Project Management Professional

Course Slides

- *Project Process*
- *Key Concepts*
- *Agile Overview*
- *Agile Considerations for each Process*

These are the general Project Management and Agile slides in the Project Management Professional course. Use your PMI Membership to gain access to specific PMBOK Guides or Practice Guides as you prefer.

Knowledge Areas	Initiating	Planning	Executing	Monitoring & Controlling	Closing
Project Integration	1. Develop Project Charter	2. Develop Project Management Plan	3. Direct and Manage Project Work 4. Manage Project Knowledge	5. Monitor and Control Project Work 6. Perform Integrated Change Control	7. Close Project or Phase
Stakeholders	1. Identify Stakeholders	2. Plan Stakeholder Engagement	3. Manage Stakeholder Engagement	4. Monitor Stakeholder Engagement	
Scope		1. Plan Scope Management 2. Collect Requirements 3. Define Scope 4. Create WBS		5. Validate Scope 6. Control Scope	
Schedule		1. Plan Schedule Management 2. Define Activities 3. Sequence Activities 4. Estimate Activity Durations 5. Develop Schedule		6. Control Schedule	
Cost		1. Plan Cost Management 2. Estimate Costs 3. Determine Budget		4. Control Costs	
Quality		1. Plan Quality Management	2. Manage Quality	3. Control Quality	
Resources		1. Plan Resource Management 2. Estimate Activity Resources	3. Acquire Resources 4. Develop Team 5. Manage Team	6. Control Resources	
Communications		1. Plan Communications Management	2. Manage Communications	3. Monitor Communications	
Risk Management		1. Plan Risk Management 2. Identify Risks 3. Perform Qualitative Risk Analysis 4. Perform Quantitative Risk Analysis 5. Plan Risk Responses	6. Implement Risk Responses	7. Monitor Risks	
Procurements		1. Plan Procurement Management	2. Conduct Procurements	3. Control Procurements	

Key Concepts

Project Integration

- Business Case
- Benchmarking
- Make or Buy Analysis
- Expert Judgement
- Rates of return – NPV, IRR, Cost/Benefit Ratio
- Benefits management plan
- Baselines and the Configuration Management Plan
- Change Requests and the Change Management Plan
- Project Management Information System (PMIS)
- Issue Log
- Project Management Data and Information
- Status report
- The Lessons Learned Register
- The Final Report

Stakeholder Management

- Organisational Breakdown Structure
- Stakeholder Register
- Power/Interest and Impact/Influence grids versus Salience Model
- Stakeholder Engagement Assessment Matrix
- Facilitation
- Interpersonal and Team Skills

Scope

- The Requirements Management Plan (Business Analysis plan)
- Requirement Traceability Matrix
- Brainstorming
- Voting and the Nominal Group Technique
- Prototyping (Storyboards, wireframes, models and maps)
- Prioritisation (MoSCoW, Cost/Benefit, CD3)
- Decomposition (incl WBS, WBSD)
- Project Scope Baseline: Statement, WBS, WBSD, Work Packages.
- Validate Scope versus Control Quality
- Variance Analysis

Schedule

- Rolling Wave Planning
- Leads and Lags
- Precedence Diagramming Method
- Types of Estimating: Three point, Analogous, Parametric, Bottom up
- Resource Levelling vs Resource Smoothing
- Critical Path Method (Forward and backward pass)
- Schedule Compression - Fast Tracking and Crashing

Cost

- ROM, Budget and Definitive Estimates
- Contingency and Management Reserves
- Accuracy versus Precision
- Earned Value Analysis (EVA)

Quality

- The Cost of Quality
- Cause and Effect Diagrams (Ishikawa)
- Histograms & Pareto Analysis
- Audits
- Inspections & Reviews
- Checklists vs Check sheets

Resources

- Responsibility Assignment Matrix and RACIs
- OBS (Organisational Breakdown Structure) versus RBS (Resource Breakdown Structure) and Product BS
- Team Charter
- Tuckman's Ladder
- Meeting Management
- Conflict Management

Communication

- Communication Models
- Communication (Skills, Methods)
- Push and Pull Communication

Risk

- Risk Categories
- Risk Register
- SWOT Analysis
- Probability and Impact Matrix
- Decision Tree Analysis
- Quantitative tools: Monte Carlo, Sensitivity/Tornado charts
- Strategies for Threats versus Strategies for Opportunities
- Reserve Analysis and Burndown Charts

Procurement

- Types of Contracts: Fixed Price Contracts versus Cost-reimbursable versus Time and Material
- Advertising versus Bidder Conferences
- Claims Administration

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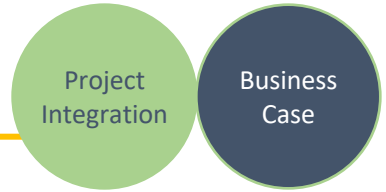
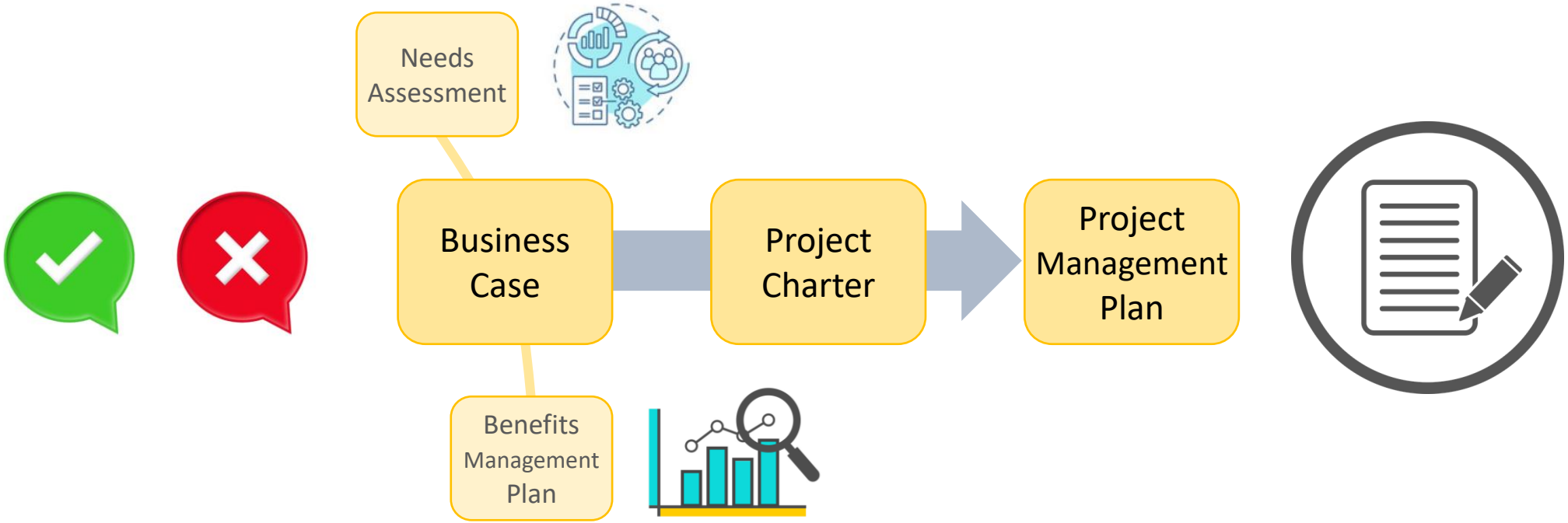
Key Concepts

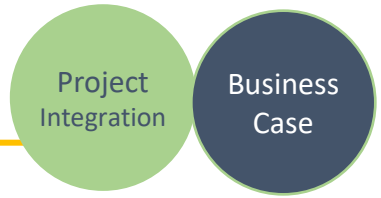


The project business case is a “feasibility study”.

It shows us whether the time and cost investment of the project is worth the expected benefit, and may result in a go/no go decision for the project.

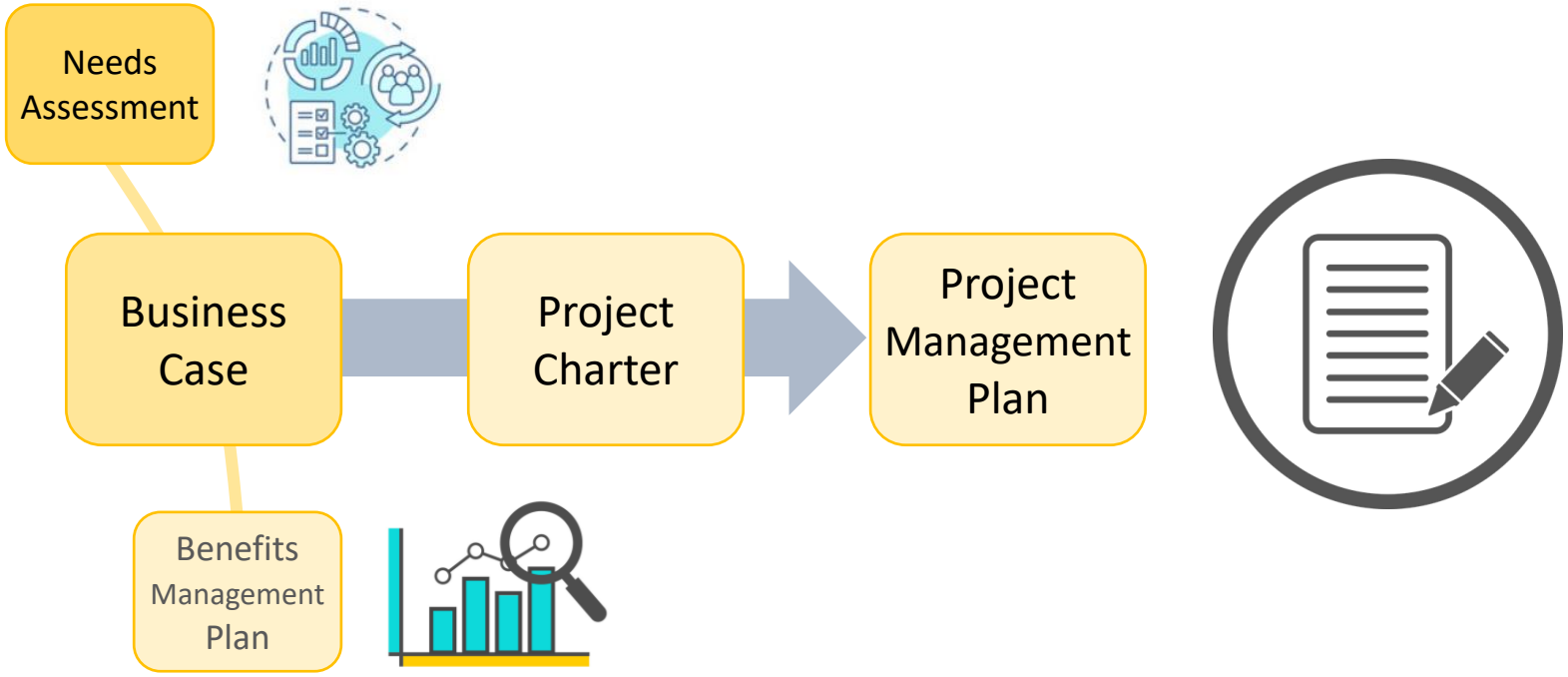


Key Concepts



A needs assessment may precede the business case. This shows the organisation's goals and objectives, and recommends project ideas to meet those goals.

These results are also summarised in the Business Case.



Key Concepts

Project Integration

Business Case

What's in a Business Case?

- Business Needs
- Analysis of the Situation
- Solution Options
- Recommendation

Key Concepts

Project Integration

Business Case

What's in a Business Case?

Business Needs

Analysis of the Situation

Solution Options

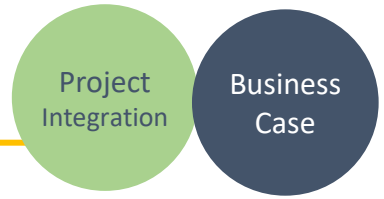
Recommendation

Describe:

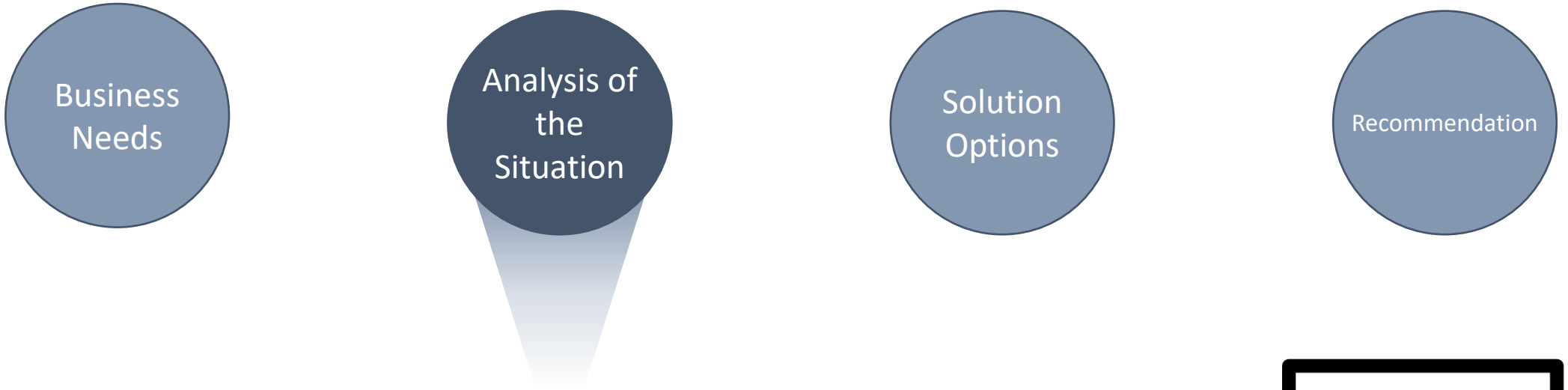
- What has prompted the need for action?
- What is the business problem or opportunity?
- Who are the stakeholders or areas affected?

This might include the organisation's current goals and objectives

Key Concepts

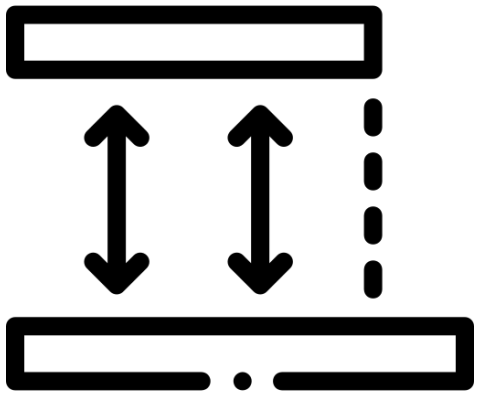


What's in a Business Case?



Describe:

- The root cause(s) of the problem or main contributors to the opportunity,
- A gap analysis of where we are to where we need to be,
- Any known risks.



Key Concepts

Project Integration

Business Case

What's in a Business Case?

Business Needs

Analysis of the Situation

Solution Options

Recommendation

Identify a set of options to be considered for addressing the business problem or opportunity, which may include options such as:

Required: Items that are required to address the problem.

Desired: Items that are desired to be fulfilled to address the problem.

Optional: Items that are not essential.

Do nothing
(i.e. business as usual, no project required).

Do the minimum work possible:
The key criteria required to address the problem.

