Introduction to the Agile Principles and Mindset

BOOTCAMP

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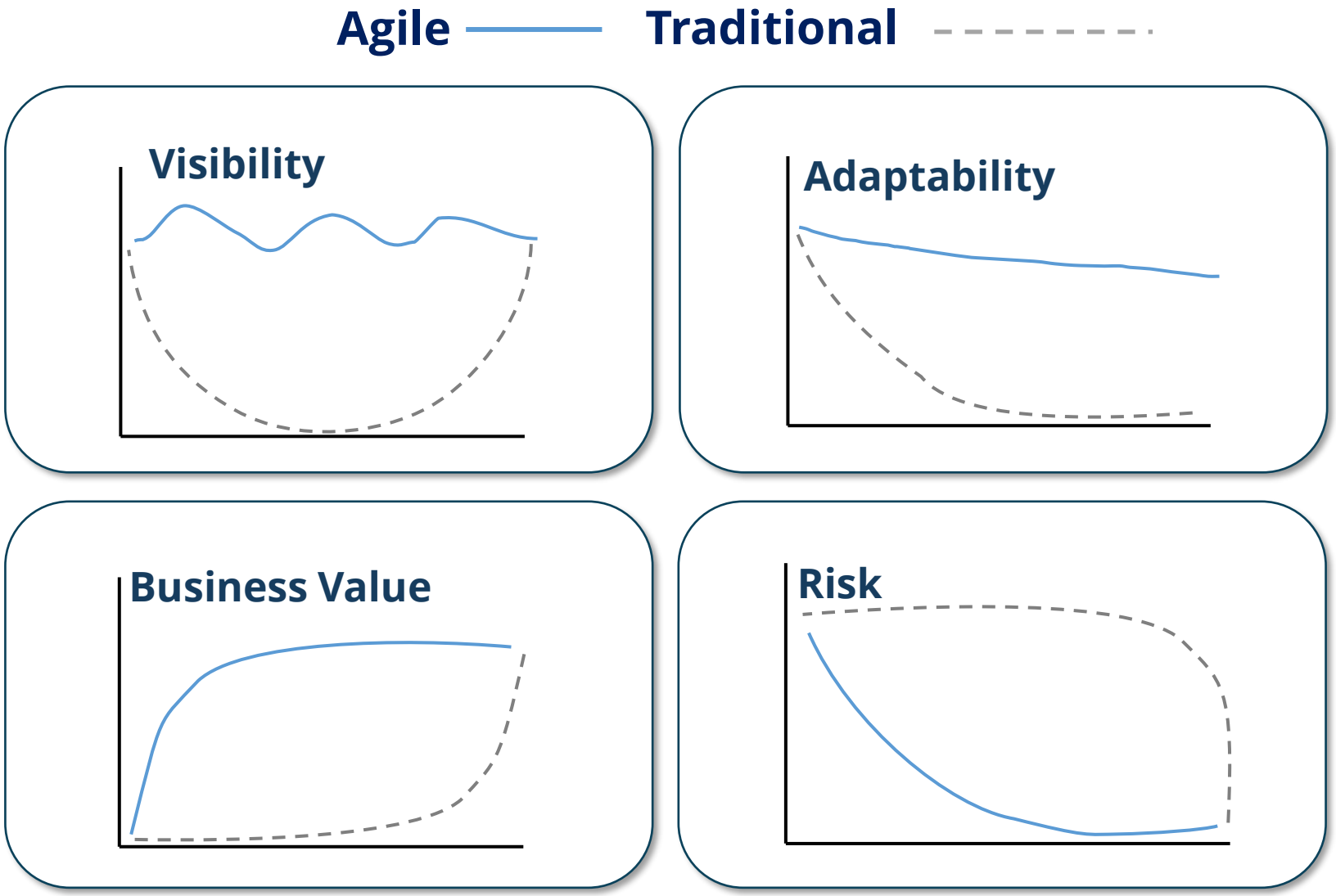
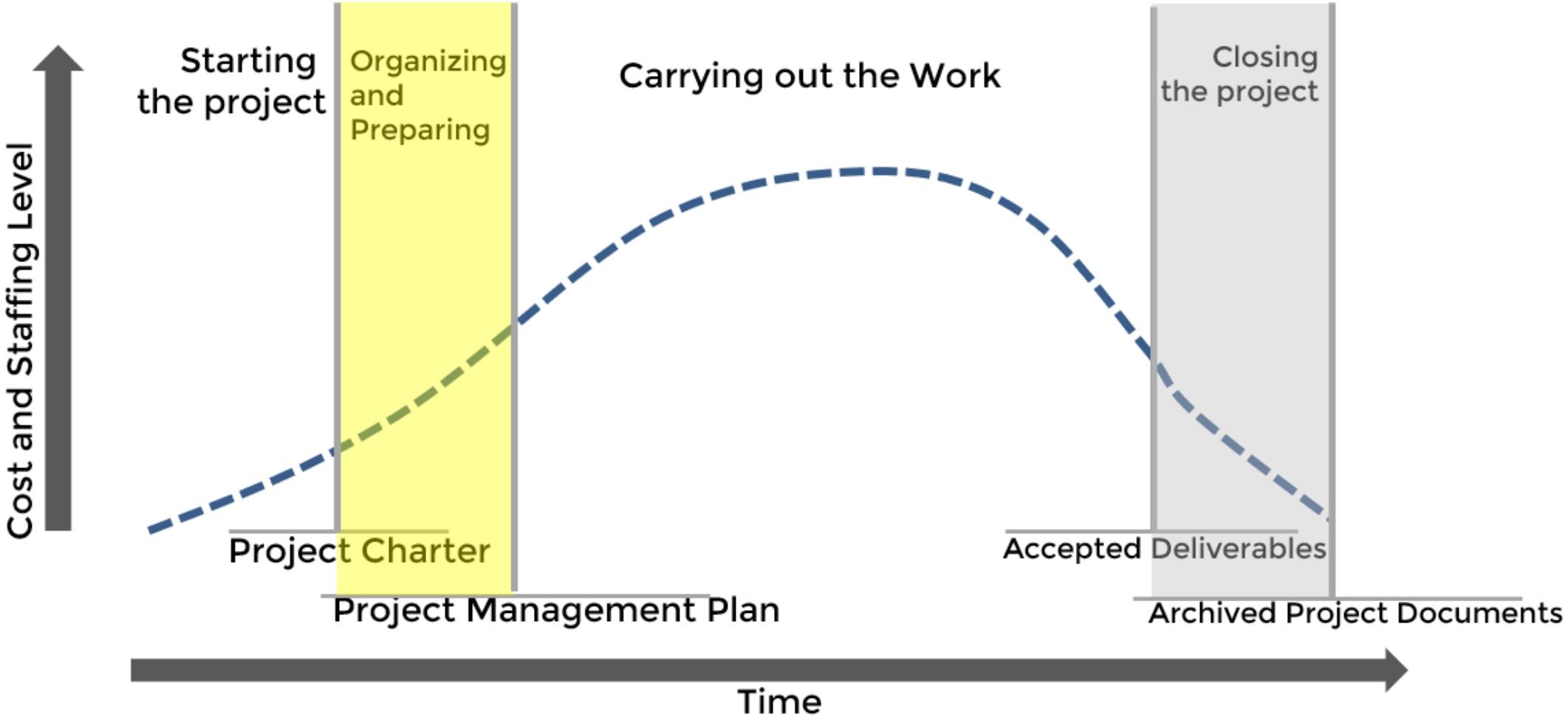
Class will begin at 11:00 am Eastern Time

Understanding Agile

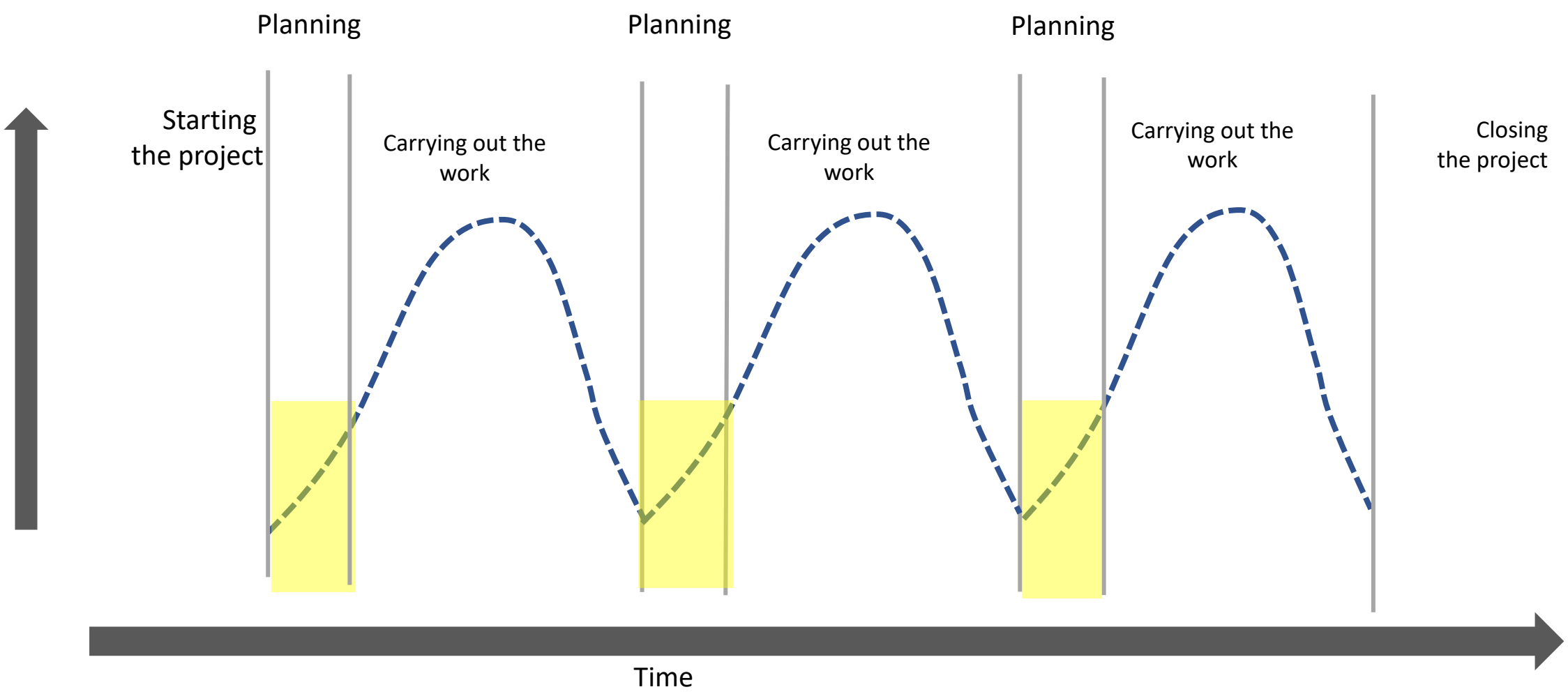
- Focus on highest-value items first
- Issues identified earlier
- Feedback obtained early and often
- Easier to implement change



Traditional Project Life Cycle



Agile Project Life Cycle

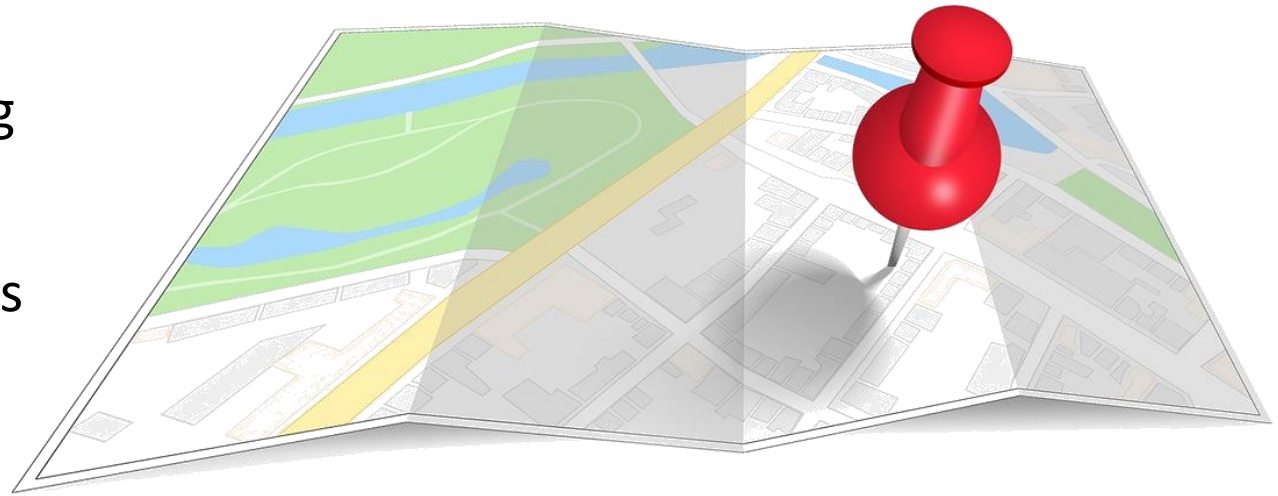


Problems with Excessive Planning

- Team lacks information
- Execute toward the wrong goals
- Value isn’t maximized
- Decreased customer satisfaction
- Rework

Adapting the Plan

- Road trip
- Itinerary
  - Fully plan-driven vs adaptive planning
- Threats
  - Accidents, weather, mechanical issues
- Opportunities
  - Value-added activities
- All stakeholders participate
- Not scope creep



Lightweight plans promote adaptability

Deliver Value Early

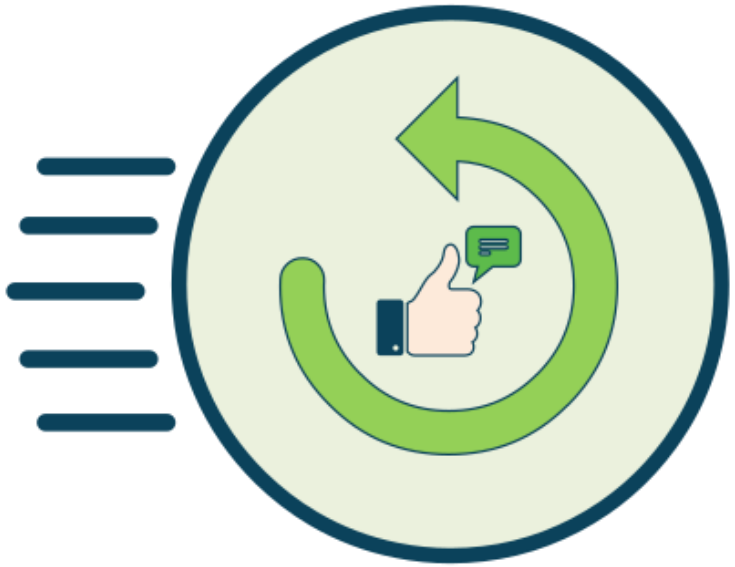
- Over time, things change
  - Threats can appear
  - Opportunities can fade
  - Benefits can decrease
- Deliver before things change

Agile is characterized by frequent, short iterations

Business value is recognized sooner

Deliver Value Early

- Maintain stakeholder engagement and confidence
  - Demonstrate understanding of the needs
  - Prove you can deliver
  - Collect feedback and quickly adapt



Agile vs Traditional Project Management

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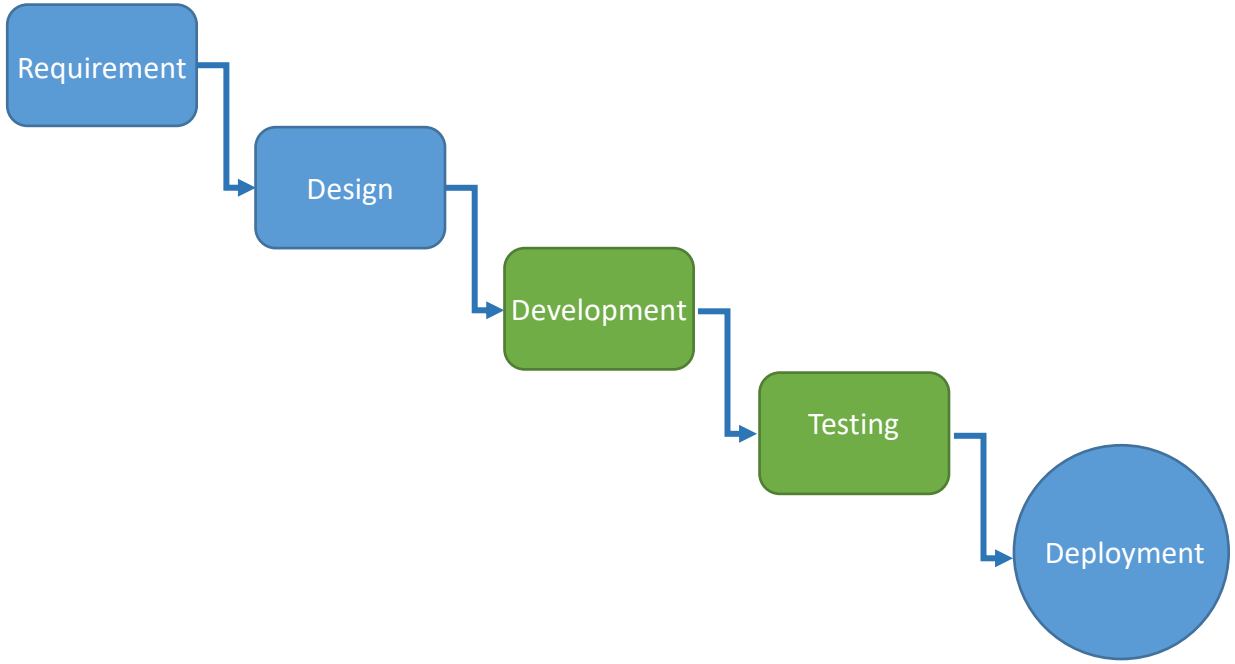
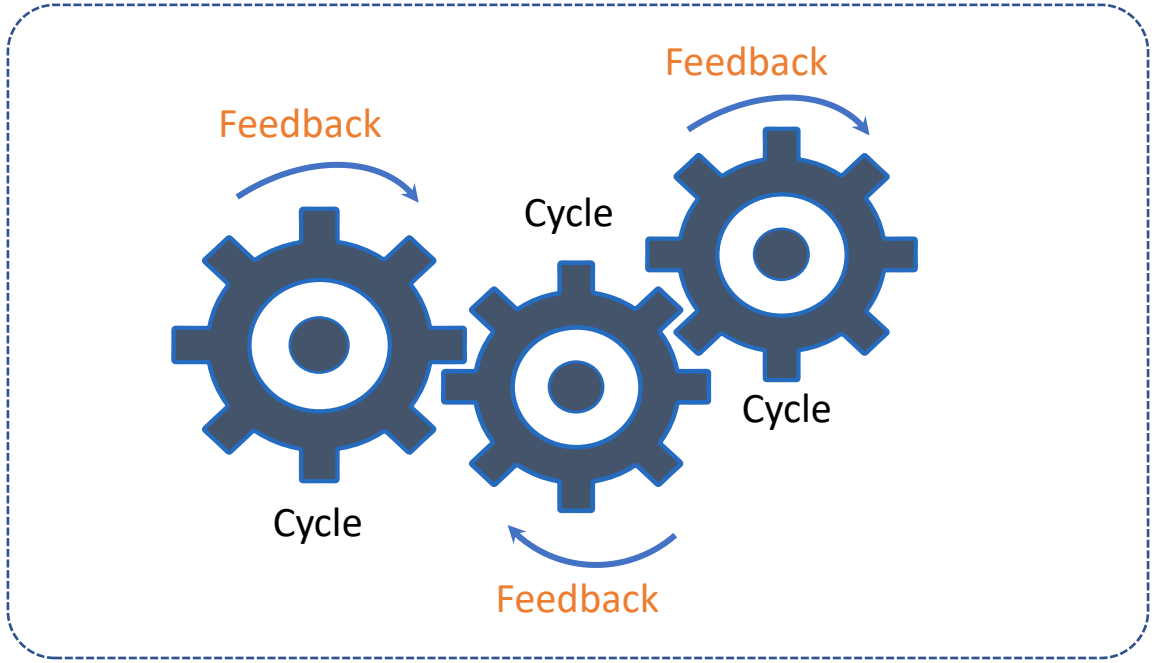
Traditional

