

Project Management

Lecture 3 – Project Methodologies

Dr. Andre Samuel

Previous Lecture

- What is Project Management?
- Project Management Processes
- Project Management Process Group and Knowledge Area Mapping

Session 2- 5:00 pm to 9:00 pm

5:00 pm to 6:00 pm

Project Methodologies

- PMI-PMBok
- Prince 2
- Agile

6:00 pm to 6:10 pm

Coffee/Tea- Break

6:10 pm to 7:00 pm

Stakeholder Management

- Identification of Stakeholders
- Stakeholder Analysis

7:00 pm to 7:15 pm

Coffee/Tea- Break

7:15 pm to 8:00 pm

Project Charter

- Purpose
- Structure of a Project Charter
- Template

8:00 pm to 8:15 pm

Coffee/Tea- Break

8:15 pm to 9:00 pm

Look at the Assignment

- Understanding the requirements
- Initial structure of the report

In this lecture

- Project Methodology:
 - Project Management Institute (PMI) PMBoK
 - Prince 2
 - Agile

Why Project Methodology?

There's method to his madness

Shakespeare-Hamlet

- To provide structure
- To ensure a common set of aims, methods and 'rules of engagement'
- To standardize the delivery of multiple, different projects into one organization
- A methodology provides the project management framework to manage the tasks that need to be done.

Need for Project Management Maturity

- Kerzner (2017) considers that managing projects goes beyond adopting the knowledge, skills, tools and techniques usually applied.
- **The greater the standardized practices, the greater the chances of the projects to end on time and within budget (PMI, 2013)**
- Kerzner (2017) states that, despite the importance of defining a project management methodology, it does not guarantee its success in terms of performance during its execution
- Therefore, **organizations need to mature in the science and art of project management** in order to coordinate efforts to deliver projects directed to the organization's strategy

Benefits of a Methodology

- No surprises! We know what's coming next
- A structured approach to project management will improve project success:
 - Scope is controlled
 - Cost is controlled
 - Logical plans can be developed to meet deadlines
 - Roles and responsibilities are well defined
 - Quality assurance is built in, are we doing it right?

Team Discussion

- Discuss the following topic:

“If you didn’t have a methodology to follow when managing a project, what would be the results?”

Consequences of no Methodology?

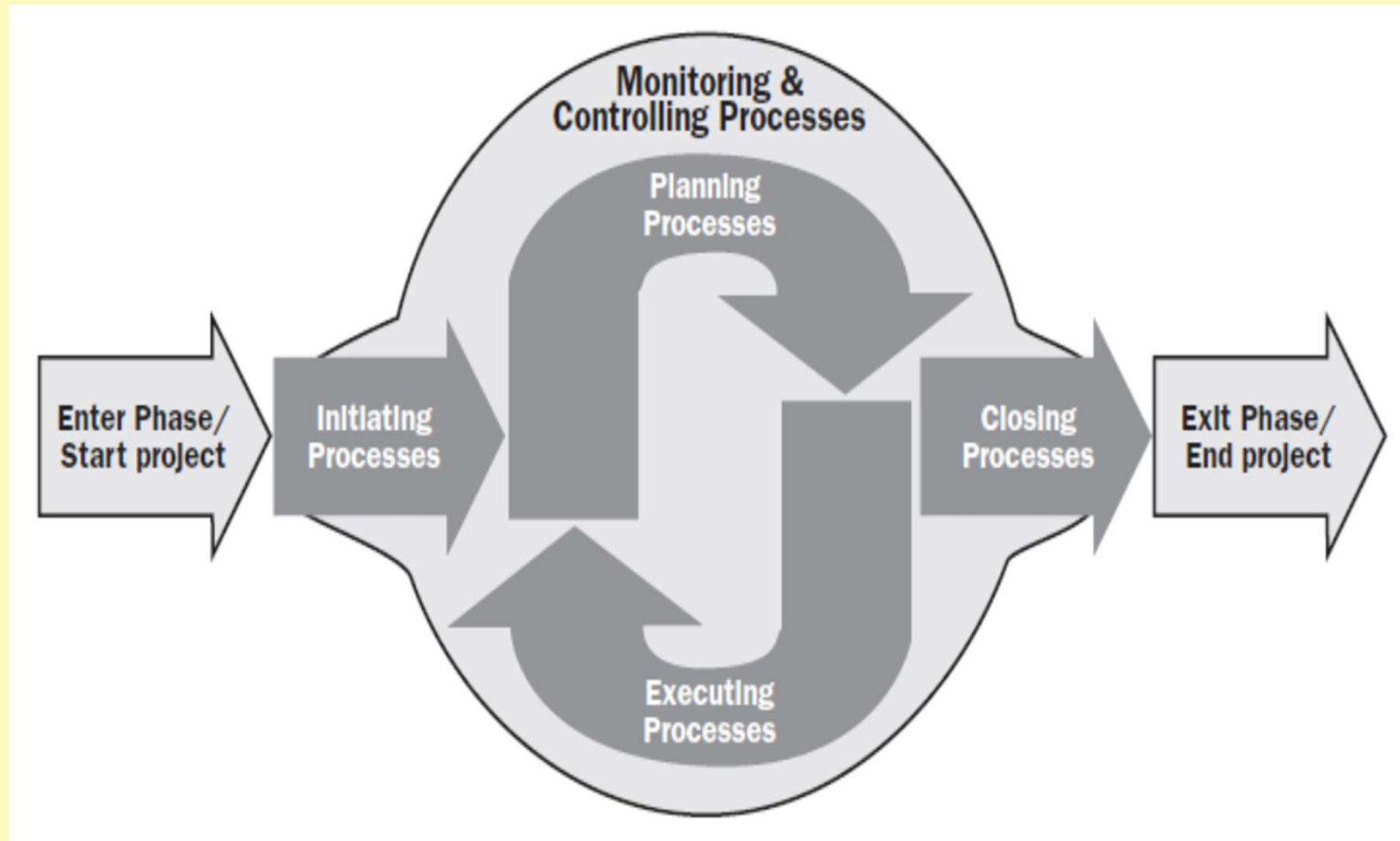
- The different roles in the project are not clearly defined
- Different teams in the organization manage projects in their own way, with little sharing of lessons learned or consistency of approach.
- Project performance is not consistent across all projects.
- Project teams re-invent the wheel every time, using different tools, templates and processes

[Naybour \(2016\)](#)

Popular Methodologies

- The PMI/PMBok method
- PRINCE 2
- Agile Methods

PMI- 5 Process Groups



Initiation Process

- Initiating Process Group consists of those processes performed to define a new project or a new phase of an existing project by obtaining authorization to start the project or phase.
- The **initial scope is defined**
- **Initial financial resources** are committed post Feasibility Study
- Internal and external **stakeholders** who will interact and influence the overall outcome of the project are identified.
- The **project manager will be selected.**

- The project manager is given the authority to apply organizational resources to the subsequent project activities.
- When the **Project Charter** is approved, the project becomes officially authorized
- The key purpose of this Process Group is to align the **stakeholders' expectations** with the project's purpose, give them visibility about the scope and objectives

Planning Process

- Planning Process Group consists of those processes performed to establish the total scope of the effort
- Define and refine the objectives,
- Develop the course of action required to attain those objectives
- Develop the **project management plan** and the project documents
- It will explore all aspects of the scope, time, cost, quality, communications, human resources, risks, procurements, and stakeholder engagement.

Executing Process

- Executing Process Group consists of those processes performed to **complete the work defined in the project management plan** to satisfy the project specifications
- Involves coordinating people and resources, managing stakeholder expectations

Monitoring and Control Process

- Monitoring and Controlling Process Group consists of those processes required **to track, review, and orchestrate the progress and performance of the project**
- It will identify any areas in which changes to the plan are required; and initiate the corresponding changes
- Project performance is measured and analyzed at regular intervals

Closing Process

- Closing Process Group consists of those processes performed to conclude all activities
- Verifies that the defined processes are completed and formally establishes that the project is complete
- Further details can be found at:
<https://projectmanagementacademy.net/articles/five-traditional-process-groups/>

Project Management Process Group and Knowledge Area Mapping

Knowledge Areas	Project Management Process Groups				
	Initiating Process Group	Planning Process Group	Executing Process Group	Monitoring and Controlling Process Group	Closing Process Group
4. Project Integration Management	4.1 Develop Project Charter	4.2 Develop Project Management Plan	4.3 Direct and Manage Project Work	4.4 Monitor and Control Project Work 4.5 Perform Integrated Change Control	4.6 Close Project or Phase
5. Project Scope Management		5.1 Plan Scope Management 5.2 Collect Requirements 5.3 Define Scope 5.4 Create WBS		5.5 Validate Scope 5.6 Control Scope	
6. Project Time Management		6.1 Plan Schedule Management 6.2 Define Activities 6.3 Sequence Activities 6.4 Estimate Activity Resources 6.5 Estimate Activity Durations 6.6 Develop Schedule		6.7 Control Schedule	
7. Project Cost Management		7.1 Plan Cost Management 7.2 Estimate Costs 7.3 Determine Budget		7.4 Control Costs	
8. Project Quality Management		8.1 Plan Quality Management	8.2 Perform Quality Assurance	8.3 Control Quality	
9. Project Human Resource Management		9.1 Plan Human Resource Management	9.2 Acquire Project Team 9.3 Develop Project Team 9.4 Manage Project Team		
10. Project Communications Management		10.1 Plan Communications Management	10.2 Manage Communications	10.3 Control Communications	
11. Project Risk Management		11.1 Plan Risk Management 11.2 Identify Risks 11.3 Perform Qualitative Risk Analysis 11.4 Perform Quantitative Risk Analysis 11.5 Plan Risk Responses		11.6 Control Risks	
12. Project Procurement Management		12.1 Plan Procurement Management	12.2 Conduct Procurements	12.3 Control Procurements	12.4 Close Procurements
13. Project Stakeholder Management	13.1 Identify Stakeholders	13.2 Plan Stakeholder Management	13.3 Manage Stakeholder Engagement	13.4 Control Stakeholder Engagement	

PRINCE 2

PRINCE 2

- PRojects IN Controlled Environments
- UK Gov standard
- PRINCE – 1989 PRINCE 2 – 1996:
- Focus on **business justification**
- Defined **organization structure** for the project management team
- **Product-based planning** approach
- Emphasis on dividing the project into **manageable and controllable stages**
- **Flexibility** that can be applied at a level appropriate to the project.

