

Why do projects fail?

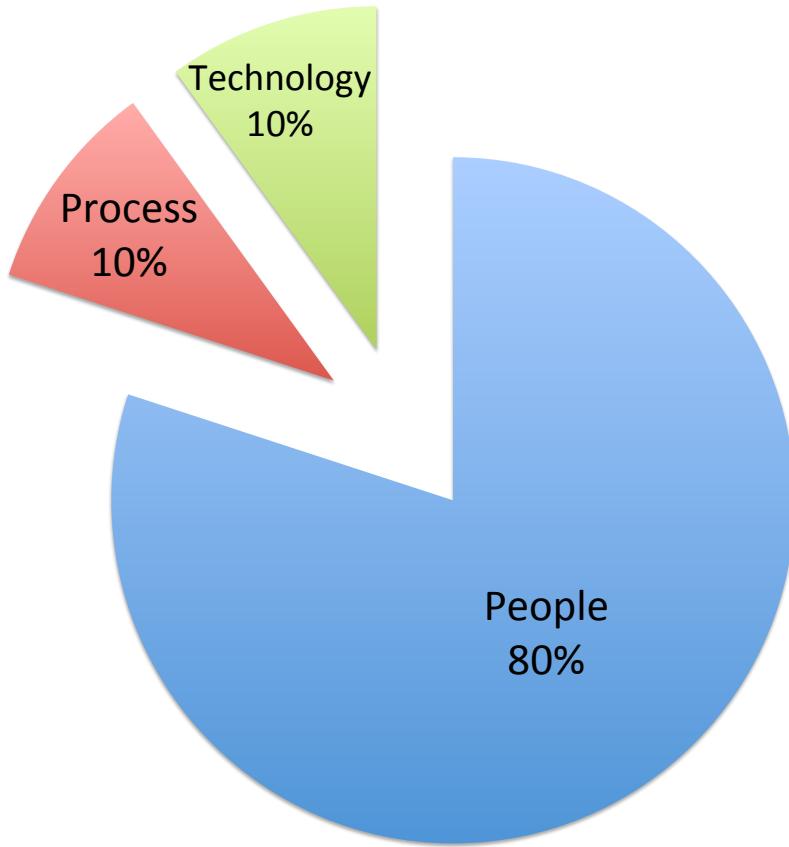
Why do projects fail?

People?

Process?

Technology?

Why do projects fail?



Source: Ernst and Young

LEAN & AGILE DEVELOPMENT

Team Software Project
2018 - 2019

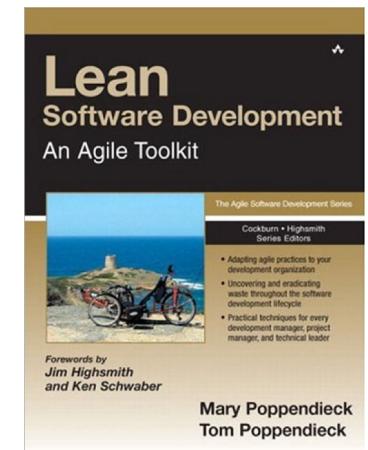
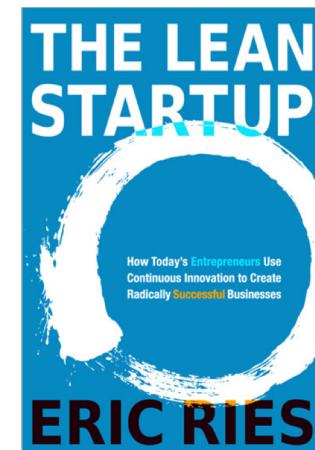
Dr. Andrew Hines
University College Dublin

Based on content from Dr Brian MacNamee

LEAN STARTUPS & MINIMUM VIABLE PRODUCTS

Running Lean

- The **lean** philosophy became very popular in manufacturing in the 1970s – 1980s
 - Key idea is to eliminate waste
- **Taiichi Ohno** at Toyota brought a lot of ideas together in the **Toyota Production System** (TPS)
- Lean processes became widely adopted outside of manufacturing