Do more than the minimum work:
Criteria that goes above and beyond solving the problem.

Key Concepts

Project Integration

Business Case

What's in a Business Case?

Business Needs

Analysis of the Situation

Solution Options

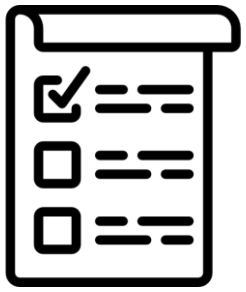
Recommendation

Describe:

- Which option will we pursue?
- What are the results of this particular option?
- Any assumptions and dependencies
- High level milestones to achieve

Key Concepts

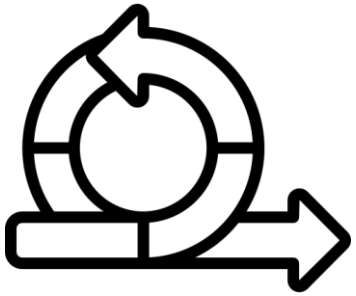
In Agile, we have:



A prioritised list of features

That deliver customer value

and are delivered incrementally



Each of these features may need a “business case”.
(or a simplified idea of one, showing cost versus benefit)

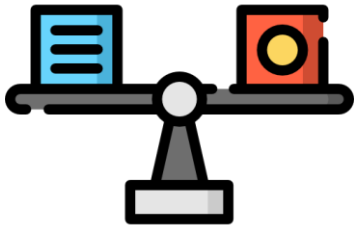
This will help the Product Owner prioritise the items, and ensures the highest items of value are always being delivered.

Key Concepts

Project Integration

Bench-marking

Benchmarking compares our product or process to those of comparable organizations, to identify best practices and generate ideas for improvement.



Compare them to identify best practices and generate ideas for improvement.

Your product or process.

Comparable organisation's product or process

They can be internal or external, small or large, in the same industry or different industries, as long as the process is comparable.

Key Concepts

Project Integration

Bench-marking

Benchmarking process:

Select the process you want to improve

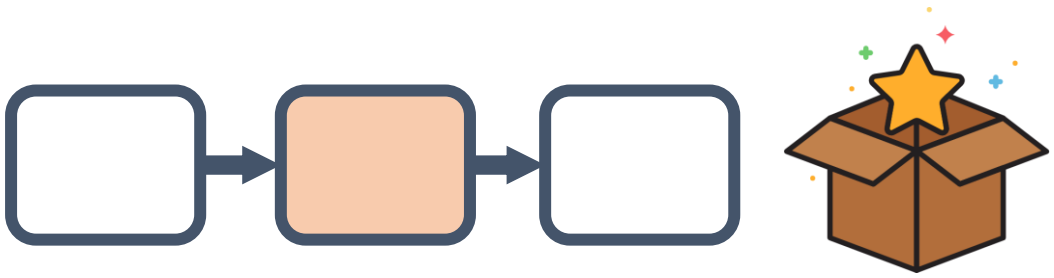
Select the organisations you wish to compare to

Document your current process

Collect and compare data from other organisations

Plan and implement changes

Review the results and repeat



Key Concepts

Project Integration

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Benchmarking process:

Select the process you want to improve

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Plan and implement changes

Review the results and repeat

Internal

External

Options may include:

- Approaching and working with them directly,
- Using available industry data or databases,
- Working with consultants who have seen industry best practices

Key Concepts

Project Integration

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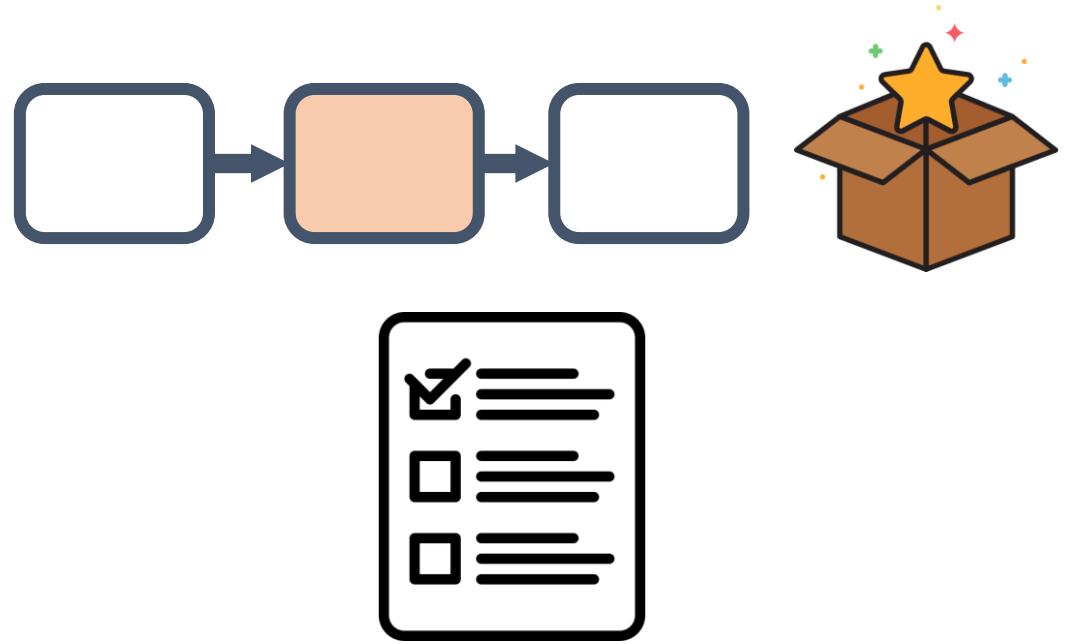

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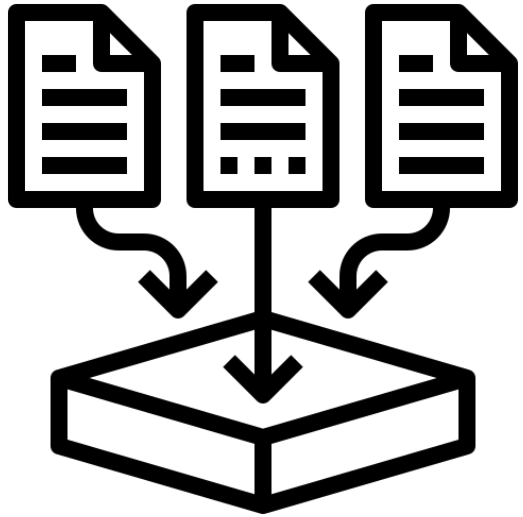

Key Concepts

Project Integration

Bench-marking

Benchmarking process:

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Plan and implement changes

Review the results and repeat

Change is most often delivered through a project.

Key Concepts

Project Integration

Bench-marking

Benchmarking process:

Select the process you want to improve

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Document your current process

Collect and compare data from other organisations

Plan and implement changes

Review the results and repeat

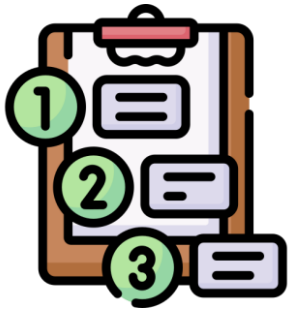
Key Concepts

Project Integration | Bench-marking | Agile

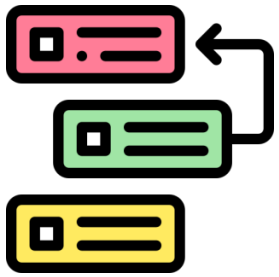
Benchmarking is great for finding new project ideas.

These ideas might go into a Business Case, or help create features to place in the Product Backlog.

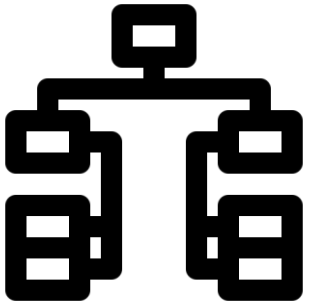
Benchmarking



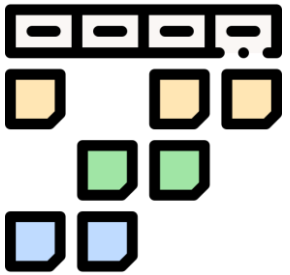
Feature ideas



Prioritised Product Backlog



Decompose into User Stories



Place User Stories in a sprint and complete work incrementally

Key Concepts

Project Integration

Make or Buy Analysis

A make-or-buy analysis shows us whether particular work should be completed by the project team, or purchased from outside sources like a third party vendor.

We will consider:

- Organisation's available resources.
- Whether their skills are fit for purpose.
- Any specialised expertise needed.

Key Concepts

Project Integration

Make or Buy Analysis

Initial versus ongoing costs

	Initial Costs	*Ongoing Costs*					**TOTAL**
Cost to Make	**Initial**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	
e.g. Project costs	$ 1,500.00						$ 1,500.00
e.g. People costs	$ 200.00	$ 100.00					$ 300.00
e.g. System costs		$ 50.00					$ 50.00
e.g. Ongoing Costs			$ 100.00				$ 100.00
e.g. Maintenance		$ 50.00	$ 50.00	$ 50.00	$ 100.00	$ 200.00	$ 450.00
TOTAL	**$ 1,700.00**	**$ 200.00**	**$ 150.00**	**$ 50.00**	**$ 100.00**	**$ 200.00**	**$ 2,400.00**

Key Concepts

Project Integration | Make or Buy Analysis | Agile

In Agile, the ideal situation is the Whole Team Approach, where:

We have everyone included in the team needed to deliver an increment of customer value.

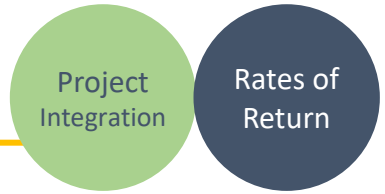
They are co-located, so they can easily pair up and gain the benefit of osmosis.

They are T-shaped, “Generalising Specialists”

- Early Cancellation option
- Not-to-exceed time and materials
- Dynamic scope option
- Fixed price increments

We will need to consider this if we are decide to use a third party vendor, and either bring them into the team, or use the right contract.

Key Concepts



There are various financial measures we may use to measure our project benefits and success.

- Net Present Value
- Internal Rate of Return
- Return on Investment
- Payback Period
- Benefit-Cost Ratio

Key Concepts

Project Integration

Rates of Return

There are various financial measures we may use to measure our project benefits and success.

- Net Present Value
- Internal Rate of Return
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Net present value (NPV) is the Present Value (PV) of a future stream of payments, minus the Initial Investment cost.

On your exam – the higher the NPV, the better.

Key Concepts

Project Integration

Rates of Return

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$$NPV = \frac{\text{Total Future Cash Flow}}{(1 + \text{percent return})^{\text{Number of time periods}}} - \text{Investment}$$

Investment: $1000
Current cash rate: 4% a year
Cashflow: $500 a year
Number of years: 3 years

$$NPV = \frac{\$1500}{(1 + 0.04)^{3}} - \$1000$$

1.124

$$= \$1{,}333 - \$1000$$

$$= \$333$$

(greater than zero = a good investment)

Key Concepts

Project Integration

Rates of Return

There are various financial measures we may use to measure our project benefits and success.

- Net Present Value
- Internal Rate of Return
- Return on Investment
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Internal Rate of Return (IRR) is the resulting return on your investment in a given time period.

On your exam – the higher the IRR, the better. Given a choice - choose the project with the highest IRR.

There are two main ways to calculate it, with a little trial and error – the simplest is similar to the NPV calculation where the return percentage equals the future cashflow.

Key Concepts

Project Integration

Rates of Return

There are various financial measures we may use to measure our project benefits and success.

- Net Present Value
- Internal Rate of Return
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$$IRR = (\text{Investment}) \frac{\text{Total Future Cash Flow}}{(1 + \text{percent return})^{\text{Number of time periods}}} = 0$$

Investment: $1000
IRR %: TBA
Investment Cashflow: $400 a year
Number of years: 3 years

$$IRR = \frac{\$1200}{(1 + 0.0626)^{3}} - \$1000 = 0$$

1.19

$$= \$1{,}000 - \$1000 = 0$$

$$= 6.26\%$$ Internal Rate of Return

Key Concepts

Project Integration

Rates of Return

There are various financial measures we may use to measure our project benefits and success.

Net Present Value

Internal Rate of Return

Return on Investment

Payback Period

Benefit-Cost Ratio

Return on Investment (ROI) is a simple ratio that divides the net profit (or loss) from an investment by its cost.

Because it is expressed as a percentage, it is easy to compare to different project investment choices.

Return / Investment x 100 = ROI

1. $2000 / $1000 x 100 = 200%
2. $500 / $1000 x 100 = 50%

Choose Option 1

On your exam – the higher the ROI, the better.

Key Concepts

Project Integration

Rates of Return

There are various financial measures we may use to measure our project benefits and success.

- Net Present Value
- Internal Rate of Return
- Return on Investment
- **Payback Period**
- Benefit-Cost Ratio

The payback period is the length of time it takes to breakeven on a project.

$$\text{Payback Period} = \frac{\text{Cost of Project}}{\text{Average Annual Return}}$$

$$\frac{\$5000}{\$1250} = 4 \text{ years}$$

The shorter the payback period the better.

Key Concepts

Project Integration

Rates of Return

There are various financial measures we may use to measure our project benefits and success.

- Net Present Value
- Internal Rate of Return
- Return on Investment
- Payback Period
- Benefit-Cost Ratio

The Benefit-Cost Ratio (BCR) compares the present value of all benefits with that of the cost of a project.

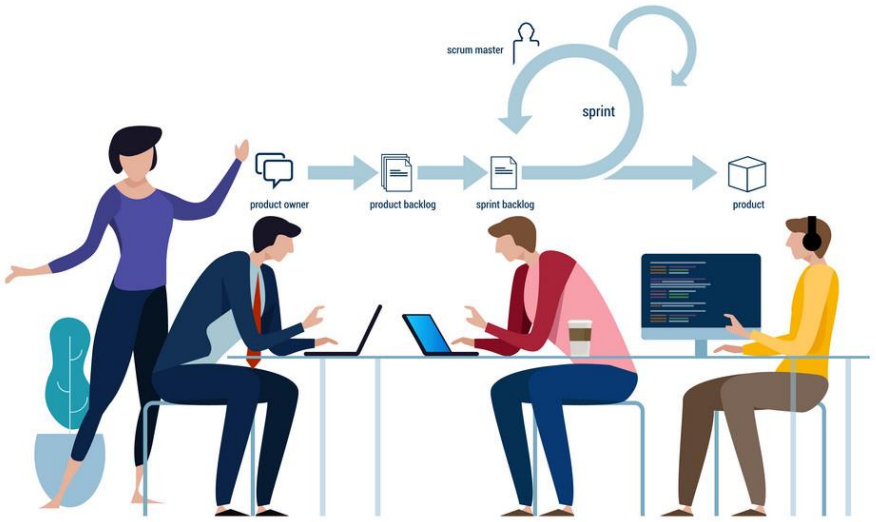
$$\text{BCR} = \frac{\text{Total benefit of the project}}{\text{Cost of the project}}$$

$$\frac{\$5{,}000{,}000}{\$2{,}500{,}000} = 2 : 1$$

The higher the benefit to cost ratio the better.

Key Concepts

We may use Rates of Return to help us approve and prioritise features for our Product Backlog.