- Waterfall methodology
- Fully plan driven (predictive)
- Phases are sequential with handoffs from one phase to the next
- Good for well known products
- Defined and linear

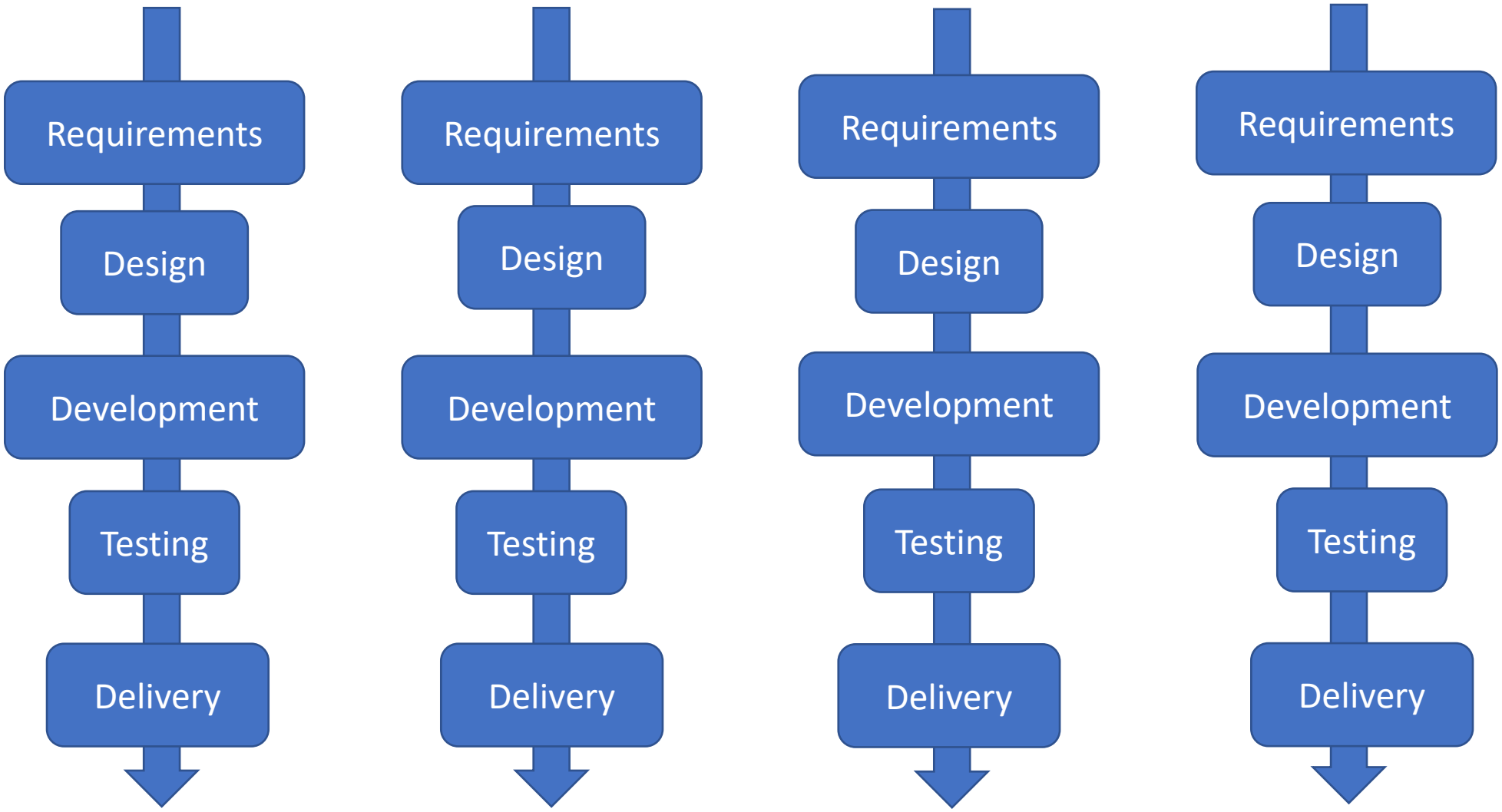
Agile

- Incremental
- Adaptive
- Iterative
- Empirical





Agile Characteristic: Incremental



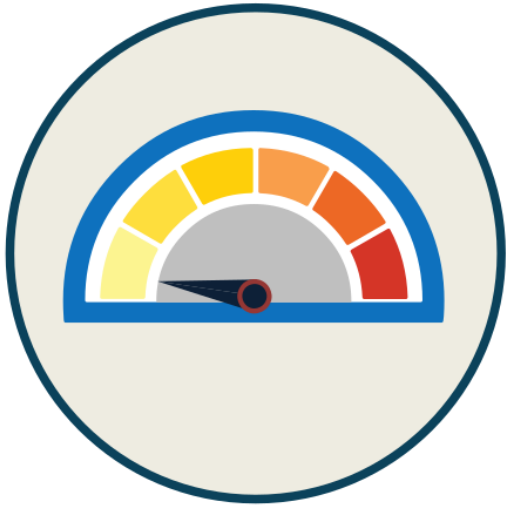
Agile Characteristic: Iterative

- Opportunity to make changes
- Add features with each iteration

Agile Characteristic: Empirical

Empiricism is a fact-based, evidence-based approach that removes subjectivity from the process.

- Based on observation and evidence
- Not theoretical

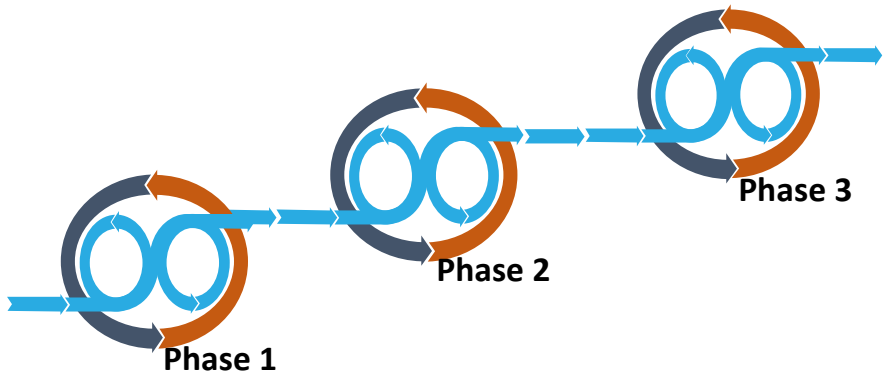


Traditional	Agile
"If we continue working at this pace we should finish on time and deliver a valuable product."	"We have delivered a minimum viable product with the following working features."

Phase-to-Phase Relationships

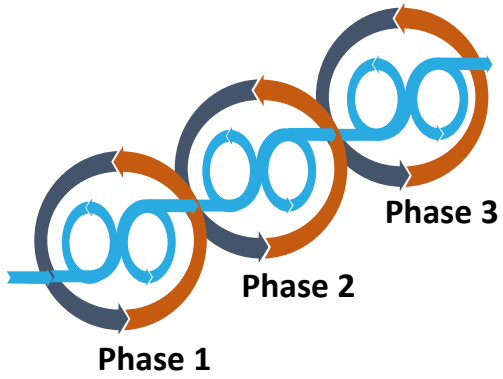
Sequential

Good: Reduces uncertainty
Bad: Limits schedule compression



Overlapping

Good: Allows for schedule compression (fast tracking)
Bad: Increases risk of rework



Characteristics of Project Life Cycles

Approach	Requirements	Activities	Delivery	Goal
Predictive	Fixed	Performed once for the entire project	Single delivery	Manage cost
Iterative	Dynamic	Repeated until correct	Single delivery	Correctness of solution
Incremental	Dynamic	Performed once for a given increment	Frequent smaller deliveries	Speed
Agile	Dynamic	Repeated until correct	Frequent small deliveries	Customer value via frequent deliveries and feedback

Table 3-1 Characteristics of Four Categories of Life Cycles from the Agile Practice Guide, © PMI

The Agile Manifesto

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In 2001, seventeen software developers met at a resort in Snowbird, Utah to discuss existing software development methods, among others Jeff Sutherland, Ken Schwaber, Jim Highsmith, Alistair Cockburn, and Bob Martin. Together they published the *Manifesto for Agile Software Development*.

The Four Values of the Agile Manifesto

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

1. Individuals and interactions over processes and tools
2. Working software over comprehensive documentation
3. Customer collaboration over contract negotiation
4. Responding to change over following a plan

There is value in all of these, but we value the items in red more.

The 12 Clarifying Principles

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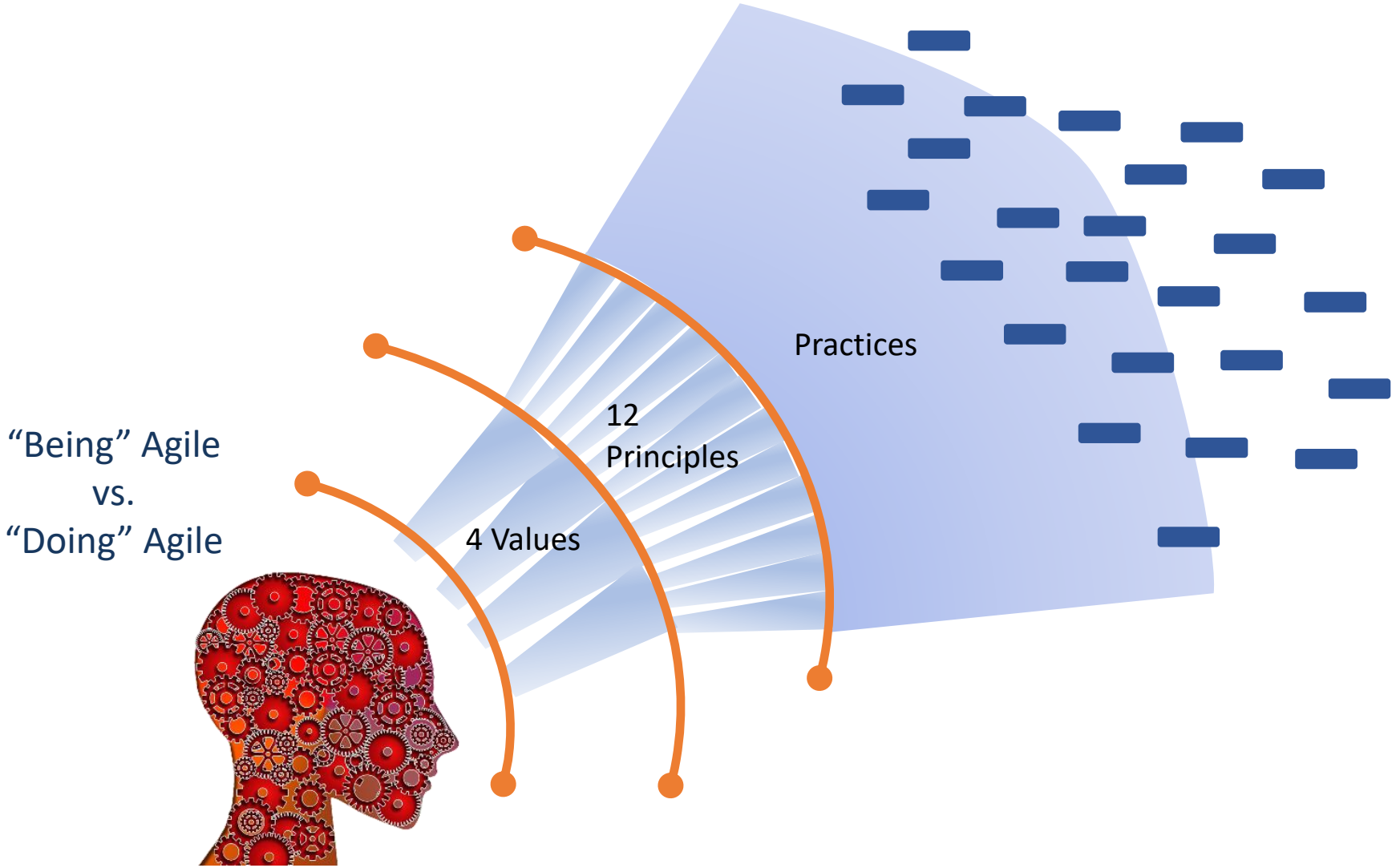
1. Our highest priority is to satisfy the customer through early and continuous delivery of valuable software
2. Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.
3. Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.
4. Business people and developers must work together daily throughout the project.
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, developer, and users should be able to maintain a constant pace indefinitely.
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 adjust its behavior accordingly.

The Agile Mindset



Agile is a mindset defined by values, guided by principles, and manifested through many different practices. Agile practitioners select practices based on their needs.

Figure 2-3. The Relationship Between the Agile Manifesto Values, Principles, and Common Practices from the Agile Practice Guide, © PMI

Organizational Agility

- Is your organization agile, or ready for agile?
- Perform assessments
  - An Organizational Transformation Checklist, by Agile Alliance

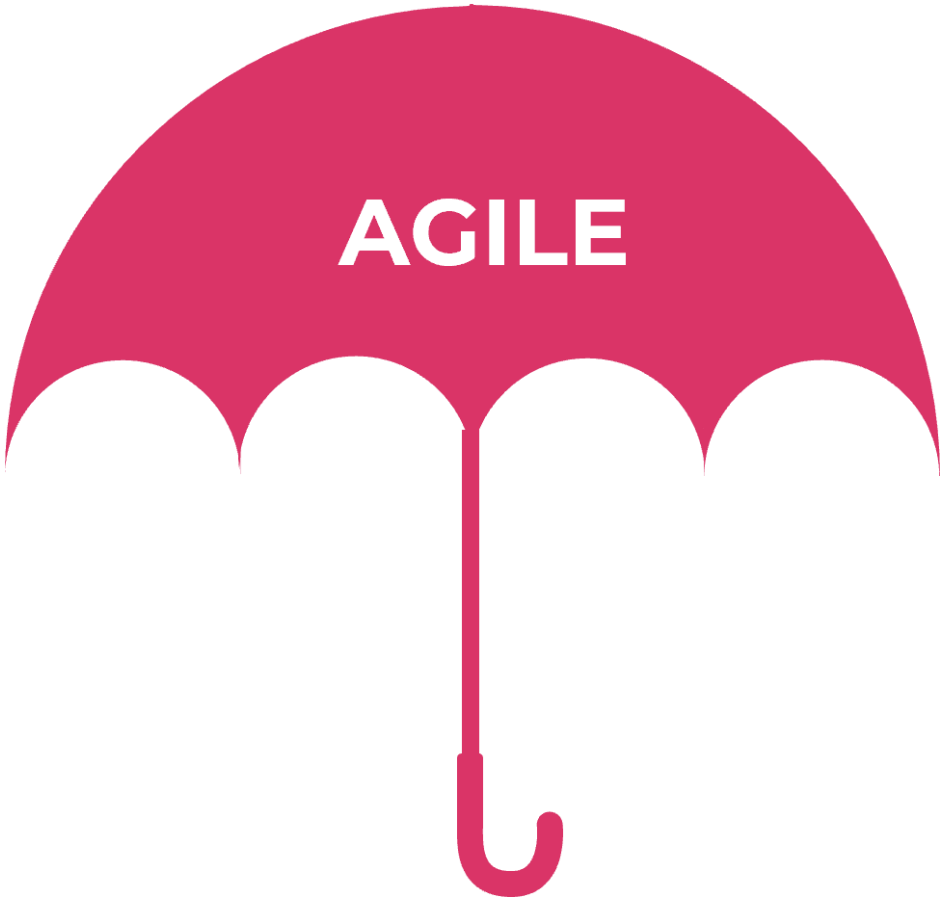
https://www.agilealliance.org/wp-content/uploads/2016/02/An_Organizational_Transformation_Checklist.pdf

  - Seven Questions to Determine if Your Organization is Agile Ready, by the Project Management Institute

https://www.pmi.org/learning/library/determine-organization-agile-scrum-ready-6129

Agile Methodologies

- There are over a dozen agile methodologies
- No single right way
- Can be tailored once a team is experienced
- Most common
- Scrum (really a framework)
- Lean product development
- Kanban
- Disciplined Agile
- Extreme Programming (XP)
- Feature-driven development (FDD)
- Dynamic Systems Development Method (DSDM)
- Crystal



Scrum Pillars and Values

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Pillars

Transparency

- Shared vision among stakeholders

Inspection

- Facts and observation define performance reporting

Adaptation

- Welcome change and quickly realign performance

Values

- Focus
- Courage
- Openness
- Commitment
- Respect

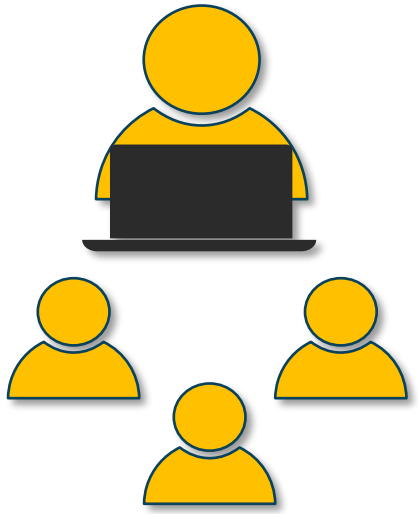
Scrum

- Framework rather than a methodology
- Scrum is Agile
- Agile is *not only* Scrum
- Employs various techniques
- High-performing cross functional teams
- Iterative, incremental approach
- Iterations knowns as “sprints”
- Typically 1-4 weeks in length
- Each sprint goal results in a product increment
- Inspection and adaption after each sprint

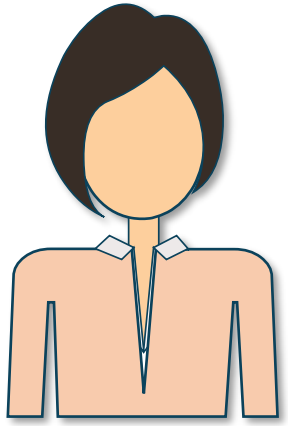
The Scrum Team

Includes:

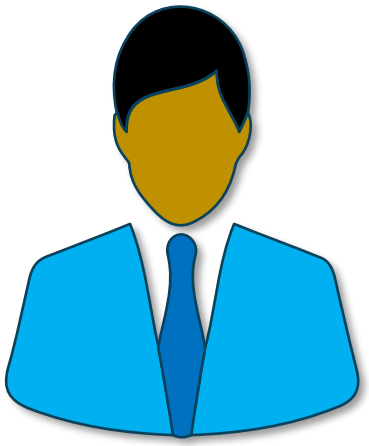
- Developers
- Scrum Master
- Product Owner



Developers



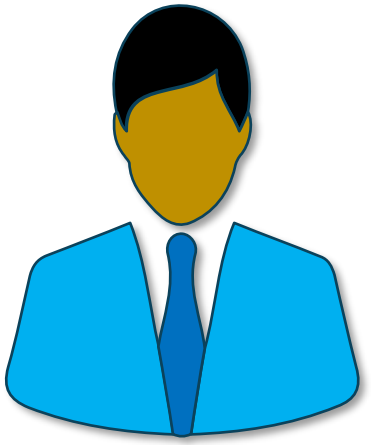
Scrum Master



Product Owner

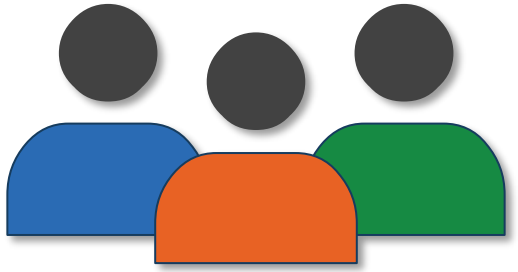
Product Owner

- Develops product vision
- Serves as voice of the stakeholders (liaison)
- Collects and prioritizes requirements
- Controls budget
- Oversees return on investment
- Determines value of features
- Validates product quality