PRINCE 2 Principles/rules

- Continued business justification (Benefits)
- Learn from experience
- Defined roles and responsibilities
- Managed by stages
- Managed by exception (appropriate delegation of authority)
- Focus on products
- Tailor to suit the project environment



PRINCE 2 Themes

Aspects of project management

- Business Case
- Organization
- Quality
- Plan
- Risk
- Change
- Progress

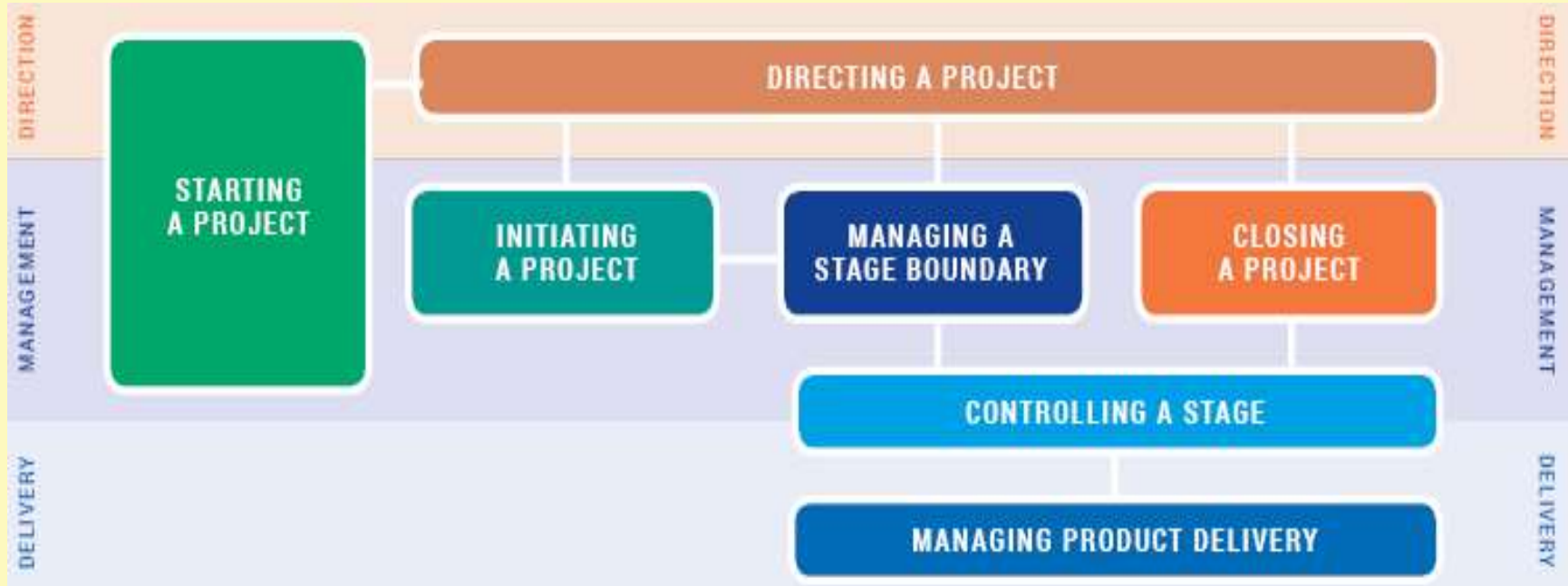


PRINCE2 basic framework

- A project should have:
 - ***An organised and controlled start***, i.e. organise and plan before leaping in.
 - ***An organised and controlled middle***, i.e. keeping projects organised and controlled.
 - ***An organised and controlled end***, i.e. when you've got what you want and the project has finished, tidy up the loose ends

PRINCE 2 Processes

- Starting up a project
- Directing a project
- Initiating a project
- Controlling a stage
- Managing product delivery
- Managing a stage boundary
- Closing a project



PRINCE 2- summary



[Axelos - What is PRINCE2®?](#)

Axelos- Prince 2 overview



<https://www.youtube.com/watch?v=61RnrsWQE7A>

Why Agile?



How the customer explained it



How the project leader understood it



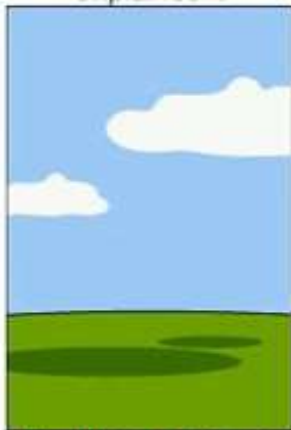
How the engineer designed it



How the programmer wrote it



How the sales executive described it



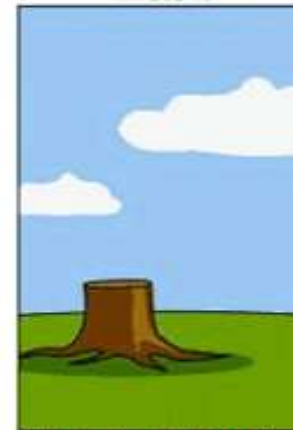
How the project was documented



What operations installed



How the customer was billed



How the helpdesk supported it



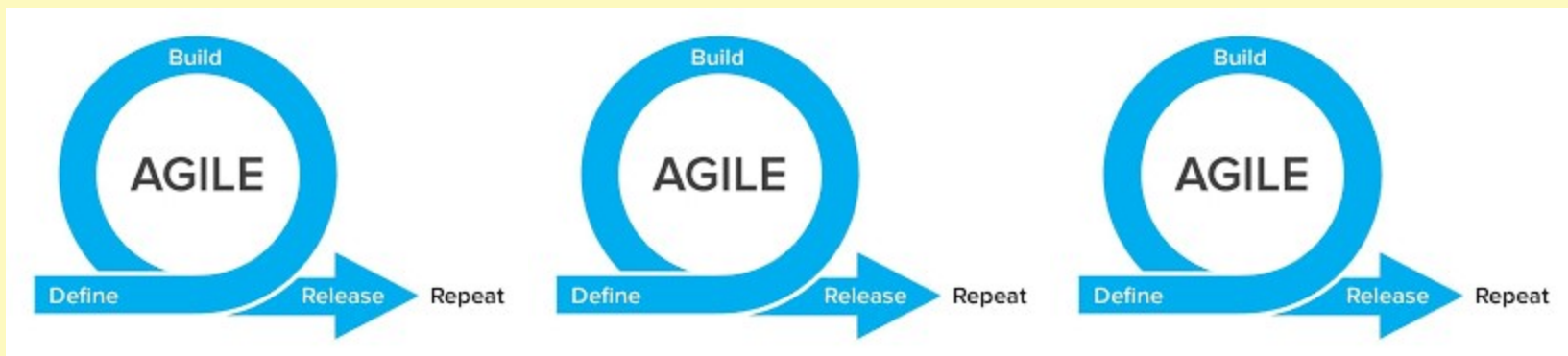
What the customer really needed

What is Agile Project Management?

- Agile project management is an approach based on:
 - delivering requirements **iteratively** and
 - **incrementally** throughout the project life cycle.
- At the core of agile is the requirement to exhibit central values and behaviours of
 - trust
 - Flexibility
 - empowerment and collaboration.

Characteristics of Agile

- Delivers work in **short bursts (or sprints)** of anything up to a few weeks.
- These are **repeated to refine the working deliverable** until it meets the client's requirements.
- Agile starts **work with a rough idea** and as the project progresses **clarifies the requirements**
- **Collaborative relationships** are established between stakeholders and the team members delivering the work

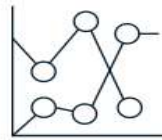


The digital agenda for recovery

A plan for the first 90 days has four efforts to launch immediately.



Refocus digital efforts toward changing customer expectations



Use new data and AI¹ to improve business operations



Selectively modernize technology capabilities



Increase organizational drumbeat

**Sprint 1:
days 1–29**

Align organization to new digital priorities

Assess performance of critical decision-support models

Create rightsizing plan for shifting to variable cost structure and begin assessing cyberrisks

Assess where organizational velocity is needed and where remote-work models could drive productivity

**Sprint 2:
days 30–59**

Bring digital channels to parity or better vs competition

Recalibrate and/or rebuild models

Set up cloud-based data platform and automate software-delivery pipeline

Deploy new models leveraging agile and remote

**Sprint 3:
days 60–90**

Launch new digital offerings or channels

Develop next-generation data sets and models for optimal performance

Begin strengthening technology talent bench

Upskill organization for accelerated digital world

¹Artificial intelligence.

- Agile projects need **documentation, reviews and processes** just as traditional projects do to meet requirements, manage costs and schedules, deliver benefits and avoid scope creep;
- Agile **does not expect to fully understand the requirements** before work can begin.
- Instead it **emphasises the importance of delivering a working product as something tangible** for the client that can then be refined until it fulfils the client's needs.
- The **key measure of project progress is this series of working deliverables.**

Pareto Principle

- 20% of the User Stories (functional work) probably contain 80% of the customer value. So find them and do those first
- Find the 20 percent that delights customers, deliver them, and repeat.