The Product Owner may choose to prioritise features with the highest NPV, IRR, ROI or BCR first.

There are other ways to prioritise in Agile however, including:

- MoSCoW
- Cost of Delay
- Weighted Shortest Job First

Key Concepts

Project Integration

Expert Judgement

Expert judgement is expertise provided to your project
by someone with the appropriate specialised education,
experience, knowledge or skill
in a particular area, discipline, industry, etc.

You will need to engage and manage many different types of expert judgement on your project, including:

- Organisational Strategy
- Requirements, Scope and Benefits
- Risk identification
- Technical knowledge of the industry and product

Key Concepts

Project Integration

Benefits Management Plan

The Benefits Management Plan describes how and when the project benefits will be delivered, and how we will measure those benefits.

Project Initiation

Define the Target Benefits to be Realised

Target

Strategy

How does it meet the organisation's strategy?

Timeframe

Milestones for achieving the benefits.

Owner

Who owns the benefits and their measurement?

The measures to show the benefits are realised.

Metrics

Assumptions

Any risks for realisation of the benefits.

Risks

Key Concepts

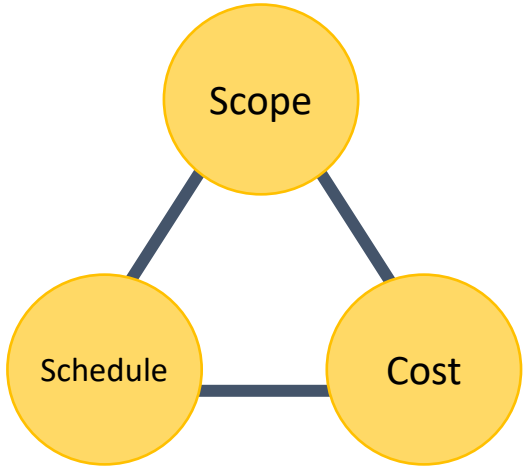
Project Integration

Baselines and the Configuration Management Plan

A Baseline is an approved version of a project artefact, fixed in time. It is used to compare to future results and control changes in the future.

The most common baselines are:

- Project Scope
- Project Schedule
- Project Cost



Baselines go in the Project Management Plan.

The Configuration Management Plan describes which items will be baselined, and how information will be recorded and updated when changes are made so the product remains consistent.

For example, artefact versions and version control.

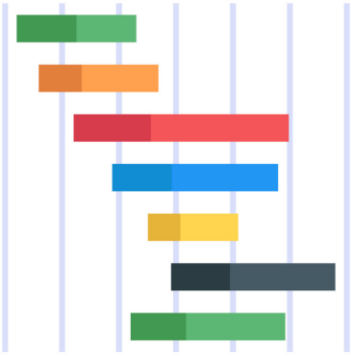
Key Concepts

Project Integration

Change requests and the Change Management Plan

Any change in a baselined item or configuration element should be formally controlled and will require a change request – a formal proposal to modify the document, deliverable or baseline.

Any stakeholder can request a change.



Corrective Action	To realign the performance of the project with the initial project plan.
Preventative Action	To prevent the future performance of the project from going off track or not meeting its goals.
Defect Repair	To fix defects or non-conforming scope.
Other Updates	To fix defects or non-conforming scope.

Change requests may require information on estimated **schedule** or **cost** impacts prior to approval.

Key Concepts

Project Integration

Change requests and the Change Management Plan

The change management plan describes how the change requests throughout the project will be formally authorized and incorporated.

Change requests may be approved, deferred or rejected by the Project Manager, Change Control Board, or an assigned team member.

The outcome of all change requests are communicated to the person or group requesting the change and recorded in the change log as a project document update.

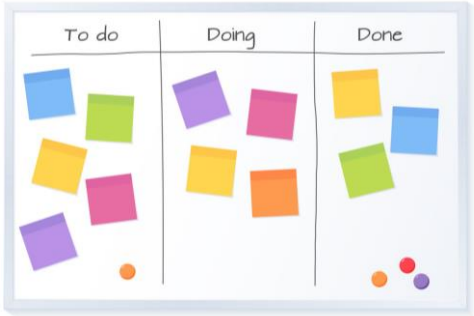
Stakeholder Requests raises a change request → Review the impact to any project baselines → Take change request to authoriser (CCB, Project Manager, Sponsor, team member) → Communicate the outcome of the change request → Record the outcome in the change log

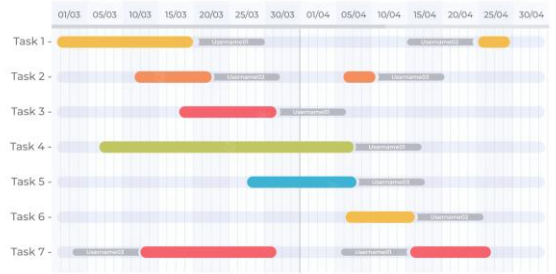
Key Concepts

Project Integration

Project Management Information System (PMIS)

A Project Management Information System is typically one or more software applications and an approach for collecting and using all project information.

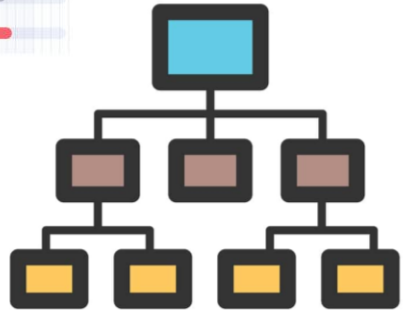




Your PMIS might include:

- Scheduling software tools
- Work authorization systems
- Configuration management systems
- Document management systems
- Resource calendars

Project Key Performance Indicators (KPIs) and more.



Key Concepts

Project Integration

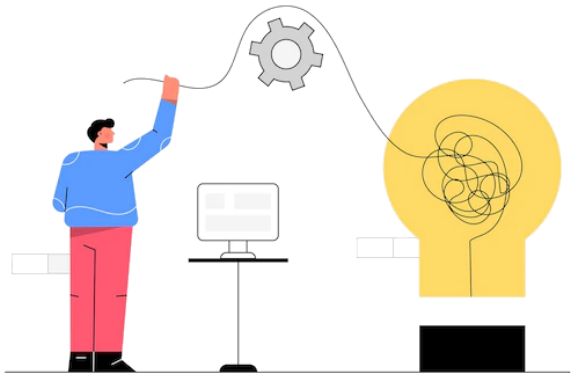
Issue Log

During your project you will face gaps, problems or conflicts that require some action.

The Issue Log is where all the issues are recorded, tracked and resolved.

You might include:

- Issue Type
- Who raised the issue
- Description of the issue
- Priority of the issue
- Who is managing the issue
- Target resolution date
- Its current status
- The final solution

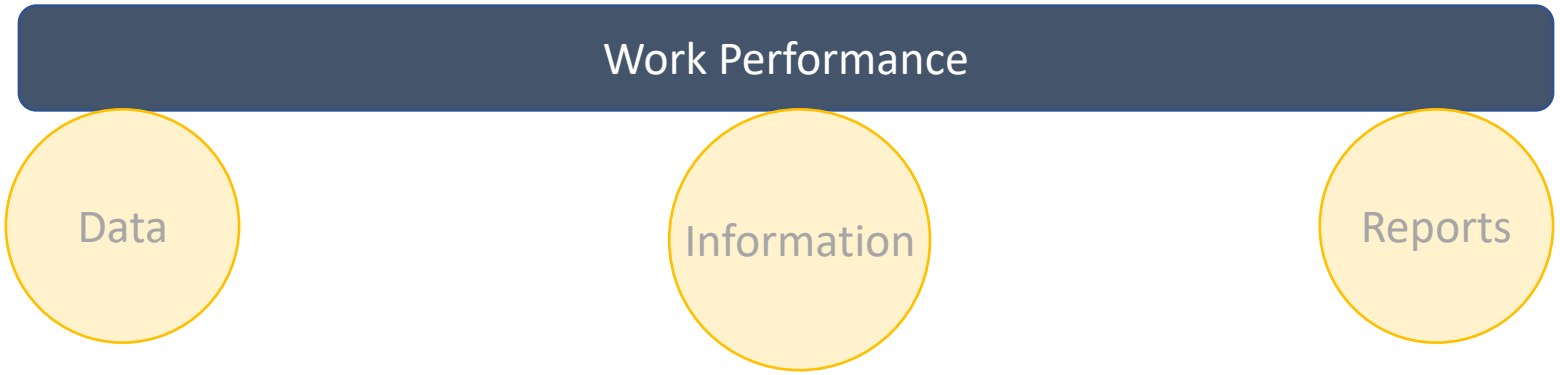


Key Concepts

Project Integration

Project Management Data and Information

Throughout your project you will gather and use a significant amount of data, and communicate it to project stakeholders verbally or in reports.



Key Concepts

Project Integration

Project Management Data and Information

Raw measurements of activities performed to carry out the project work. e.g.

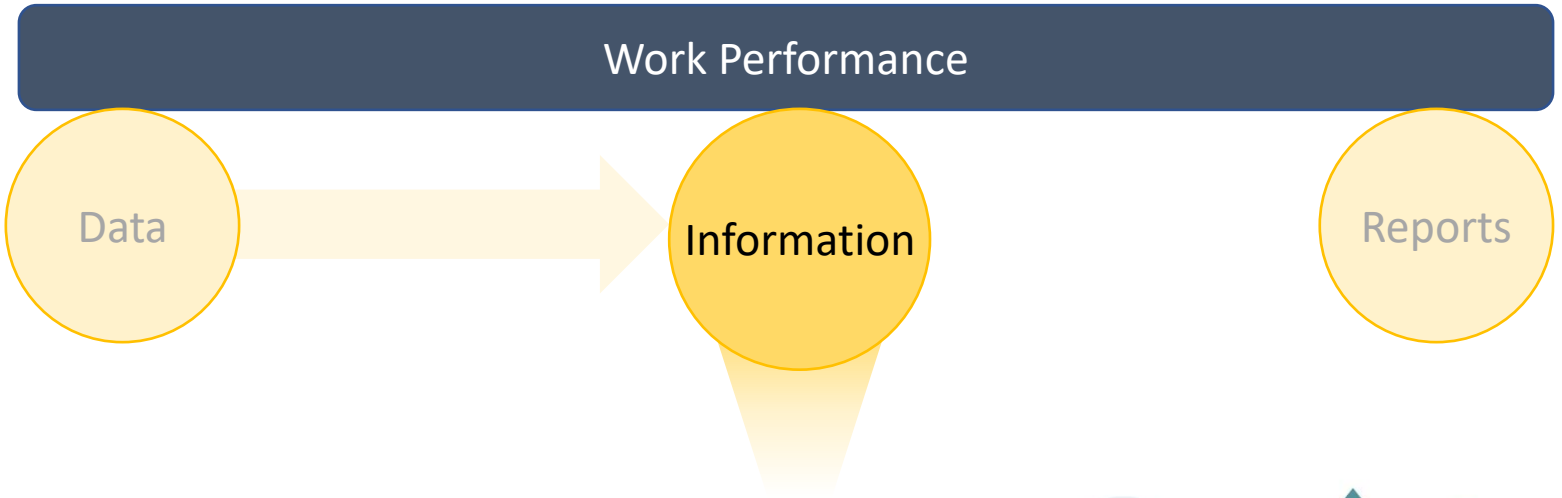
- Number of defects
- Number of change requests
- Actual costs and durations
- Percent of work completed

This is recorded in the PMIS.

Key Concepts

Project Integration

Project Management Data and Information



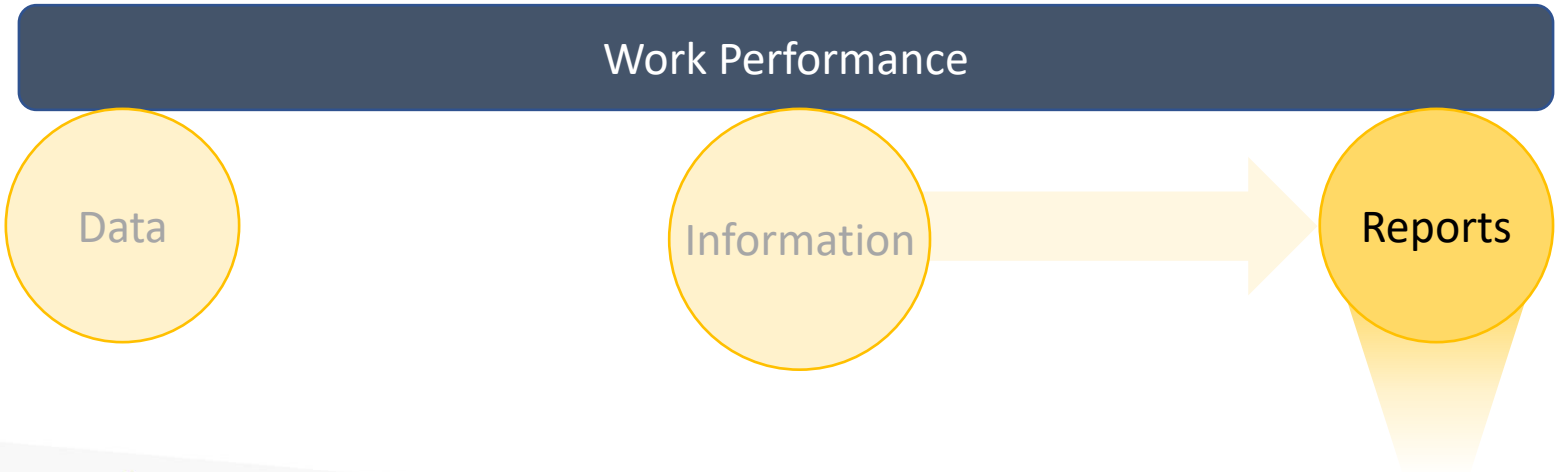
Data collected as we control the project and analysed against relationships with other areas e.g.

- Status of deliverables against the schedule
- Forecast Estimate To Complete
- Other measures like Schedule or Cost variance.

Key Concepts

Project Integration

Project Management Data and Information



The physical or electronic representation of work performance information, intended to raise actions or awareness.

Examples include status reports, memos or updates, electronic dashboards and more.

