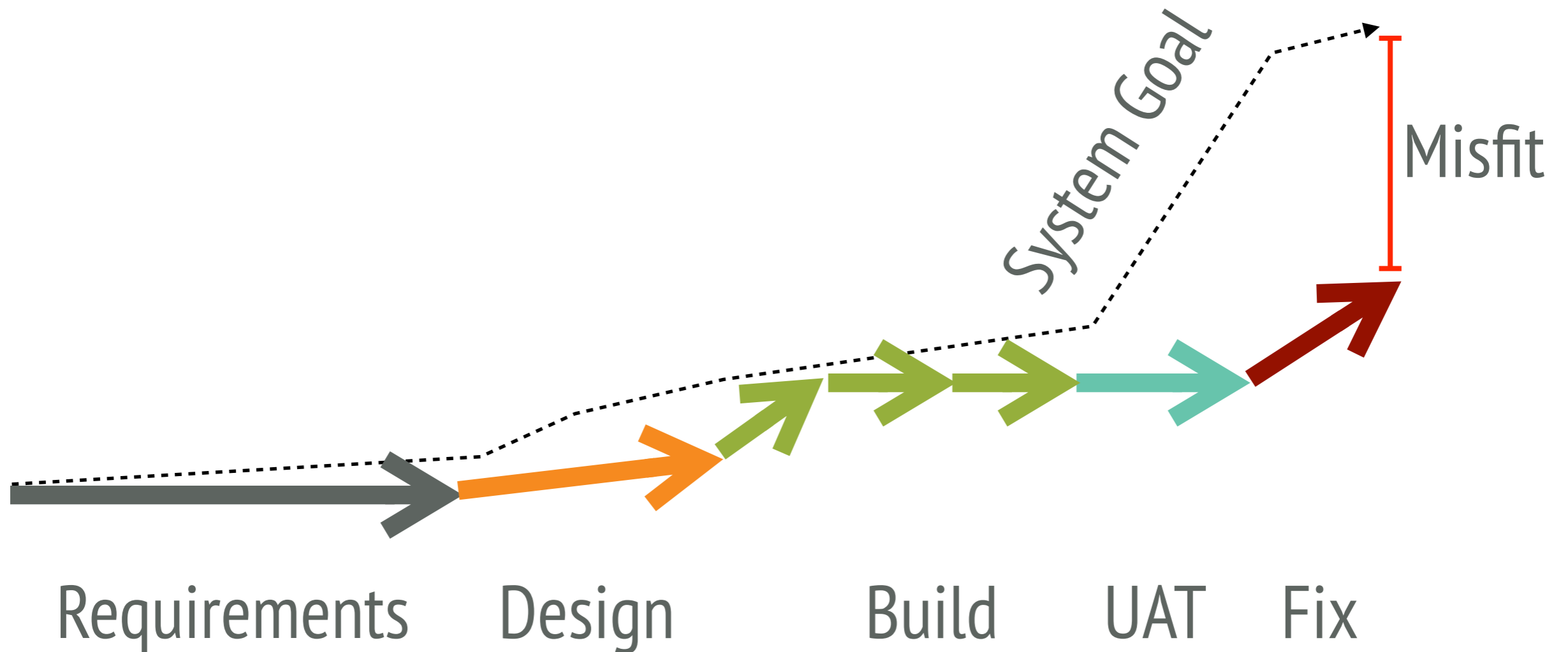
**- Project Manager,  
based on Traditional Planning**