Build Me A Pyramid

Year 0



Builder 1

Build Me A Pyramid

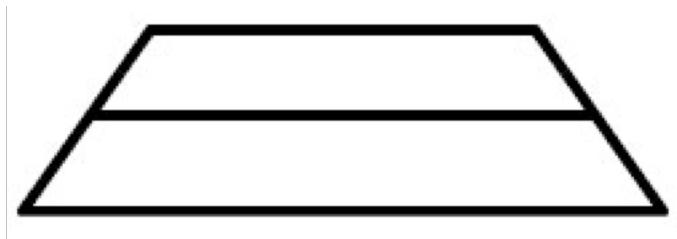
Year 1



Builder 1

Build Me A Pyramid

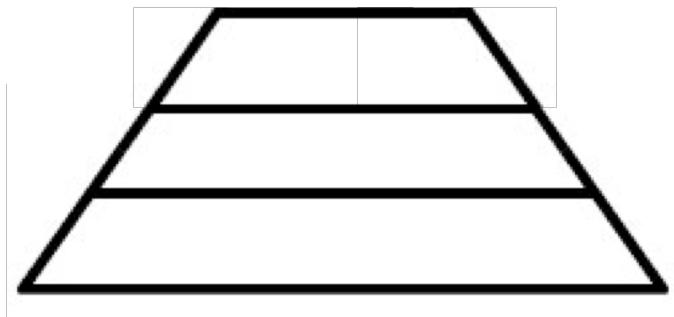
Year 2



Builder 1

Build Me A Pyramid

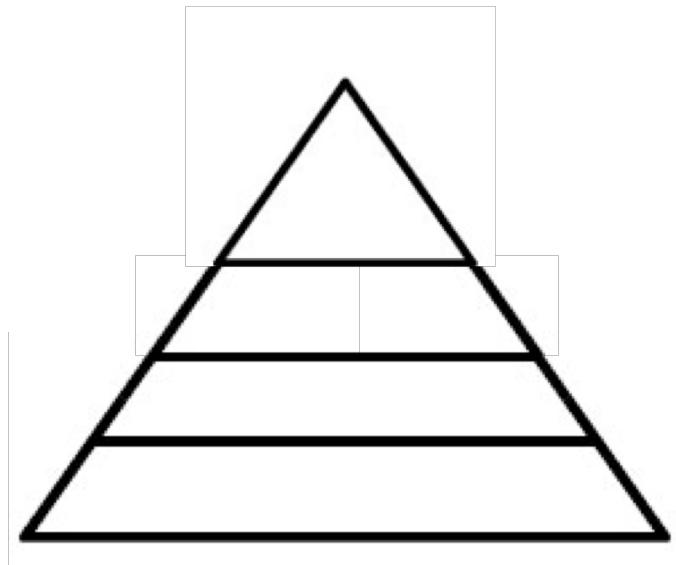
Year 3



Builder 1

Build Me A Pyramid

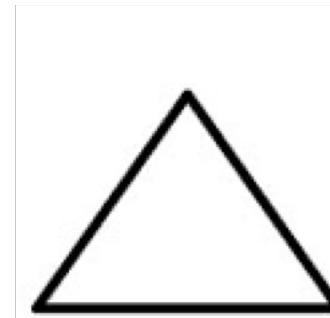
Year 4



Builder 1

Build Me A Pyramid

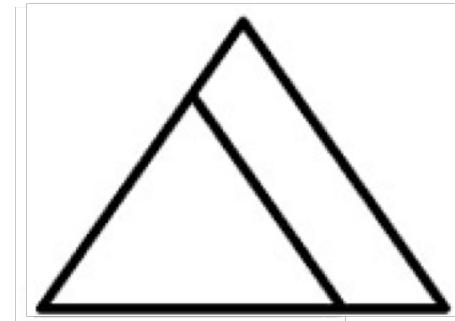
Year 1



Builder 2

Build Me A Pyramid

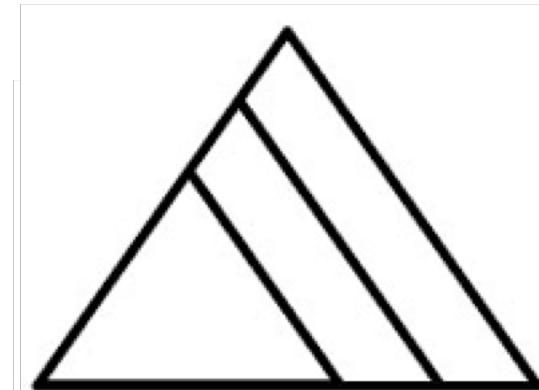
Year 2



Builder 2

Build Me A Pyramid

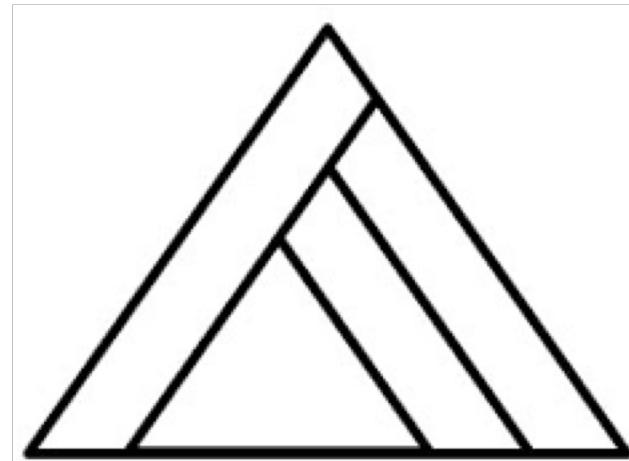
Year 3



Builder 2

Build Me A Pyramid

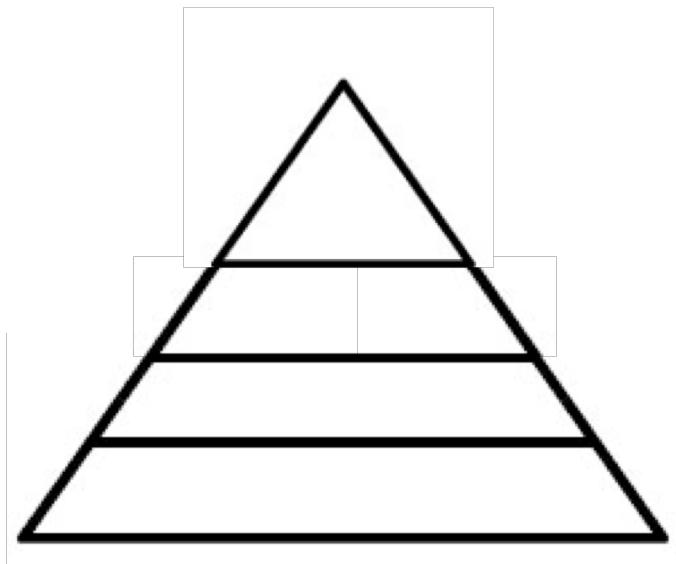
Year 4



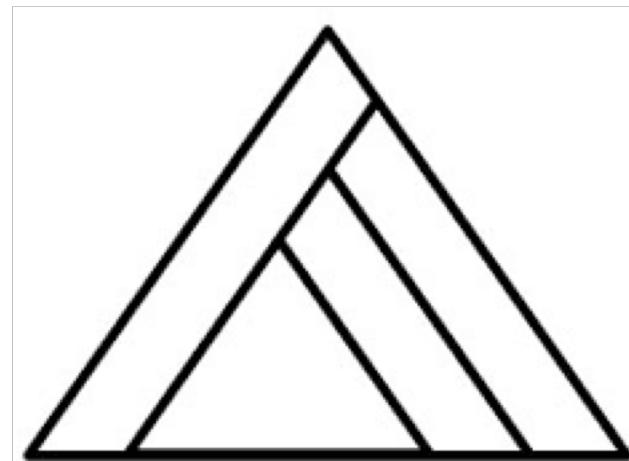
Builder 2

Build Me A Pyramid

Year 4



Builder 1



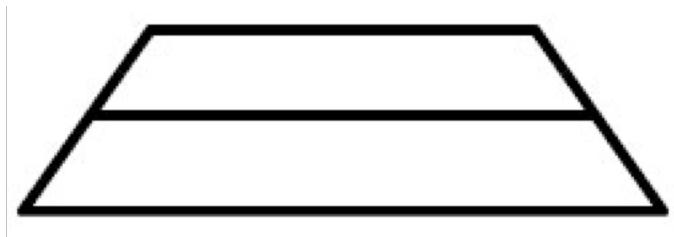
Builder 2

Build Me A Pyramid

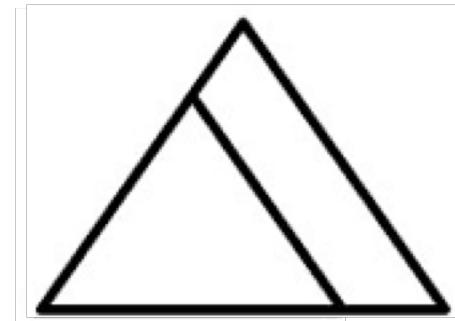
What if the pharaoh had died after year 2?

Build Me A Pyramid

What if the pharaoh had died after year 2?



Builder 1



Builder 2

Minimum Viable Product

- A bit of argument about the exact definition of minimum viable product (MVP)
- Probably coined by **Frank Robinson**, but used a lot and popularized by **Steve Blank** and **Eric Ries**

"A **minimum viable product** (MVP) has just those core features that allow the product to be deployed, and no more."

- Eric Reis

Minimum Viable Product

“we define an MVP (minimum viable product) as the smallest amount of design and code necessary to conduct the first product or market experiment while maintaining a positive user experience.”

- Eric Reis

Famous MVPs



Famous MVPs

lastminute.com

lastminute.com price match guarantee £ £

Our favourite deals...

From <u>Flights</u> : Whisk your loved one away to the capital of romance - Paris!	from £77 £52 +Tax £25.00
From <u>Hotels</u> : Elegant hotel in the heart of the Georgian city - Bath!	£92