Knowledge Areas	Initiating	Planning	Executing	Monitoring & Controlling	Closing
Project Integration	1. Develop Project Charter	2. Develop Project Management Plan	3. Direct and Manage Project Work 4. Manage Project Knowledge	5. Monitor and Control Project Work 6. Perform Integrated Change Control	7. Close Project or Phase
Stakeholders	1. Identify Stakeholders	2. Plan Stakeholder Engagement	3. Manage Stakeholder Engagement	4. Monitor Stakeholder Engagement	
Scope		1. Plan Scope Management 2. Collect Requirements 3. Define Scope 4. Create WBS		5. Validate Scope 6. Control Scope	
Schedule		1. Plan Schedule Management 2. Define Activities 3. Sequence Activities 4. Estimate Activity Durations 5. Develop Schedule		6. Control Schedule	
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Resources		1. Plan Resource Management 2. Estimate Activity Resources	3. Acquire Resources 4. Develop Team 5. Manage Team	6. Control Resources	
Communications		1. Plan Communications Management	2. Manage Communications	3. Monitor Communications	
Risk Management		1. Plan Risk Management 2. Identify Risks 3. Perform Qualitative Risk Analysis 4. Perform Quantitative Risk Analysis 5. Plan Risk Responses	6. Implement Risk Responses	7. Monitor Risks	
Procurements		1. Plan Procurement Management	2. Conduct Procurements	3. Control Procurements	

Key Concepts

Project Integration

- Business Case
- Benchmarking
- Make or Buy Analysis
- Expert Judgement
- Rates of return – NPV, IRR, Cost/Benefit Ratio
- Benefits management plan
- Baselines and the Configuration Management Plan
- Change Requests and the Change Management Plan
- Project Management Information System (PMIS)
- Issue Log
- Project Management Data and Information

Stakeholder Management

- Organisational Breakdown Structure
- Stakeholder Register
- Power/Interest and Impact/Influence grids versus Salience Model
- Stakeholder Engagement Assessment Matrix
- Facilitation
- Interpersonal and Team Skills

Scope

- The Requirements Management Plan (Business Analysis plan)
- Requirement Traceability Matrix
- Brainstorming
- Voting and the Nominal Group Technique
- Prototyping (Storyboards, wireframes, models and maps)
- Prioritisation (MoSCoW, Cost/Benefit, CD3)
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- Leads and Lags
- Precedence Diagramming Method
- Types of Estimating: Three point, Analogous, Parametric, Bottom up
- Resource Levelling vs Resource Smoothing
- Critical Path Method (Forward and backward pass)
- Schedule Compression - Fast Tracking and Crashing

Cost

- ROM, Budget and Definitive Estimates
- Contingency and Management Reserves
- Accuracy versus Precision
- Earned Value Analysis (EVA)

Quality

- The Cost of Quality
- Cause and Effect Diagrams (Ishikawa)
- Histograms & Pareto Analysis
- Audits
- Inspections & Reviews
- Checklists vs Check sheets

Resources

- Responsibility Assignment Matrix and RACIs
- OBS (Organisational Breakdown Structure) versus RBS (Resource Breakdown Structure) and Product BS
- Team Charter
- Tuckman's Ladder
- Meeting Management
- Conflict Management

Communication

- Communication Models
- Communication (Skills, Methods)
- Push and Pull Communication

Risk

- Risk Categories
- Risk Register
- SWOT Analysis
- Probability and Impact Matrix
- Decision Tree Analysis
- Quantitative tools: Monte Carlo, Sensitivity/Tornado charts
- Strategies for Threats versus Strategies for Opportunities
- Reserve Analysis and Burndown Charts

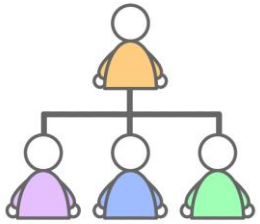
Procurement

- Types of Contracts: Fixed Price Contracts versus Cost-reimbursable versus Time and Material
- Advertising versus Bidder Conferences
- Claims Administration

Key Concepts

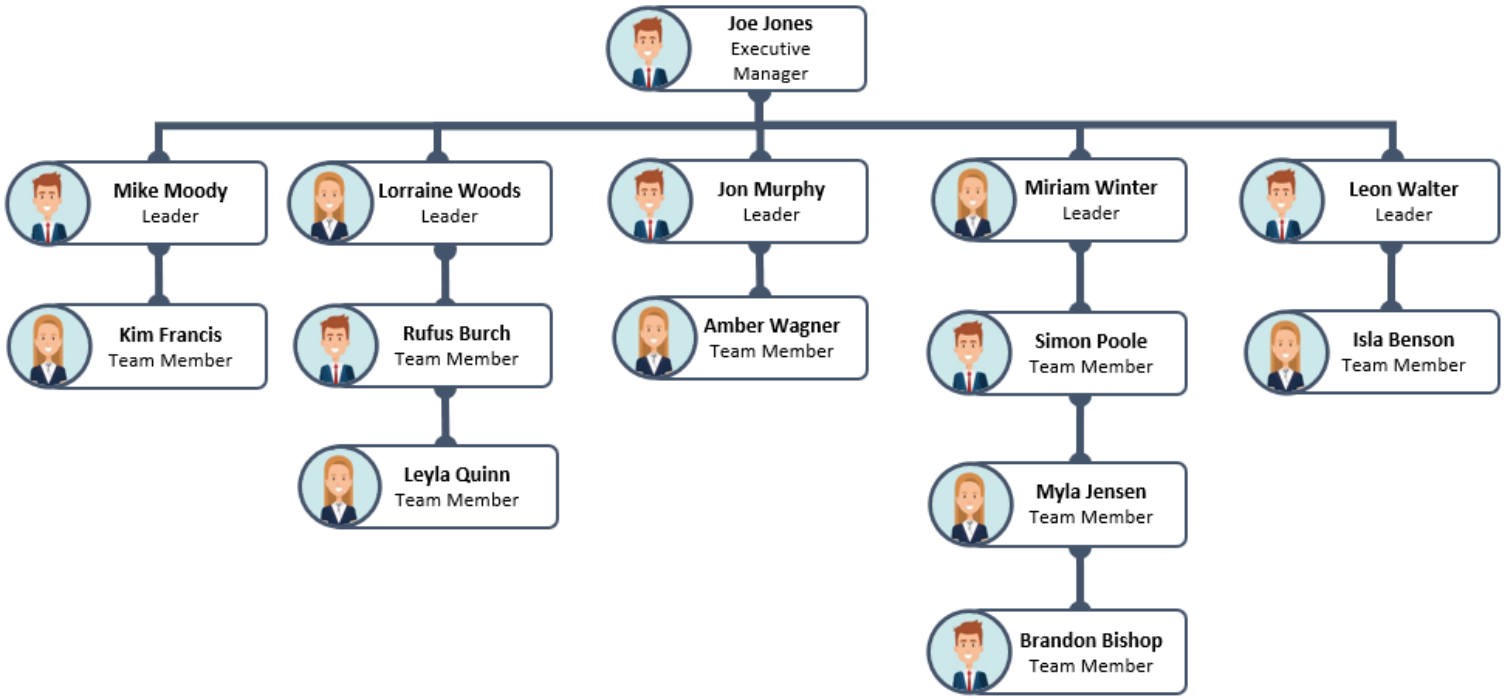
Stakeholder Management

Organisational Breakdown Structure

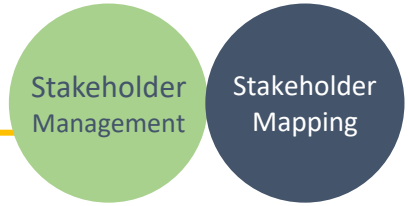


An Organisational Breakdown Structure shows an organisation's existing departments, units or teams.

It is a great way to discover stakeholders impacted by your project and where they fit in the organisation.



Key Concepts



Stakeholder mapping and representation is a method of categorizing stakeholders using various methods.

You might use any or all of these methods to prioritise your stakeholders and their needs.

- Impact / Influence grid
- Salience Model
- Directions of Influence

Key Concepts

Stakeholder Management

Stakeholder Mapping

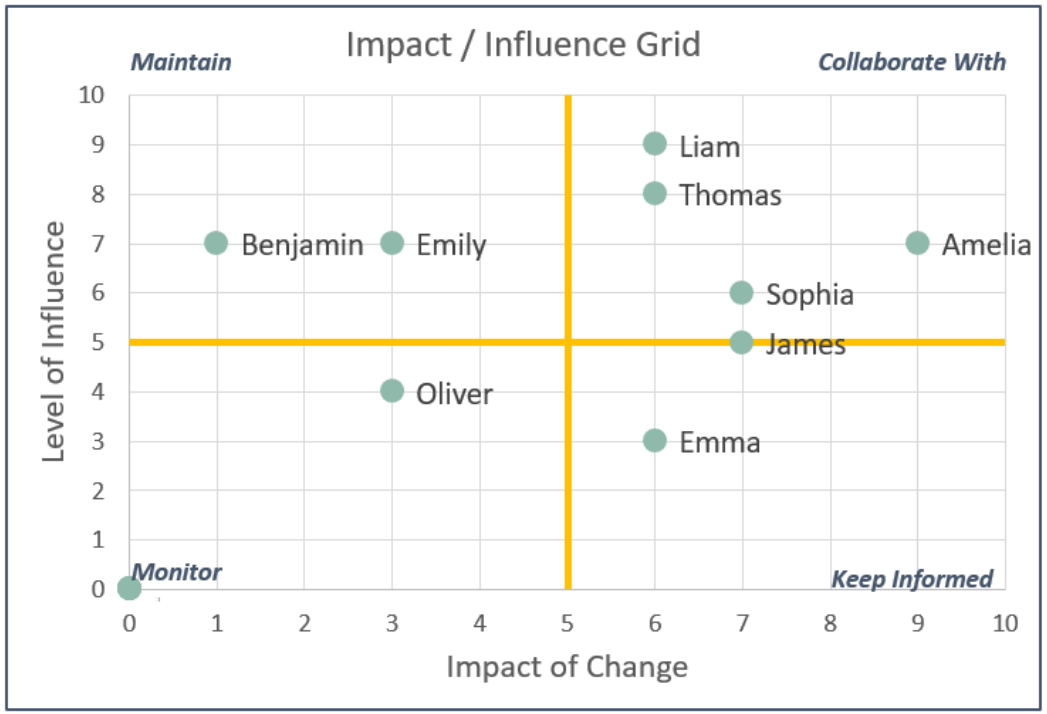
Impact / Influence grid

Salience Model

Directions of Influence

An Impact over Influence grid groups and prioritises stakeholders according to the level that your project Impacts them, and the level of influence they have on your project.

Rank them from 1 to 10 and place on the grid to prioritise.

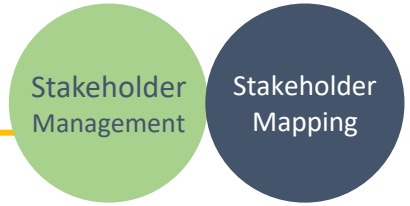


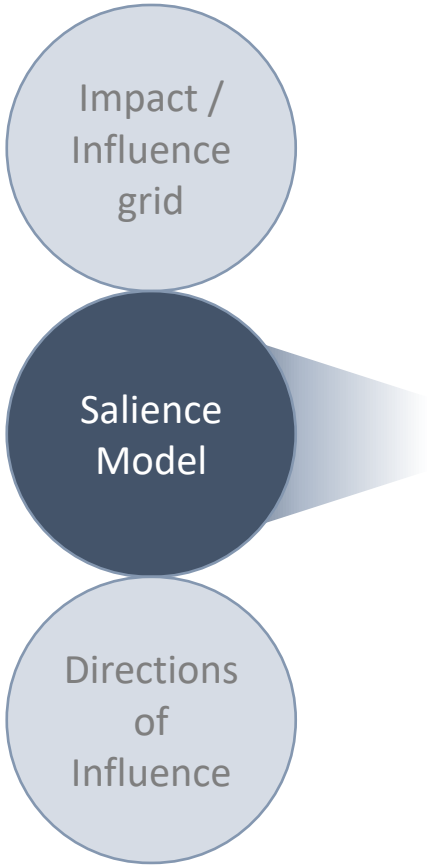
You can map stakeholders by:

- Impact over Influence
- Power over Influence
- Power over Interest

Or any other method that suits.

Key Concepts

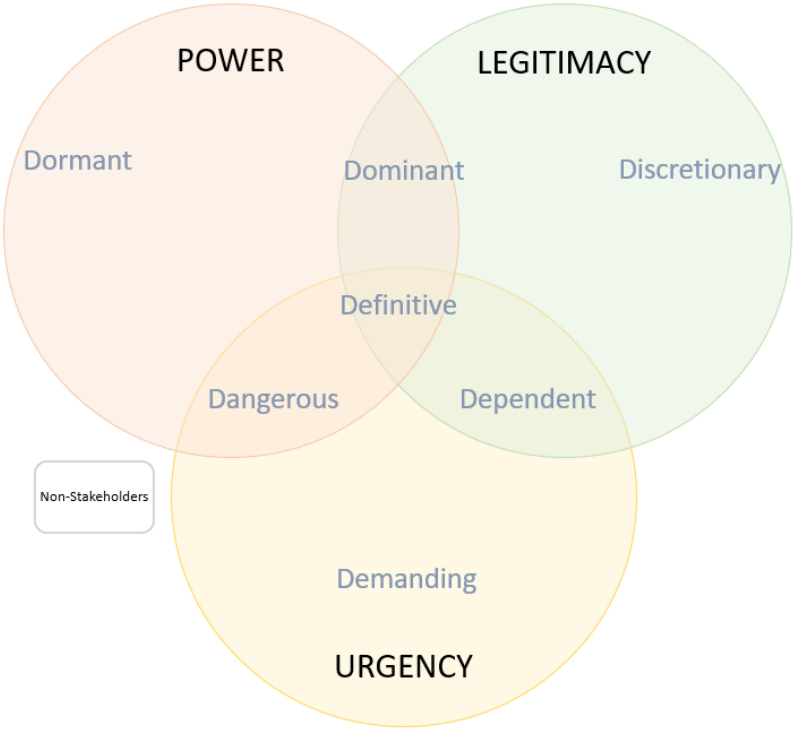




The salience model assesses stakeholders by their:

- Power (level of authority or ability to influence the project)
- Urgency (need for immediate attention)
- Legitimacy (their involvement is appropriate)

Legitimacy may also be replaced with proximity in some cases.



This model is also known as a 3D or Cube model, given it has three axes.

Key Concepts

Stakeholder Management

Stakeholder Mapping

This classifies stakeholders according to their influence on the project or project team.

- Impact / Influence grid
- Salience Model
- Directions of Influence

Senior management, sponsor, steering committee.

Upward

Peers of the project manager, other middle managers in charge of resources.

Sideward

Outside the team, including suppliers, end users, government departments.

Outward

Downward

Team or specialists providing knowledge or skills to the project

Key Concepts

Stakeholder Management

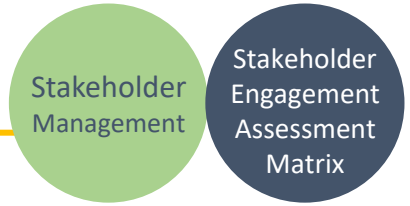
Stakeholder Register

Once we have discovered our stakeholders, we need to document their names and information in the Stakeholder Register.

We might include:

Identification Information	Name, Organisational position, Role on the project, contact details.
Assessment Information	Major requirements or needs, and their main project lifecycle stage.
Stakeholder Classification	Internal or external, impact/influence/power/interest, directions of influence etc.

Key Concepts



The Stakeholder Engagement Assessment Matrix classifies stakeholders by their Current and Desired level of engagement and project support.

Stakeholder Engagement Assessment

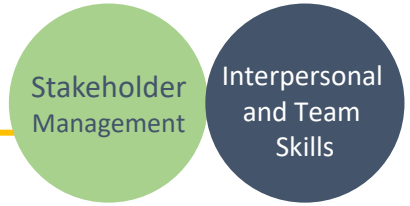
C urrent state D esired state

Place a C and D in a row for each stakeholder

	Stakeholders	Unaware	Resistant	Neutral	Supportive	Leading
Team or Area 1	Billy		C		D	
	Anne			C	D	
	Michael	C				D
	James				C, D	
Area 2	Kathy		C	D		
	Fiona	C			D	

Use communication techniques (more often and in the format required by the receiver) and team development techniques to improve engagement where needed.