**Unrealistic Timeline**

# Waterfall



# Waterfall Product/Market Fit



**SOFTWARE SERVES**

**BUSINESS**

**NEEDS**

**SOFTWARE IS**

**IMPORTANT!**

**WHAT'S A  
BETTER WAY TO  
PLAN AND ESTIMATE..**

**Features**

**Resources**

**Duration**

**Cost**

# AGILE

# Manifesto

*agilemanifesto.org*

# Manifesto

**Individuals and Interactions**

**Processes and Tools**

**Working Software**

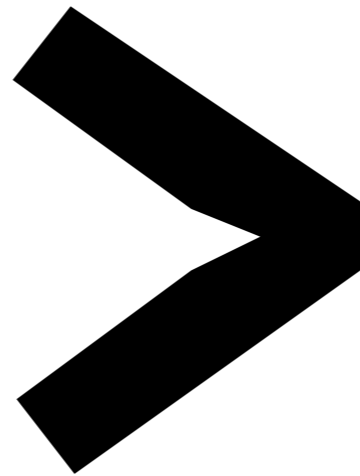
**Comprehensive  
Documentation**

**Customer Collaboration**

**Contract Negotiation**

**Responding to Change**

**Following a Plan**



# Benefits of Agile

**HIGHER  
VISIBILITY.**

**HIGHER  
ADAPTABILITY.**

**REDUCED RISK  
AND UNCERTAINTY.**

**GREATER  
BUSINESS VALUE.**

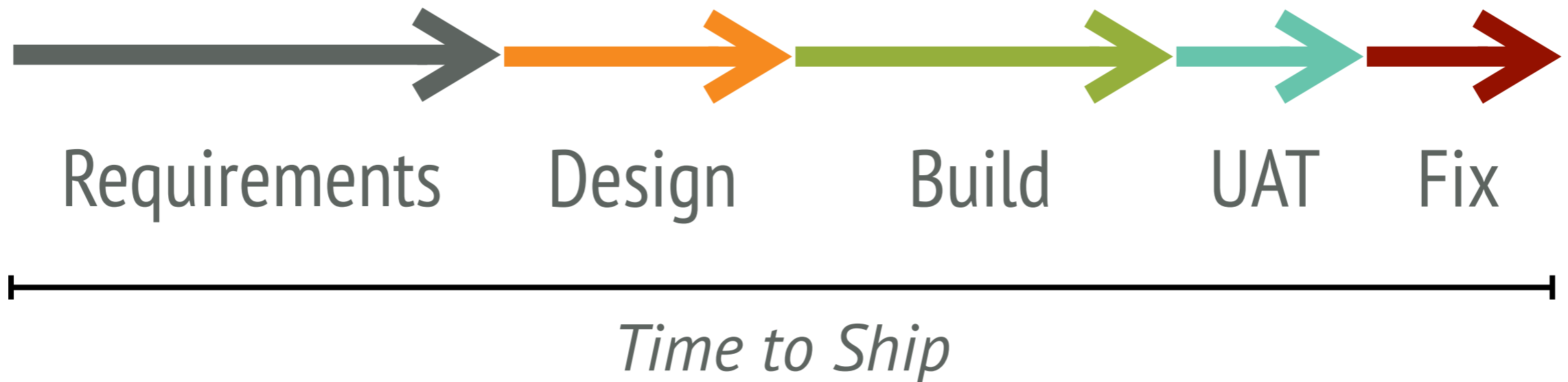