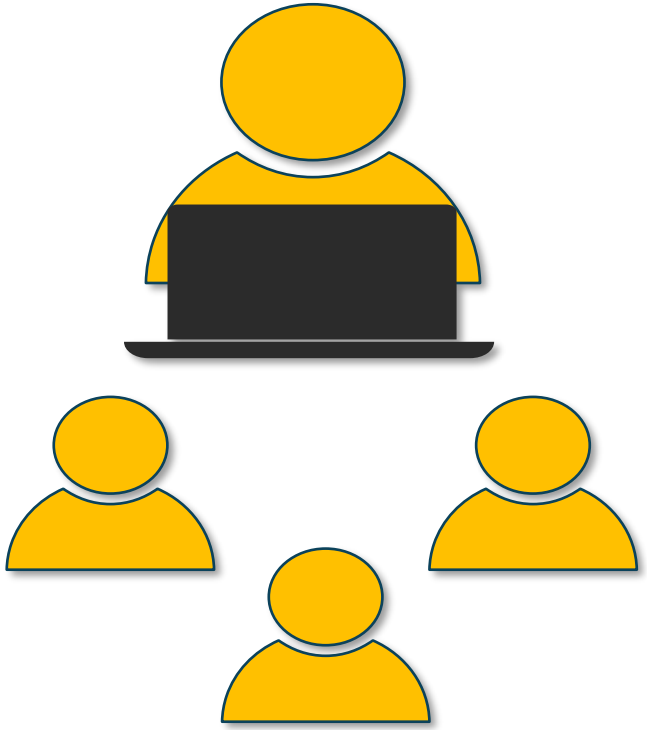
Product Owner

Stakeholders



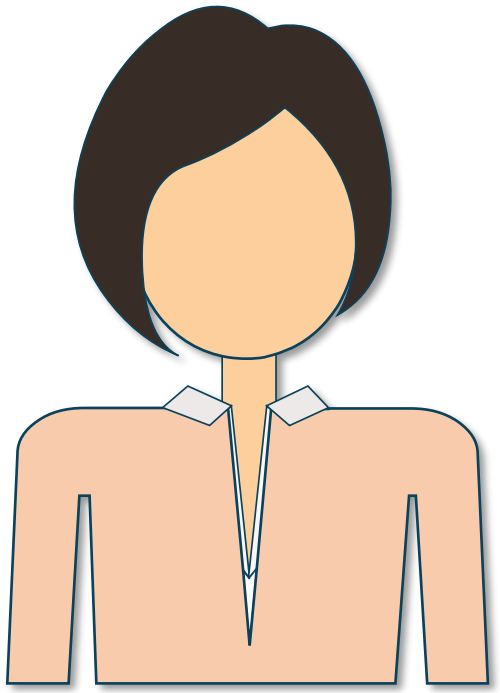
Developers

- Self-organized
- Builds the product increments during each sprint
- Estimated the work
- Decided what can be done during each sprint
- Cross-functional
  - Each member can build and test
  - T-person vs. I-person



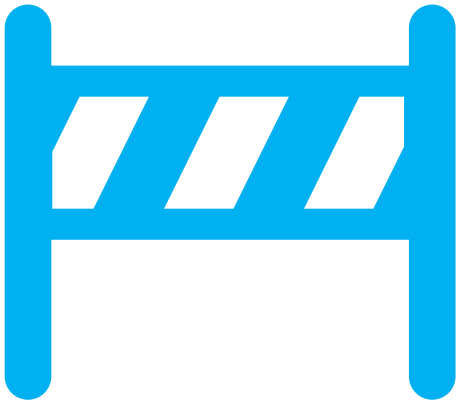
Scrum Master

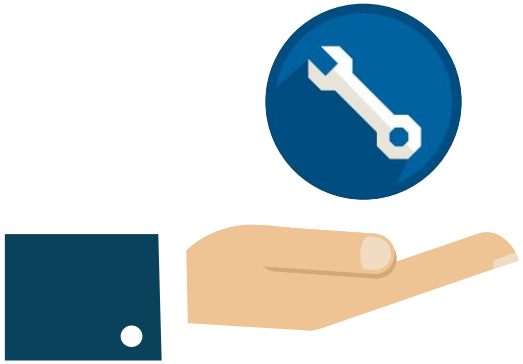
- Servant leader to Developers (not a developer themselves)
- Ensures adherence to Scrum framework
- Facilitates meetings
- Removes impediments (roadblocks, blockers)
- Coaches team members
- Assists Product Owner with managing backlog
- Serves as Scrum “ambassador” to the organization



Servant Leadership: Core Duties

- Serve as a buffer to prevent interruptions
- Remove roadblocks
- Communicate the product vision
- Provide essential resources
  - Tools
  - Resources
  - Rewards
  - Encouragement





Agile Team Characteristics

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Team Characteristics

- Individuals take ownership of work
- Members are empowered to make their own decisions
- Open and frequent communication encouraged
- Balance between collaboration and cooperation

Individual characteristics

- Emotionally intelligent
- Works with integrity
- Sense of responsibility
- Self-confident
- Comfortable asking for help

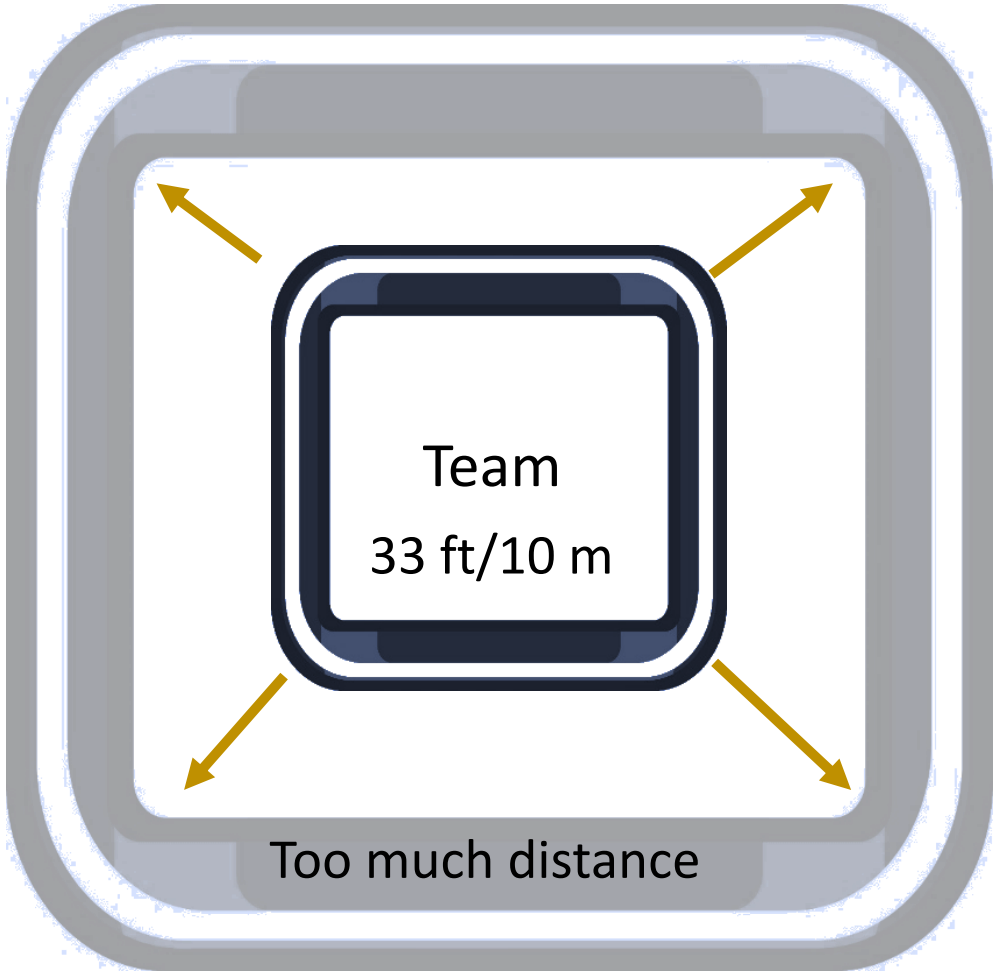
Safe Environment

We are in this together, and it is okay to fail.

- Truthful
- Honest
- Accountable
- Respectful
- Authentic
- Competent

Co-Located Teams

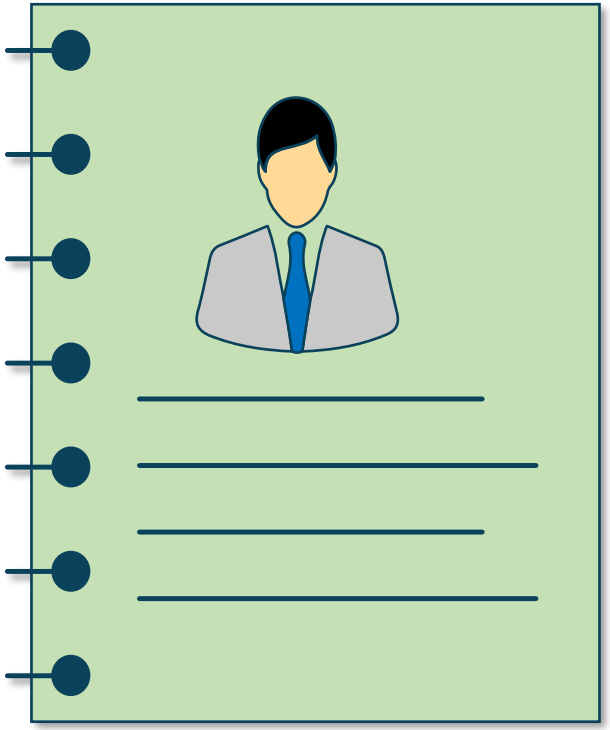
- Alternate spellings
  - Colocation
  - Collocation
- Face-to-face interaction
- "Virtual" co-location uses tools to overcome distance
  - Videoconferencing
  - Skype
  - Live chat
  - Instant messaging
  - Web-based tools
  - Agile software



A "distributed" team has one or more team members located outside of the team's location

User Stories

- Short, simple descriptions of a feature
- Told from the user's perspective
- When large or complex, can be called "epics"



Sentence structure:

"As a *role*, I want *functionality*, so that *business benefit*."

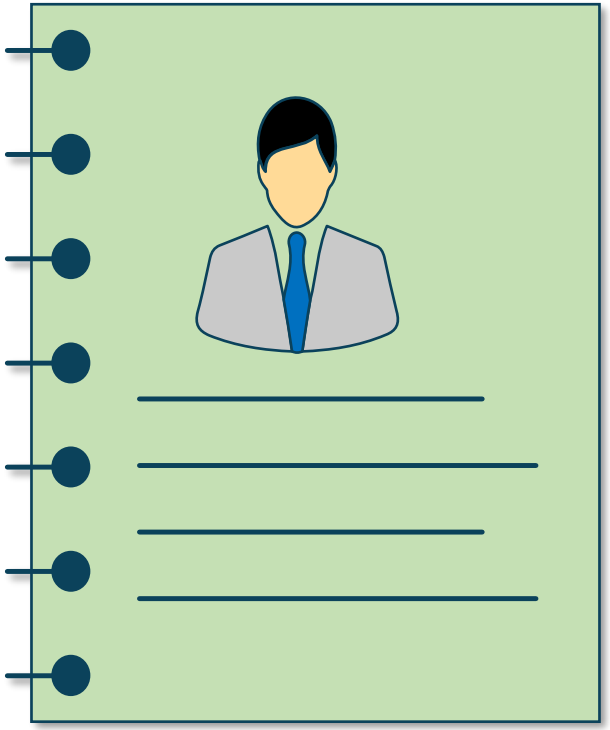
Example:

"As a customer, I want my credit card information to be stored, so that I save time when checking out."

Formatting User Stories

- Keep them simple
  - Gather feedback
  - Experiment
  - Use storyboards
  - Use annotations
  - Provide explanations

- Depict user stories visually
  - Wireframes
    - Form of modeling
    - Better solution understanding
    - Provide format for feedback
    - Ensure stakeholders on same page
    - Provide blueprints for design visuals
    - Provide technical requirements understanding



INVEST Criteria for Effective User Stories

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Independent - developed in any order

Negotiable - discussions with Product Owner

Valuable - justify the work

Estimatable - quantify the effort

Small – reliable estimates of 4-40 hours of work

Testable – measure progress and acceptance

I N V E S T

The Agile Inverted Triangle

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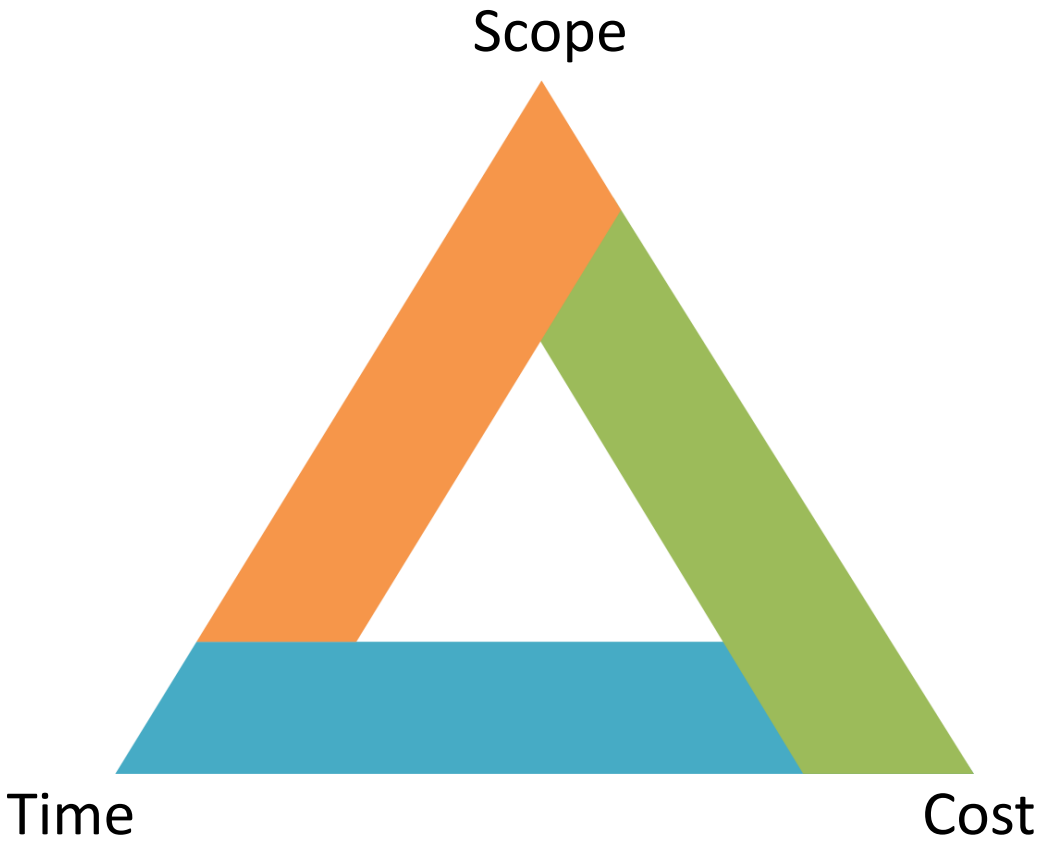
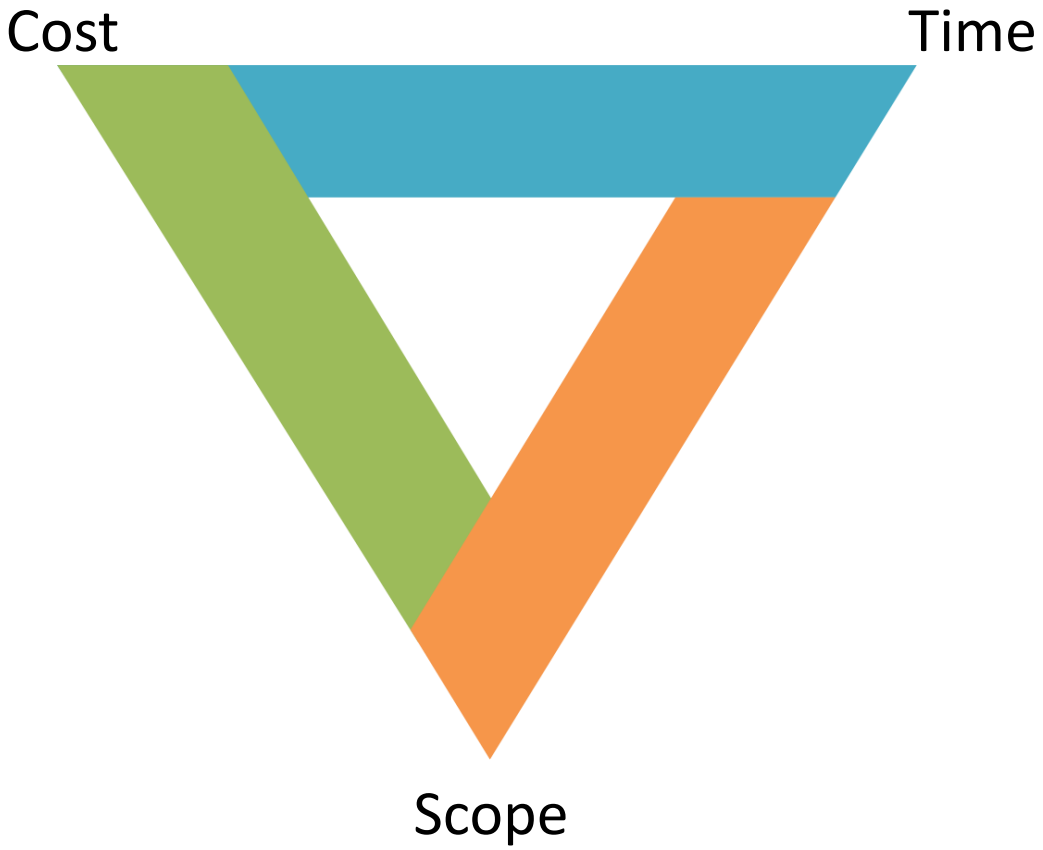
Traditional