From <u>Entertainment</u> : The Lion King midnight special - one night only charity show!	£32.50
From <u>Holidays</u> : Fulfill your dream - cruise the Caribbean for seven sultry days!	£599.00
From <u>Gifts</u> : Tasty chocolates and a well deserved break - ferry for five to Dublin!	£33.95
From <u>Auctions</u> : Dramatic John Lennon painting by David Vaughan!	£800
From <u>Restaurants</u> : Be at Centrestage for one night only - fantastic discount!	

Quick Search

All Products

search

register with lastminute.com

SE FR DE

UK Home

- Flights
- Hotels
- Holidays
- Entertainment
- Restaurants
- Gifts
- Auctions

What's cool

- nextweekend™
- Skiing!
- Fully Booked!
- World Events Guide
- World Places Guide

About us

- Guided Tour
- About Us
- Contact Us
- Security
- Privacy Policy
- Terms & Conditions
- Our Deals

Need advice on using the site?
[Click here](#) to ask someone at [lastminute.com](#)! Available 9:30 - midnight Mon - Fri!

For FAQs on the Proposed Share Listing [click here](#)

lastminute.com updates!

You are going to have a great time using lastminute.com! Join the **most talked about** FREE weekly newsletter in town, and be the **first** to receive the **best deals**.

Not sure? [Click here](#) and we'll tell you why.

Enter your email address:

Choose a format for the email:
 HTML Standard Text

See how cool the HTML version is!
[Go!](#)

See our Privacy Policy for how we'll use your email address

Need advice on using the site?
[Click here](#) to ask someone at [lastminute.com](#)! Available 9:30 - midnight Mon - Fri!

[FAQs](#)

Famous MVPs



Famous MVPs

Explore Start a project

KICKSTARTER

Search Sign in

Pebble: E-Paper Watch for iPhone and Android



Pebble is a customizable watch. Download new watchfaces, use sports and fitness apps, get notifications from your phone.

Buy Now

Created by

Pebble Technology

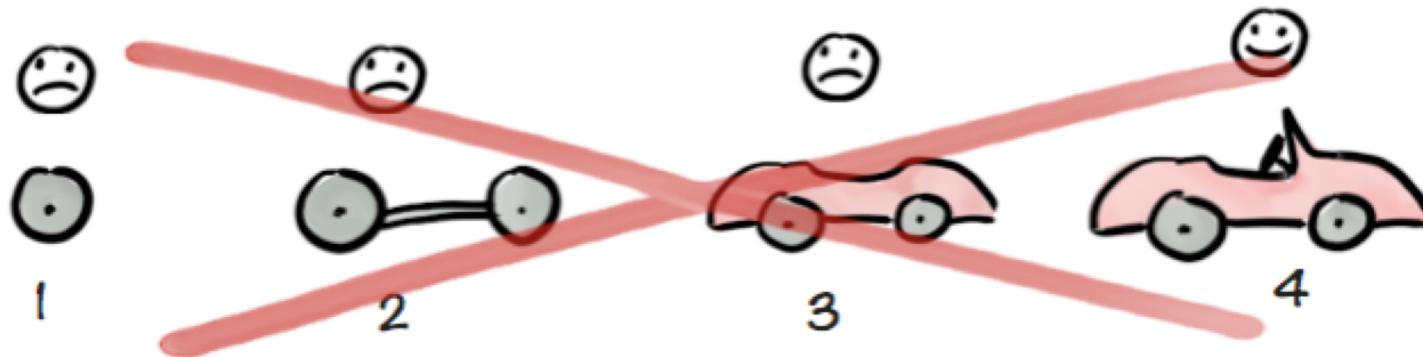
68,929 backers pledged \$10,266,845 to help bring this project to life.