**[for the engineers]**

**EMPOWERED.**

**PURPOSE.**

# Comparison

# Waterfall



# Agile

High Level Scope



High Level Design



Detailed Design



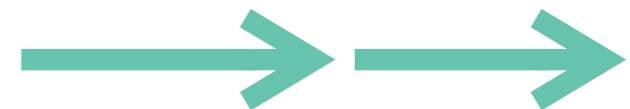
Estimate



Build

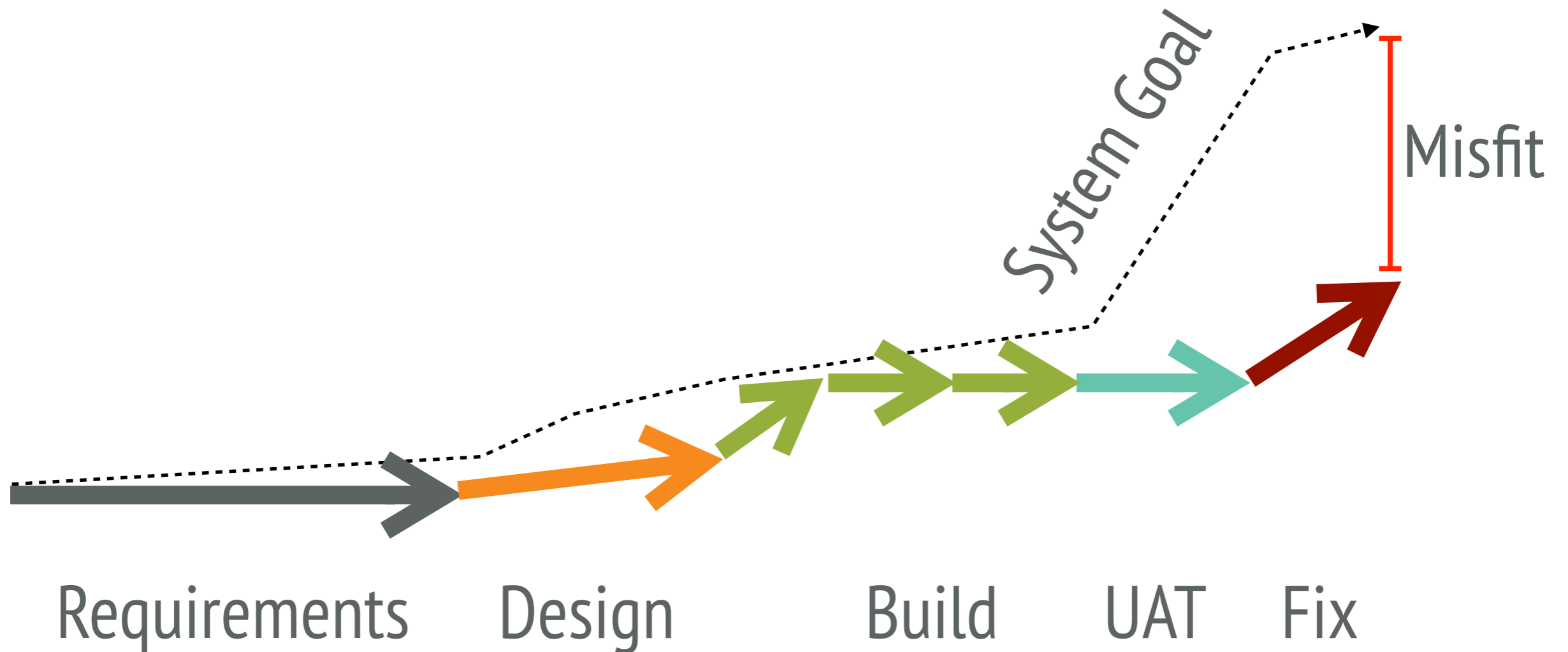


UAT

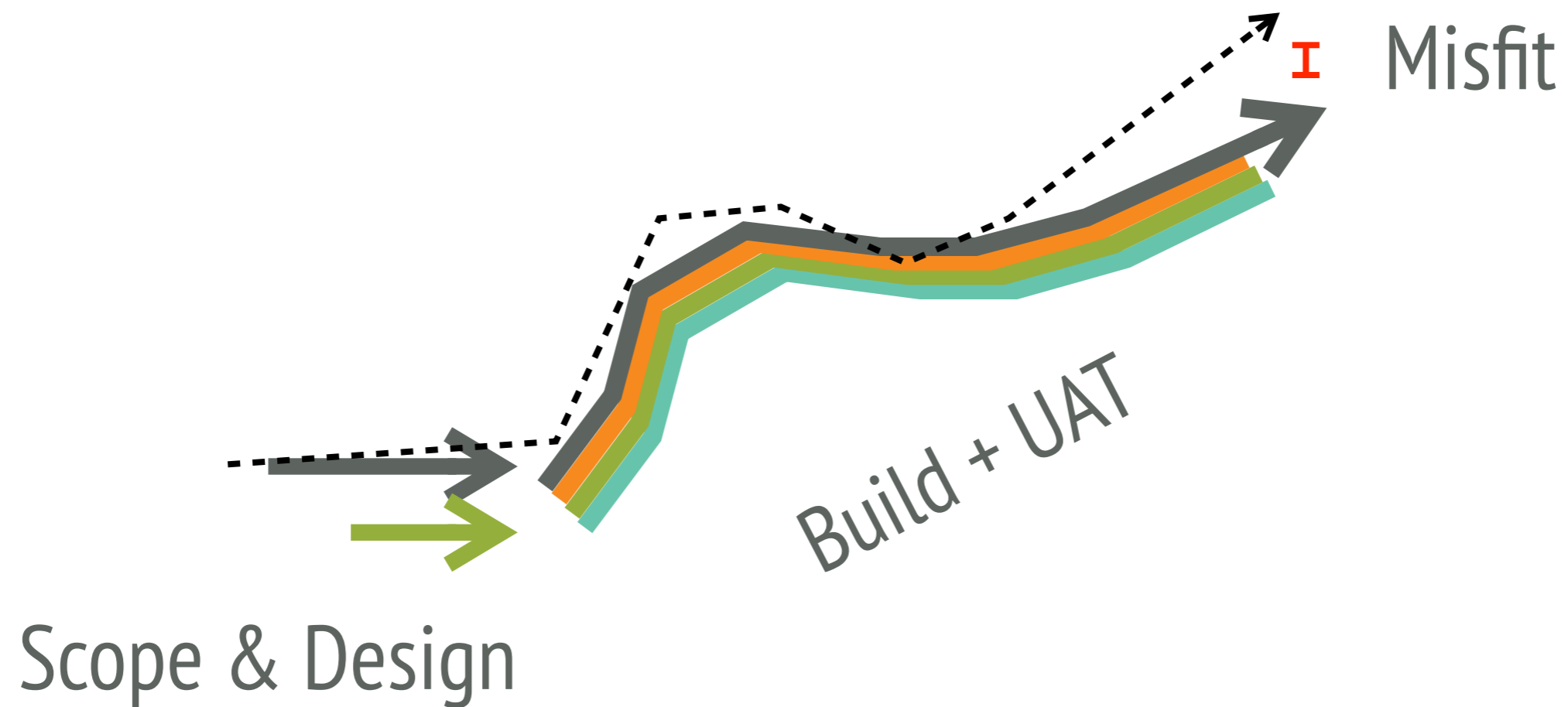


*Time to Ship*

# Waterfall Product/Market Fit



# Agile Product/Market Fit



# Agile Implementations

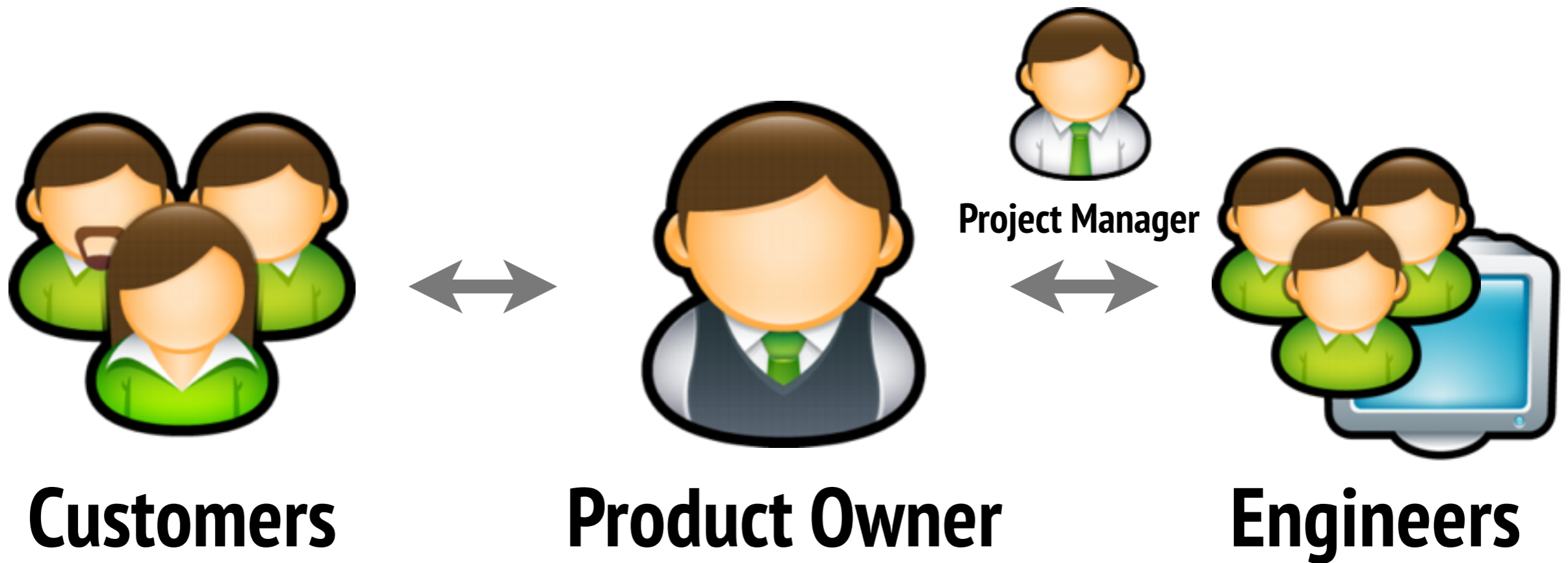
**Kanban**

**Scrum**

**Extreme Programming**

**etc**

# Roles in an Agile Project



# Customers



- Use the system/service
- Provides feedback on the system/service

# Product Owner



- Represents the stakeholders
- Represents customers and subject matter experts
- Manages product backlog by ranking and prioritizing user stories
- Ensures that the Team delivers value to the business