Prioritisation- MoSoCoW

- **Must-** Cannot deliver/go live without this.
- **Should-** Important but not vital
- **Could-** Wanted or desirable but less important. "nice to haves"
- **Won't-** team has agreed it will not deliver



Benefits to Business/Clients

- Increased flexibility
- Increased transparency
- Speed up delivery
- Improve quality
- Satisfy stakeholders and realise efficiencies
- Decreased risk of missed objectives

Principles of Agile

- **Customer collaboration** over contract negotiation
- **Individuals and interaction over processes and tools**
- **Responding to change** over following a structured plan
- **Prototyping/working solutions** over comprehensive documentation

Benefits to Project Management

- Reduced waste through minimization of resources
- Increased flexibility and adaptability to change
- Faster turnaround times
- Faster detection of issues and defects
- A Optimal project control
- Increased focus on specific customer needs
- Increased frequency of collaboration and feedback
- Builds accountability
- Encourages diversity of ideas

Adopting PRINCE2 Agile™ to deliver projects: The AXELOS Website



Agile Methodologies

- Scrum
- Lean
- Kanban
- DSDM

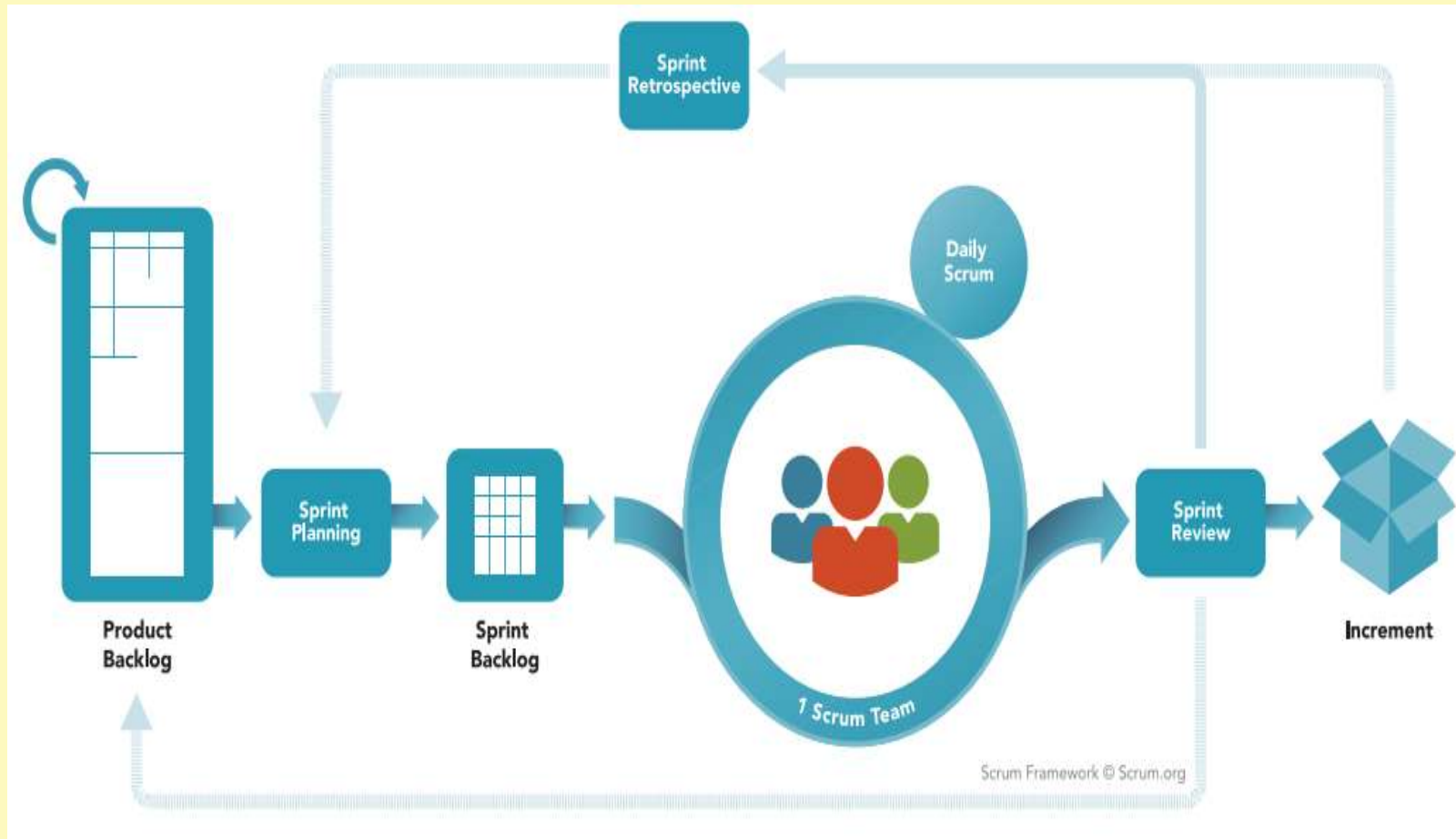
Agile Project Management with SCRUM

- Jeff Sutherland created the scrum process in 1993, he borrowed the term "scrum" from an analogy put forth in a 1986 study by Takeuchi and Nonaka, published in the Harvard Business Review.
- In that study, Takeuchi and Nonaka compare high-performing, cross-functional teams to the scrum formation used by Rugby teams.
- Scrum is the leading agile development methodology, used by Fortune 500 companies around the world

SCRUM Values



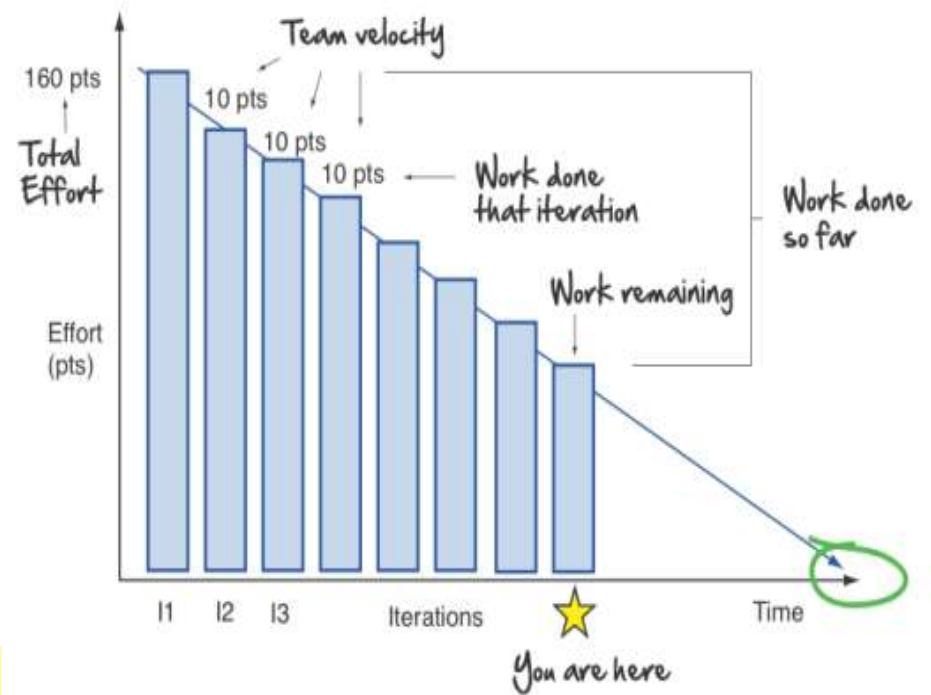
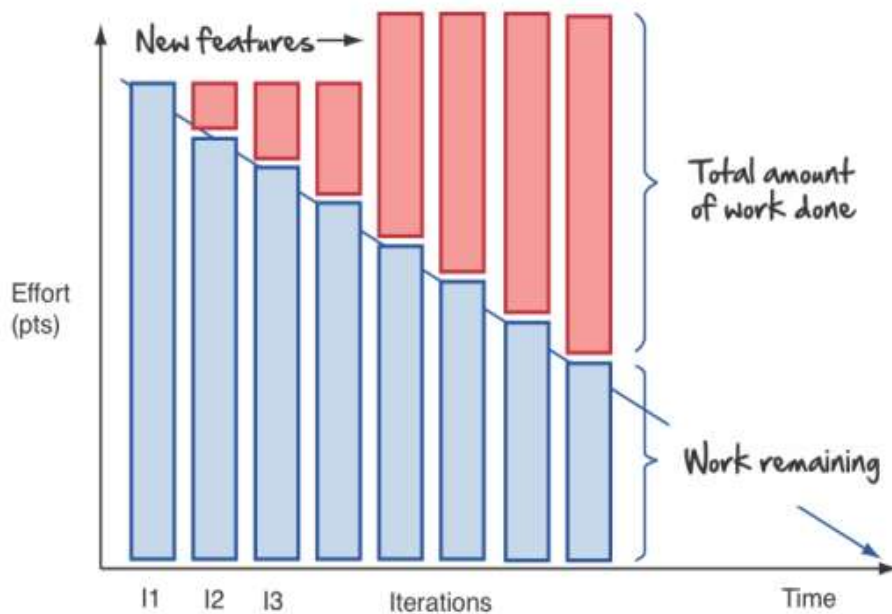
SCRUM Framework