Key Concepts



Interpersonal and team skills are the behaviours and tactics needed to interact with stakeholders in a project effectively. A Project Manager will use them all.

The ability to establish a relationship with others and to maintain that relationship is a key to success in project management.

Some of these will be covered in-depth in “Communication” and “Resources” areas.

- Conflict Management
- Facilitation
- Meeting Management
- Active Listening
- Leadership
- Networking
- Political Awareness
- Cultural Awareness
- Influencing
- Motivation
- Negotiation
- Team Building
- Emotional Intelligence
- Communication Styles Assessment
- Observation / Conversation

Key Concepts

Stakeholder Management

Interpersonal and Team Skills

Facilitation | Meeting Management | Active Listening | Leadership | Networking | Political Awareness | Cultural Awareness | Influencing | Motivation | Negotiation | Team Building | Emotional Intelligence | Communication Styles Assessment | Observation / Conversation

Conflict Management

Conflict Management is used to help bring stakeholders into alignment on the objectives, success criteria, high-level requirements, project description, summary milestones, and other elements of the charter.

(More detail in Resources area)

Key Concepts

Stakeholder Management

Interpersonal and Team Skills

Conflict Management

Meeting Management

Active Listening

Leadership

Networking

Political Awareness

Cultural Awareness

Influencing

Motivation

Negotiation

Team Building

Emotional Intelligence

Communication Styles Assessment

Observation / Conversation

Facilitation

Facilitation is the ability to effectively guide a group event to a successful decision, solution, or conclusion.

Getting stakeholders together in a workshop can quickly reconcile differences, foster relationships, improve communication and reveal issues earlier.

To facilitate we ensure there is effective participation. All contributions are considered, the conclusions have buy-in from the right people and actions are assigned and achieved afterward.

Key Concepts

Stakeholder Management

Interpersonal and Team Skills

Conflict Management

Facilitation

Active Listening

Leadership

Networking

Political Awareness

Cultural Awareness

Influencing

Motivation

Negotiation

Team Building

Emotional Intelligence

Communication Styles Assessment

Observation / Conversation

Meeting Management

Meeting Management includes:

- Preparing and distributing the agenda,
- Ensuring that a representative for each key stakeholder group is invited,
- Ensuring the meetings start and finish at the published time,
- Staying on topic during the meeting
- Managing expectations, issues and conflicts during the meeting,
- Recording actions and allocating people responsible for their completion.

Key Concepts

Stakeholder Management

Interpersonal and Team Skills

Conflict Management

Facilitation

Meeting Management

Leadership

Networking

Political Awareness

Cultural Awareness

Influencing

Motivation

Negotiation

Team Building

Emotional Intelligence

Communication Styles Assessment

Observation / Conversation

Active Listening

Active listening involves acknowledging, clarifying and confirming, understanding, and removing barriers to reduce misunderstandings and improve communication and knowledge sharing.

(More detail in Communications area)

Key Concepts

Stakeholder Management

Interpersonal and Team Skills

Conflict Management

Facilitation

Meeting Management

Active Listening

Networking

Political Awareness

Cultural Awareness

Influencing

Motivation

Negotiation

Team Building

Emotional Intelligence

Communication Styles Assessment

Observation / Conversation

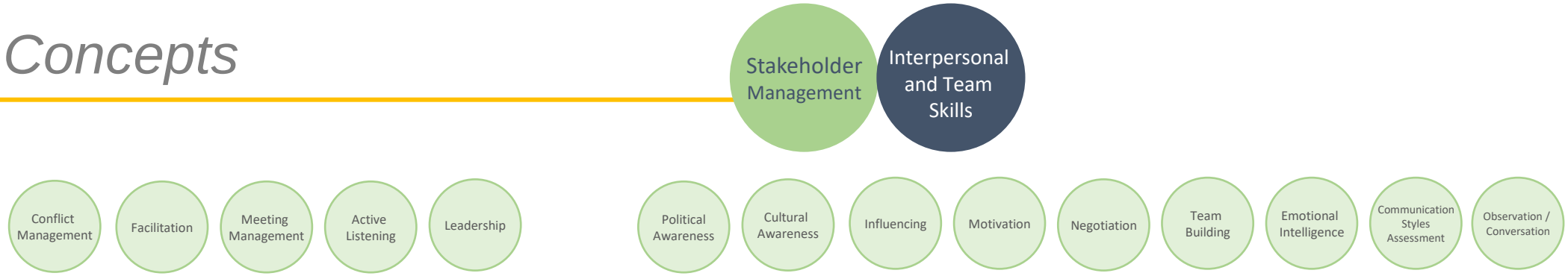
Leadership

Leadership is used to communicate the vision and inspire the project team to focus on the project objectives.

Skills include:

- Being a visionary
- Being collaborative and optimistic
- Managing relationships by building trust, seeking consensus, balancing competing goals
- Communicating with your stakeholders a lot
- Managing expectations
- Using critical thinking
- Being able to build effective teams and be service oriented.

Key Concepts



Networking

Networking is interacting with others to exchange information and develop contacts.

Networks provide you with access to informal connections among project stakeholders who increase your knowledge and project support.

Key Concepts

Stakeholder Management

Interpersonal and Team Skills

Conflict Management

Facilitation

Meeting Management

Active Listening

Leadership

Networking

Cultural Awareness

Influencing

Motivation

Negotiation

Team Building

Emotional Intelligence

Communication Styles Assessment

Observation / Conversation

Political Awareness

Political awareness is when we recognise the power relationships in the organisation – both formal and informal – and have the willingness to operate within these structures.

Key Concepts

Stakeholder Management

Interpersonal and Team Skills

Conflict Management

Facilitation

Meeting Management

Active Listening

Leadership

Networking

Political Awareness

Influencing

Motivation

Negotiation

Team Building

Emotional Intelligence

Communication Styles Assessment

Observation / Conversation

Cultural Awareness

Cultural awareness is an understanding of the differences between individuals and groups and adapting in the context of these differences.

It helps reduce miscommunication and misunderstandings.

Key Concepts

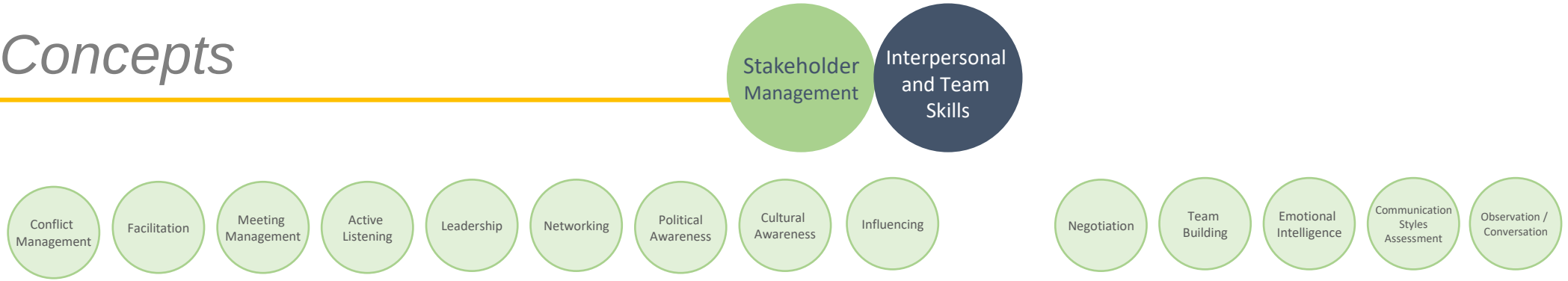
Influencing

Because project managers have little or no direct authority over team members in many environments, being able to influence is critical.

Skills include:

- Ability to be persuasive
- Clearly articulating points and positions
- High levels of active listening skills
- Gathering information to reach agreements while maintaining mutual trust.

Key Concepts



Motivation

Motivation is providing a reason for someone to act.

The project manager needs to be aware of:

Student Syndrome: where people apply themselves only at the last possible moment before a deadline.

Parkinson's Law: where work expands to fill the time available for its completion.

Teams are motivated by empowering them to participate in decision making and encouraging them to work independently.

Key Concepts

Stakeholder Management

Interpersonal and Team Skills

Conflict Management | Facilitation | Meeting Management | Active Listening | Leadership | Networking | Political Awareness | Cultural Awareness | Influencing | Motivation

Team Building | Emotional Intelligence | Communication Styles Assessment | Observation / Conversation

Negotiation

Negotiation is a discussion aimed at reaching an agreement, or consensus on project needs.

Consider having things you could give up in exchange for concessions from the other side, and knowing your BATNA – best alternative to a negotiated agreement – if an agreement cannot be reached.

Key Concepts

Stakeholder Management

Interpersonal and Team Skills

Conflict Management | Facilitation | Meeting Management | Active Listening | Leadership | Networking | Political Awareness | Cultural Awareness | Influencing | Motivation | Negotiation

Emotional Intelligence | Communication Styles Assessment | Observation / Conversation

Team Building

Team building is conducting activities that enhance the team's social relations and build a collaborative and cooperative working environment.

It could be a short, fun activity to start a meeting, or multi-hour involvement of the team in forming the project strategy.

Key Concepts

Stakeholder Management

Interpersonal and Team Skills

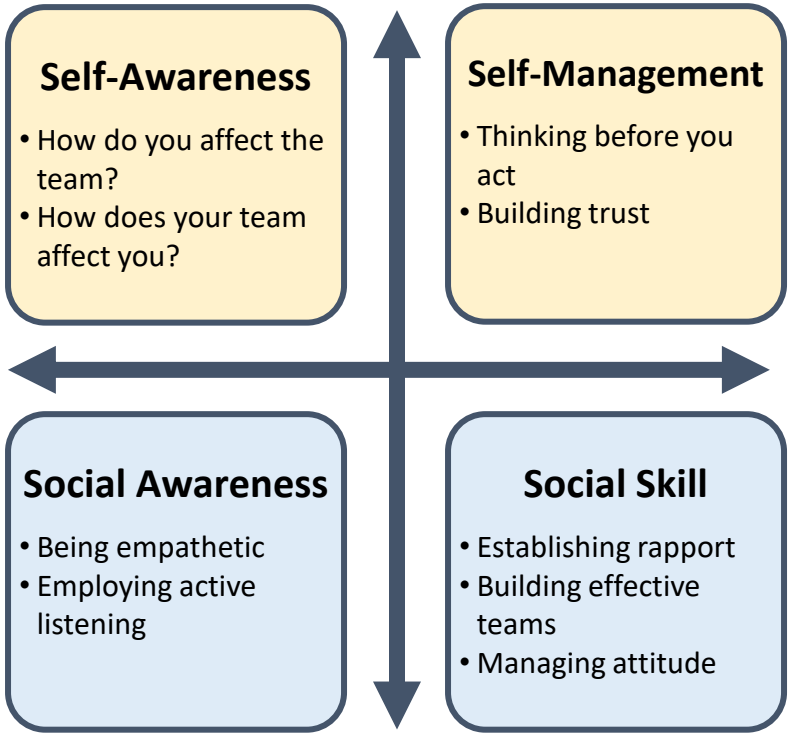
Conflict Management | Facilitation | Meeting Management | Active Listening | Leadership | Networking | Political Awareness | Cultural Awareness | Influencing | Motivation | Negotiation | Team Building

Communication Styles Assessment | Observation / Conversation

Emotional Intelligence

Emotional Intelligence is the ability to identify, assess, and manage the personal emotions of oneself and other people, as well as the collective emotions of groups of people.

This helps anticipating others' actions, acknowledging their concerns, and following up on their issues.



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Stakeholder Management

Interpersonal and Team Skills

Conflict Management | Facilitation | Meeting Management | Active Listening | Leadership | Networking | Political Awareness | Cultural Awareness | Influencing | Motivation | Negotiation | Team Building | Emotional Intelligence | Observation / Conversation

Communication Styles Assessment

Often used with unsupportive stakeholders, this is a technique used to assess their communication styles and identify the preferred communication method, format, and content for them.

Key Concepts

Stakeholder Management

Interpersonal and Team Skills

Conflict Management | Facilitation | Meeting Management | Active Listening | Leadership | Networking | Political Awareness | Cultural Awareness | Influencing | Motivation | Negotiation | Team Building | Emotional Intelligence | Communication Styles Assessment

Observation / Conversation

Observation / conversation is a direct way of viewing people in their environment and how they carry out tasks. You might use it for “job shadowing”, to learn how an expert performs their job.

It can help you uncover hidden requirements in the work.

In Lean, this is “Go look, Go See” or Genchi Genbutsu.

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- Benefits management plan
- Baselines and the Configuration Management Plan
- Change Requests and the Change Management Plan
- Project Management Information System (PMIS)
- Issue Log
- Project Management Data and Information
- Status report
- The Lessons Learned Register
- The Final Report

Stakeholder Management

- Organisational Breakdown Structure
- Stakeholder Register
- Power/Interest and Impact/Influence grids versus Salience Model
- Stakeholder Engagement Assessment Matrix
- Facilitation
- Interpersonal and Team Skills

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- Team Charter
- Tuckman's Ladder
- Meeting Management
- Conflict Management

Communication

- Communication Models
- Communication (Skills, Methods)
- Push and Pull Communication

Risk

- Risk Categories
- Risk Register
- SWOT Analysis
- Probability and Impact Matrix
- Decision Tree Analysis
- Quantitative tools: Monte Carlo, Sensitivity/Tornado charts
- Strategies for Threats versus Strategies for Opportunities
- Reserve Analysis and Burndown Charts

Procurement

- Types of Contracts: Fixed Price Contracts versus Cost-reimbursable versus Time and Material
- Advertising versus Bidder Conferences
- Claims Administration

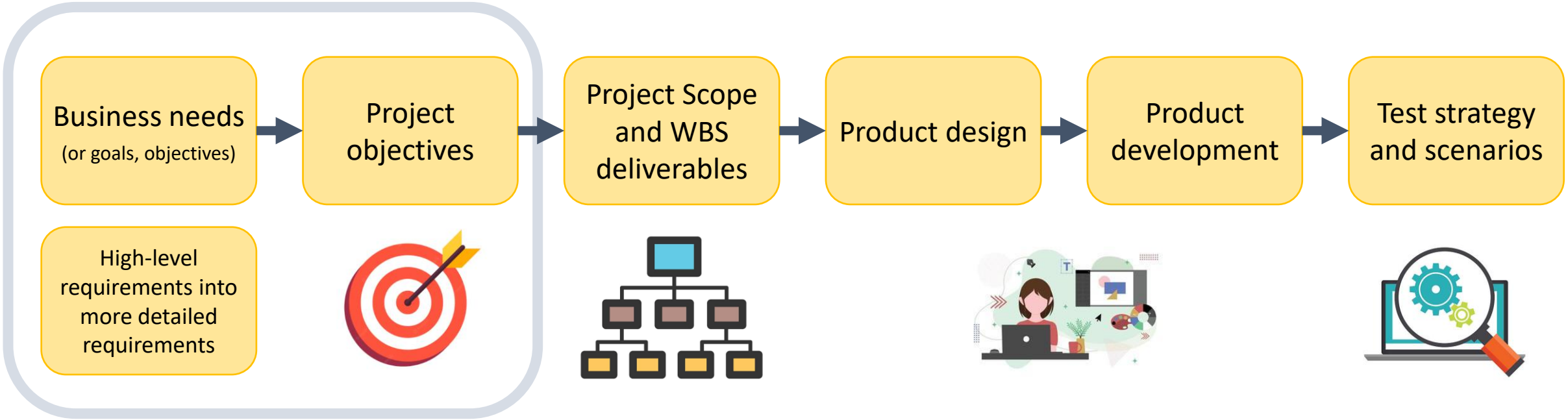
Key Concepts

Scope

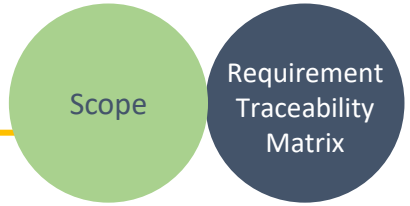
Requirement Traceability Matrix

The requirements traceability matrix links the product requirements from their origin to their completed deliverables.