# Project Manager

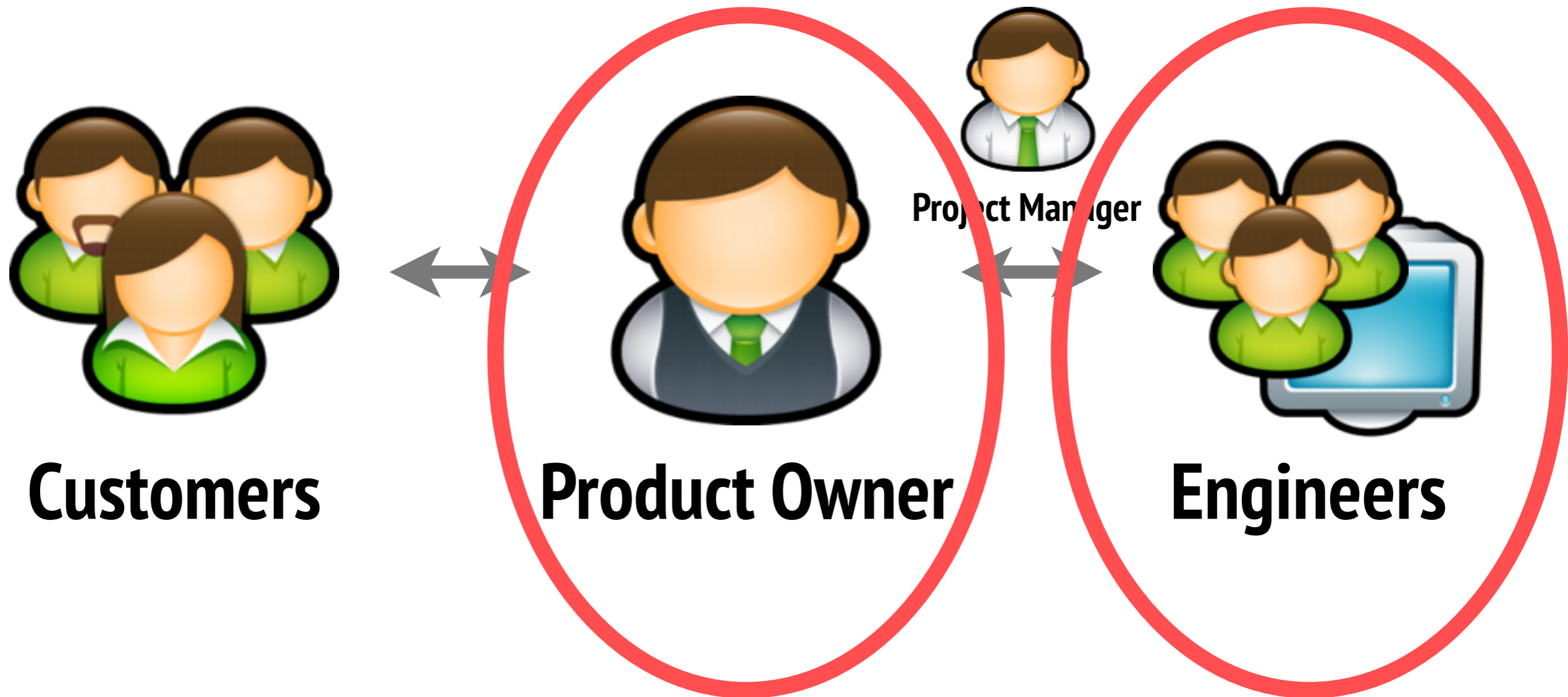


- Bridge between the Product Owner and Engineers
- Could be the Lead Developer too

# Engineers



- Write the code
- Estimate the stories effort
- Provide expertise on simplest solution first
- Pivotal to the success or failure of a project





# **Management Practices**



# **Engineering Practices**

# Management Practices



- Inception
- Iteration Planning
- Release Planning
- Retrospectives

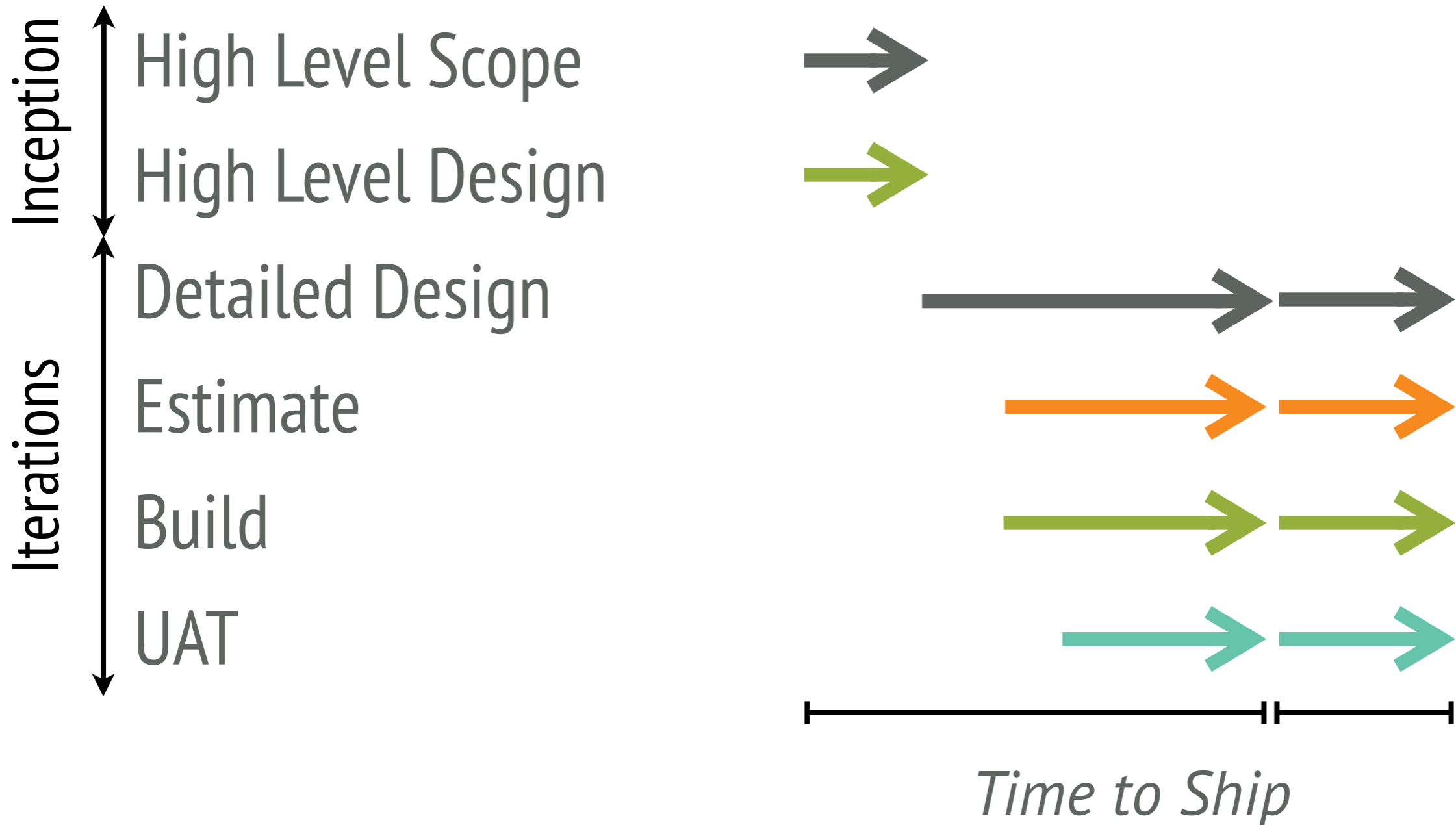
# Engineering Practices



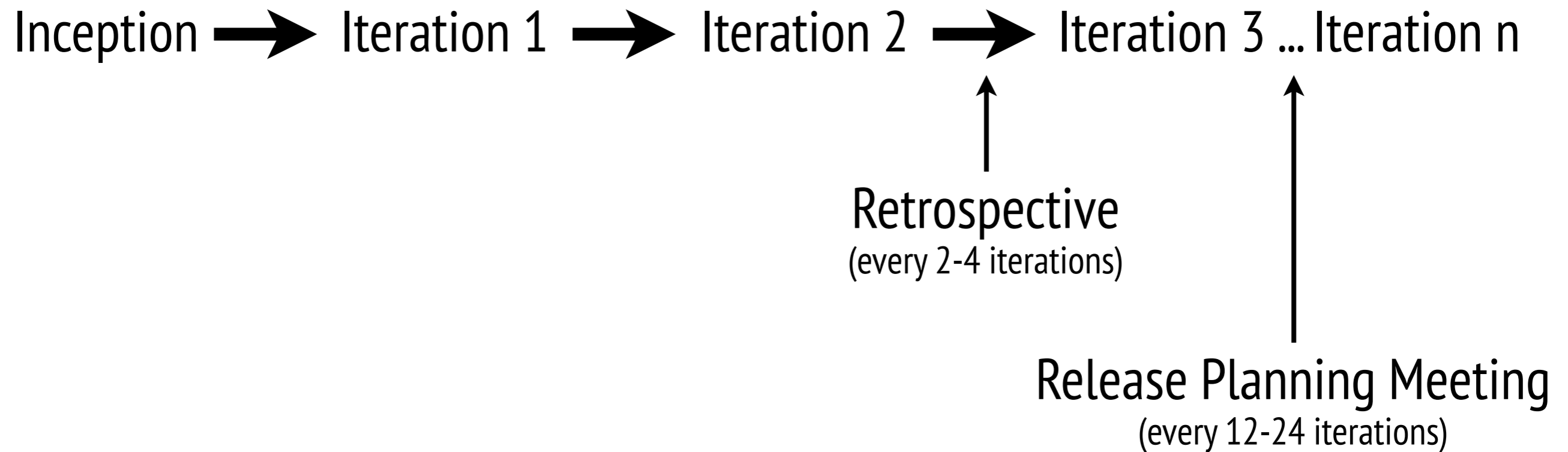
- Daily Standups
- Pair Programming
- Test Driven Development
- Continuous Integration/Deployment