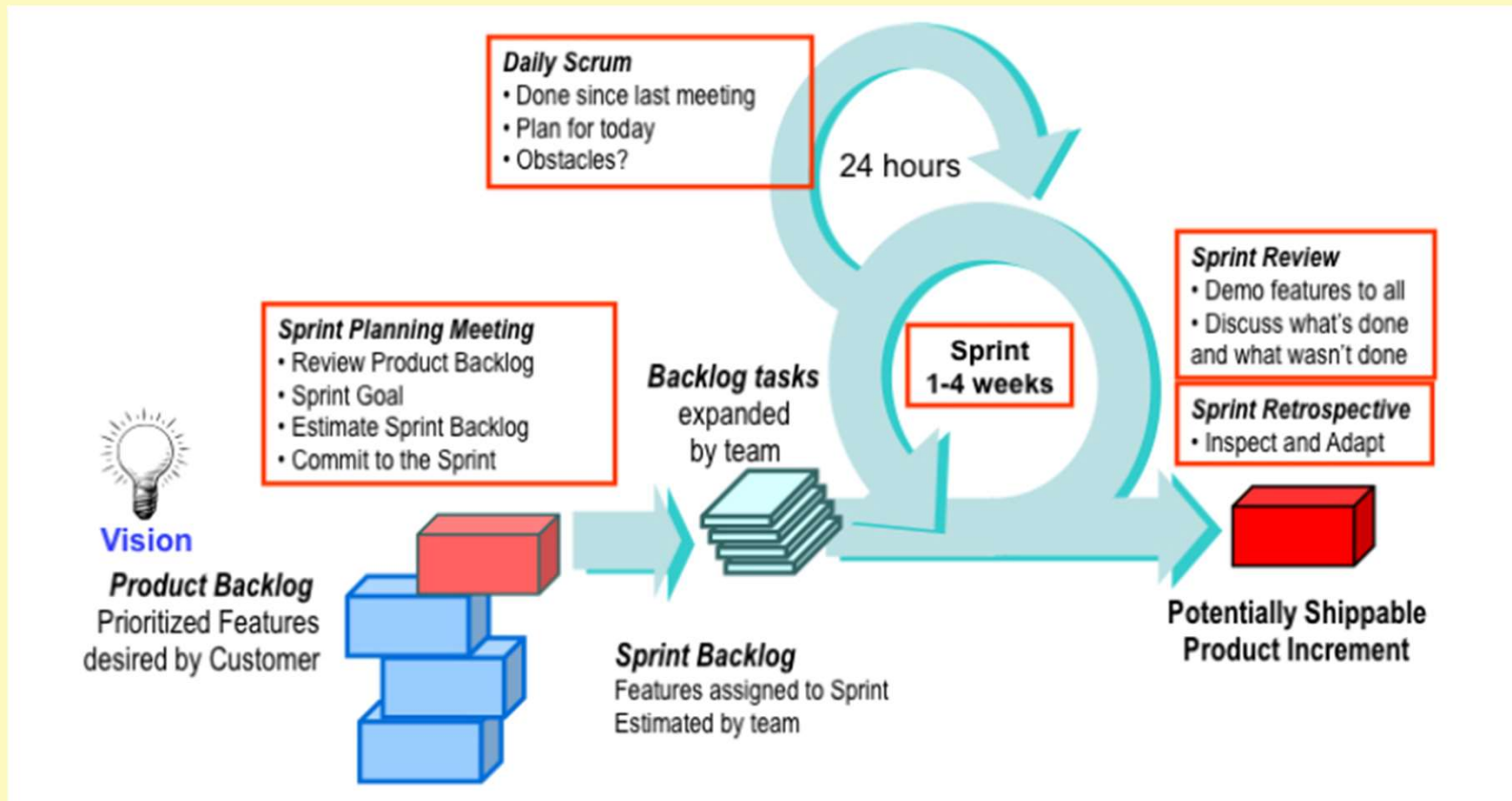
SCRUM Events

- Sprint
- Sprint Planning
- Daily Scrum
- Sprint Review
- Sprint Retrospective

Tracking Progress- Burndown Chart

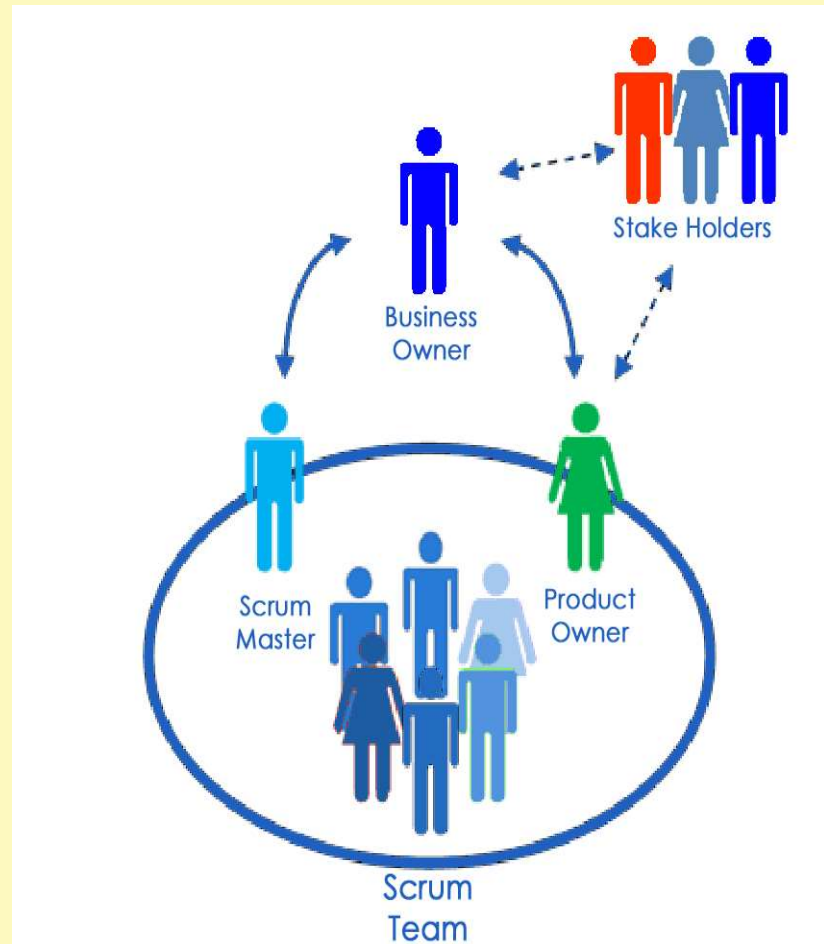


Detailed Framework



SCRUM Roles

- **SCRUM Development Team-** consists of seven plus or minus two people who are jointly responsible for the delivery of the product
- **Product Owner-** represents the voice of the customer and has the authority to make decisions about the product.
- **SCRUM Master-** is the keeper of the process, the advocate for the team, and the protector of the team



SCRUM Development Team

- Cross-functional (e.g., includes members with testing skills, and others not traditionally called developers: business analysts, designers, domain experts, etc.)
- Self-organizing / self-managing, without externally assigned roles
- Plans one Sprint at a time with the Product Owner
- Has autonomy regarding how to develop the increment
- Intensely collaborative
- Most successful when located in one team room, particularly for the first few Sprints
- Most successful with long-term, full-time membership. Scrum moves work to a flexible learning team and avoids moving people or splitting them between teams.
- 6 ± 3 members
- Has a leadership role

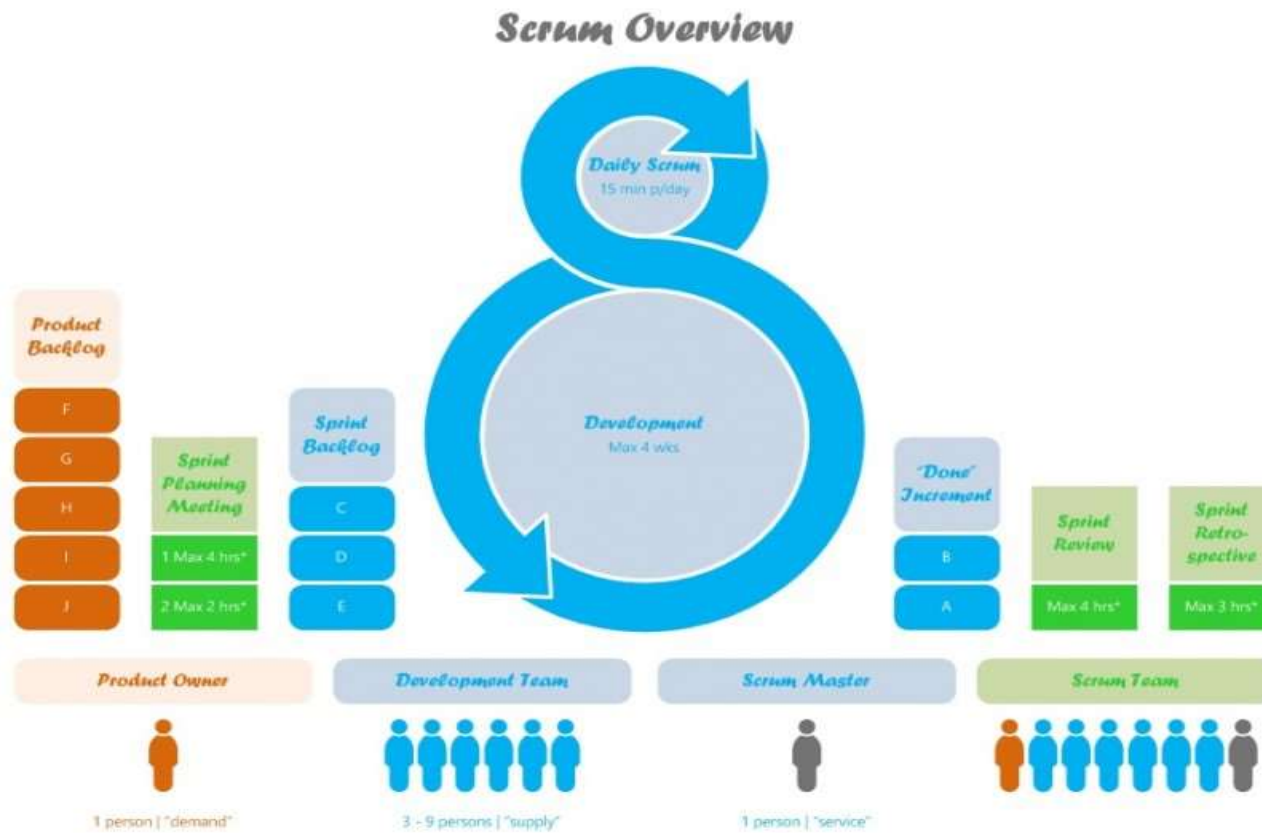
Product Owner

- Single person responsible for maximizing the return on investment (ROI) of the development effort
- Responsible for product vision
- Constantly re-prioritizes the Product Backlog, adjusting any long term expectations such as release plans
- Final arbiter of requirements questions
- Decides whether to release
- Decides whether to continue development
- Considers stakeholder interests
- May contribute as a team member
- Has a leadership role

SCRUM Master

- Works with the organization to make Scrum possible
- Ensures Scrum is understood and enacted
- Creates an environment conducive to team self-organization
- Shields the team from external interference and distractions to keep it in group flow (a.k.a. the zone)
- Promotes improved engineering practices
- Has no management authority over the team
- Helps resolve impediments
- Has a leadership role