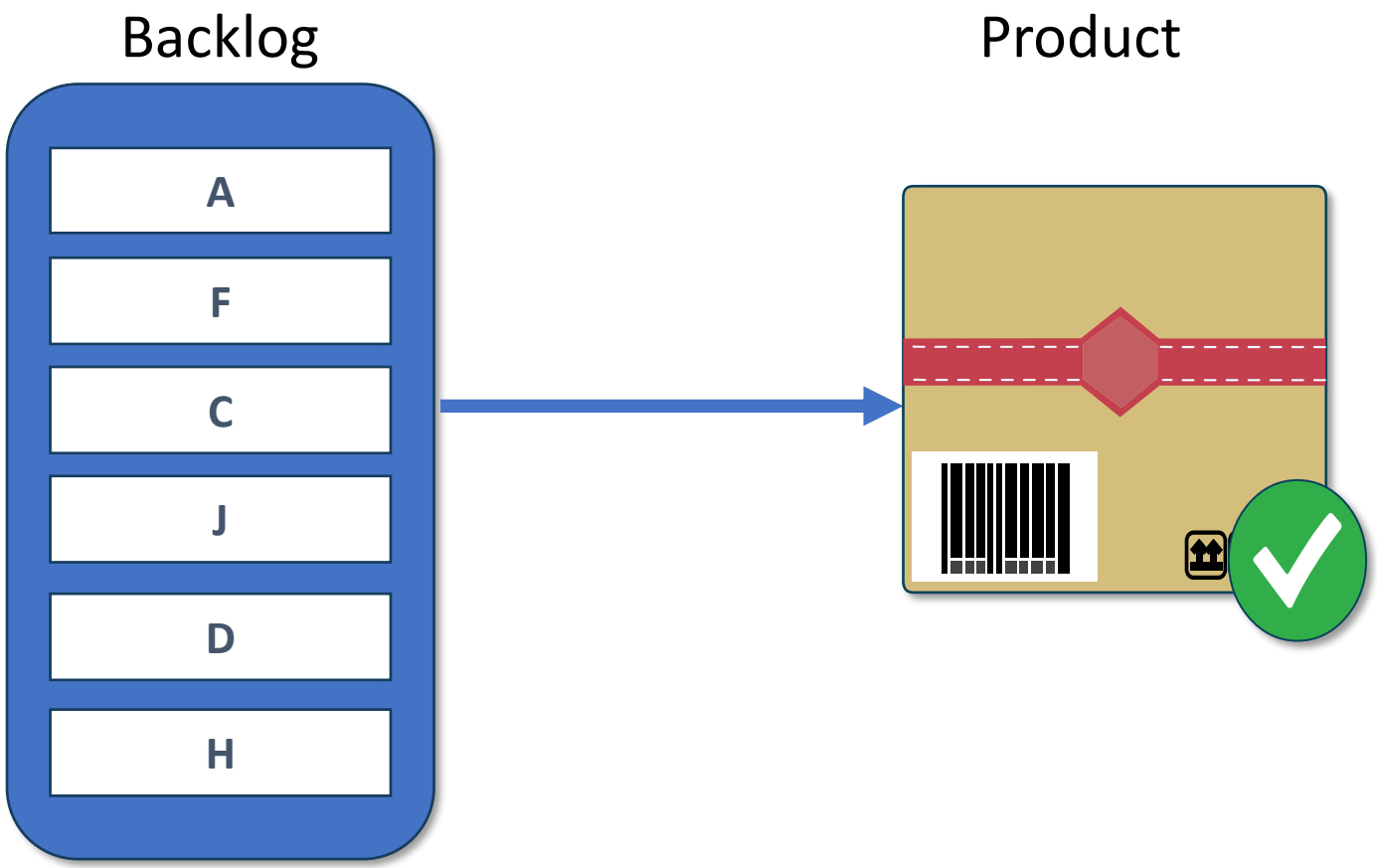


Agile



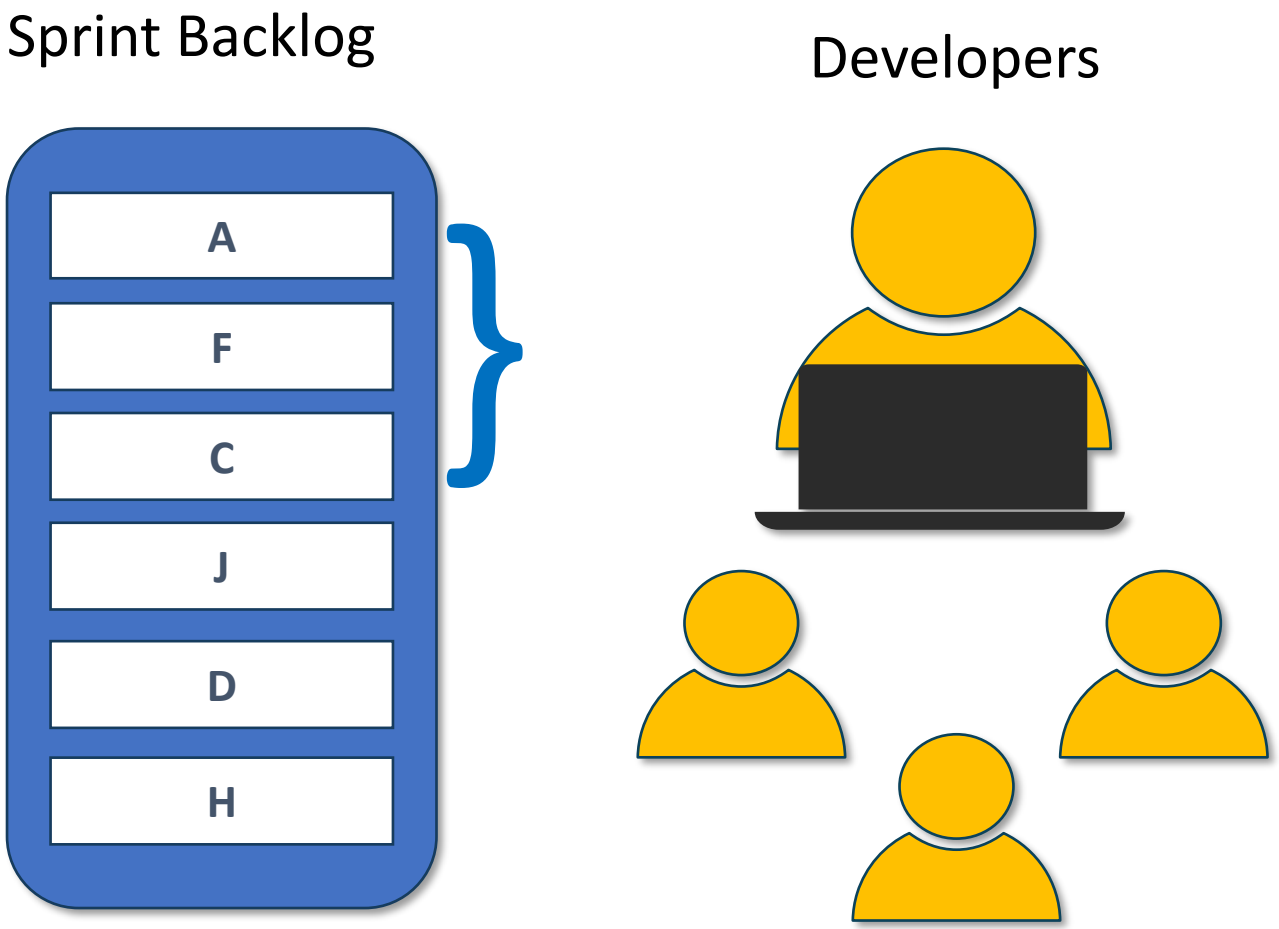
Product Backlog

- Prioritized list of everything that is needed in the product
- Single source of product requirements
- Always changing
- Items are added, dropped, and reprioritized based on value
- The product is built incrementally based on work selected from the backlog



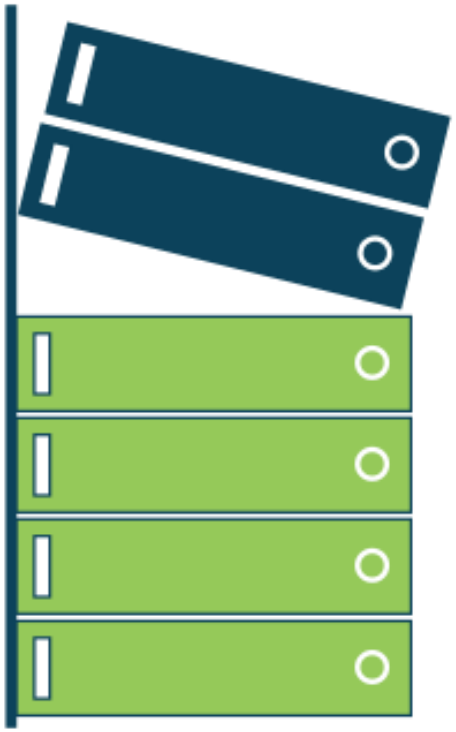
Sprint Backlog

- Belongs to the Developers
- Subset of the product backlog
- Goal for the current sprint
- Highly detailed and visible



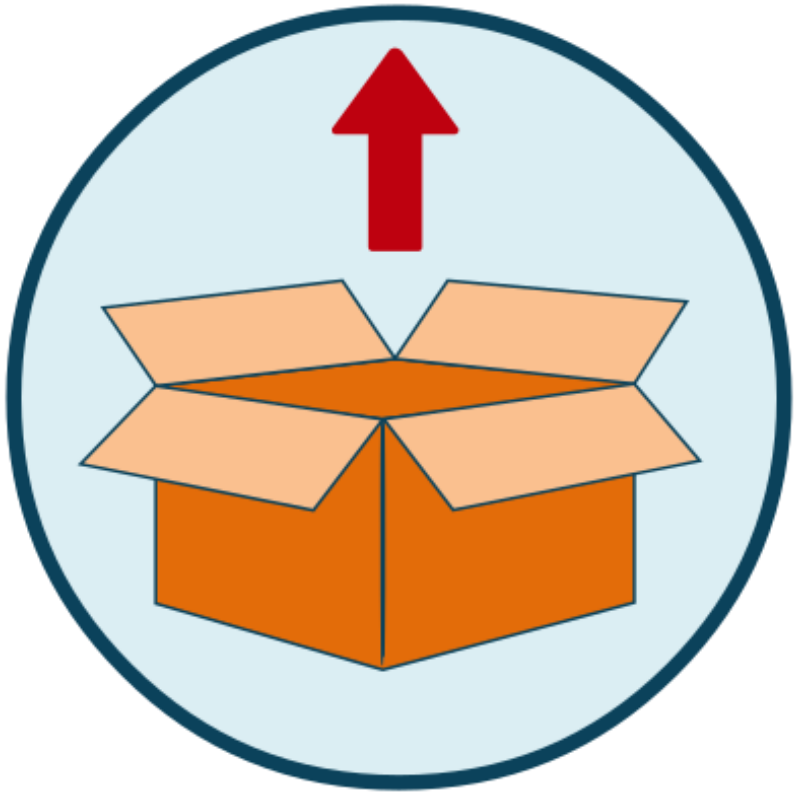
Product Increment

- The result of the latest sprint
- Demo during sprint review
- Must meet the “definition of done” established during planning



Small Releases

- Demonstrates progress
- Increases visibility to the customer
- Smaller increments means rapid deployments



Simple Design

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"Is there a simpler way to introduce this functionality?"

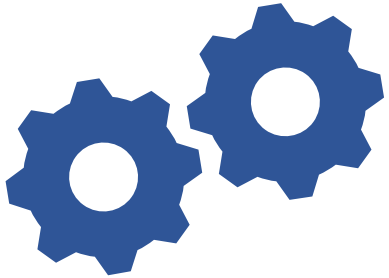
- Adequate for what is needed now
- Adapt as necessary
- Revisit as needed

Metaphor

- Shared technical vision
- How the system should work
- Common vocabulary
- All stakeholders understand

"This music app will be like a mind-reader. It will know which song you would like to listen to without having to ask you."

"This exercise bike will make you feel like you are in your own private fitness studio."



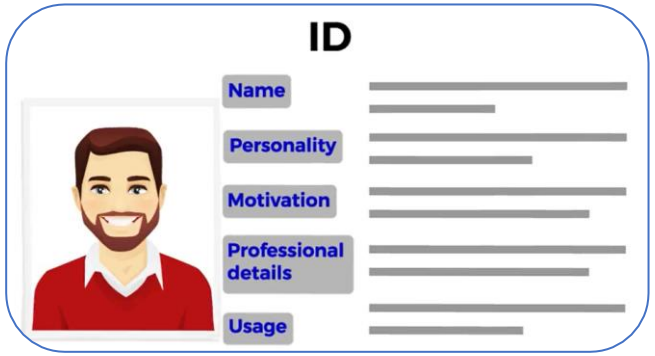
Engaging stakeholders in Agile projects

- Keeping stakeholders committed requires:
  - Senior management support
  - Training key stakeholders on technologies and processes
  - Flexibility
  - Accept customer representatives
- Engagement is critical in every phase

Personas

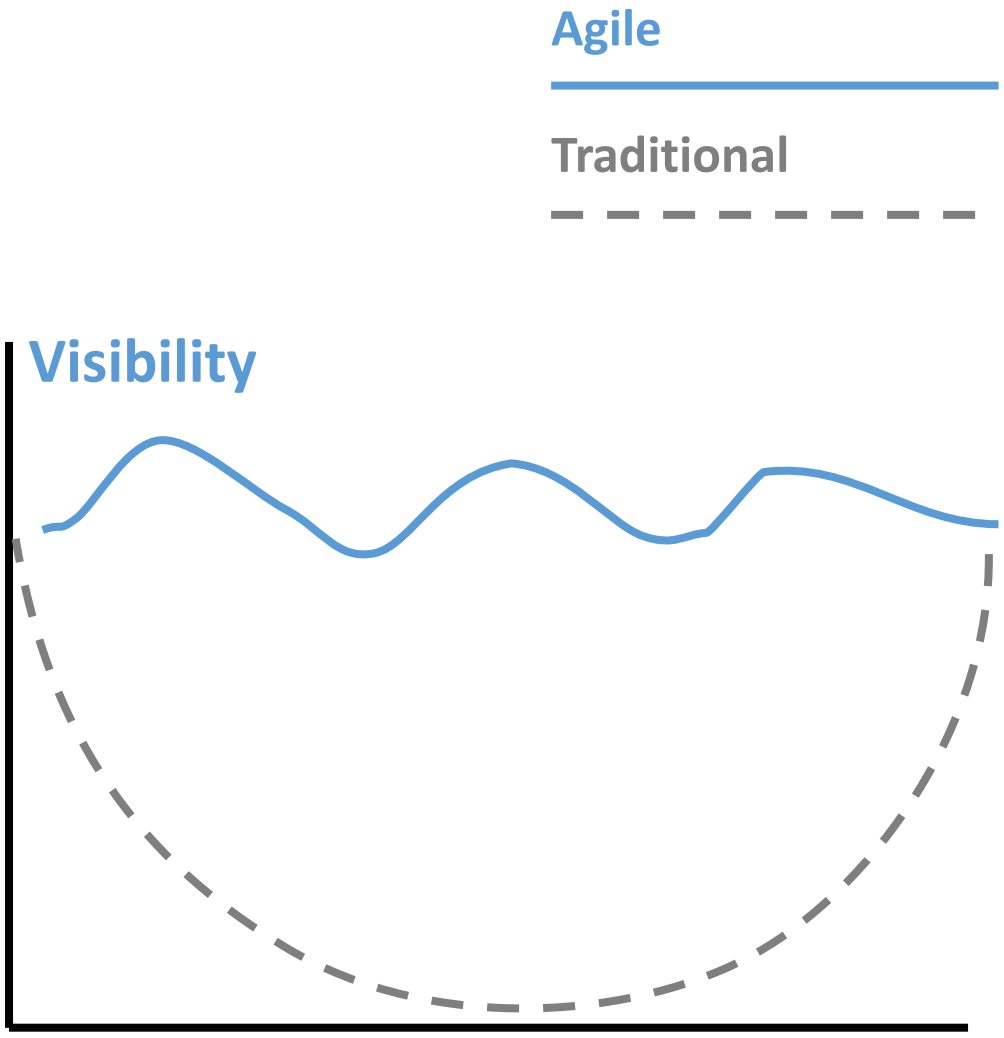
- Quick reminder of stakeholder needs
- Composite
  - Represents majority of actual users
- Not a replacement for stakeholders
- Focus on value and priorities

Mario is an employee of ABC Company. He must use his ID badge to access his work computer. For security reasons, the computer automatically logs users out after 5 minutes of inactivity. Mario would like to remain logged in while he is sitting at his desk.



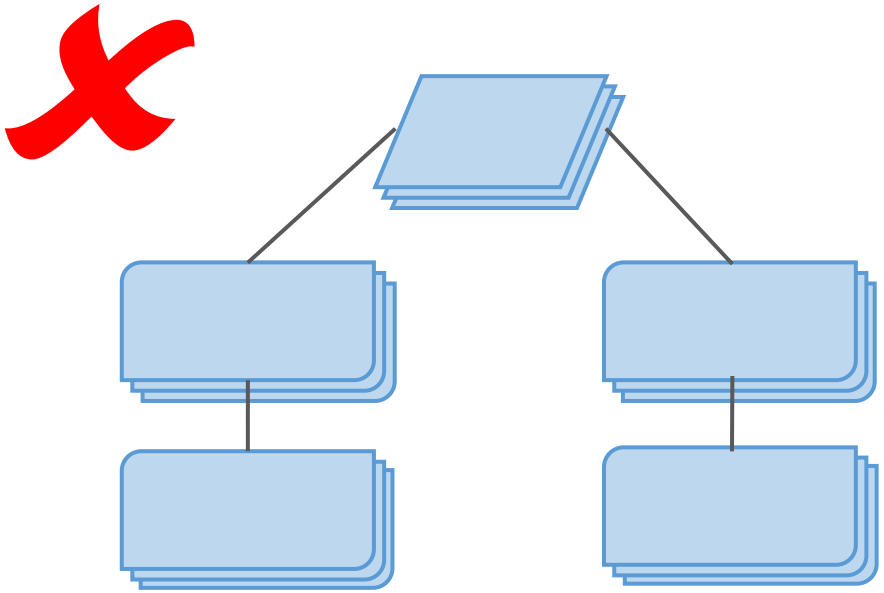
Stakeholders and Visibility

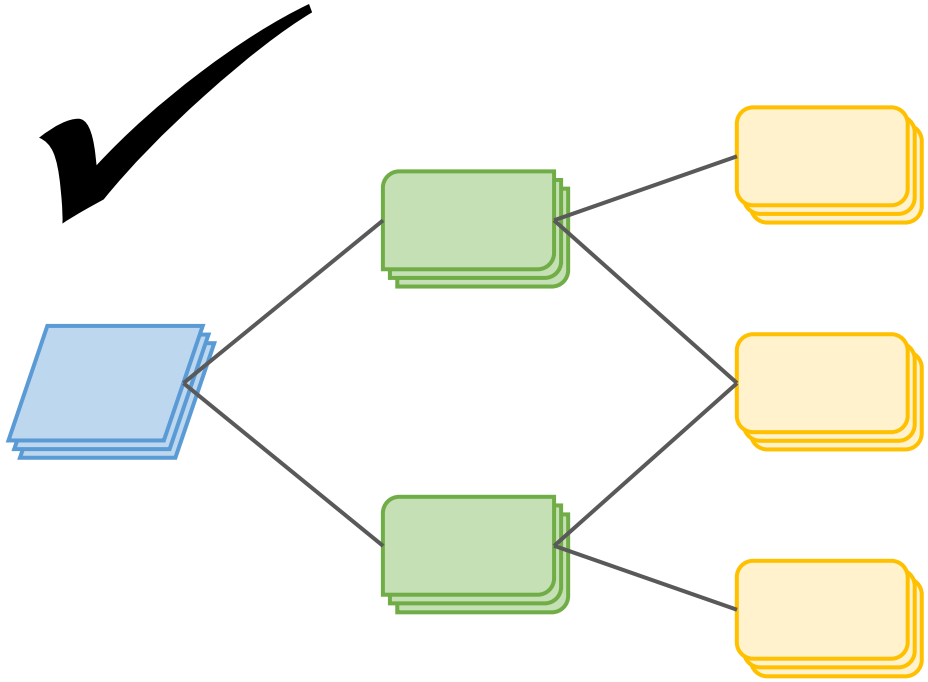
- Short iterations
  - Visibility and transparency
  - Frequent meetings and demonstrations
- Improved communication
  - Ongoing dialogue
  - Continuous feedback
    - Change requests
    - Issues



Agile Collaboration

- Stakeholders are not “managed”
  - Collaboration
  - Servant leadership/stewardship
  - Not top-down