# Agile Project Life Cycle

# Agile



# Agile



# Iteration

Iteration Planning Meeting

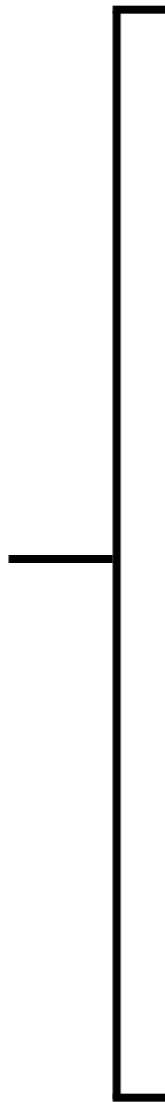


Build

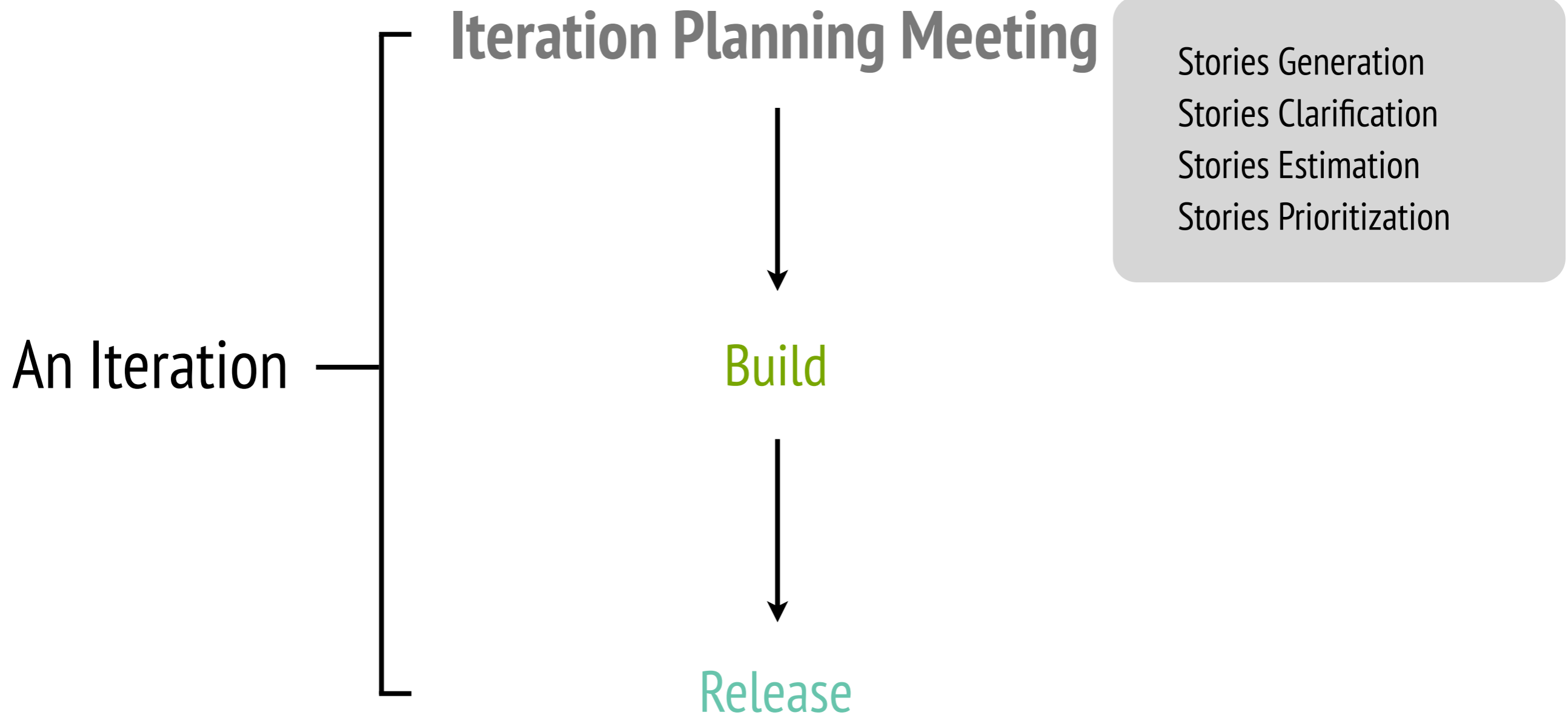


Release

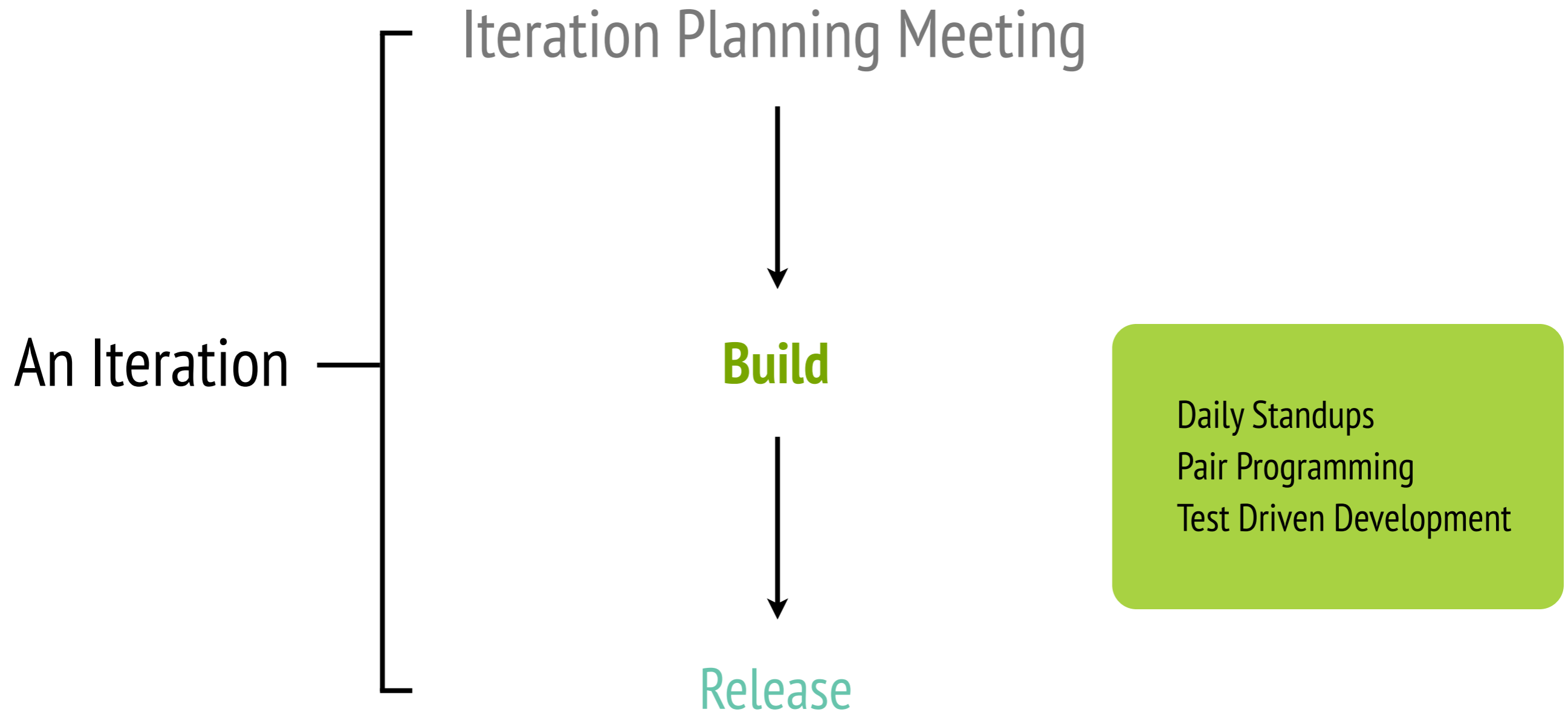
An Iteration