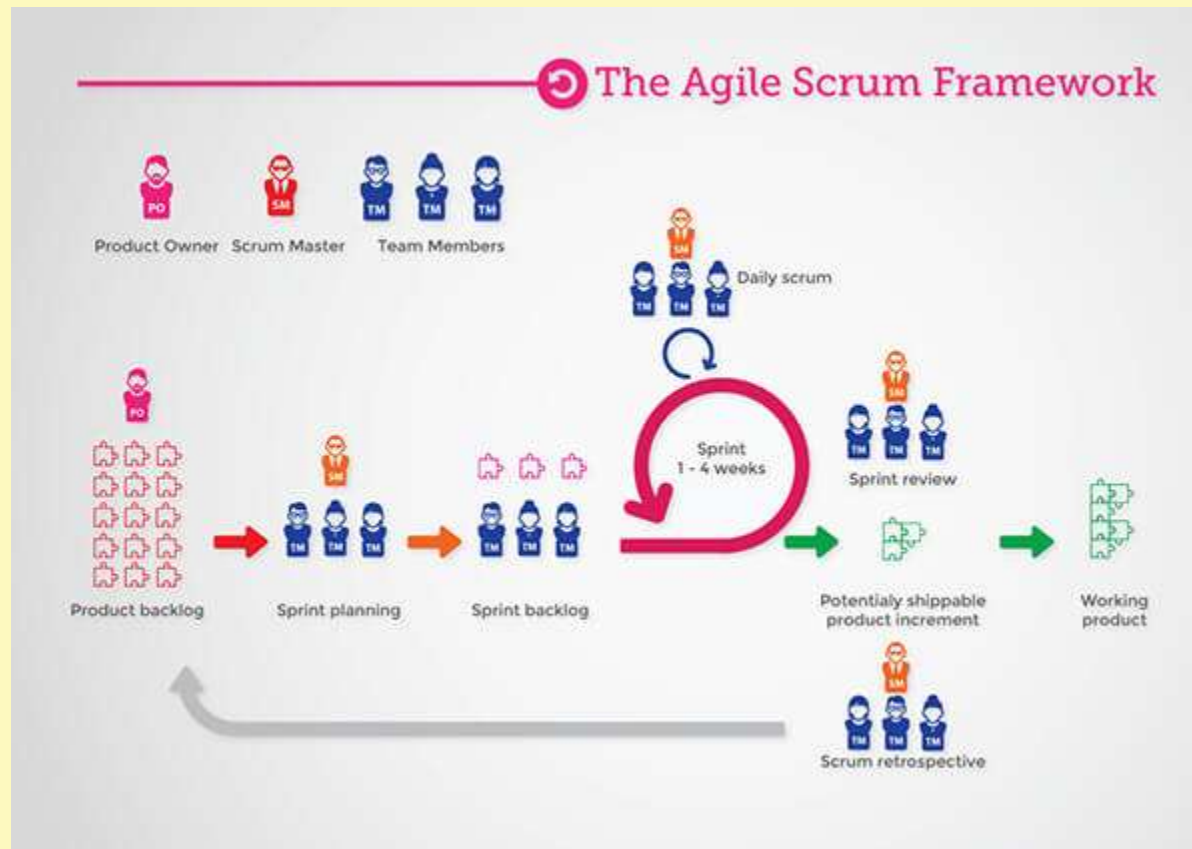
SCRUM Roles integrated with SCRUM Framework



* Duration of this event depends on the duration of the Sprint.

Designed by Marq Hoogveld © 2012

SCRUM Roles integrated with SCRUM Framework

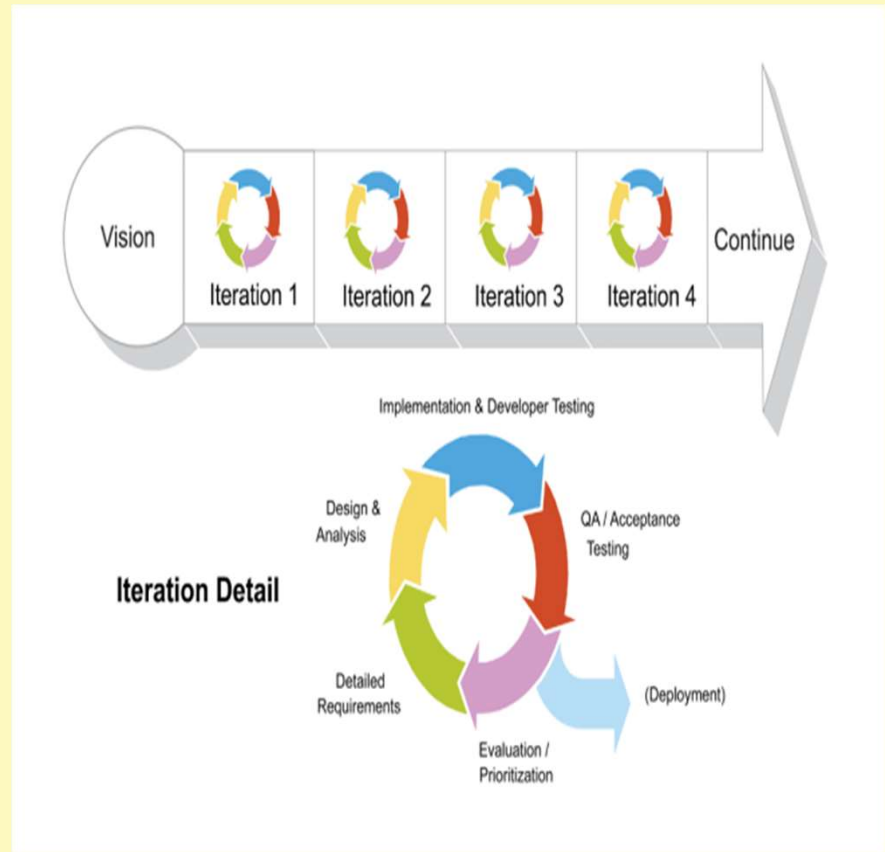
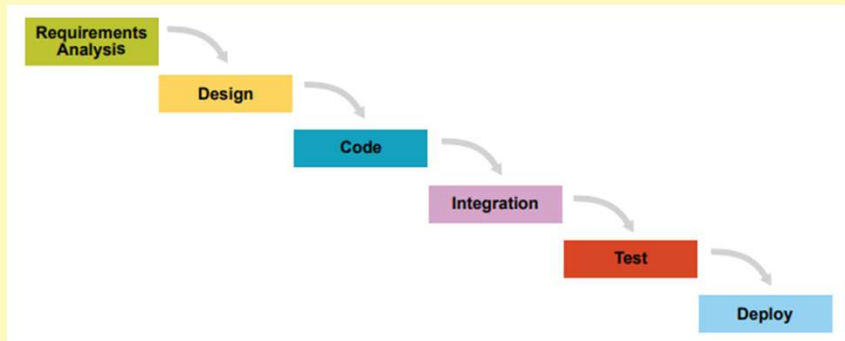


Implication of Agile to Project Management

Project Management Function	Implication
Planning	Less formal, based on sprints
Scope	Collaborative and interactive approach to requirements as they are not fully known. Change is welcomed, scope creep is expected
Cost	Based on number of sprints and effort, iterative, bottom up
Quality	Early testing, continuous improvement
Project Team	Greater communication and collaboration

Knowledge Areas	Activities	Scrum Tools & Techniques
Project Integration Management	Direct & Manage Project Execution	Execute Tasks
	Monitor & Control Project Work	Taskboard, Burnup & Burndown charts, and related tools
	Perform Integrated Change Control	Manage Product Backlog
Project Scope Management	Collect Requirements	Write Epics & Stories
	Define Scope	Sprint Planning Meeting
	Create WBS	Create Task Breakdowns
	Verify Scope	Sprint Review Meeting
	Control Scope	Manage Product Backlog
Project Time Management	Define Activities	Develop Task Breakdown
	Sequence Activities	Rank Product Backlog
	Estimate Activity Duration	Planning Poker, Analogous Estimation
	Develop Schedule	Sprint Planning Meeting
	Control Schedule	Daily Scrum Meeting
Project Quality Management	Plan Quality	Create Definition of Done
	Perform Quality Control	Validate to Definition of Done
Project Cost Management	Estimate Costs	Planning Poker, Analogous Estimation
Project Human Resource Management	Develop Project Team	Swarming
	Manage Project Team	Daily Scrum Meeting
Project Communication Management	Plan Communications	Taskboard and related tools
	Distribute Information	Taskboard and related tools
	Report Performance	Taskboard and related tools
Project Risk Management	Monitor & Control Risks	Daily Scrum Meeting

Comparison of Agile and Waterfall



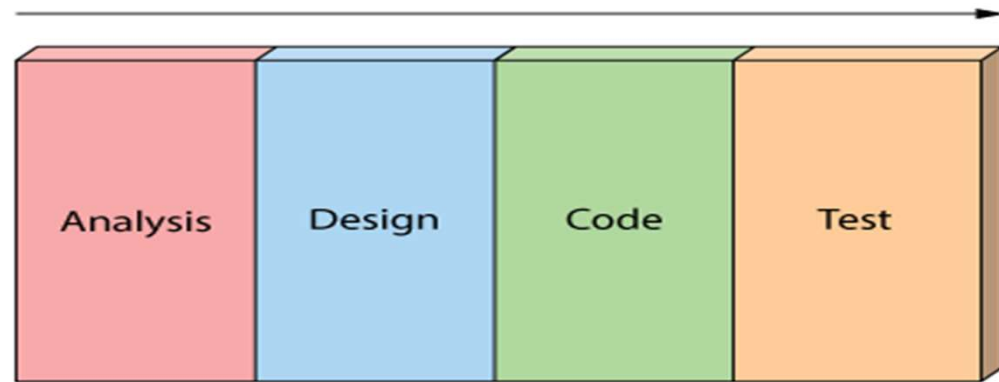
Waterfall Principles

- Sequential steps-creating stage gates
- Strong project documentation
- Low customer involvement