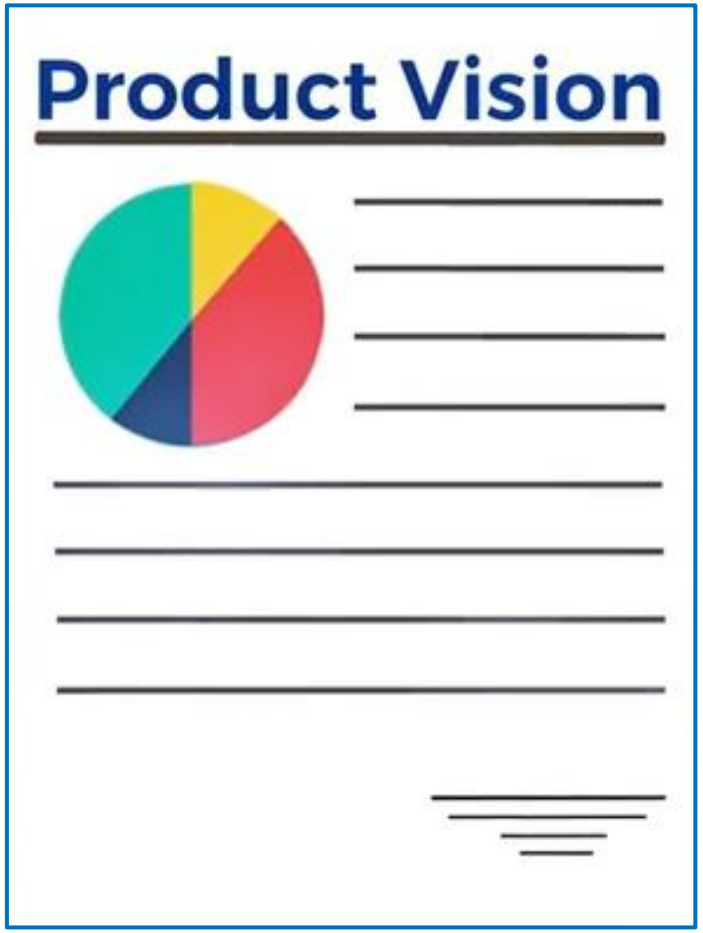
Educating and Engaging Stakeholders

- Stakeholders may:
  - Not understand Agile
  - Not understand their role
  - Be overwhelmed with work
  - Disengage or not participate if not accountable

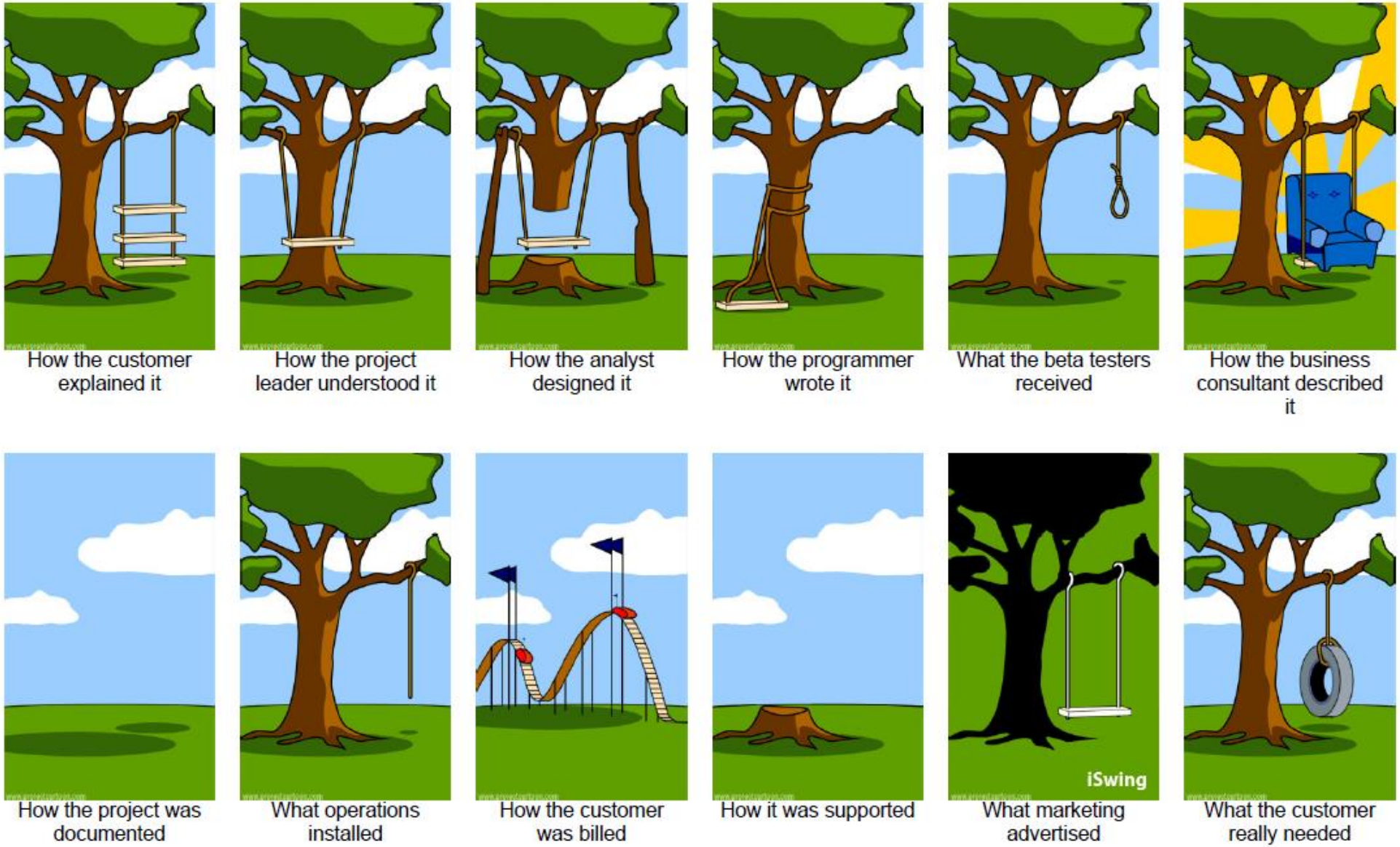
- Stakeholder levels of commitment:
  - Committed
  - Reluctant to commit
  - Enthusiastic only at beginning (short iterations help with this)

Product Vision

- Why you're building a product
- Benefits of product
- Since scope is evolving it is important to share an understanding of what is being created
- Definition of Done (DoD)
- "Gulf of evaluation"

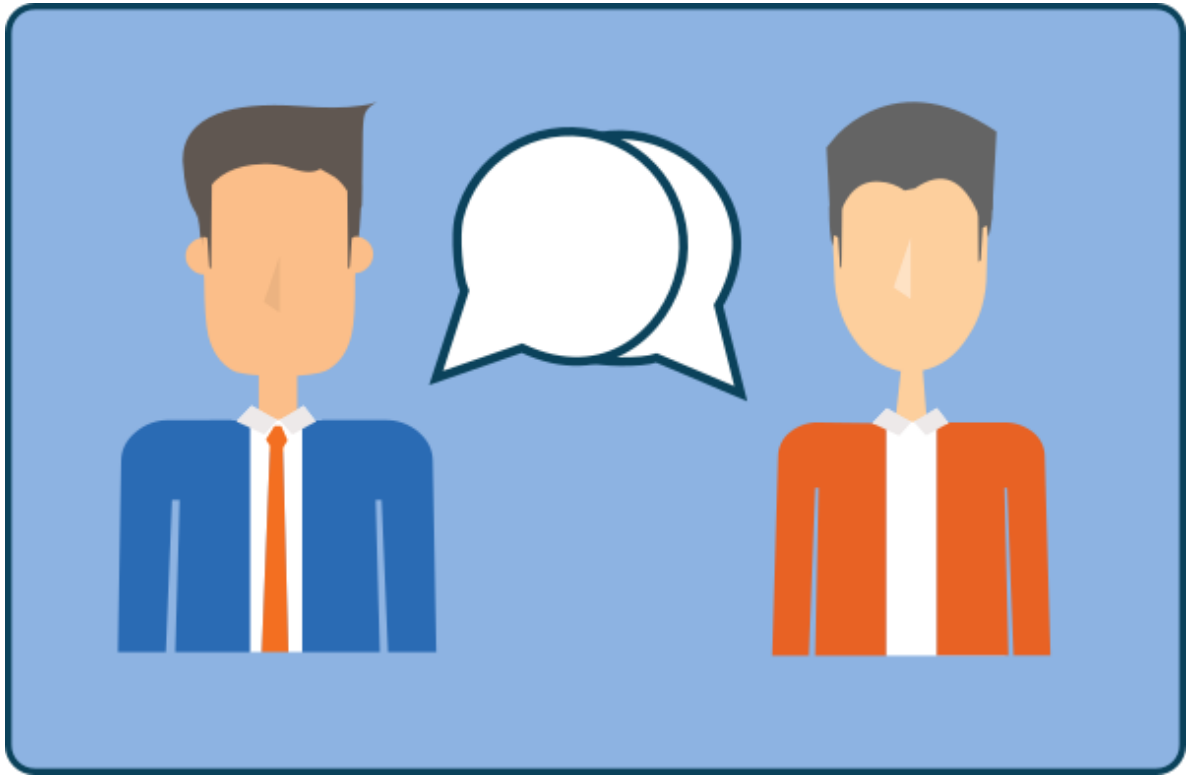


Gulf of Evaluation



Managing Stakeholder Expectations

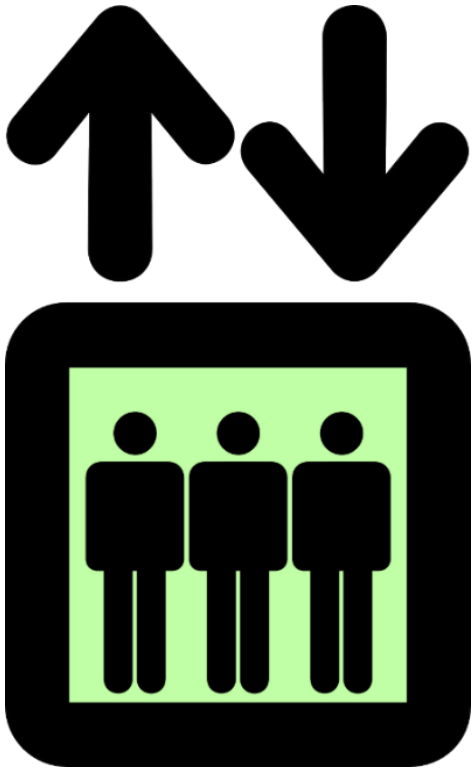
- Scope is evolving
- Need shared vision
- Gulf of evaluation
  - Difference between stakeholder and project team perceptions
  - Reduce by using wireframes or prototypes
- Definition of Done
- Tools for shared vision
  - Elevator Statement
  - Product Vision Box
  - Tweet
  - Definition of Done
  - Workshops
  - Modeling
  - Wireframes
  - Personas



Elevator Statement

- Shouldn't take longer than an elevator ride (2 min)
- Helps to create the charter

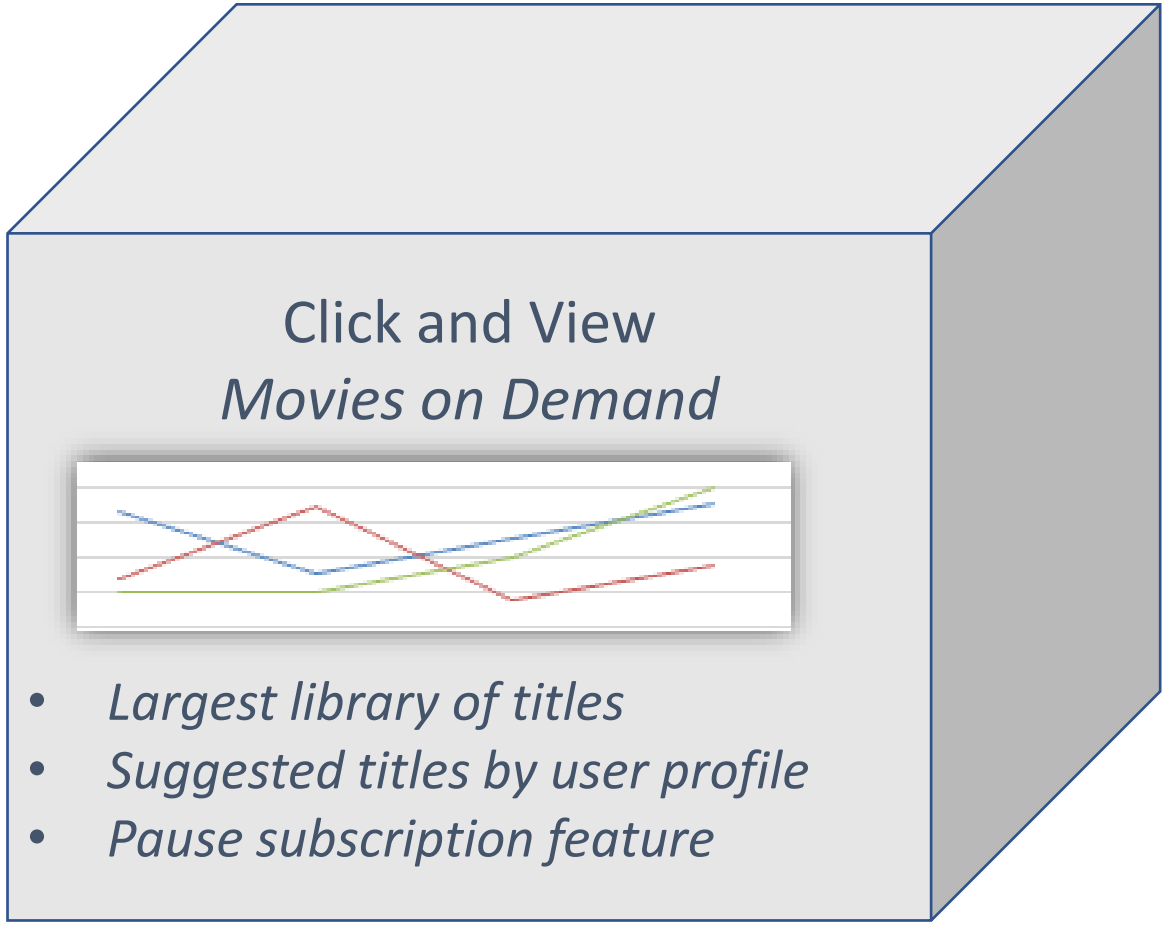
For:	**Customer**
Who:	**Need or problem**
Our:	**Product or service**
Provides:	**Unique features or benefits**
As opposed to:	**Competitor product**
We:	**Differentiator**



For customers who need immediate answers to their questions, our client support includes 24/7 live coverage. Unlike the average company's 24 hour email response, we are always here to take your call.

Product Vision Box

- Front of the box
  - Product name
  - Relevant graphic
  - Key benefits
- Back of the box
  - Detailed product description
  - Product functional requirements

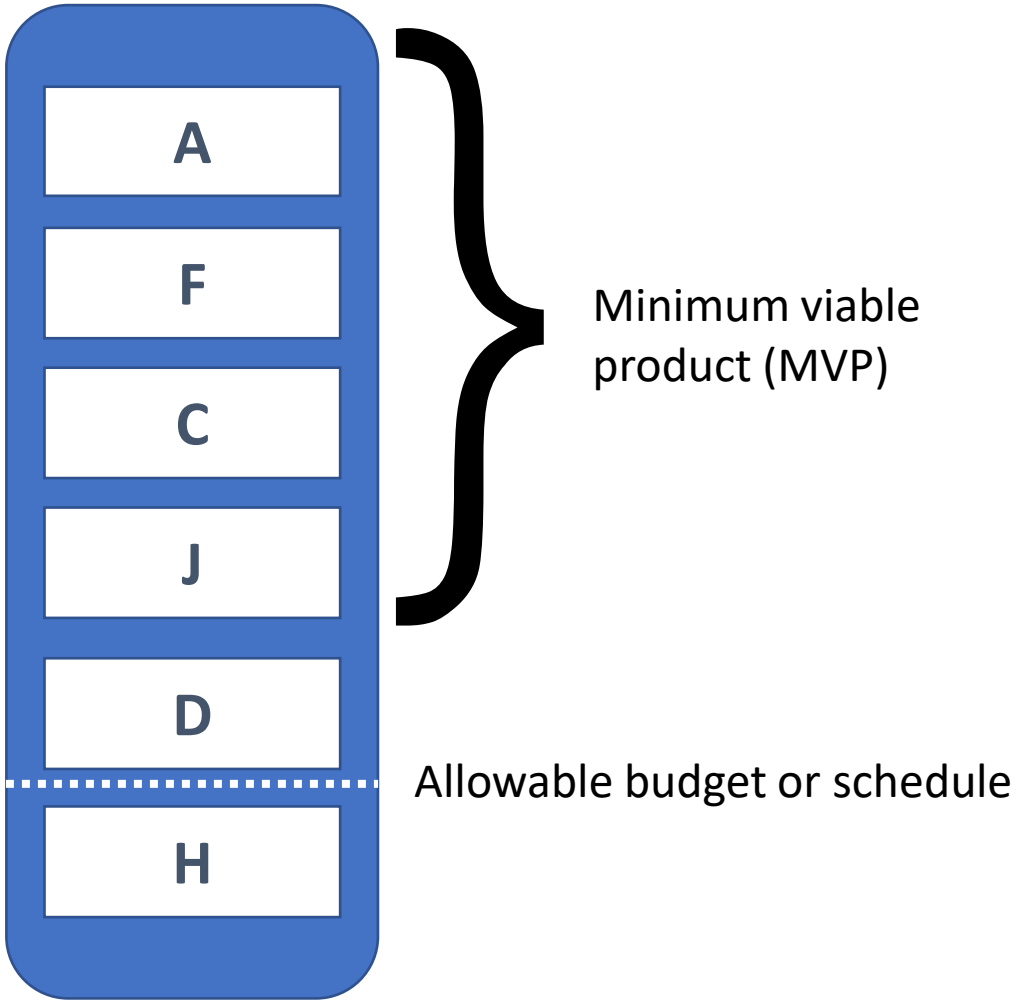


Tweet

- Stakeholders describe objective using a limited number of characters
- 280 characters or less
- High-level understanding of project
- Helps to create the charter

Relative Prioritization

- Also known as relative ranking
- There are several techniques
  - Priority matrix
  - MoSCoW method
  - Monopoly money
  - Kano method
  - 100-point method
  - Dot voting/Multi-voting
  - Requirements prioritization model
  - CARVER technique



Minimum Viable Product (MVP)