<https://www.kickstarter.com/projects/getpebble/pebble-e-paper-watch-for-iphone-and-android>

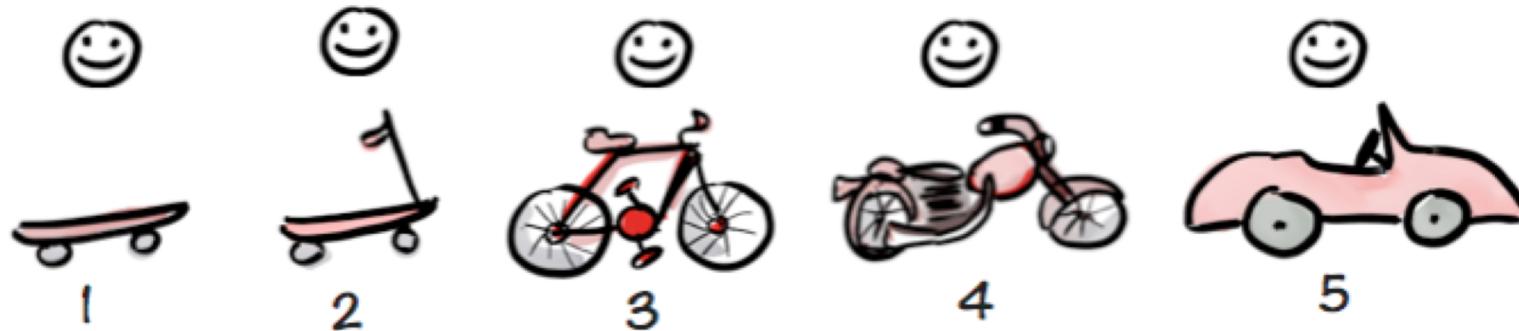
<https://www.kickstarter.com/projects/getpebble/pebble-e-paper-watch-for-iphone-and-android>

Minimum Viable Product

Not like this....

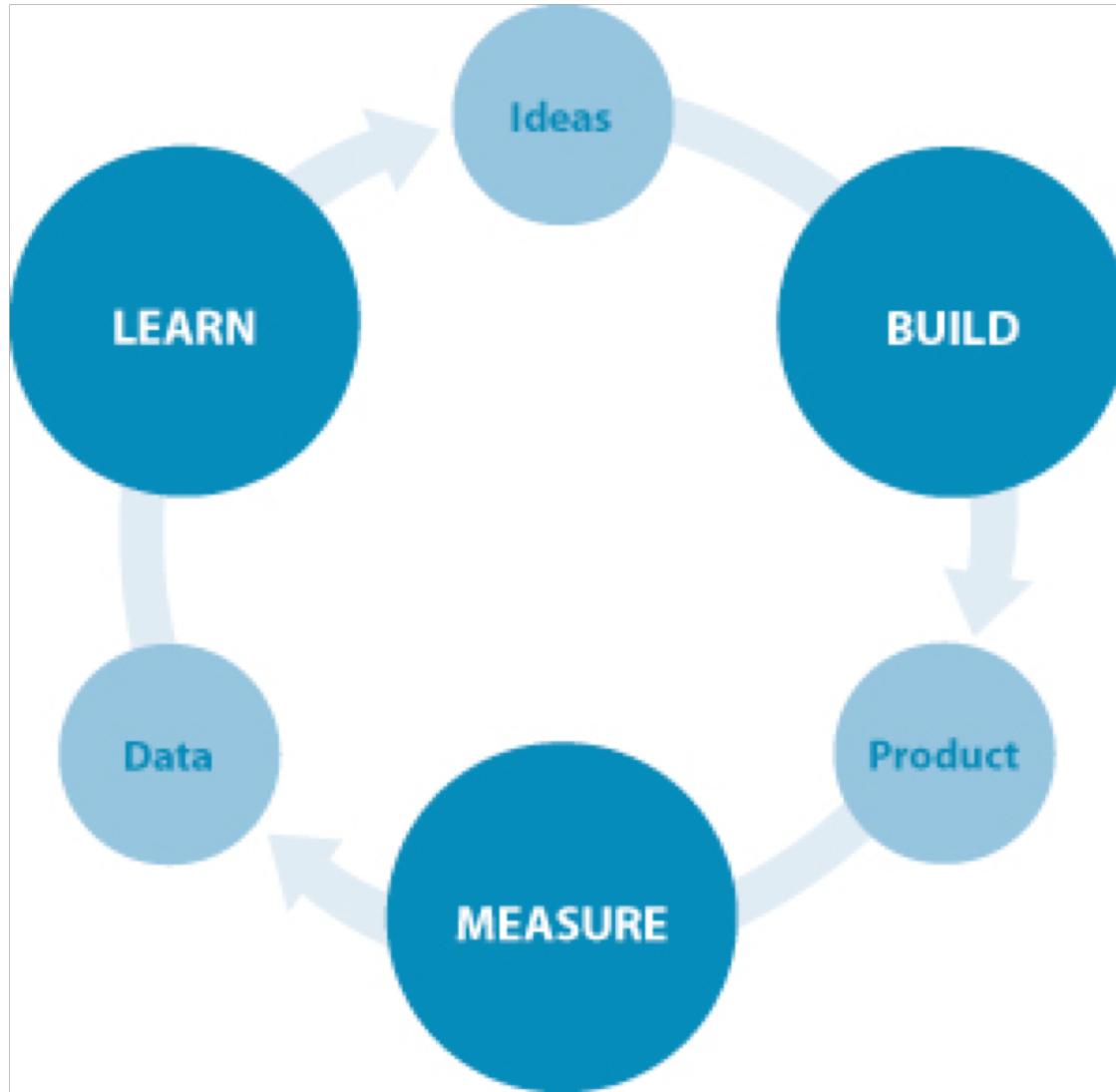


Like this!