This helps ensure that each requirement adds business value, by linking it to the business and project objectives.



Key Concepts



Things you might include for each requirement in your Requirements Traceability Matrix include:

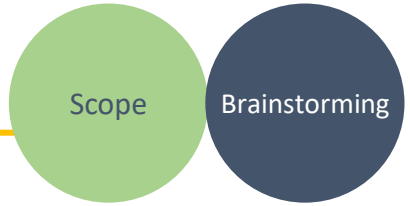
A Unique Identifier	A text description of the requirement	Rationale for inclusion	Source and Owner	Priority	Current Status

Requirements Traceability Matrix

Project Name: _____ **Document Author:** _____

Req # Unique ID	Requirement Name / Description	Requested / Approved By:	Priority	Scope Deliverable or Feature	Scope Unique ID	User Story or Work Package	Assigned To	Test Case	Current Status
1001	Requirement 1	Jane	High	High level feature (Or "Epic" name, in Agile)	Story Card ID	Work Breakdown structure item (Or "User Story" name, in Agile)	Jane	501	Elaboration
1002	Requirement 2	Amanda	Medium	Deliverable 2	Scope ID 2		Amanda	502	Not Started
1003	Requirement 3	Michael	Low	Deliverable 3	Scope ID 3		Michael	503	Development

Key Concepts



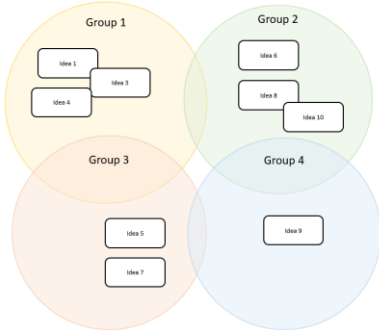
Brainstorming is used to identify a list of ideas in a short period of time.

It is usually done in a group, such as a workshop, where a facilitator ensures everyone can contribute, stays on track, and actions are taken.

i.e. Getting as many unfiltered ideas as possible.

Idea Generation

Idea Analysis



i.e. Grouping and prioritising ideas.

Use brainstorming sessions to do things like gather requirement or solution ideas from your stakeholders.

Key Concepts

Scope

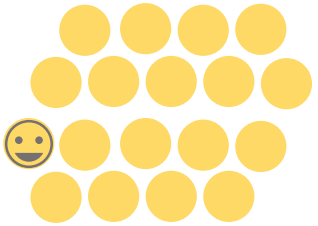
Voting and the Nominal Group Technique

Voting is a way to make decisions on your project, especially when there are three or more people involved.

Where you have multiple options or ideas to choose from, each person in your group may get to choose (or vote for) one of them. You might get:

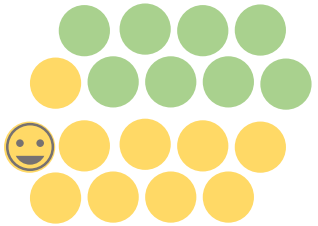
Unanimity

A decision reached where everyone agrees.



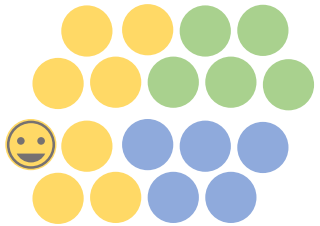
Majority

A decision reached where more than 50% of people agree.



Plurality

A decision reached where the largest block agrees (even if it's not more than 50%).



Key Concepts

Scope | Voting and the Nominal Group Technique | Agile

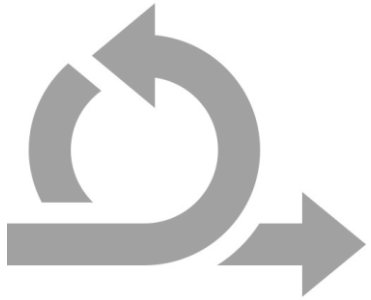
One variation of the voting method that is often used in agile-based projects is called the Fist of Five.

The project manager asks the team to show their level of support for a decision by holding up a:

Closed fist (no support)

Up to five fingers (full support)

If a team member holds up fewer than three fingers, the team member is given the opportunity to discuss any objections with the team.



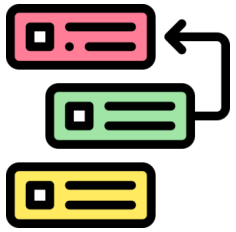
The project manager continues the fist-of-five process until the team achieves consensus or agrees to move on to the next decision.

Key Concepts

Scope

Voting and the Nominal Group Technique

The Nominal Group Technique is a form of anonymous voting and prioritisation, to reduce one person (like an executive) swaying the opinions of others.



1. A question or problem is posed to the group. Each person silently generates and writes down their ideas.
2. The moderator collects and writes down the ideas on a flip chart until all ideas are recorded.
3. Each recorded idea is discussed until all group members have a clear understanding.
4. Individuals vote privately to prioritize the ideas, usually using a scale of 1 – 5, with 1 being the lowest and 5 being the highest.
5. Votes are tallied and the highest scoring ideas are selected.

Key Concepts

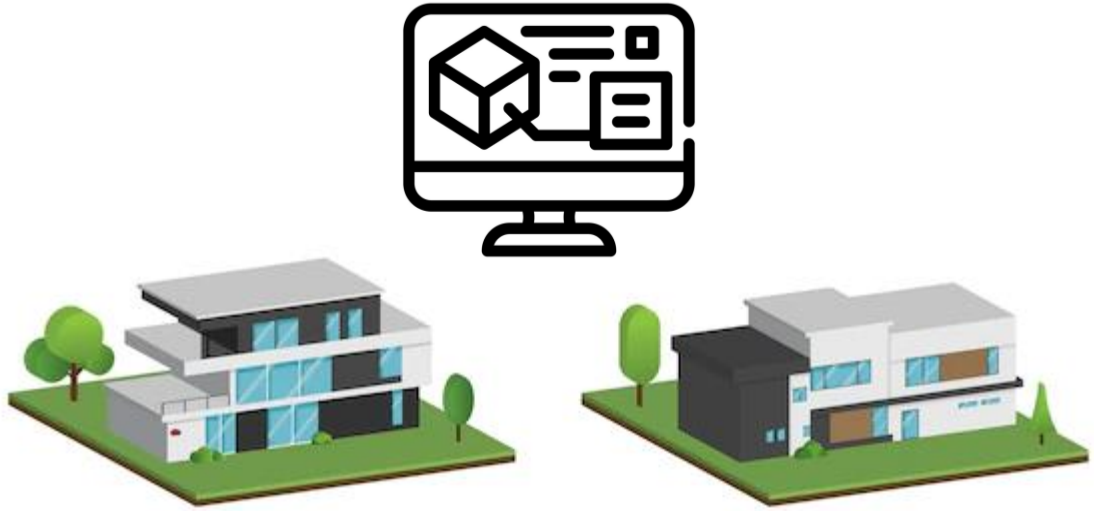
Scope

Prototyping

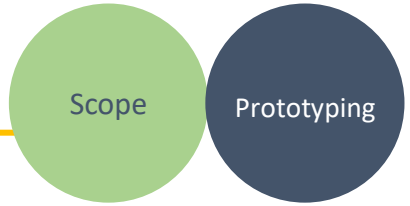
Prototyping is a method of obtaining early feedback on requirements by providing a model of the expected product before actually building it.

They could include:

- Computer generated 2D or 3D models
- Mock-ups or Wireframes
- Storyboards
- Process maps



Key Concepts



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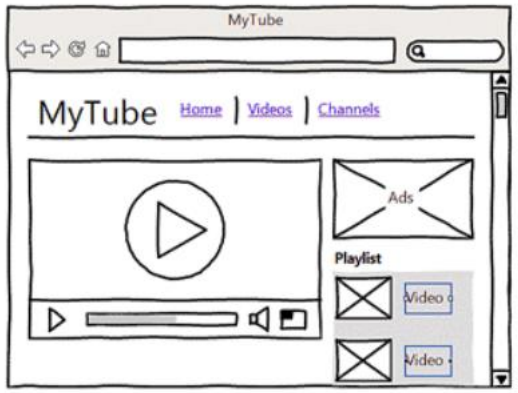
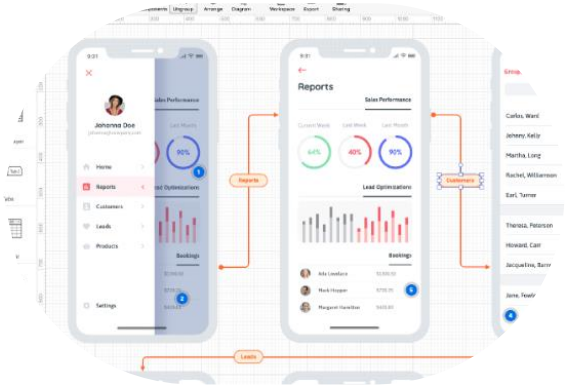
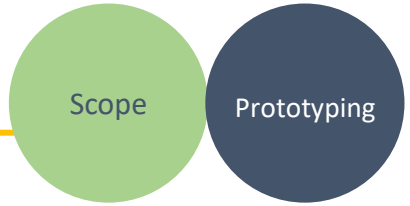




Key Concepts



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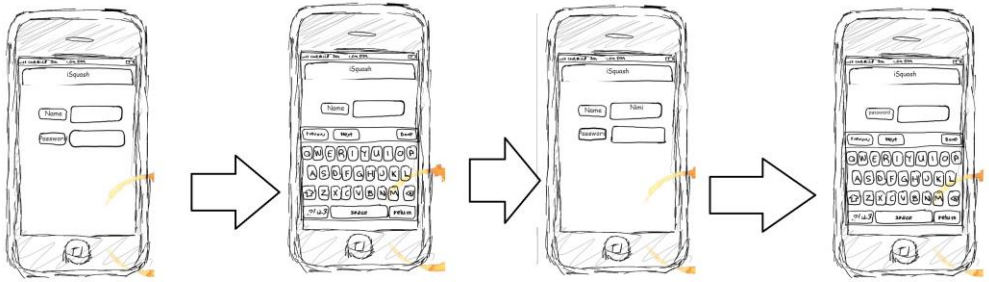

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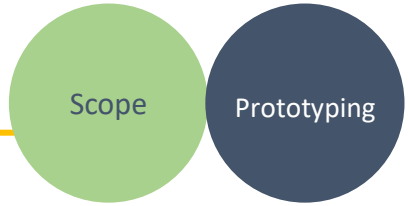

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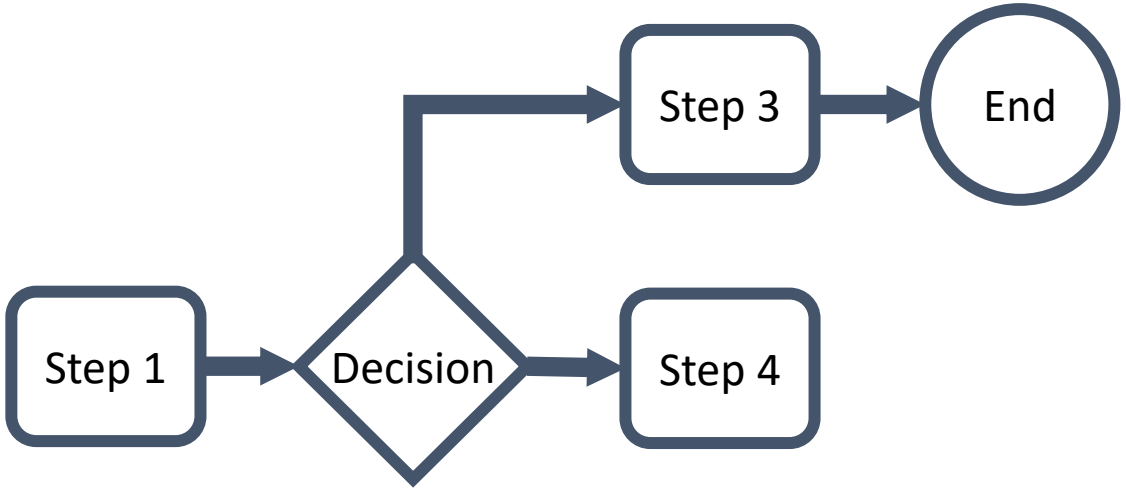
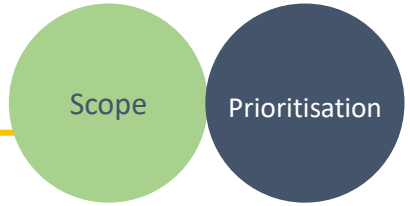
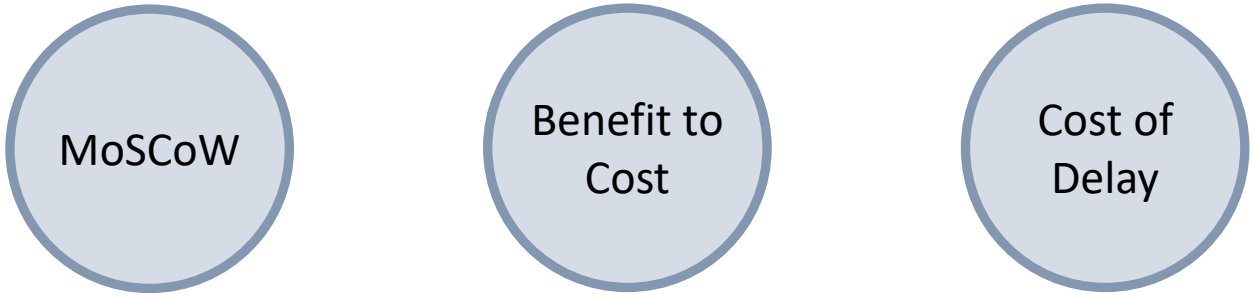


Key Concepts



As you collect requirements or risks, and brainstorm solutions with your stakeholders, you may not have the time or money to complete them all.

Prioritising means determining which items get done first (or at all). You might use:



Key Concepts

Scope

Prioritisation

MoSCoW stands for:

Must have **M**

Should have **S**

Could have **C**

Will not have **W**

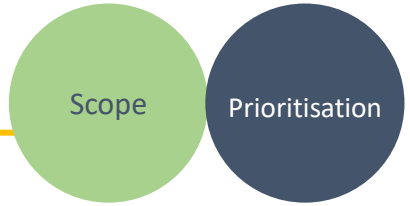
You can use Voting with your stakeholders to decide and prioritise.