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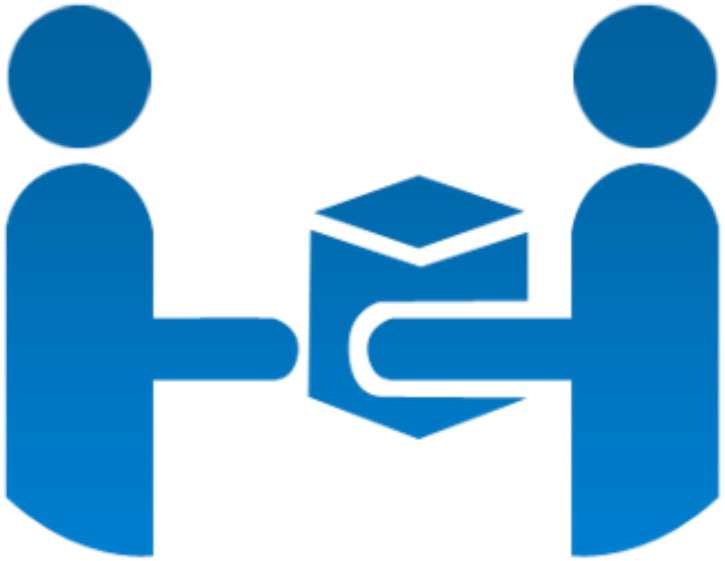
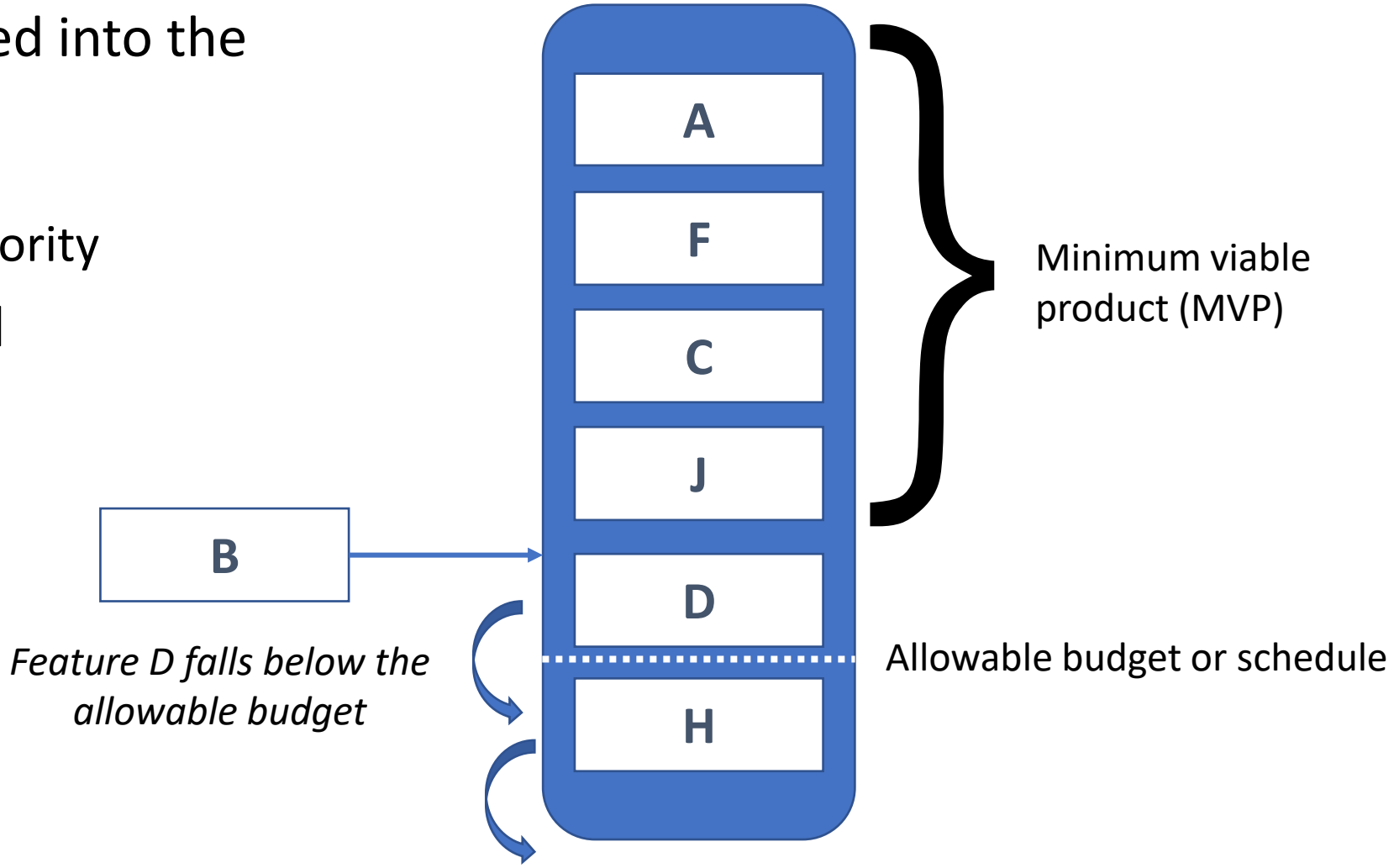
- Also known as minimum marketable feature (MMF)
  - Complete enough to be useful
  - Small enough that it is not the entire project scope
  - Early release of MVP allows for rapid feedback and changes
  - Additional functionality can be included in future releases



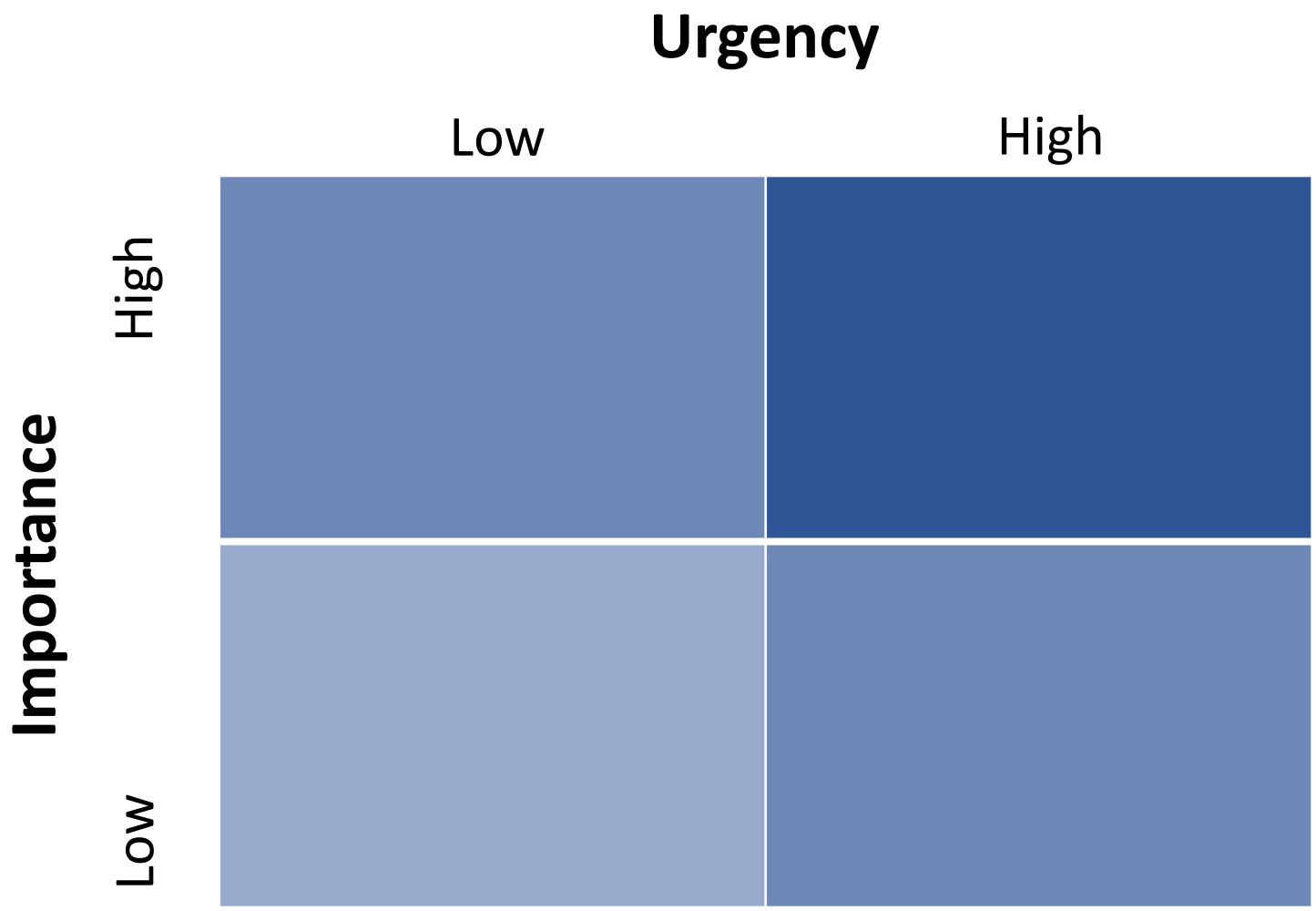
Relative Prioritization and Scope Changes

- New features can be inserted into the priority list
  - Developers estimate effort
  - Product Owner decides priority
- All work should be included
  - Bug fixes
  - Changes
  - Single, prioritized list



Priority Matrix

- Can be tailored
  - Value
  - Cost
  - Risk
  - Complexity/releasability



MoSCoW Method

Must have

o

Should have

Could have

o

Won’t have/would like to have

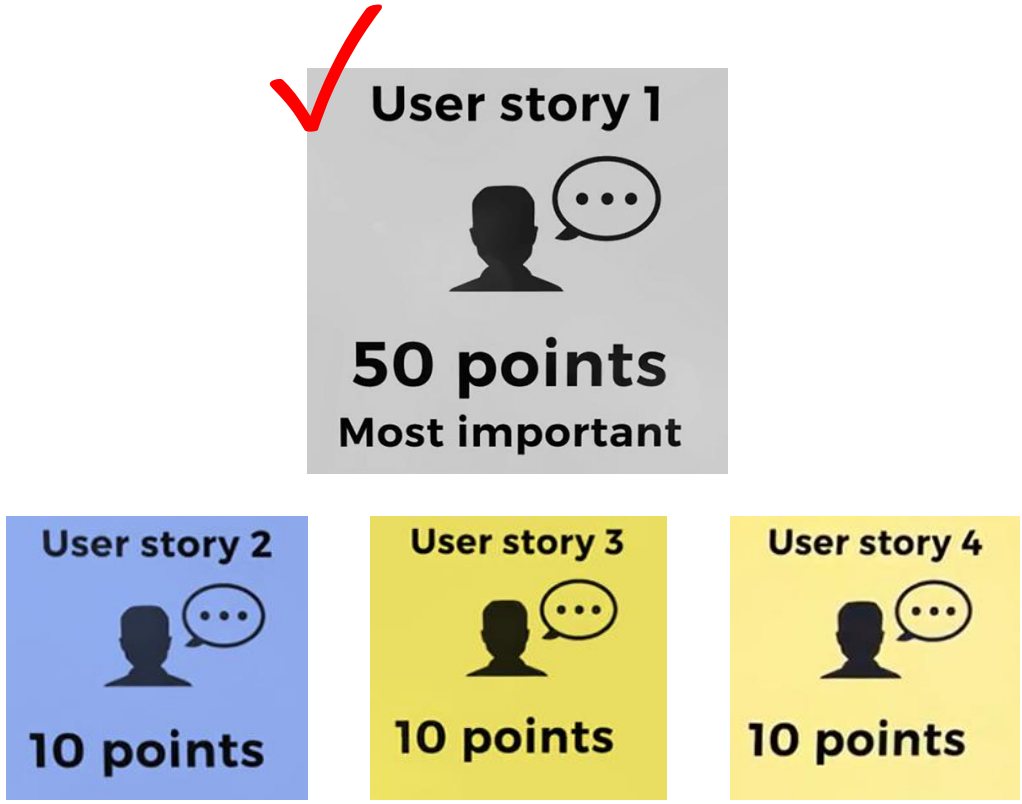
Category	User Stories
Must have	Included with the release
Should have	Not critical but still important
Could have	Useful and would add value
Won’t have	Excluded from this release
Would like to have	Retained for the future

Play Money

- Participants use money to “buy a feature”
- Features with the most money are the highest priority
- Feature prices may be set based on story points, hours of effort, or complexity

100-Point Method

- Each stakeholder has 100 points to spend on requirements
- The points can be allocated in any way
- Requirements are prioritized by points



The 100-point method was developed by Dean Leffingwell and Don Widrig for use cases.

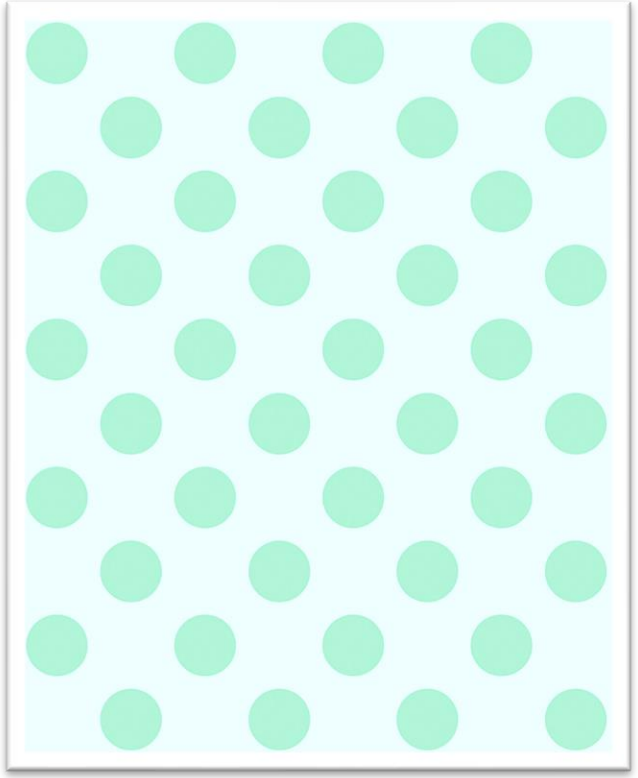
Dot Voting or Multi-voting

- Follows brainstorming
- Each person can vote for 20% of the choices
- Results show which features are valued by the most stakeholders

Example:

20 items must be prioritized

Each person gets 4 votes



Requirements Prioritization Model

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- Evaluates each feature based on multiple criteria
- Customer ratings
  - Benefit of having feature
  - Penalty for not having it
- Developer ratings
  - Cost of feature
  - Risks
- Weighted Formula

Weight	2	1			1		.5		
Feature	Relative Benefit	Relative Penalty	Total Value	Value %	Relative Cost	Cost %	Relative Risk	Risk %	Priority
Feature 1	5	3	13	16.8	2	9	1	5.8	1.345
Feature 2	5	5	15	19.5	3	13.6	2	11.8	.957
Feature 3	4	9	17	22.1	4	18.2	4	23.5	.708
Feature 4	6	2	14	18.2	4	18.2	3	17.6	.646
Feature 5	7	4	18	23.4	9	40.9	7	41.2	.365
Totals	27	23	77	100	22	100	17	100	

The requirements prioritization model was developed by Karl Wiegers.

Agile Games

- Gaming activities:
  - Collaboration activities
  - Brainstorming activities
  - Contrasting variants
  - Retrospectives
  - Learning matrix
  - Drawing
  - Storytelling

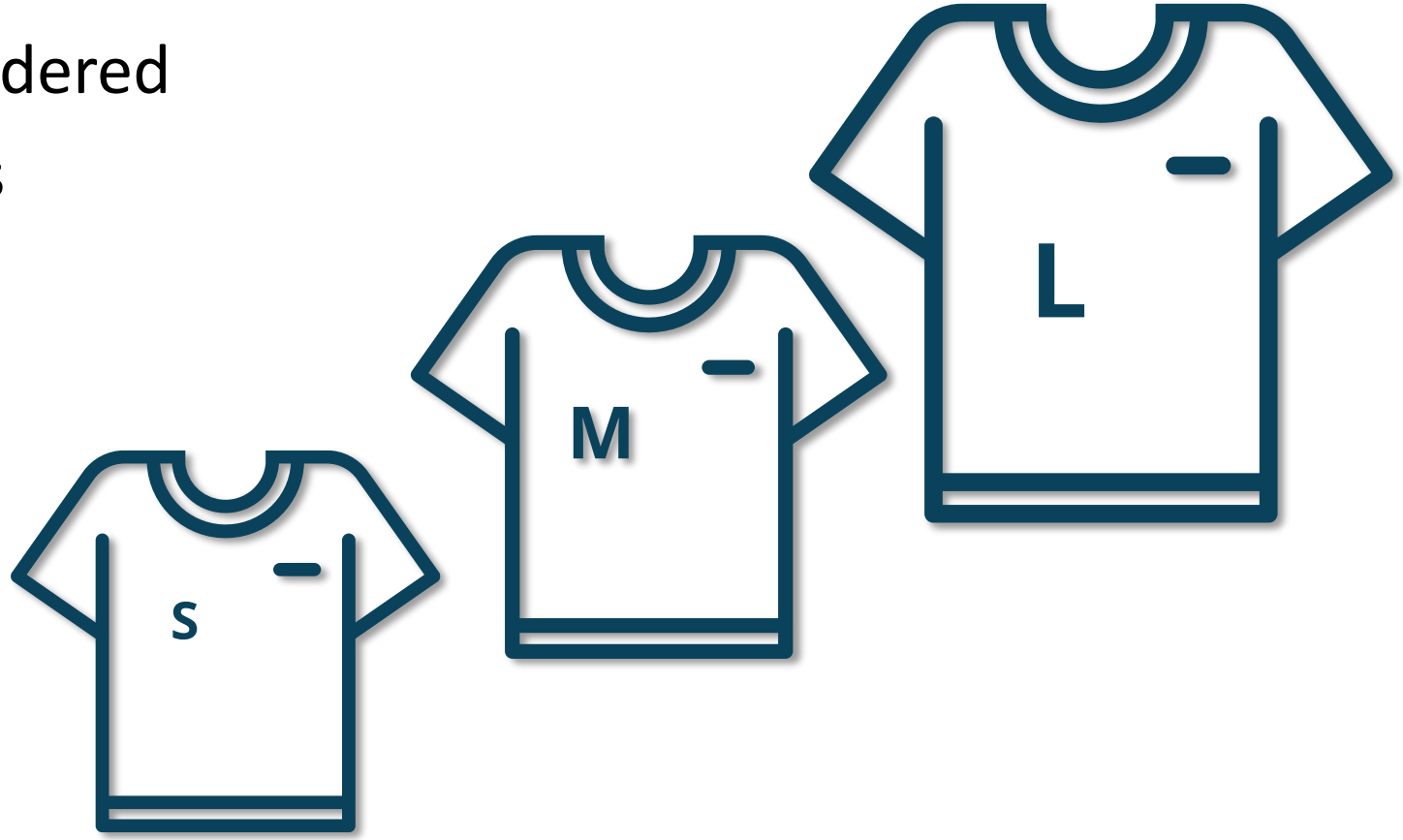
- Foster collaboration, communication, innovation
- Used to teach, demonstrate, improve
- Help model complex processes
- Facilitate issue examination and improvement identification
- Drive good behaviors
- Overcome destructive behaviors

Agile Estimating Techniques

- Relative estimation
- Arbitrary measure
- Usually used by scrum teams
- Express effort required to implement a story
- 3 items taken into consideration: level of complexity, level of unknowns, effort to implement.

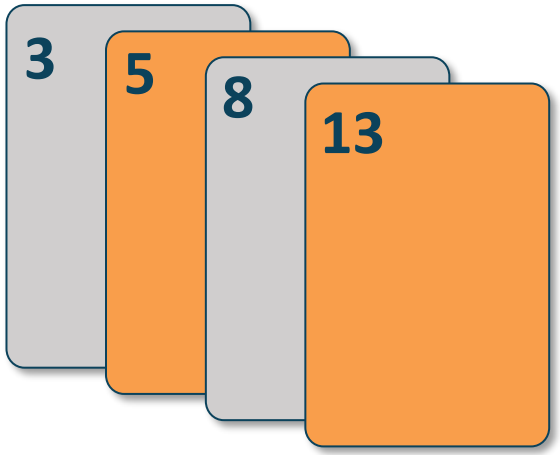
T-shirt sizing

- Quick and easy technique
- Absolute value not considered
- Sizes instead of numbers



Story Points

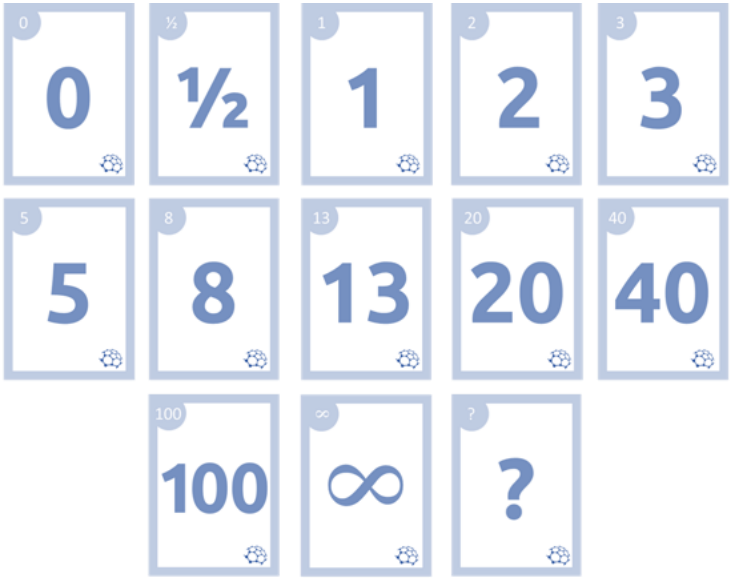
- Relative sizing
  - We aren't good at absolute estimate
  - We are better at relative estimates
- Not tied to days, hours, or dates
  - Removes pressure or emotion
- Based on quantity of work, not speed
- Unique to a team
  - Not comparable to the work of other teams
  - Removes competition between teams
- Reference for future estimates
- Reserves and buffers are not necessary



While story points is the most commonly used metric, teams may choose any unit to represent work.