# Iteration



# Iteration



# Iteration

Iteration Planning Meeting

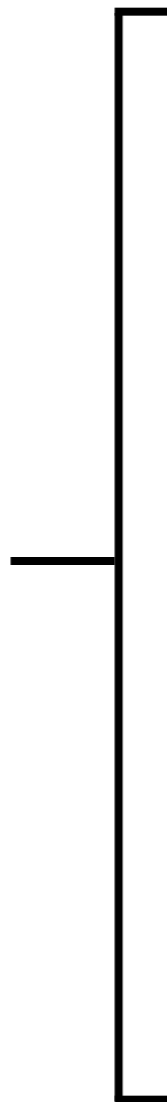


Build



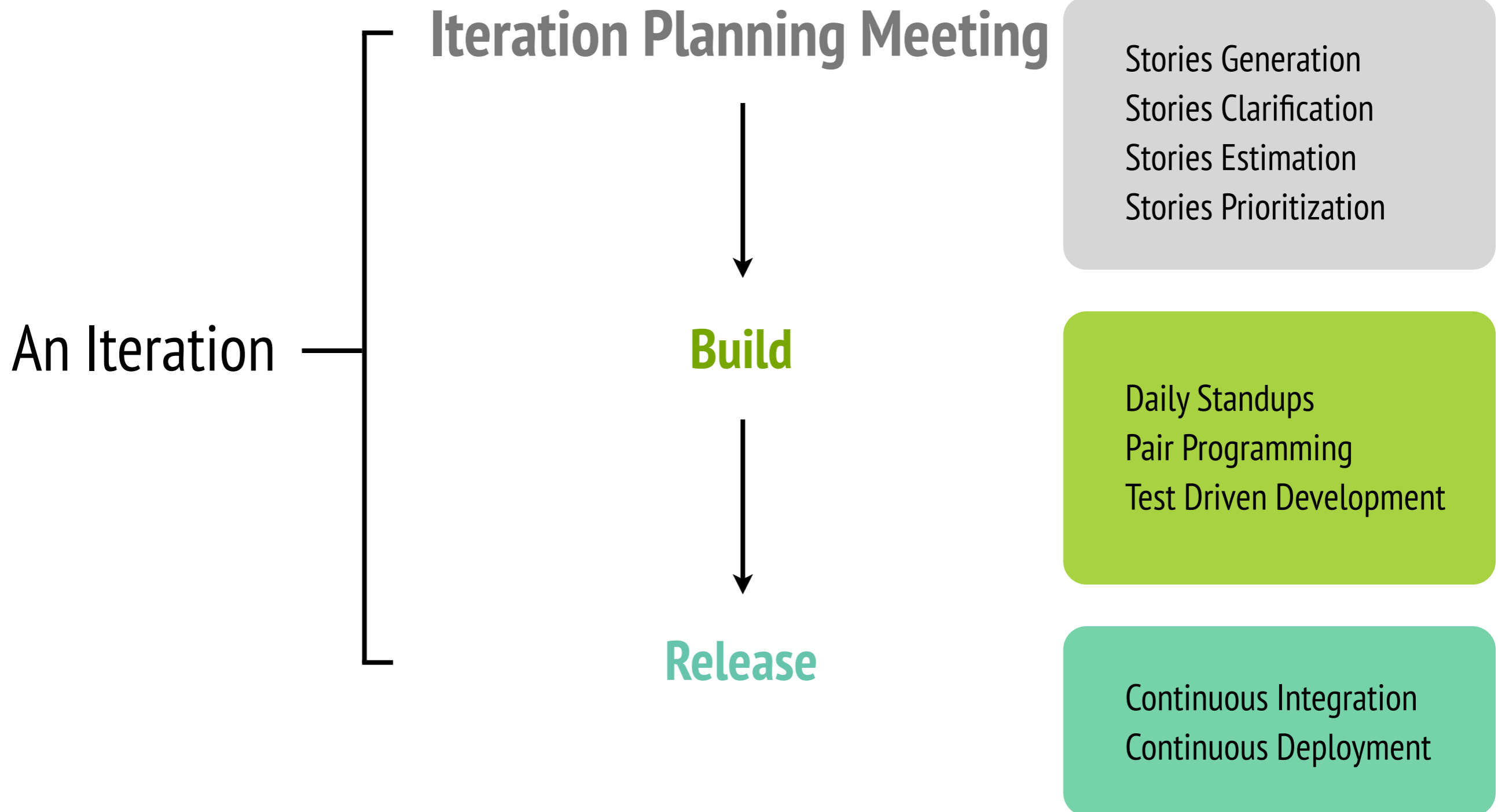
Release

An Iteration



Continuous Integration  
Continuous Deployment

# Iteration



**What is..**


# Inception

[Management Practice]