Minimum Viable Product

- The minimum viable product sequence is not just a sequence of bad versions of the product
- Each version is defined to answer a specific question
- The **Build - Measure - Learn** cycle is the key to using the MVP effectively



!START TODAY!
Your project proposal
is an MVP

MEASURE

Further Reading

- The Lean Startup, Eric Reis
- The Startup Owner's Manual, Steve Blank & Bob Dorf
- Why the Lean Start-Up Changes Everything, Steve Blank

hbr.org/2013/05/why-the-lean-start-up-changes-everything

AGILE METHODS

The Agile Manifesto

- In February 2001, 17 software developers met at the Snowbird resort in Utah to discuss lightweight development methods and published the **Manifesto for Agile Software Development**

Kent Beck James Grenning Robert C. Martin Mike Beedle Jim Highsmith Steve Mellor Arie van Bennekum Andrew Hunt Ken Schwaber Alistair Cockburn Ron Jeffries Jeff Sutherland Ward Cunningham Jon Kern Dave Thomas Martin Fowler Brian Marick

The Agile Manifesto

We are uncovering better ways of developing software by doing it and helping others do it.
Through this work we have come to value:

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

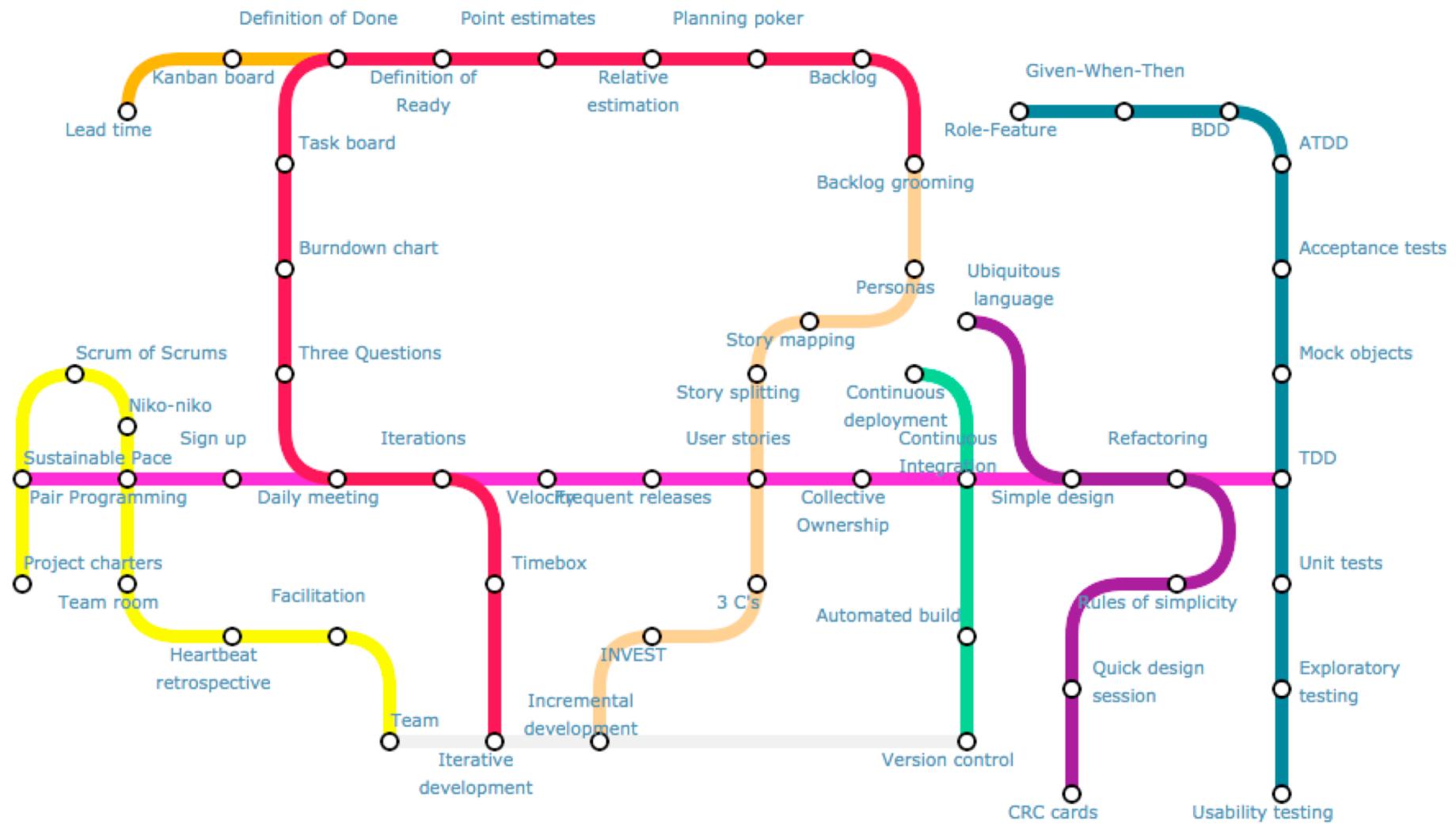
That is, while there is value in the items on the right, we value the items on the left more.

Agile Methods

- The Agile Manifesto is a statement of values rather than a particular methodology
- Different agile methodologies have emerged over the years
 - Scrum
 - Extreme Programming (XP)
 - Lean Software Development
 - Kanban
 - Dynamic systems development method
 - Feature-driven development

Agile Methods

- Many of the agile methods share a number of core practices
 - Cross-functional teams
 - Continuous integration
 - Information radiators
 - Pair programming
 - Refactoring
 - Ceremonies
 - Test-driven development
 - Timeboxing
 - User stories
 - Retrospectives
 - Velocity tracking



Lines represent practices from the various Agile "tribes" or areas of concern:

Extreme Programming
 Teams
 Lean

Scrum
 Product management
 Devops

Design
 Testing
 Fundamentals

Further Reading

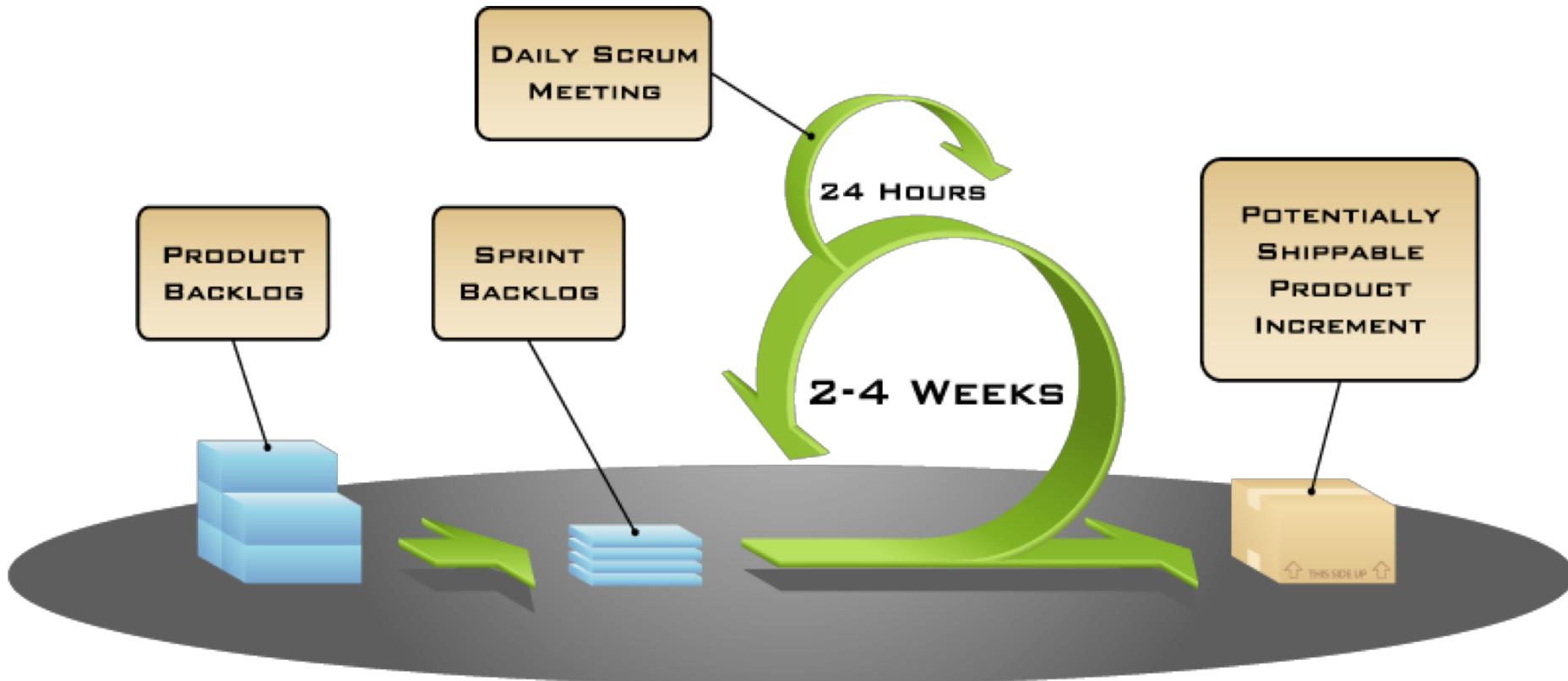
- Agile and Iterative Development, Craig Larman
- Poppendieck, M., & Poppendieck, T. (2003).
Lean Software Development: An Agile Toolkit.
- The Cathedral & The Bazaar, Eric S. Raymond
www.catb.org/esr/writings/cathedral-bazaar/



SCRUM

Much of the material in this section is based on "An Introduction to Scrum" by Mountain Goat Software (www.mountaingoatsoftware.com/scrum) and "The Basics of Scrum" by ScrumInc (www.scruminc.com/wp-content/uploads/2014/06/The-Basics-of-Scrum.pdf)

Scrum, A Bird's Eye View



COPYRIGHT © 2005, MOUNTAIN GOAT SOFTWARE

Key Components - Product Backlog

- The **product backlog** is a list of features or technical tasks which the team maintains and which, at a given moment, are known to be necessary and sufficient to complete a project or a release
 - Items in the product backlog can be defined at different levels of detail and might include user stories, technical tasks, interface elements,
 - As items in the backlog come closer to being implemented they are defined at a finer level of detail

A Sample Product Backlog

Product Backlog

Allow a guest to make a reservation

As a guest, I want to cancel a reservation.

As a guest, I want to change the dates of a reservation.

As a hotel employee, I can run RevPAR reports (revenue-per-available-room)

Improve exception handling

...

Key Components - Sprints

- Scrum projects make progress in a series of **sprints**
 - Typical duration is 2–4 weeks or a calendar month at most
 - Product is designed, coded, and tested during the sprint
 - At the end of the sprint a *deployable* version of the product is created

Key Components - Sprint Backlog

- The **sprint backlog** is the set of items taken from the product backlog that will be addressed in a particular sprint
 - Items brought into the sprint backlog should be well defined and ready to be worked on

Key Components - Daily Scrum Meeting

- The **daily scrum meeting** is one of four key **ceremonies** in the Scrum method
 - Held every day lasting < 15 minutes (encouraged by remaining standing up!)
 - Each team member answers 3 key questions:
 - What did you do yesterday?
 - What will you do today?
 - Is anything in your way?
 - This daily scrum meeting should avoid many other meetings, keep everyone on track, and give everyone visibility of the entire project



Scrum Framework

Roles

- Product owner
- ScrumMaster
- Team

Ceremonies

- Sprint planning
- Sprint review
- Sprint retrospective
- Daily scrum meeting

Artifacts

- Product backlog
- Sprint backlog
- Burndown charts

Scrum Framework

Roles

- Product owner
- ScrumMaster
- Team

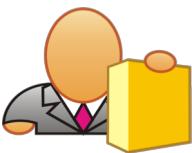
Ceremonies

- Sprint planning
- Sprint review
- Sprint retrospective
- Daily scrum meeting

Artifacts

- Product backlog
- Sprint backlog
- Burndown charts

Product Owner



- Define the features of the product
- Decide on release date and content
- Adjust features and priority every iteration, as needed

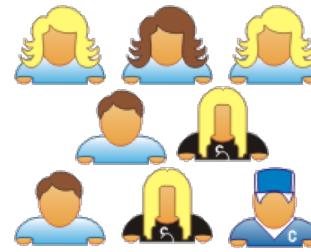
ScrumMaster



- Responsible for enacting Scrum practices
- Ensure that the team is fully functional and productive

Roles

- Product owner
- ScrumMaster
- Team



Team

- Typically 4-9 people
- Cross-functional: programmers, testers, UX designers, etc.
- Teams are self-organizing