MoSCoW

Benefit to Cost

Cost of Delay

Key Concepts

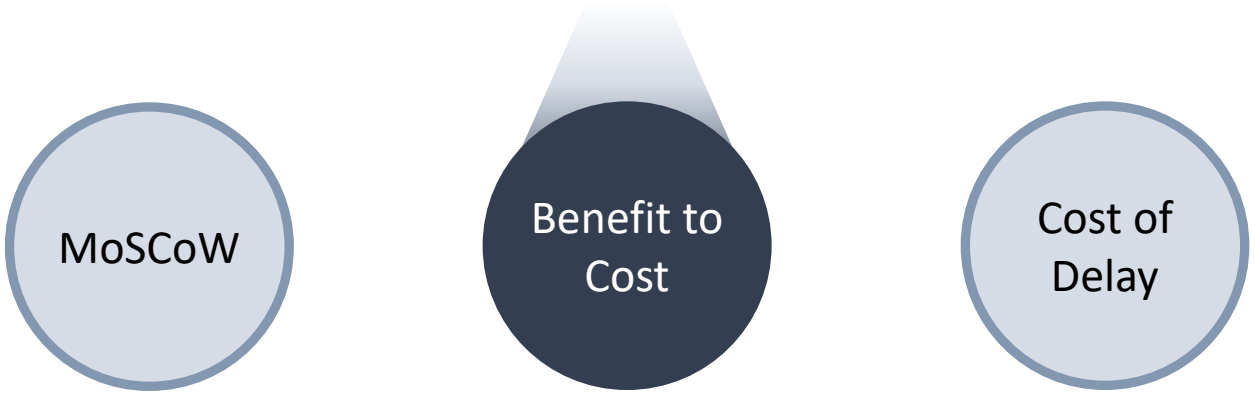


Prioritising items with the highest benefit and the lowest cost is easy to do with the Benefit to Cost ratio.

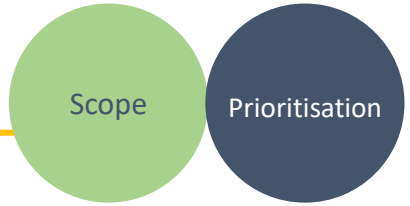
Divide your benefit by your cost, and prioritise the highest ones first.

$$BCR = \frac{\text{Item Benefit}}{\text{Item Cost}}$$

$$\frac{\$5{,}000{,}000}{\$2{,}500{,}000} = 2 : 1$$



Key Concepts



The cost of delay and CD3 uses the value of the item versus the time it will take to deliver.
Calculate the expected weekly profit (or benefit) of an item once it is delivered.
Divide the weekly profit by the duration to deliver to get “CD3”, and prioritise the highest ones.

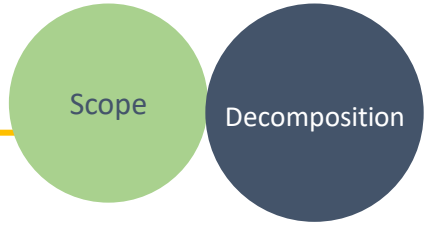
	Duration to Deliver (in Weeks)	Expected Profit (Weekly)	CD3
Feature 1	4	$4,000	4,000 / 4 = **1,000**
Feature 2	8	$4,000	4,000 / 8 = **500**
Feature 3	10	$5,000	5,000 / 10 = **500**
Total	**22**	**$13,000**	

MoSCoW

Benefit to Cost

Cost of Delay and CD3

Key Concepts

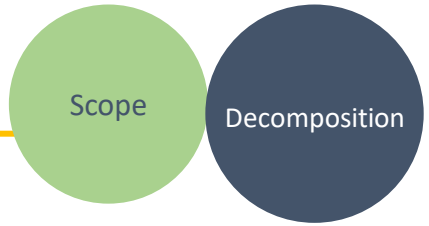


Decomposition is a technique used for dividing and subdividing something into smaller, more manageable parts.

It can be used on many different things, most commonly:

- Work Breakdown Structure
- Organisational Breakdown Structure
- Product Breakdown Structure

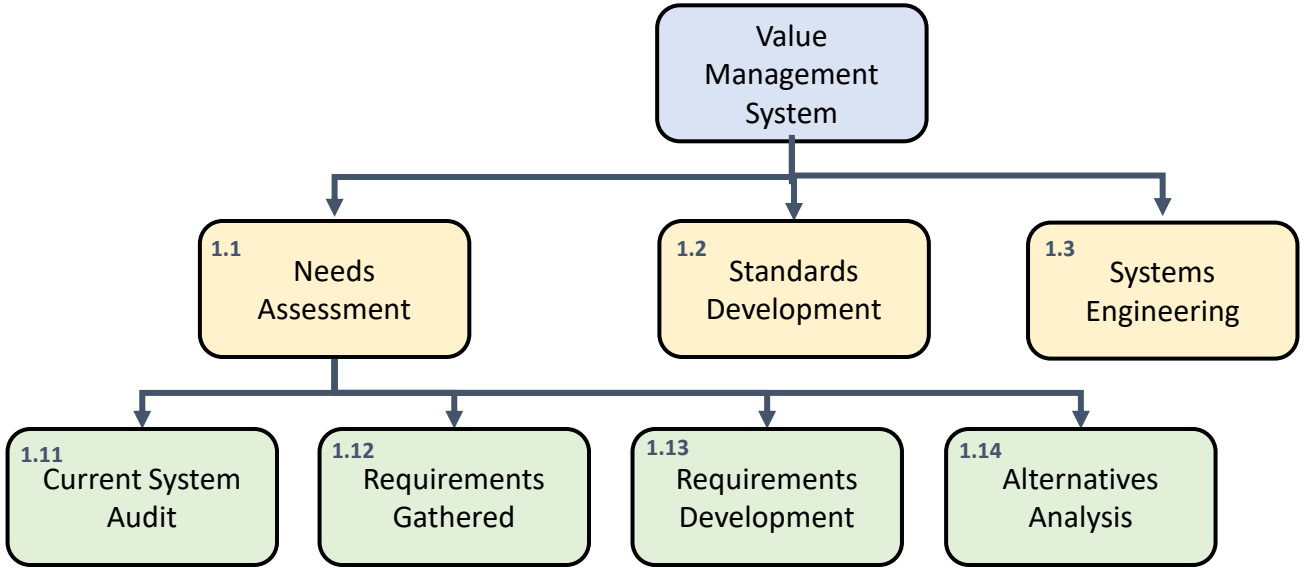
Key Concepts



Work Breakdown Structure

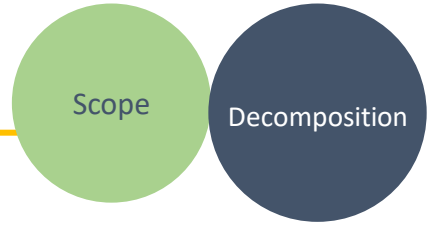
Organisational Breakdown Structure

Product Breakdown Structure



The work package is the lowest level of activities for us to estimate their cost and duration.

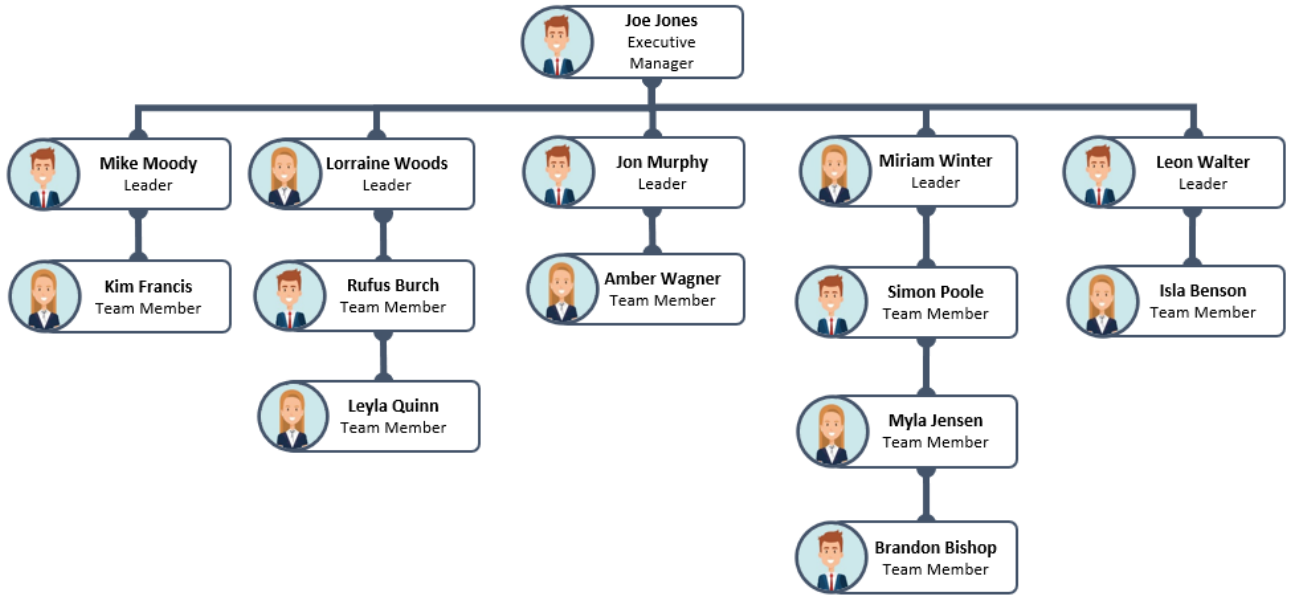
Key Concepts



Work Breakdown Structure

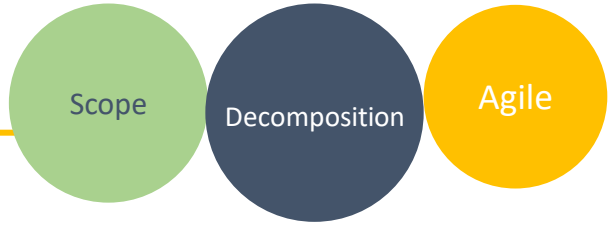
Organisational Breakdown Structure

Product Breakdown Structure



An OBS shows where people fit in the organisation, including their role, responsibility and potential influence.

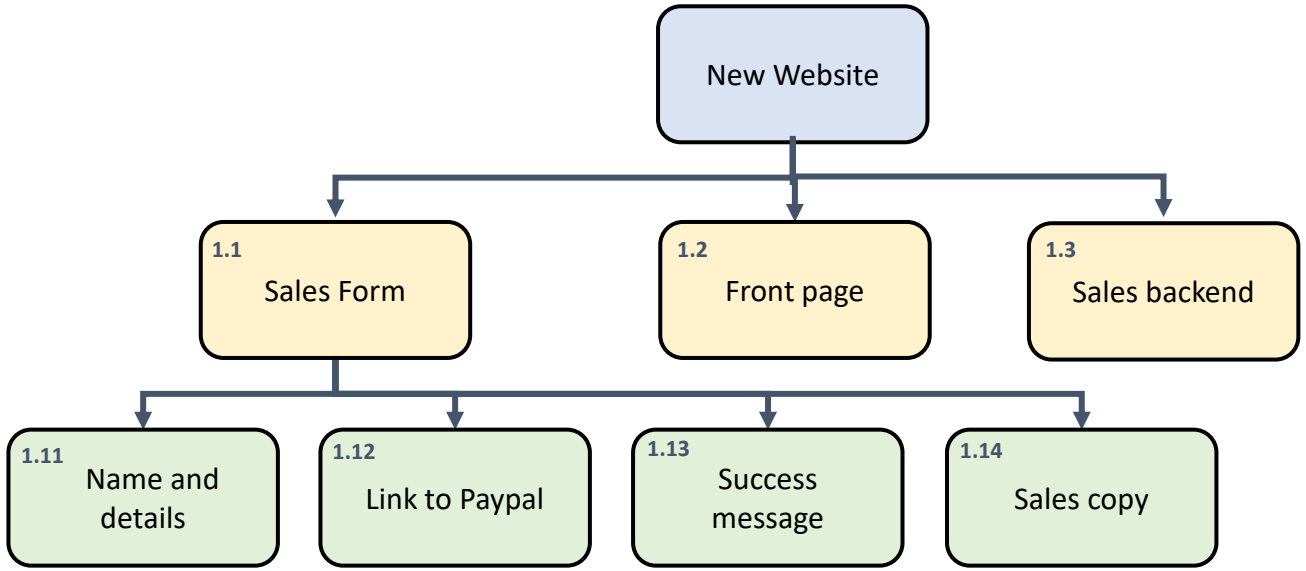
Key Concepts



Work Breakdown Structure

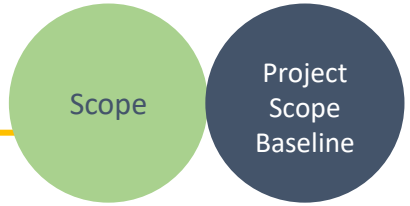
Organisational Breakdown Structure

Product Breakdown Structure



A PBS is also a great way to break down features into User Stories for the team to work on.

Key Concepts



The Project Scope Baseline is the approved version of the project scope, which can only be changed through formal change control and used to compare to future versions.

It includes:

- Project Scope Statement
- WBS
- WBS Dictionary
- Work Package

Key Concepts

Scope

Project Scope Baseline

Project Scope Statement

WBS

WBS Dictionary

Work Package

The project scope statement includes the description of the project scope, major deliverables, assumptions, and constraints.

It includes:

Project Scope Description

A written description of the scope.

Deliverables

Any unique and verifiable product, result or capability.

Acceptance Criteria

A set of conditions to be met before deliverables are accepted.

Given, When, Then.
As a, I want, So I can.

Project Exclusions

What is excluded – helps reduce scope creep

Key Concepts

Scope

Project Scope Baseline

Project Scope Statement

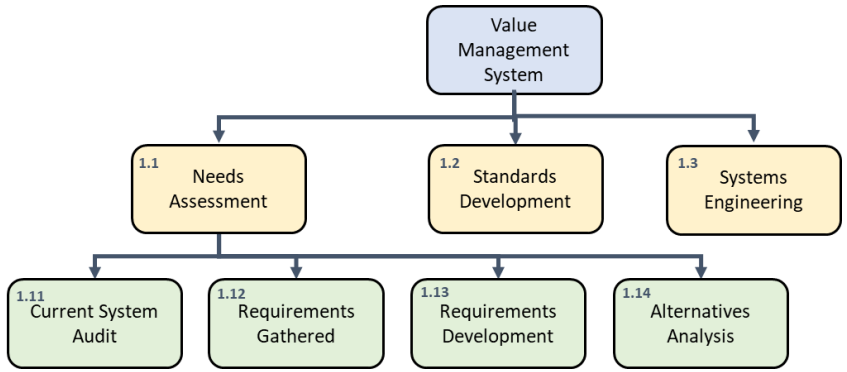
WBS

WBS Dictionary

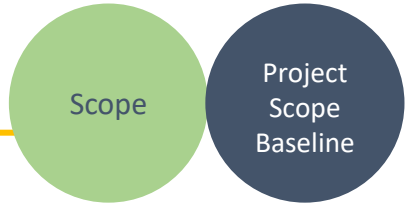
Work Package

The Work Breakdown Structure breaks down the required deliverables into work to be carried out by the project team.