- Alignment and Expectation Setting
- Days to Week depending on size of project
- Agenda:
  - Goals (Business, Product, Non-Goals)
  - Risks
  - High Level Stories Estimation and Prioritization
  - Release Planning

# Release Planning Meetings

[Management Practice]



**6.. is used to create a release plan, which lays out the overall project. The release plan is then used to create iteration plans for each individual iteration.**

**-<http://www.extremeprogramming.org/rules/planninggame.html>**

# Release Planning Meetings

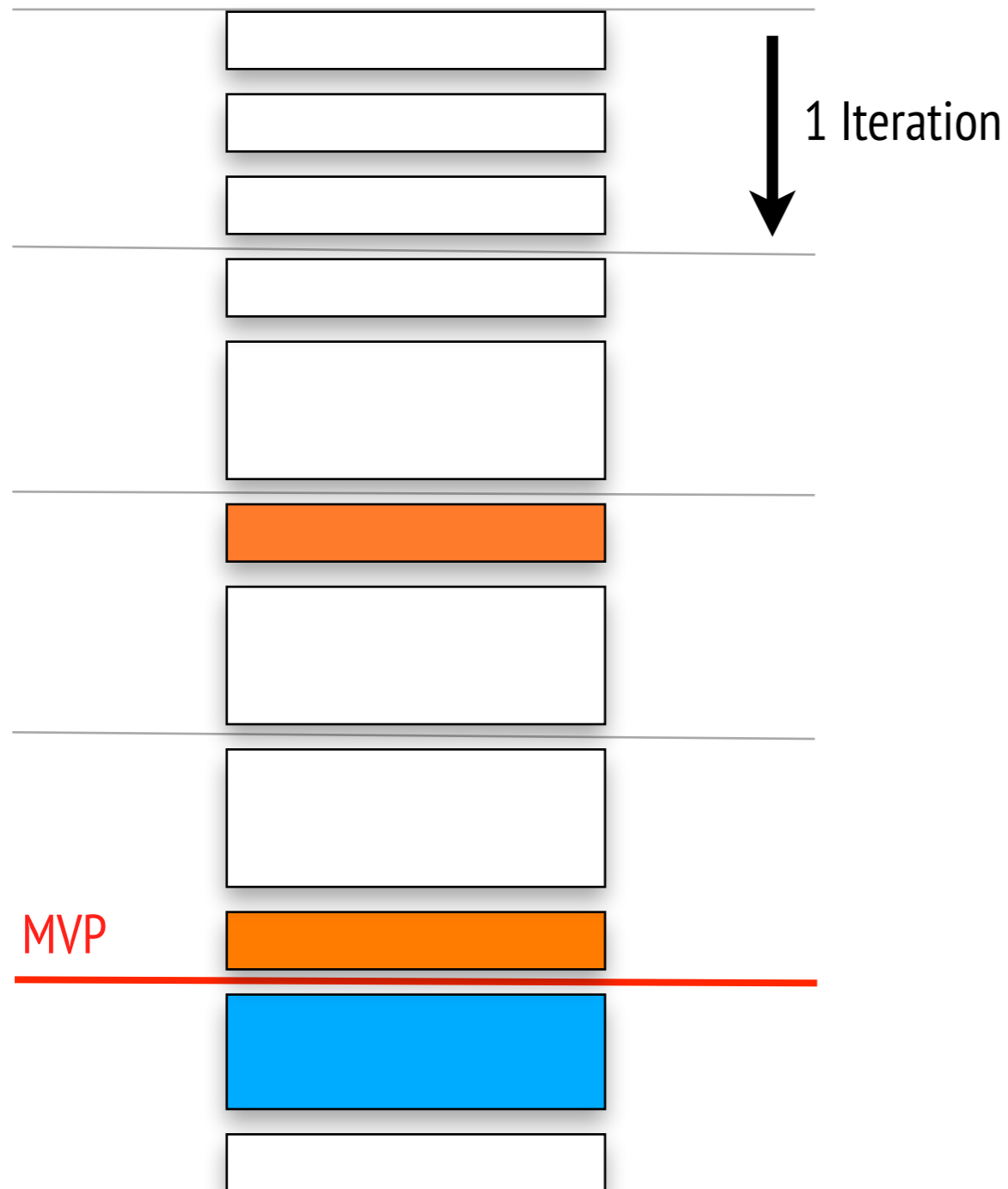
[Management Practice]

- Each release is 3 - 6 months
- Business to make decision on MVP, and its features
- Release is planned by Time or Scope
- Project can be quantified by:
  - Scope, Time, Resources and Quality

# Release Planning Meetings

[Management Practice]