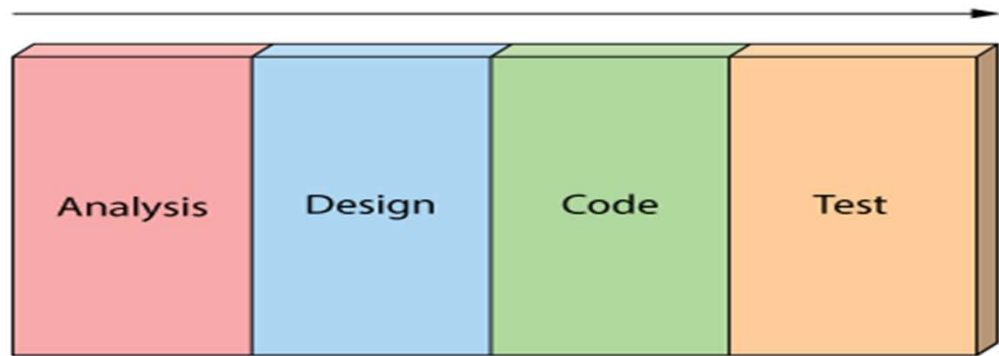
Waterfall challenges

Poor quality



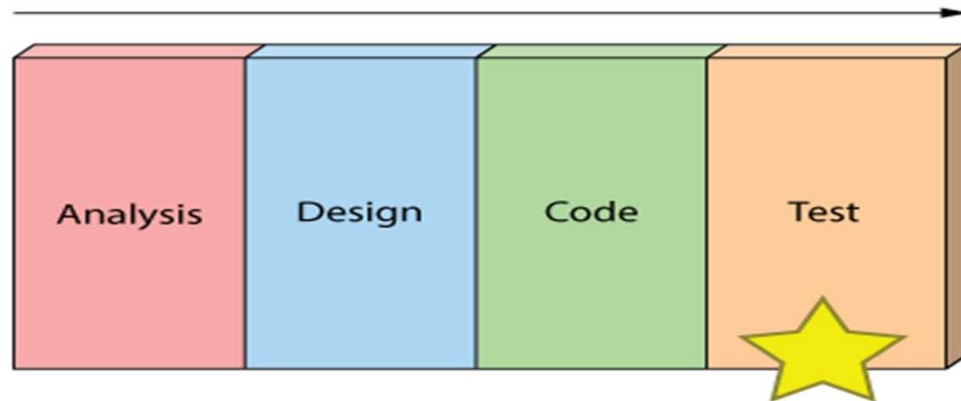
Out of time? Cut here. ↗

Poor visibility



↑
1/2 way?

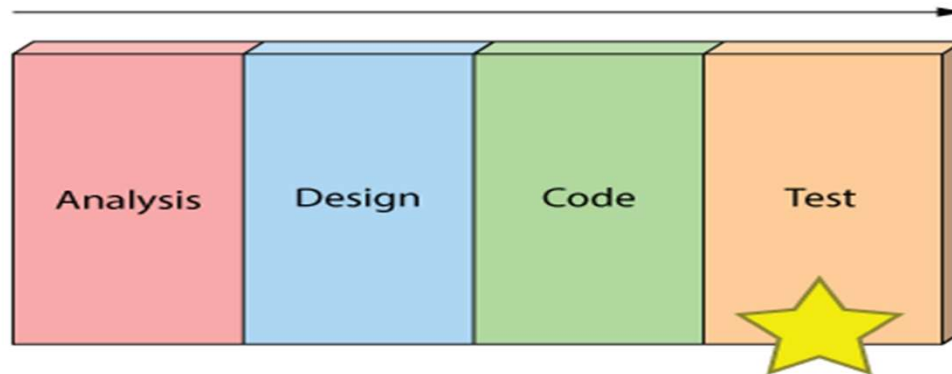
Too risky



Houston we have a problem

Can't handle change

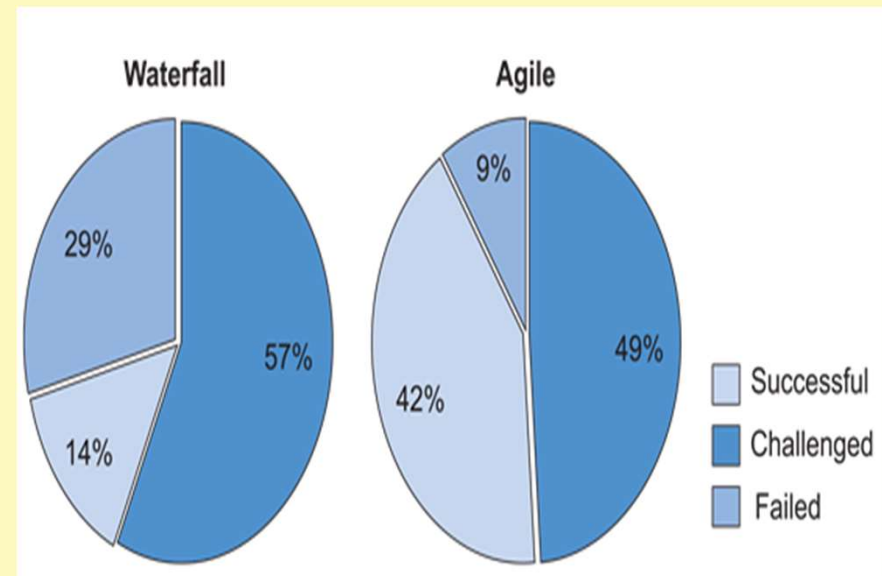
And finally, most importantly, it's just not a great way for handling change.

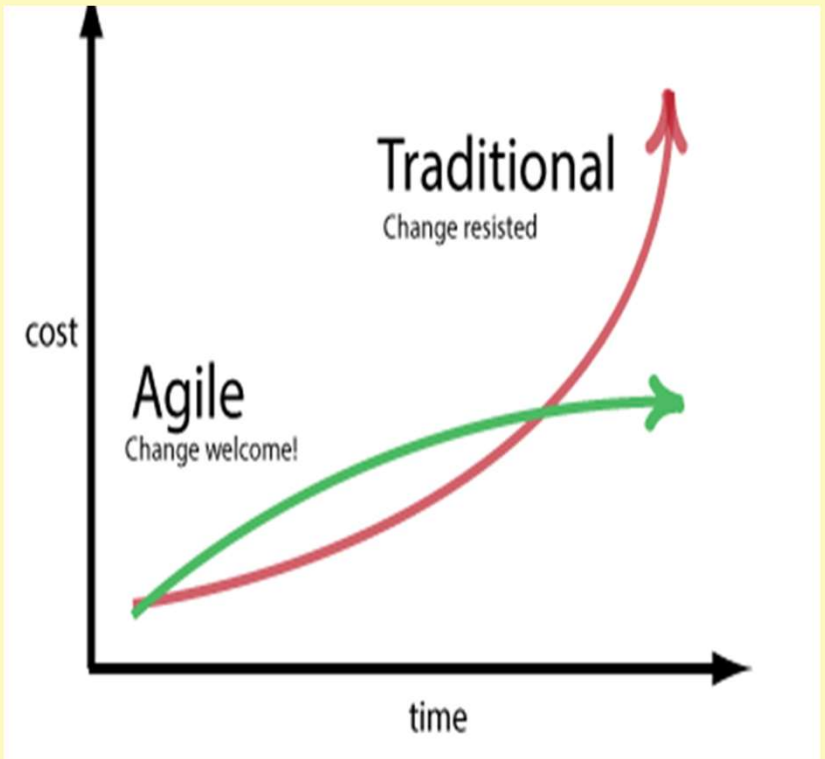
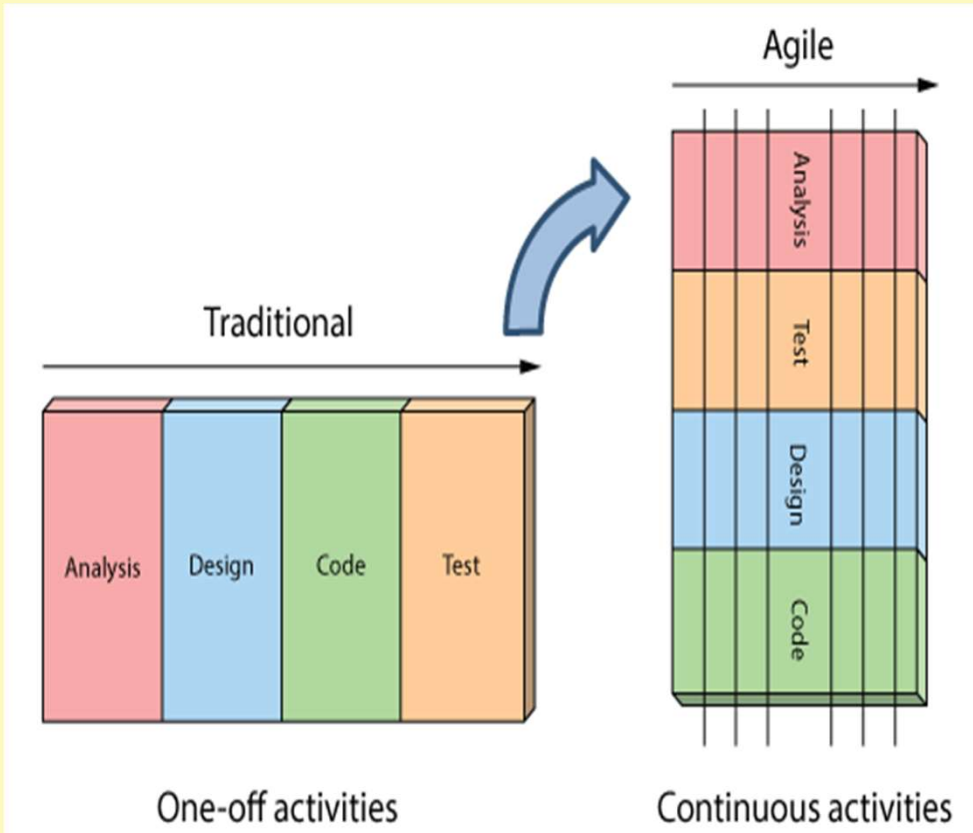


'I know what I really want!'