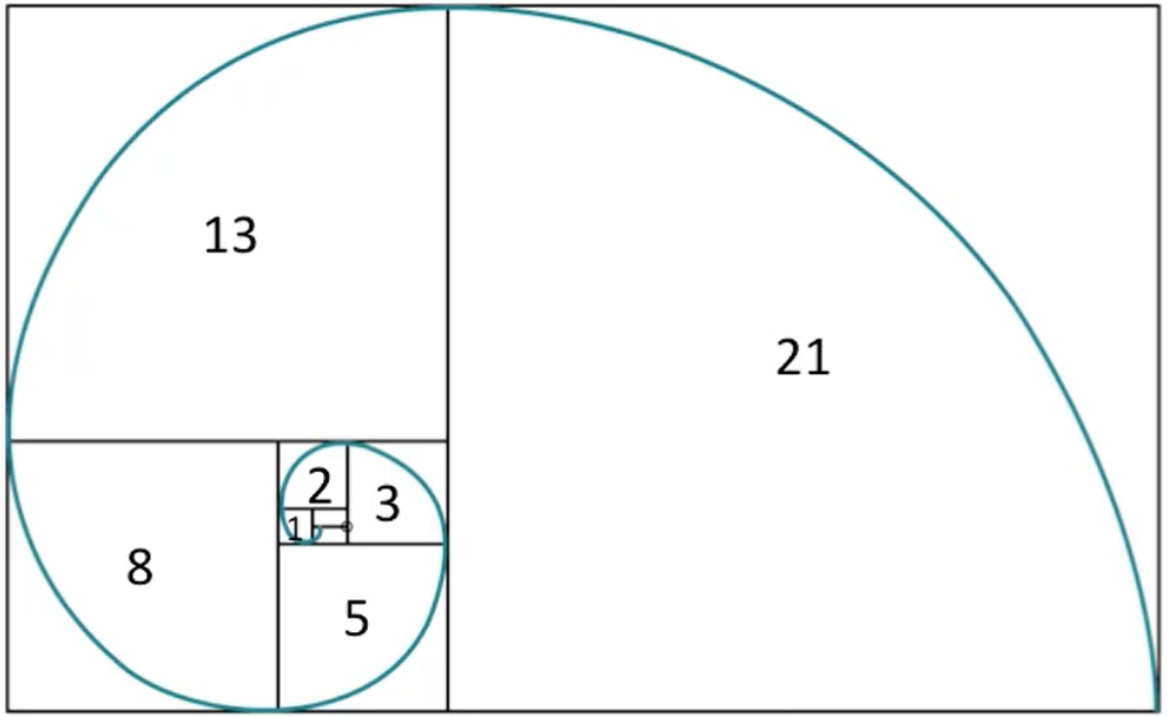
Planning Poker

- Uses Fibonacci sequence
- Each player receives a deck of cards
  - Facilitator reads a user story
  - On the count of 3, everyone shows their estimate
  - Purpose is to build consensus
  - close to consensus, move on and round to higher number
  - Scattered estimates, discuss and estimate again
  - Estimates are approximates

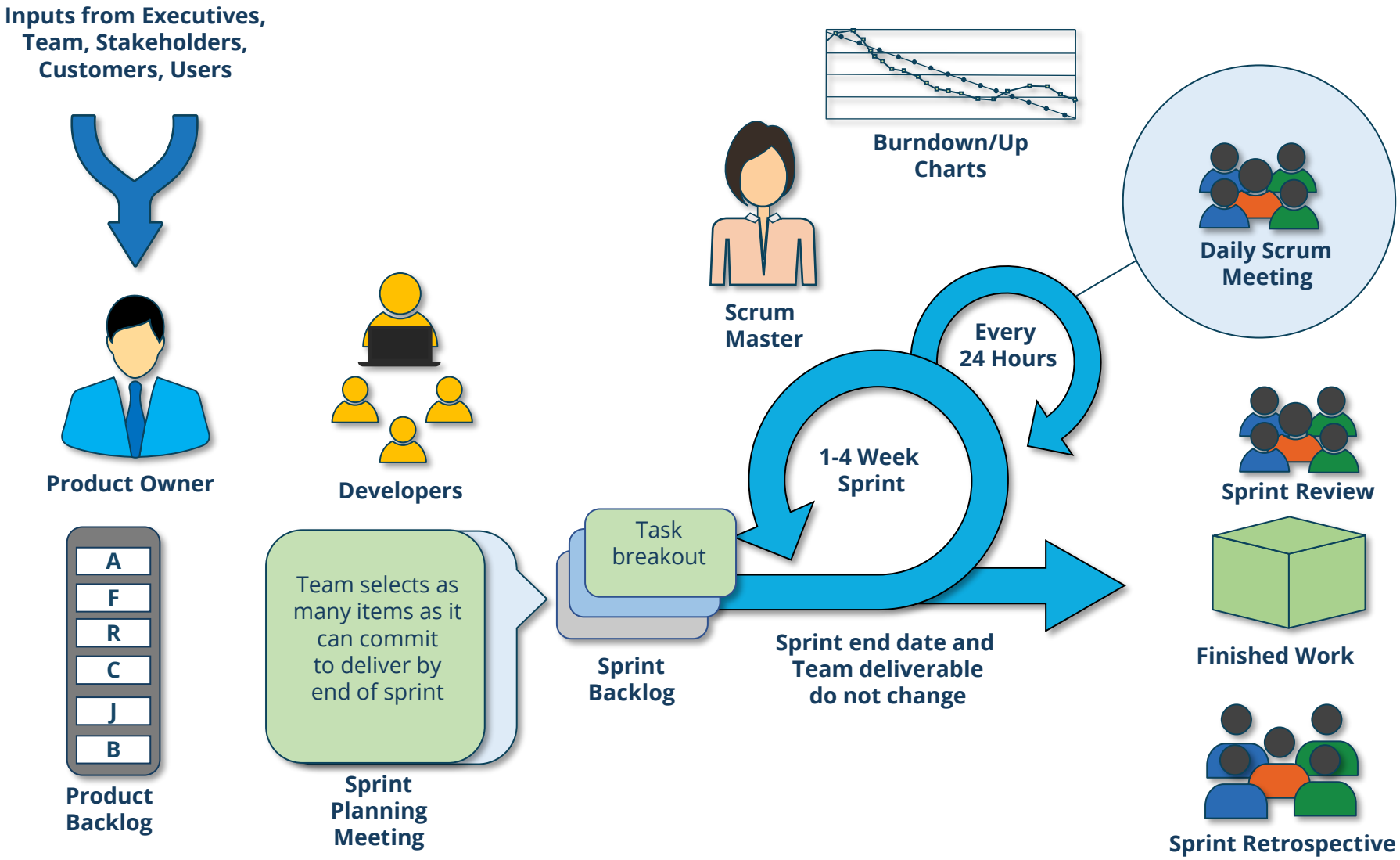


Fibonacci Sequence

- Sequence of numbers
  - Used for estimating story sizes
  - Each number is the sum of the two preceding numbers
  - **0, 1, 1, 2, 3, 5, 8, 13, 21, 34**, and so on



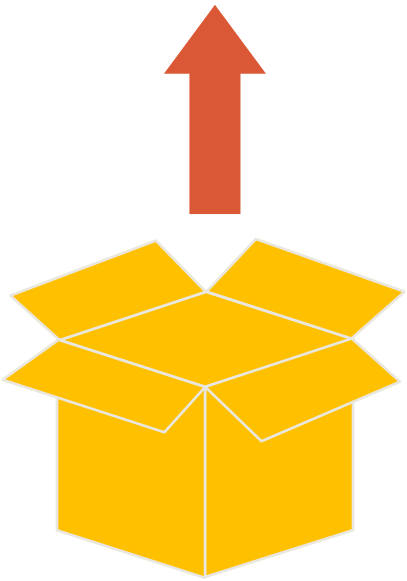
Scrum Framework



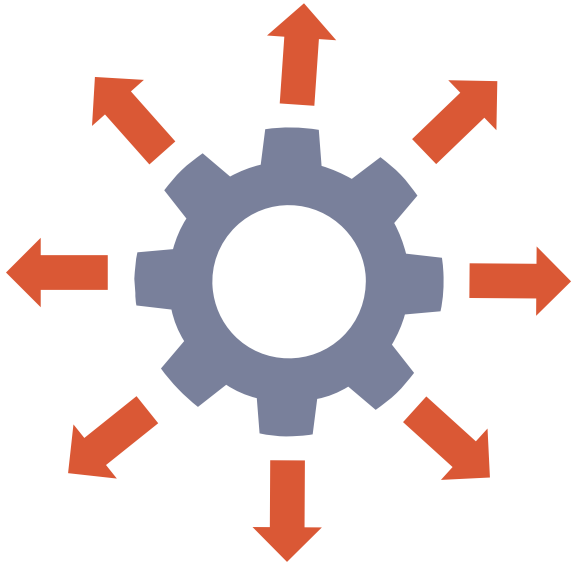
Story Map (backbone)

- Customer Journey
- Minimum Viable Product
- End-to-end functionality
- Example: video streaming service

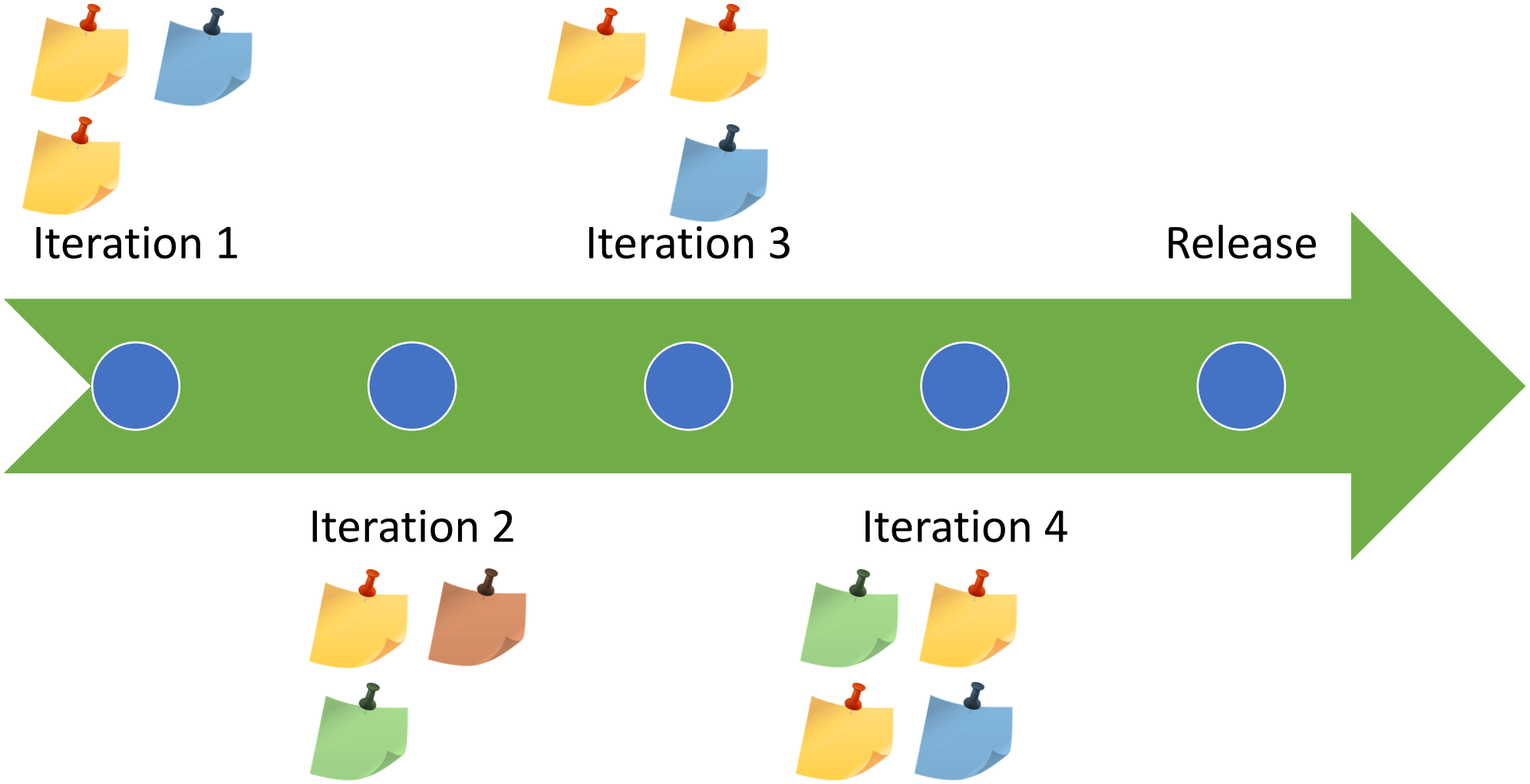
Product Scope Evolves



With each release, product becomes more robust



Sample Release Plan



Scrum Activities

- Backlog refinement
- Sprint planning meeting
- Daily scrum (during the sprint)
- Sprint review
- Sprint retrospective

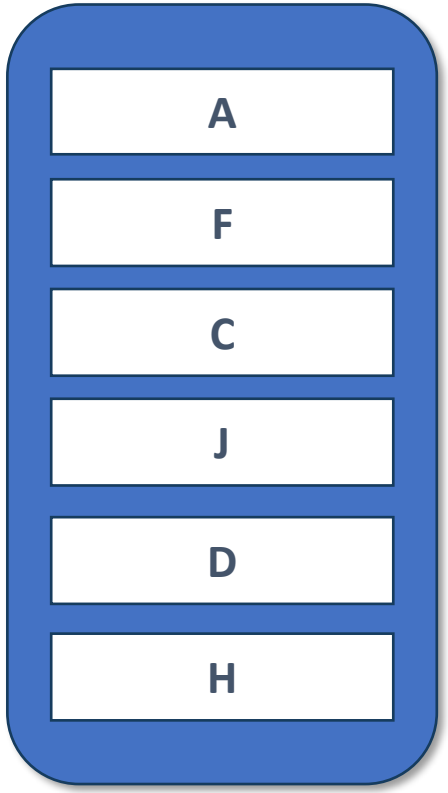
The term "scrum" comes from the sport of rugby

Scrum activities may also be referred to as "events", or "ceremonies".

Sprint Planning

- Participants
  - Everyone
- Actions
  - Product Owner presents the updated backlog
  - Team members pull from the product backlog
  - Team commits to a set of deliverables for the sprint
  - Establish “definition of done”
- Typically 8 hours or less

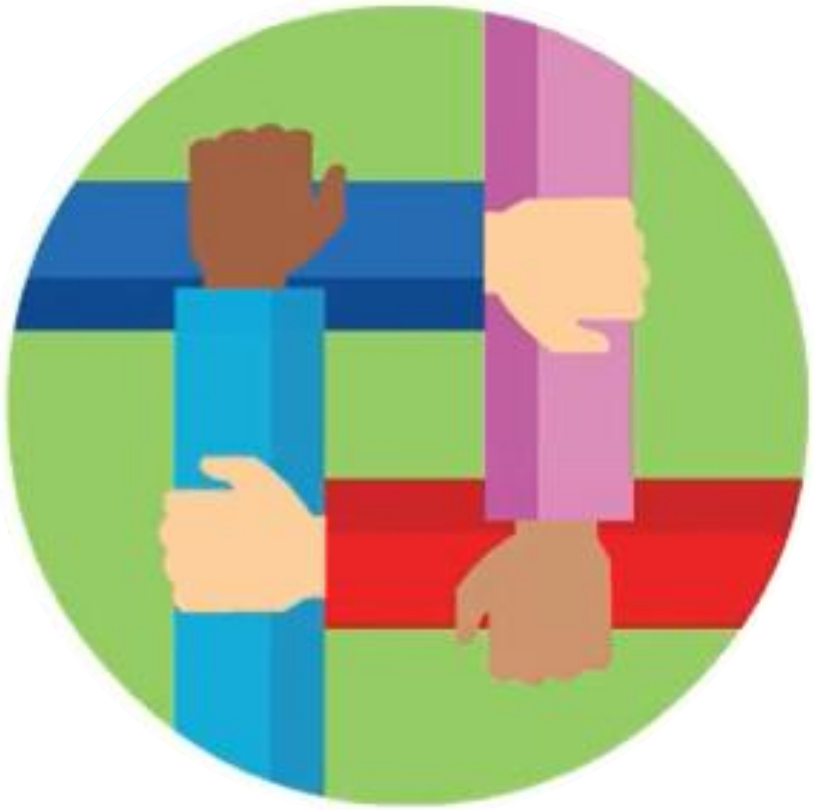
Product Backlog



Daily Scrum or “Daily Stand-up”

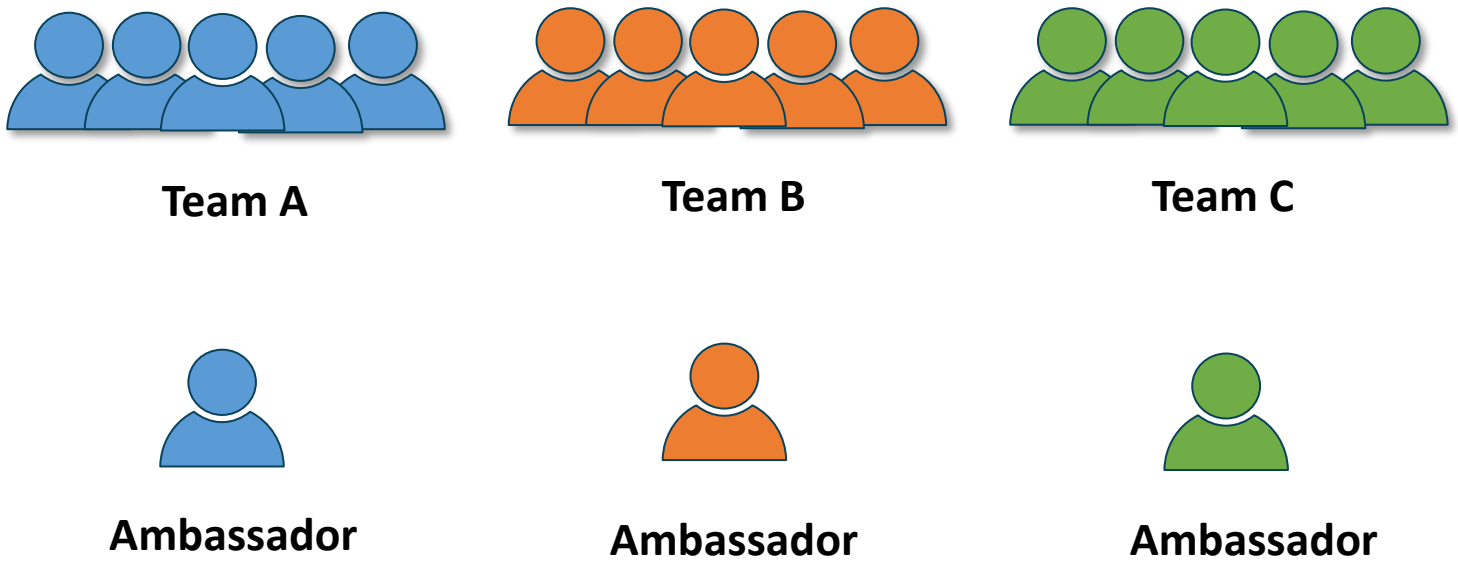
skillsoft

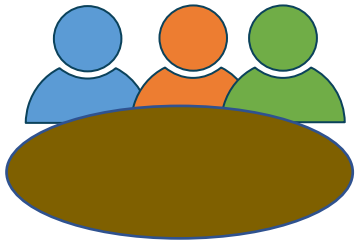
- Occurs during the sprint
- Participants
  - Developers
  - Scrum Master
  - Product Owner may observe
- Three main questions
  - What have I done since the last stand-up?
  - What do I plan on doing today?
  - Do I have any roadblocks or impediments?
- Typically 15 minutes or less
- Reserve off-topic subjects for a separate discussion