Today



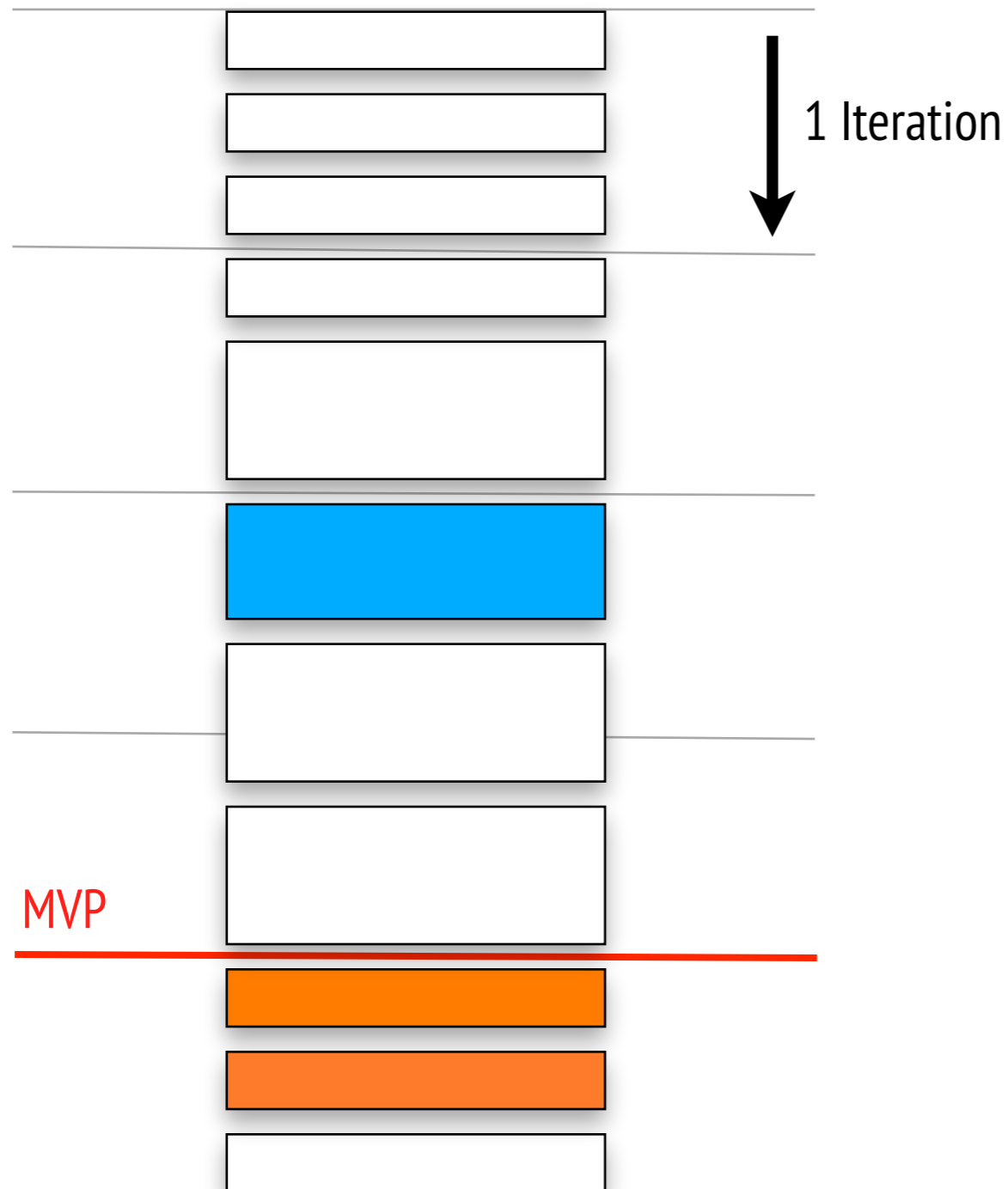
**Estimation**  
by Engineers

**Prioritization**  
by Product Owner

# Release Planning Meetings

[Management Practice]

Today



**Estimation**  
by Engineers

**Prioritization**  
by Product Owner

# Iteration Planning Meetings

[Management Practice]



**.. is called at the beginning of each iteration.  
User stories are chosen for this iteration by  
the customer in order of the most valuable to  
the customer first.**

**-<http://www.extremeprogramming.org/rules/iterationplanning.html>**

# Iteration Planning Meetings

[Management Practice]

- Each iteration is short, 1 - 3 weeks
- Features are prioritized, based on:
  - Business value (usually in financial sense)
  - Effort required
  - Amount and significance of new knowledge gained from feature
  - Risk added / removed

# Retrospective

[Management Practice]



**6.. play a very important role in iterative and incremental development. At the end of every iteration a retrospective is held to look for ways to improve the process for the next one.**

- <http://en.wikipedia.org/wiki/Retrospective>

# Retrospective

[Management Practice]

- Reflect and Adapt methods and to help whole team learning
- Benefits of Retrospectives:
  - Productivity
  - Capability
  - Quality
  - Capacity



# Daily Standups

# Daily Standups

[Engineering Practice]

- General project updates
- Which story did you work on yesterday?
- Which story are you going to work on today?
- Blockages?



# Pair Programming

# Pair Programming

## [Engineering Practice]

- Benefits of Pair Programming:
  - Focus
  - Knowledge Exchange
  - Collective Code Ownership
  - High Code Quality
  - Engineering Happiness!

# Test Driven Development

[Engineering Practice]



**..when you create your tests first, before the code, you will find it much easier and faster to create your code.**

- <http://www.extremeprogramming.org/rules/testfirst.html>

# Test Driven Development

[Engineering Practice]


- Red, Green, Refactor
- Benefits of Test Driven Development:
  - Quality
  - Accountability
  - Maintainability
  - Live Documentation



# Continuous Integration/Deployment

# Continuous Integration/Deployment

[Engineering Practice]




**.. often avoids diverging or fragmented development efforts, where developers are not communicating with each other about what can be re-used, or what could be shared.**

- <http://www.extremeprogramming.org/rules/integrateoften.html>

**WHAT SETS AGILE  
APART  
FROM WATERFALL**

# High Level Stories Estimation and Prioritization

# What is a User Story?



**.. one or more sentences in the everyday or business language of the end user or user of a system that captures what a user does or needs to do as part of his or her job function.**

- [http://en.wikipedia.org/wiki/User\\_story](http://en.wikipedia.org/wiki/User_story)

# Structure of a User Story (1)

As a

**<user role>**,

I want

**<capability>**,

so that

**<business value>**.

# Structure of a User Story (2)

## **Acceptance Criteria:**

1. <do this>

2. <do that>

...

n. <expected result>

# Example of a User Story (1)

As a

**Facebook User,**

I want

**to sign up with my FaceBook account,**

so that

**I can start using the service instantaneously.**

# Example of a User Story (2)

## **Acceptance Criteria:**

1. Go to homepage
2. Click on “Login with Facebook”
3. Wait to be redirected to Facebook Login page
4. Login with your Facebook credentials
5. You will be redirected to homepage
6. You should see “Welcome John” in header

**HOW TO**  
**ESTIMATE**  
**STORIES?**

# Techniques

**ANALOGY.**

**EXPERT  
ADVICE.**

**DIVIDE  
AND  
CONQUER.**

**TECHNIQUES**

**NOT**

**ENOUGH**

$$\frac{\text{TOTAL STORY POINTS}}{\text{VELOCITY}} = \text{DURATION}$$

# Relative Sizing

# Relativity



# Let's Estimate

**Estimate the size of these balls. Pick from S, M, L or XL.**

Type	Size
Golf Ball	S
Basketball	XL
Soccer Ball	L
Ping Pong Ball	S
Tennis Ball	M

# Size Chart and Story Points

# Size Chart

Size	Points	Points
S	1	1
M	2	2
L	4	3
XL	8	5
XXL	16	8



Increasing Order of Complexity

$$\frac{\text{TOTAL STORY POINTS}}{\text{VELOCITY}} = \text{DURATION}$$

***Velocity***

# Velocity

- Story Points per Iteration (Throughput)
- Derived based on:
  - Estimation
  - Historical Data
- Depends on:
  - Team Members (skills)
  - Team Size

$$\frac{\text{TOTAL STORY POINTS}}{\text{VELOCITY}} = \text{DURATION}$$

**ESTIMATE WITH**

**PLANNING**

**POKER**

**ENGINEERS**

**ESTIMATE**

**Product Owner**

**PRIORITIZE**

**AGILE IS**  
**CONSTANT**  
**FEEDBACK**

**Thank You**