Differences between Agile and Waterfall

- Traditional 'waterfall' approaches will tend to treat scope as the driver and calculate the consequential time and cost;
- Whereas 'agile' commits set resources over limited periods to deliver products that are developed over successive cycles.





WATERFALL

- Detailed, long-term project plans with single timeline
- Definitive and rigid project management and team roles
- Changes in deliverables are discouraged and costly
- Fully completed product delivered at the end of the timeline
- Contract-based approach to scope and requirements
- Customer is involved only at the beginning and end of a project
- Linear-phased approach creates dependencies

AGILE

- Shorter planning based on iterations and multiple deliveries
- Flexible, cross-functional team composition
- Changes in deliverables are expected and less impactful
- Product delivered in functional stages
- Collaborative and interactive approach to requirements
- Customer is involved throughout the sprint
- Concurrent approach seeks to reduce dependencies

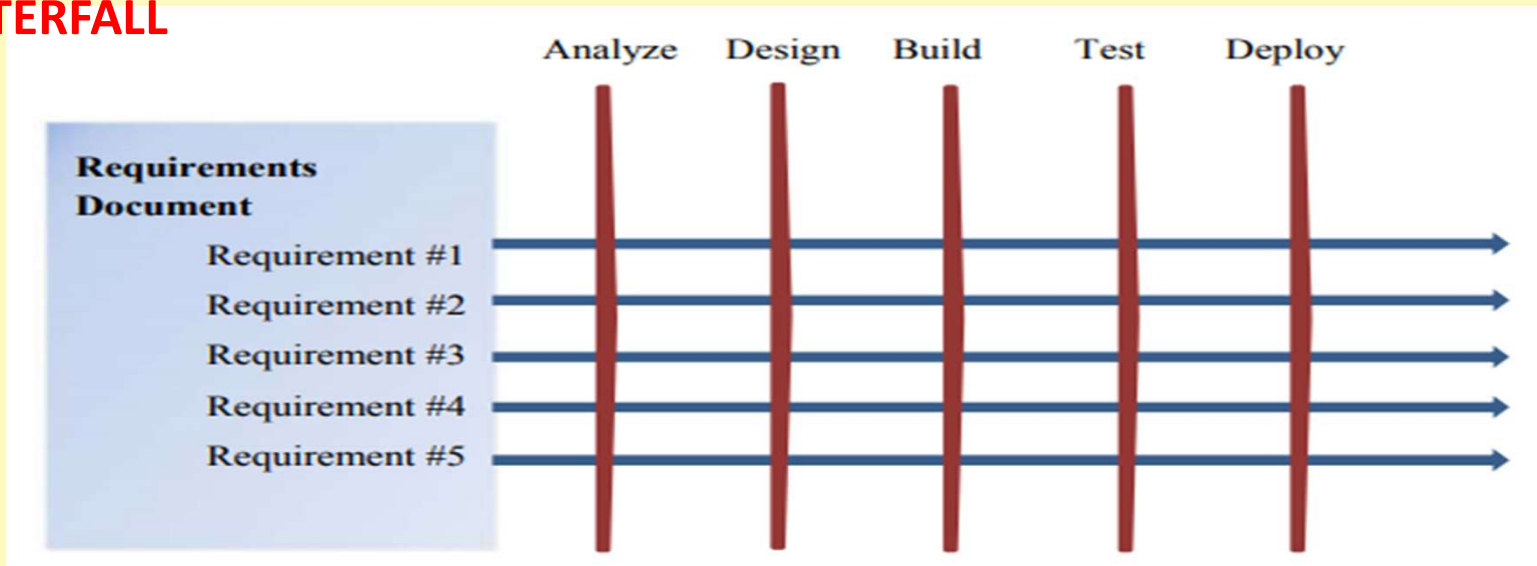
Similarities of Agile and Waterfall

- They both have the same goal i.e. deliver a quality product in an effective and responsive manner
- Same Principles:
 - plan the work out completely before beginning
 - lock down requirements early
 - institute multiple reviews²⁴
 - move forward in a step-by-step, sequential manner
 - move forward only when all parts of the previous steps were complete
 - capture all details with extensive documentation

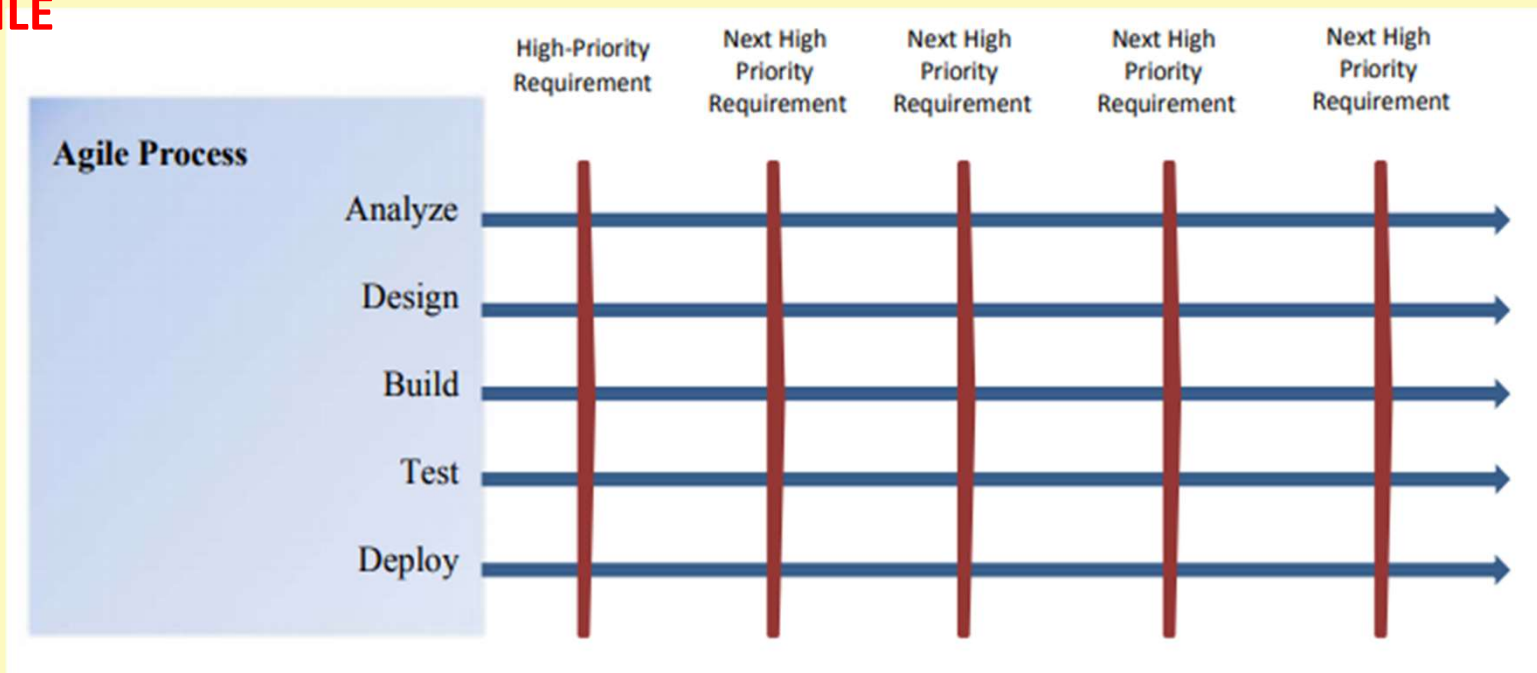
Similarities

- They both work on the same Project Management functions:
 - **Cost**
 - **Scope**
 - **Time/Schedule**
 - **Quality**
- They are both based on the same development stages:
 - **Analyze**- the requirement
 - **Design**- a capability to satisfy the requirement
 - **Build**- the capability
 - **Test**- the capability to ensure the requirement is met
 - **Deploy**- the capability