Scrum of Scrums

- Used to scale Agile
  - When teams are >12 members
  - Each team selects an ambassador
- Report on
  - Completions
  - Next steps
  - Impediments
- Resolve coordination challenges between teams
- Scrum of scrums has its own backlog of these items
- May meet a few times per week





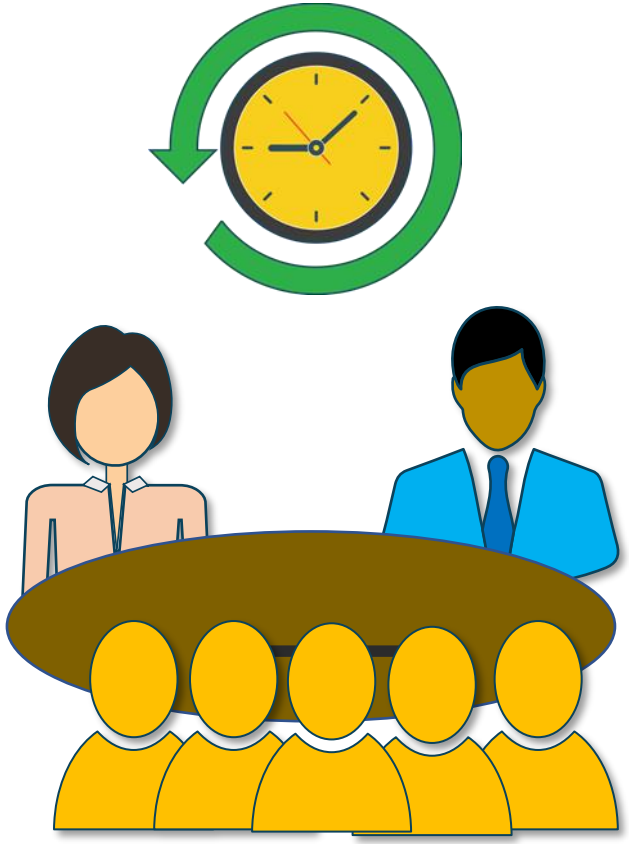
There is also a scrum of scrum of scrums!

Sprint Review

- Occurs at the end of a sprint
- Participants
  - Developers
  - Scrum Master
  - Product Owner
  - Stakeholders (potentially)
- Developers demo the product to the Product Owner and possibly stakeholders
- Product Owner inspects deliverables
- Elicit feedback and foster collaboration
- Product Owner adapts product backlog if necessary
- Typically 4 hours or less

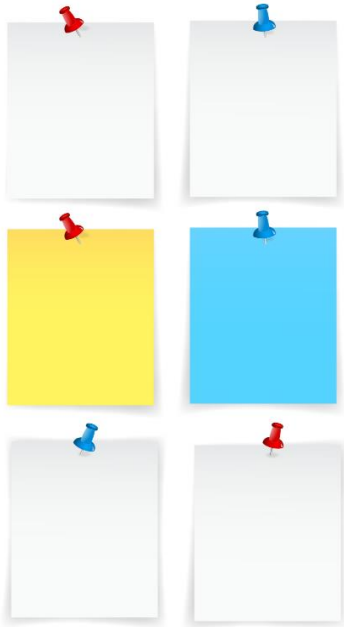
Sprint Retrospective

- Participants
  - The Scrum Team
    - Developers
    - Scrum Master
    - Product Owner
- Evaluate the last sprint
  - People
  - Processes
  - Tools
- Plan improvements for next iteration
- Typically 3 hours or less



Agile Tools

- Simple
- Low tech
- High touch
- Visible
  - White boards
  - Sticky notes
  - Charts
- “Information Radiators”
  - Large charts clearly displayed



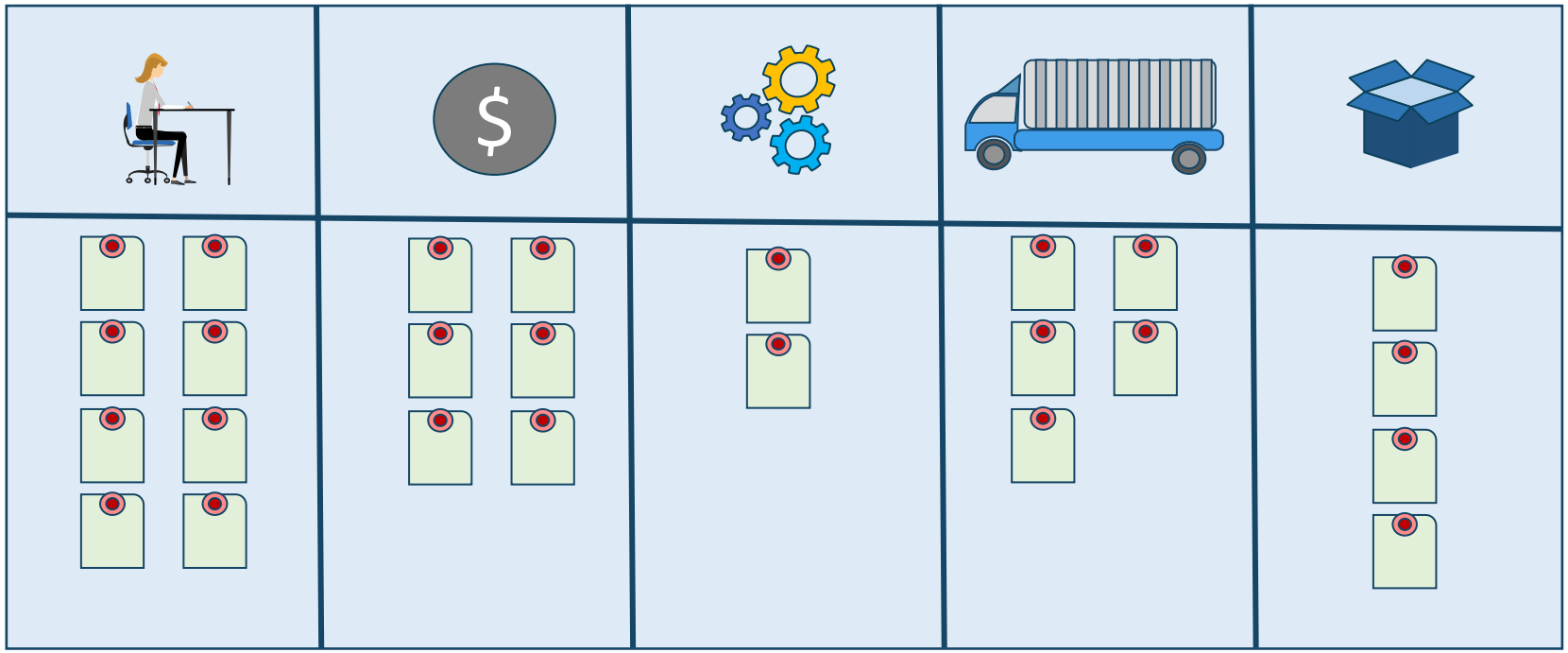
Problems with High Tech Tools

- Alters perception of data accuracy

  "If the system sophisticated the data must be good"
- Logins and passwords reduce stakeholder access
  - Fewer users have access to update the plan
  - Creates delays in receiving latest information
- Complexity reduces understanding

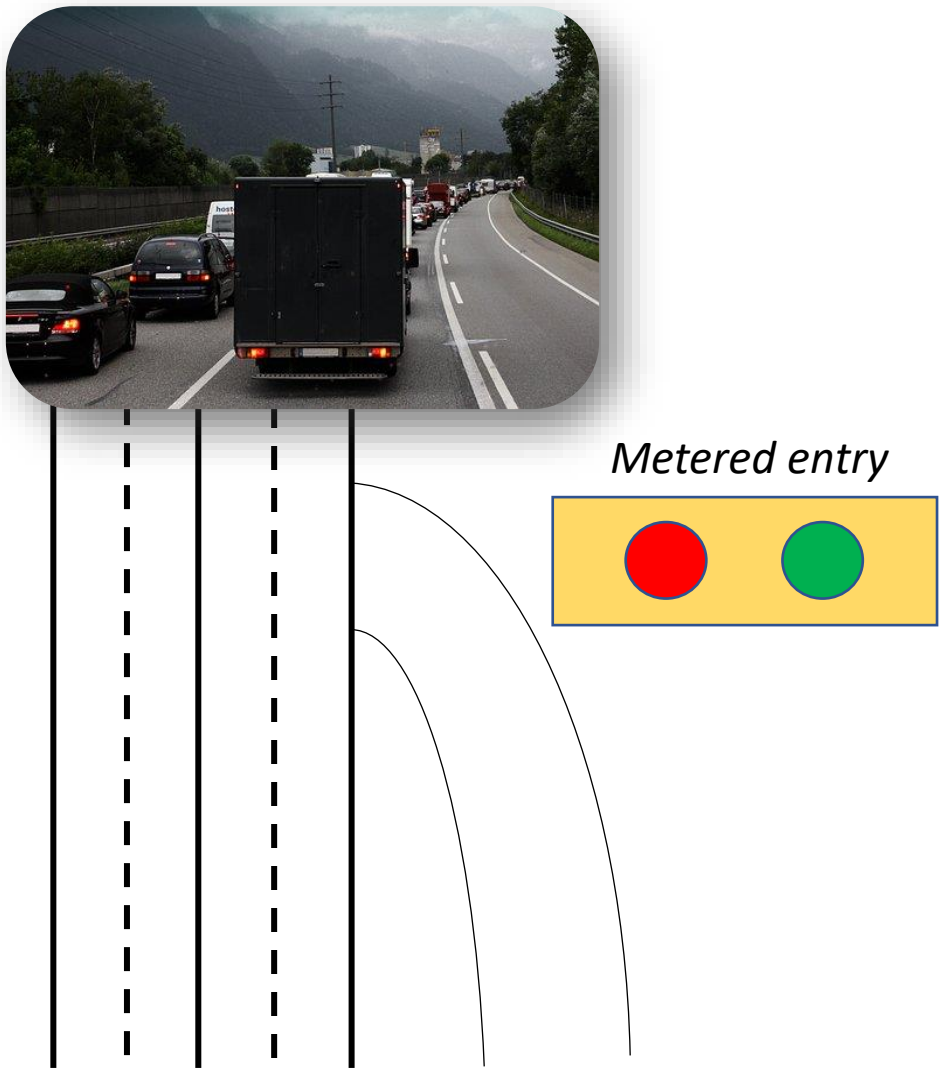
Kanban Boards

- Generic Agile term is “Task Board”
- Kanban boards show Work in Progress (WIP)
- Limiting WIP increases productivity
- WIP limits cap the number of items in each column



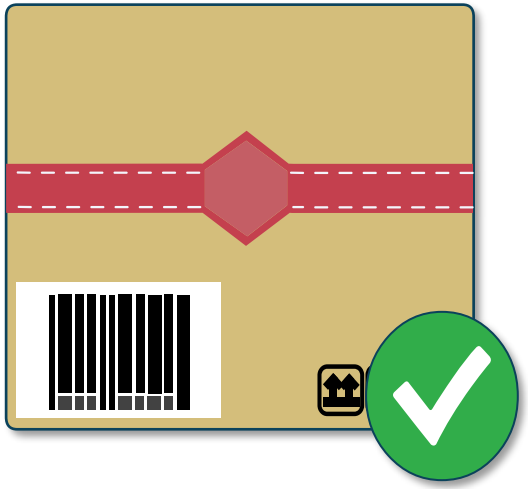
Why Limit Work in Progress (WIP)?

- Reduce Inventory
- Reduce bottlenecks
- Improve rate of throughput
- Control workloads of team members
- Goals:
  - Consistently sized tasks
  - Couple of days duration each
  - Assign to skills
  - Reduce idleness
  - Protect quality of work



Definition of Done (DoD)

- Helps to avoid stalling at 95% (just one more thing)
- Also known as “done done”
- Use a separate DoD for each level of the project work
  - Final deliverables will include more criteria than user stories
- Makes progress easier to assess
- Prevents disagreements and scope creep



Performance Tracking: Burn Charts

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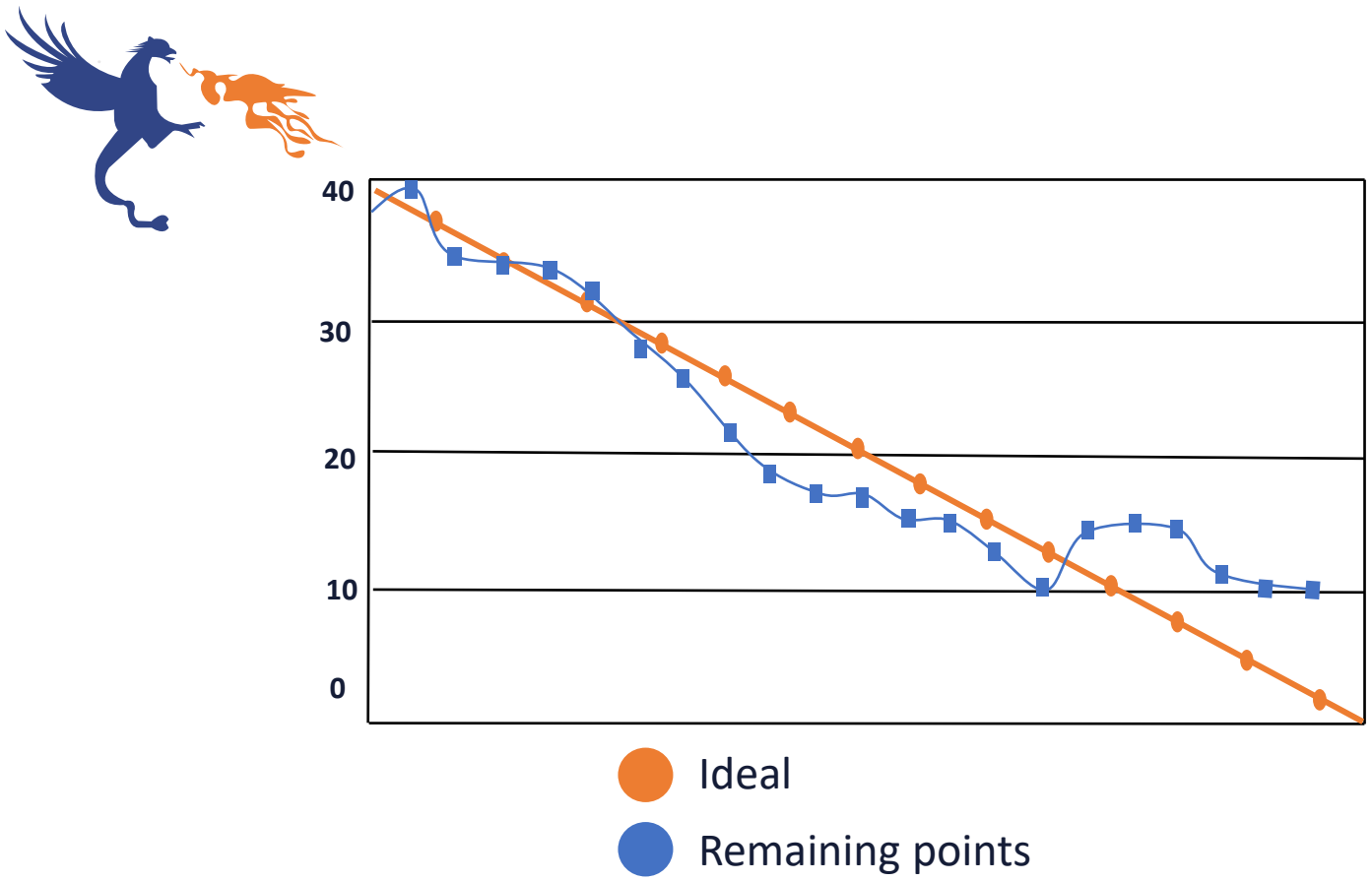
- Burndown and burnup charts
- "Information Radiators"
  - Generic term for a highly visible information display
  - Graphs, charts, data dashboard
  - Communication tool

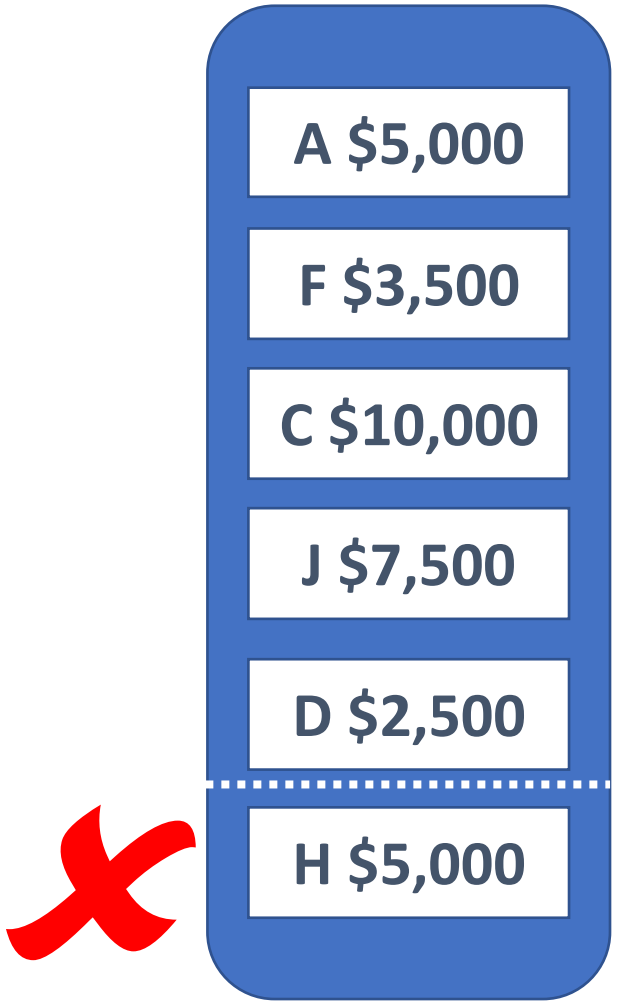


Agile Contracts

- Help organizations manage risks and resources
- Firm fixed-price contracts are not suitable for Agile projects
  - Modified fixed price contracts
  - Flexibility to make changes
- Changes for free
  - Customer must be highly involved with the project
  - Reprioritize backlog
  - Cancel the contract for a % of remaining work
- Customized contracts
  - Combination of different contracts

Fixed Price Work Packages

- Helps with accurate estimates
- Fewer unknowns
- Reduces need for contingency funds
- Allows for progressive elaboration
  - Re-estimate based on new information
  - Evaluate new risks



Can re-estimate later

Daily Bootcamp Survey

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At the end of each Bootcamp session please let us know how we are doing. Your feedback helps us to offer the best possible Bootcamp experience.

Please share your thoughts.

Introduction to the Agile Principles and Mindset

BOOTCAMP

Thank you for attending!

Instructor: Barb Waters, MBA, PMP

Class will begin at 11:00 am Eastern Time