Scrum Framework

Roles

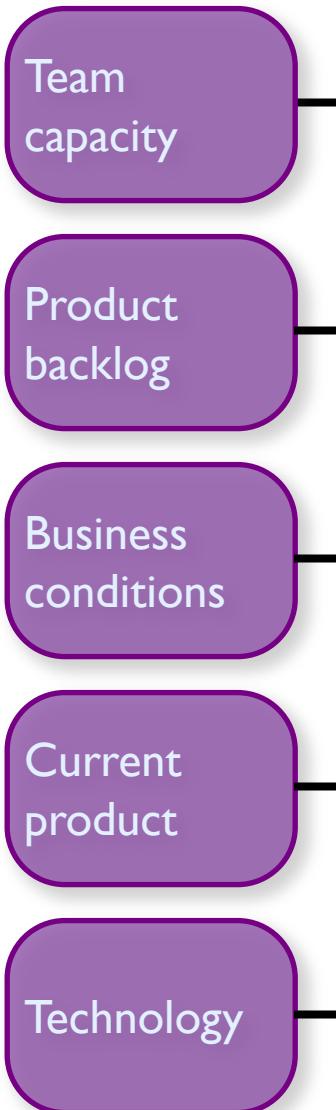
- Product owner
- ScrumMaster
- Team

Ceremonies

- Sprint planning
- Sprint review
- Sprint retrospective
- Daily scrum meeting

Artifacts

- Product backlog
- Sprint backlog
- Burndown charts



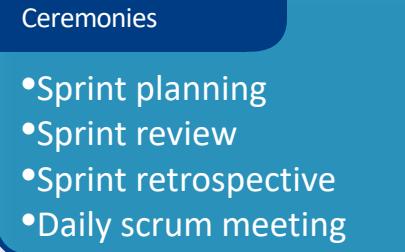
Sprint planning meeting

Sprint prioritization

- Analyze and evaluate product backlog
- Select sprint goal

Sprint planning

- Decide how to achieve sprint goal (design)
- Create sprint backlog (tasks) from product backlog items (user stories / features)
- Estimate sprint backlog in hours



Sprint goal

Sprint backlog

Sprint Review

- Present what was accomplished during the sprint - usually a demo
- Informal
 - 2-hour prep time rule
 - No slides
- Invite the world!

Ceremonies

- Sprint planning
- Sprint review
- Sprint retrospective
- Daily scrum meeting

Daily Scrum

- Already discussed

Sprint Retrospective

- Periodically take a look at what is and is not working
 - Stop doing, start doing, continue doing
- Typically 15–30 minutes
- Done after every sprint
- Whole team participates

Scrum Framework

Roles

- Product owner
- ScrumMaster
- Team

Ceremonies

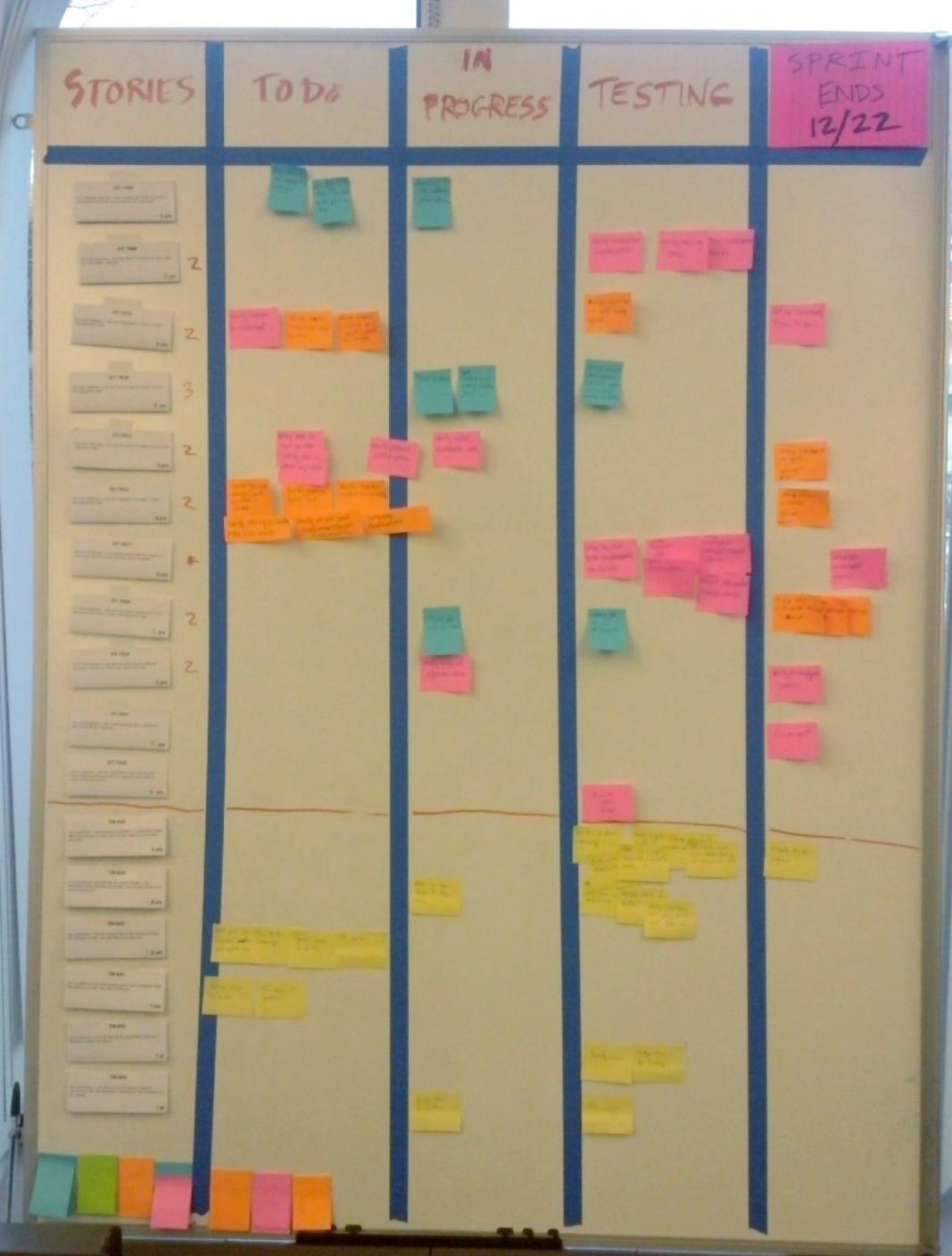
- Sprint planning
- Sprint review
- Sprint retrospective
- Daily scrum meeting