WATERFALL



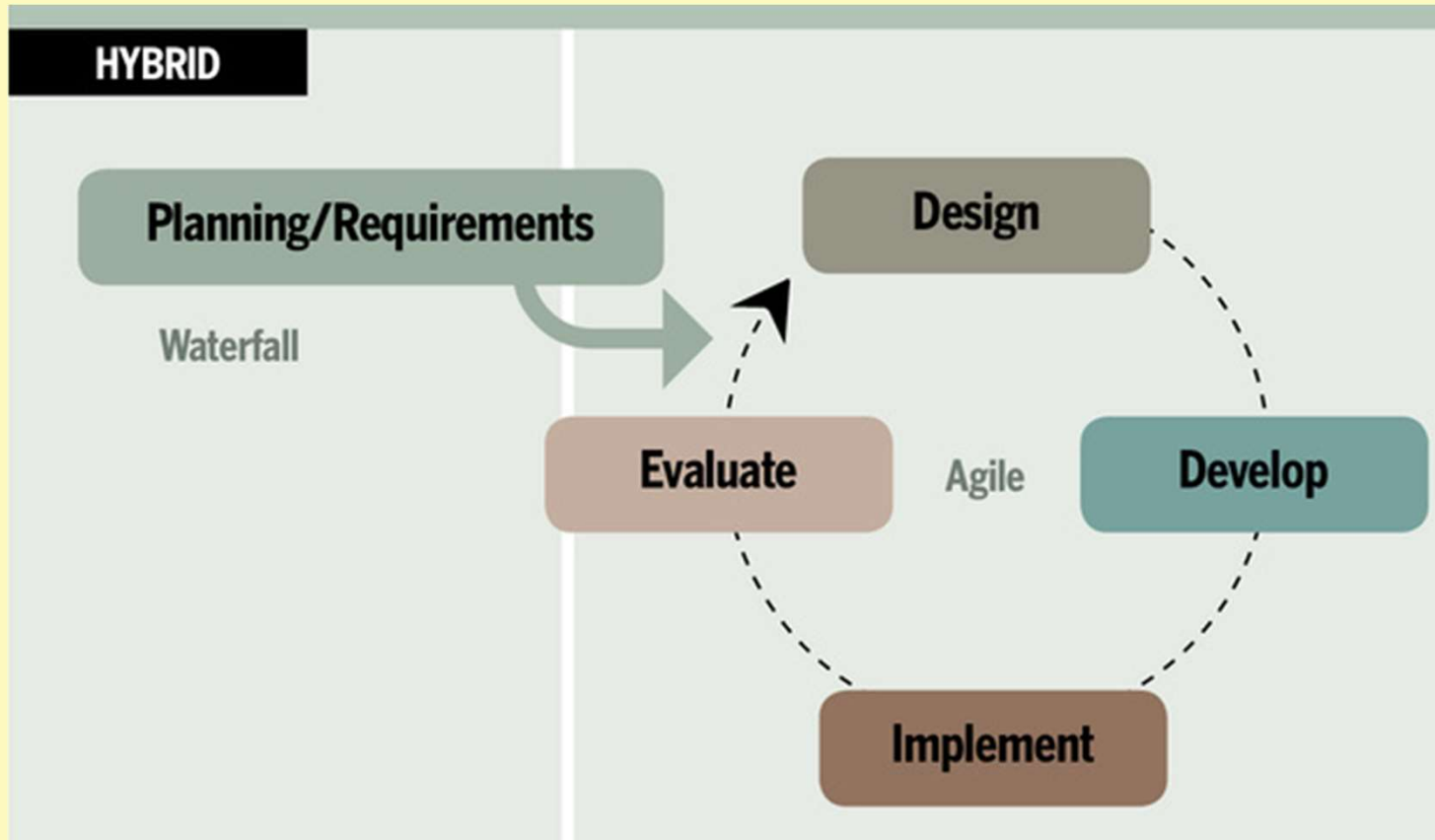
AGILE

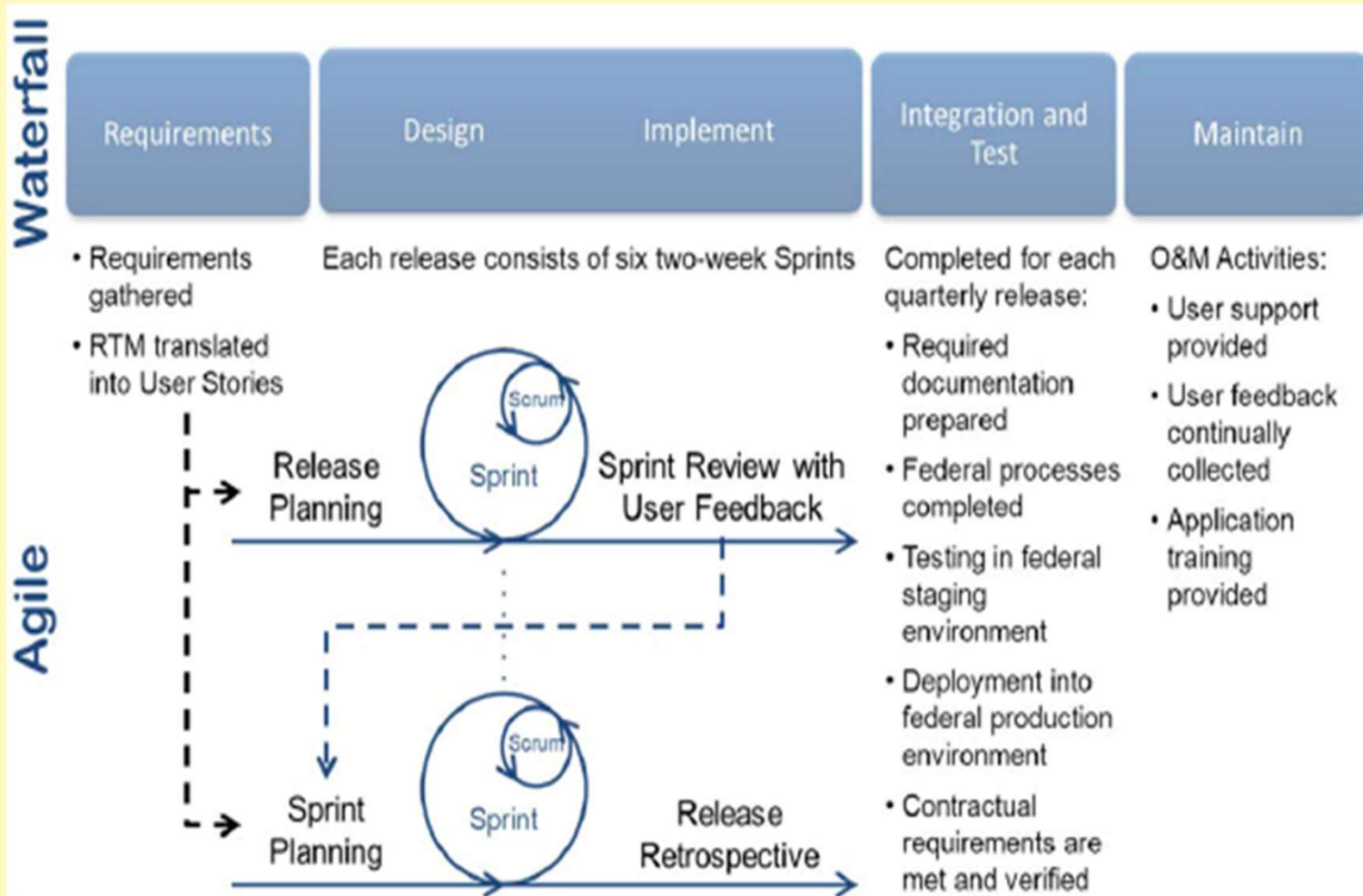


Hybrid Methodologies

- Opportunity exists to combine agile with other methodologies such as waterfall to create a hybrid solution.
- **Waterfall-** waterfall can be used for **Planning**, where rapid or repetitive steps are not required
- **Agile-** Once a project enters the **development phase**, rapid and repetitive changes require a different approach and this is where Agile kicks in to deliver the best results in the shortest amount of time.

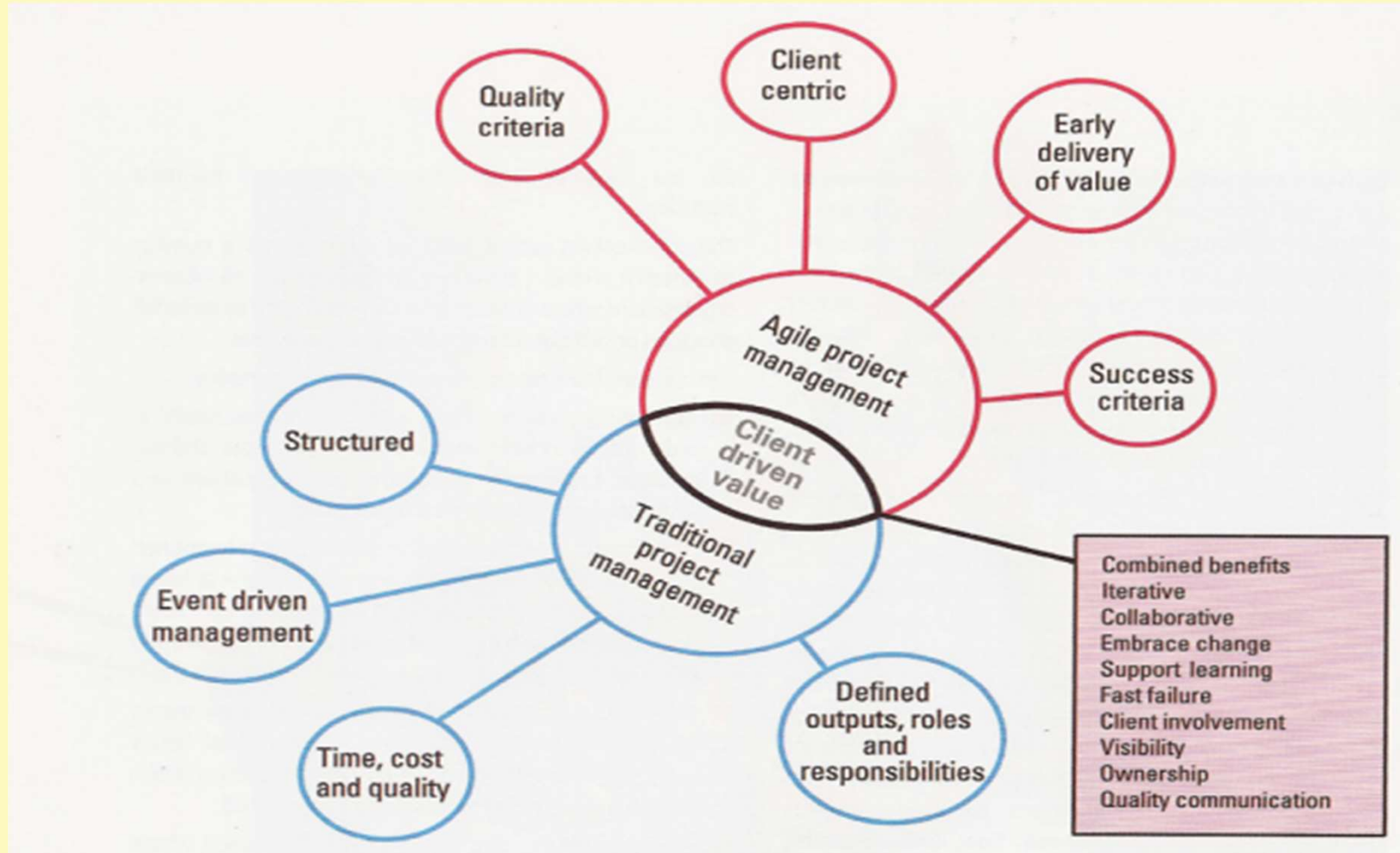
Using Waterfall and Agile





(E. M. & Boyne, L. 2012).

Benefits of Hybrid



References

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