Artifacts

- Product backlog
- Sprint backlog
- Burndown charts

Scrum Task Board

Example of a Scrum Task Board						
Product Backlog	Sprint Backlog	In Progress	Peer Review	In Test	Done	Blocked





Managing The Sprint Backlog

- Individuals sign up for work of their own choosing
 - Work is never assigned
- Estimated work remaining is updated daily
- Any team member can add, delete or change the sprint backlog
 - If work is unclear, define a sprint backlog item with a larger amount of time and break it down later
 - Update work remaining as more becomes known

Further Reading

- MountainGoat Software Scrum Guide
www.mountaingoatsoftware.com/agile/scrum
- Agile and Iterative Development, Craig Larman
- Agile Project Management with Scrum, Ken Schwaber
- Agile Software Development with Scrum, Ken Schwaber and Mike Beedle
- Succeeding with Agile, Mike Cohn
- Agile Estimating & Planning, Mike Cohn

TECHNOLOGIES

Technologies

- **Trello** for online shared todo lists or scrumboards
- **Slack** for continuous team communication
- **Basecamp** or **Asana** for project management
- **Dropbox** for sharing files etc
- **github** for better sharing of files etc
- **PowerPoint**, **MockFlow** or **pen and paper** for wireframing

Technologies

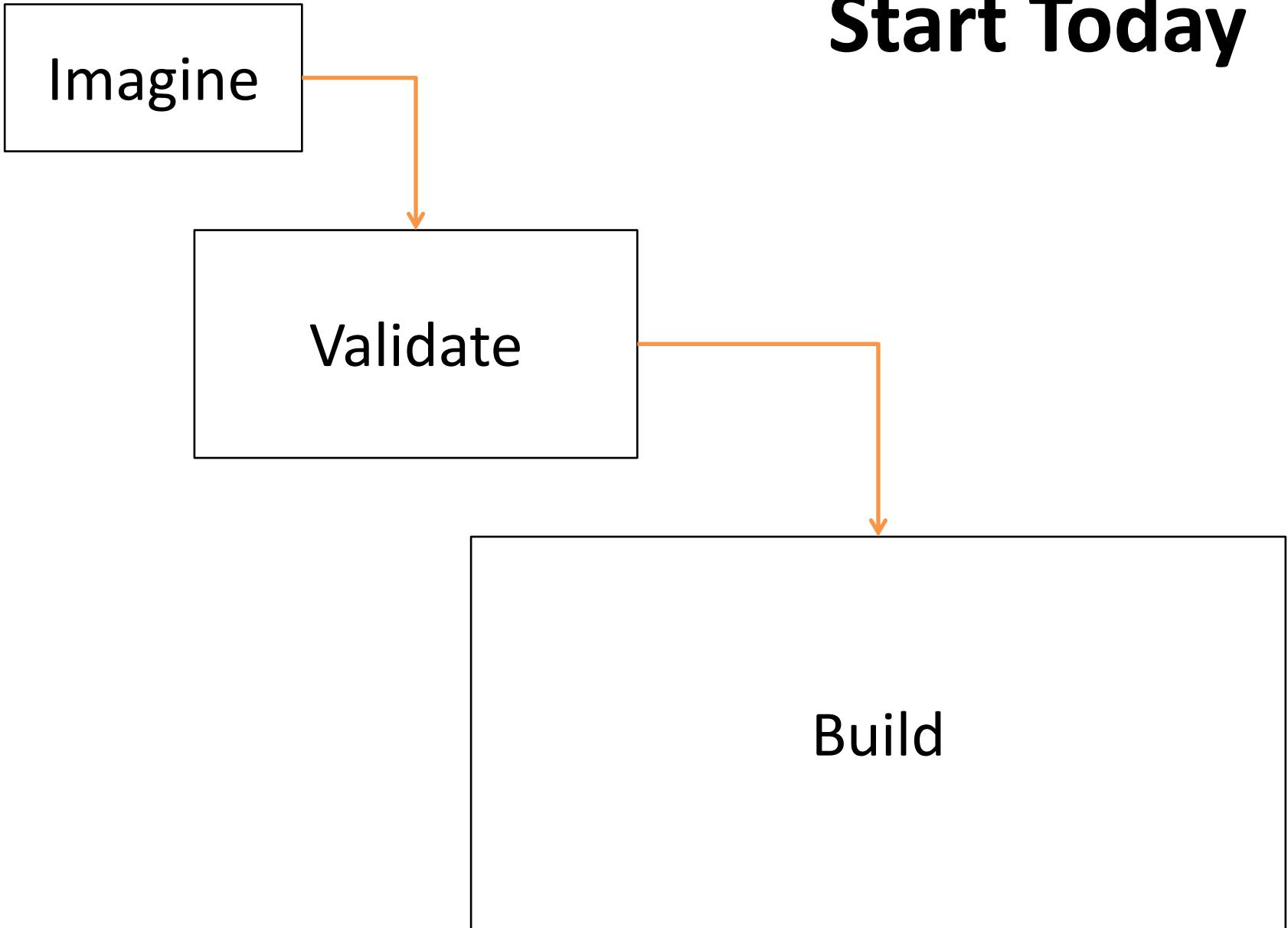
- **Jira** for really good software development management
- **ScreenFlow** or **Quicktime** for screen recording or editing
- **Skype**, **GoogleHangout**, or **Appear.In** for team meetings

Technology MVP

- **Source Control (git):** Use it- its free and for a team project it is a MUST
- **Google Drive/Docs/Sheets:** Create a shared project folder and subfolders for your team
- **Google docs:**
 - Doc: Meeting minutes
 - Spreadsheet: Issues/Risk/Bug tracking
 - Spreadsheet: virtual scrum task board
 - Slides: Weekly Show and Tells – build and collaborate as you go
- **Match the tech to the task:**
 - Jupyter Notebook: Proof of concept/data analysis (toy/sample data)
 - Python Command Line: Component testing
 - Flask integration: System testing

SUMMARY

Start Today



Start Today

Imagine



Validate