Each descending level of the WBS represents an increasingly detailed definition of the project work.



Key Concepts



Project Scope Statement

WBS

WBS Dictionary

Work Package

The WBS dictionary supports the WBS with more detailed information on deliverables, activities, and scheduling for each item. Information might include:

- Code of account identifier
- Description of work
- Assumptions and constraints
- Responsible organization
- Schedule milestones
- Associated schedule activities
- Resources required
- Cost estimates
- Quality requirements
- Acceptance criteria
- Technical references, and
- Agreement information

Work Breakdown Structure Dictionary

Project Name: | Document Author: | Date: 10-Mar-23

Unique ID	Description	Currently Assigned To:	Percentage Complete	Dependent on:	Resources Required	Cost Estimates	Acceptance Criteria	Signed-off by:	Start Date	Estimated Finish Date
1	**Feature 1**									
1.1	Task	James	80%	-	▶ James ▶ Martha	$1,000.00	▶ Functioning system	Michael	01 Feb 2023	20 Mar 2023
1.11	Subtask	Anne	70%	1.1						
1.12	Subtask	Michael	20%	2.1						
1.2	Task	Tina	50%	-						
1.21	Subtask	Kelly	0%	-						
1.22	Subtask	-	0%	1.12						

Key Concepts

Scope

Project Scope Baseline

Project Scope Statement

WBS

WBS Dictionary

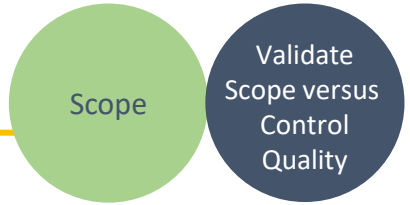
Work Package

A work package is the lowest level of the WBS.

It is given a unique identifier.

Work packages are the level of scope that a person or team can work on, and their estimates for duration and cost can be added together in “bottom up estimating”.

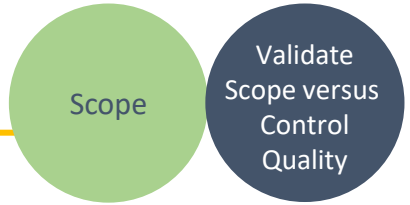
Key Concepts



The “Validate Scope” and “Control Quality” processes can be easily confused on your exam.

Knowledge Areas	Initiating	Planning	Executing	Monitoring & Controlling	Closing
Project Integration	1. Develop Project Charter	2. Develop Project Management Plan	3. Direct and Manage Project Work 4. Manage Project Knowledge	5. Monitor and Control Project Work 6. Perform Integrated Change Control	7. Close Project or Phase
Stakeholders	1. Identify Stakeholders	2. Plan Stakeholder Engagement	3. Manage Stakeholder Engagement	4. Monitor Stakeholder Engagement	
Scope		1. Plan Scope Management 2. Collect Requirements 3. Define Scope 4. Create WBS		5. Validate Scope 6. Control Scope	
Schedule		1. Plan Schedule Management 2. Define Activities 3. Sequence Activities 4. Estimate Activity Durations 5. Develop Schedule		6. Control Schedule	
Cost		1. Plan Cost Management 2. Estimate Costs 3. Determine Budget		4. Control Costs	
Quality		1. Plan Quality Management	2. Manage Quality	3. Control Quality	
Resources		1. Plan Resource Management 2. Estimate Activity Resources	3. Acquire Resources 4. Develop Team 5. Manage Team	6. Control Resources	
Communications		1. Plan Communications Management	2. Manage Communications	3. Monitor Communications	
Risk Management		1. Plan Risk Management 2. Identify Risks 3. Perform Qualitative Risk Analysis 4. Perform Quantitative Risk Analysis 5. Plan Risk Responses	6. Implement Risk Responses	7. Monitor Risks	
Procurements		1. Plan Procurement Management	2. Conduct Procurements	3. Control Procurements	

Key Concepts



Where we take the completed deliverables to the project sponsor or customer for final acceptance.

Validate Scope

Is the process of managing changes to the product (the Scope Baseline).

Control Scope

Recording and monitoring the testing results to ensure the product meets its requirements.

Control Quality

Knowledge Areas	Initiating	Planning	Executing	Monitoring & Controlling	Closing
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Resources		1. Plan Resource Management 2. Estimate Activity Resources	3. Acquire Resources 4. Develop Team 5. Manage Team	6. Control Resources	
Communications		1. Plan Communications Management	2. Manage Communications	3. Monitor Communications	
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Procurements		1. Plan Procurement Management	2. Conduct Procurements	3. Control Procurements	

Key Concepts

Project Integration

- Business Case
- Benchmarking
- Make or Buy Analysis
- Expert Judgement
- Rates of return – NPV, IRR, Cost/Benefit Ratio
- Benefits management plan
- Baselines and the Configuration Management Plan
- Change Requests and the Change Management Plan
- Project Management Information System (PMIS)
- Issue Log
- Project Management Data and Information
- Status report
- The Lessons Learned Register
- The Final Report

Stakeholder Management

- Organisational Breakdown Structure
- Stakeholder Register
- Power/Interest and Impact/Influence grids versus Salience Model
- Stakeholder Engagement Assessment Matrix
- Facilitation
- Interpersonal and Team Skills

Scope

- The Requirements Management Plan (Business Analysis plan)
- Requirement Traceability Matrix
- Brainstorming
- Voting and the Nominal Group Technique
- Prototyping (Storyboards, wireframes, models and maps)
- Prioritisation (MoSCoW, Cost/Benefit, CD3)
- Decomposition (incl WBS, WBSD)
- Project Scope Baseline: Statement, WBS, WBSD, Work Packages.
- Validate Scope versus Control Quality
- Variance Analysis

Schedule

- Rolling Wave Planning
- Leads and Lags
- Precedence Diagramming Method
- Types of Estimating: Three point, Analogous, Parametric, Bottom up
- Resource Levelling vs Resource Smoothing
- Critical Path Method (Forward and backward pass)
- Schedule Compression - Fast Tracking and Crashing

Cost

- ROM, Budget and Definitive Estimates
- Contingency and Management Reserves
- Accuracy versus Precision
- Earned Value Analysis (EVA)

Quality

- The Cost of Quality
- Cause and Effect Diagrams (Ishikawa)
- Histograms & Pareto Analysis
- Audits
- Inspections & Reviews
- Checklists vs Check sheets

Resources

- Responsibility Assignment Matrix and RACIs
- OBS (Organisational Breakdown Structure) versus RBS (Resource Breakdown Structure) and Product BS
- Team Charter
- Tuckman's Ladder
- Meeting Management
- Conflict Management

Communication

- Communication Models
- Communication (Skills, Methods)
- Push and Pull Communication

Risk

- Risk Categories
- Risk Register
- SWOT Analysis
- Probability and Impact Matrix
- Decision Tree Analysis
- Quantitative tools: Monte Carlo, Sensitivity/Tornado charts
- Strategies for Threats versus Strategies for Opportunities
- Reserve Analysis and Burndown Charts

Procurement

- Types of Contracts: Fixed Price Contracts versus Cost-reimbursable versus Time and Material
- Advertising versus Bidder Conferences
- Claims Administration

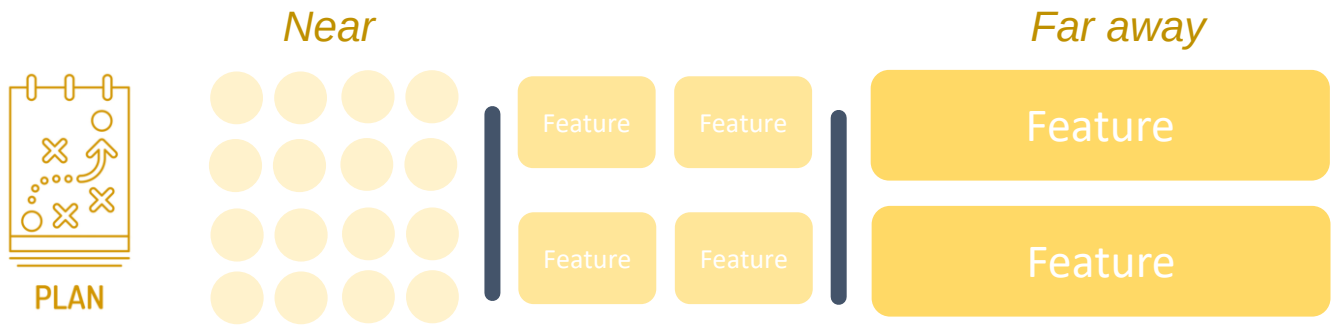
Key Concepts

Schedule

Rolling Wave Planning

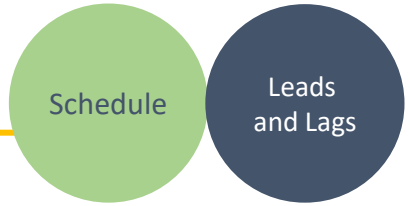
Rolling wave planning is an iterative planning technique.

Work to be accomplished soon is planned in detail, while work further in the future is planned at a higher level.



Similar to Decomposition, except we start with strategic planning and the high level scope, and break it down into work packages when it's close to being worked on.

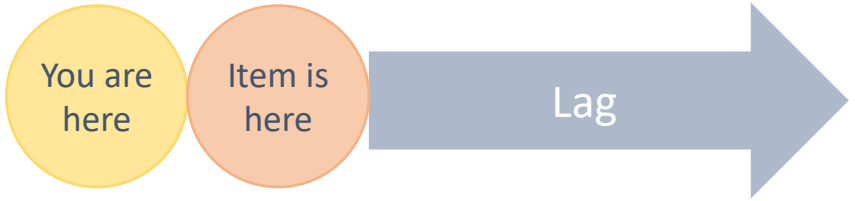
Key Concepts



Leads and Lags are applied to optimise your schedule
(e.g. your Gantt Chart or when using the Critical Path method)

Bring the item forward to be done sooner.

Delay the item and do it later.



Lead time is the amount of time the next activity can be brought forward.

Lag time is the amount of time the next activity will be delayed.

Key Concepts

Schedule

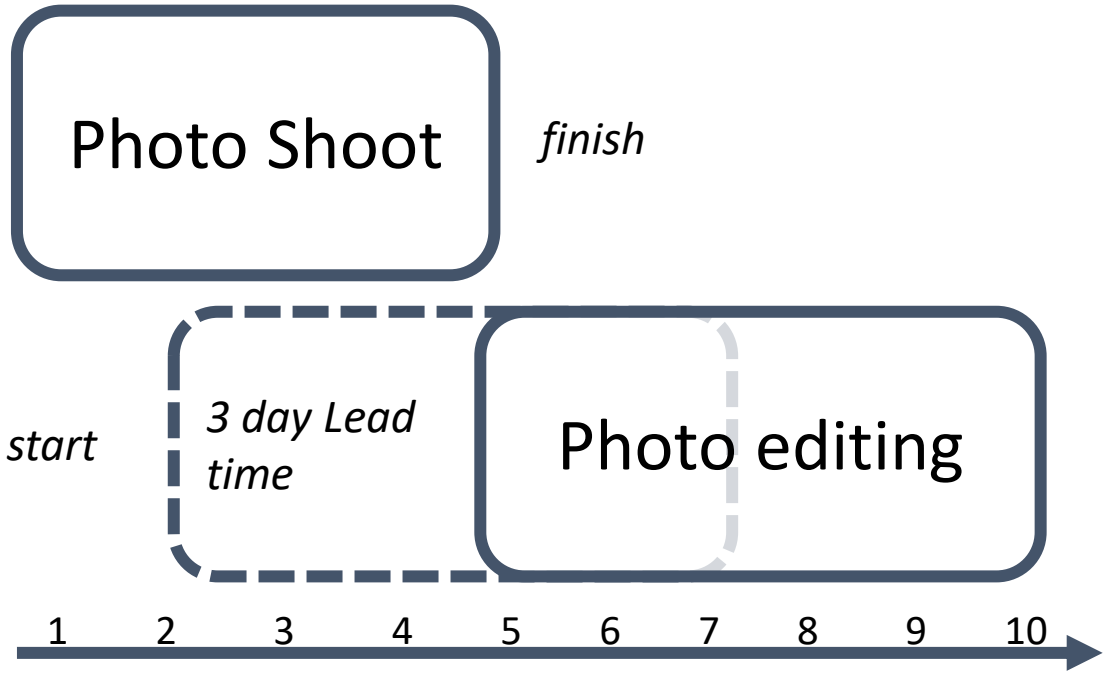
Leads and Lags

Lead Time Example

A photo shoot will take four days and the photo editing will take six days.

Instead of waiting until the end of the photo shoot to begin editing the pictures, we start editing after the first day of shooting.

This brings the total duration from ten days down to seven days by bringing it forward.



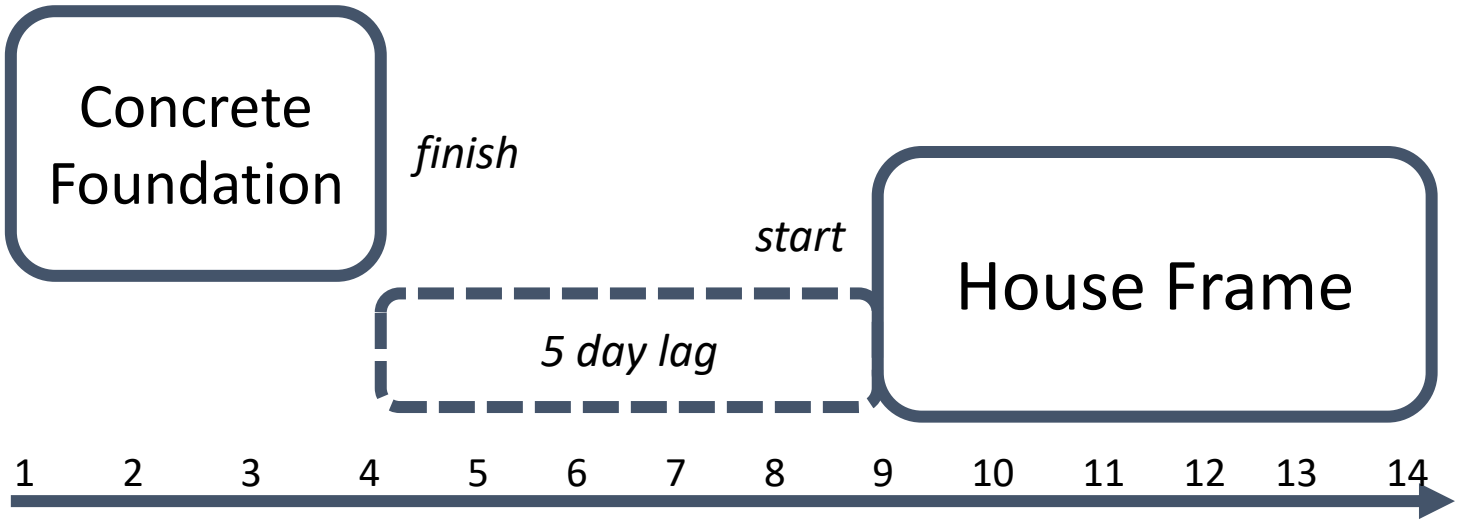
Key Concepts

Schedule

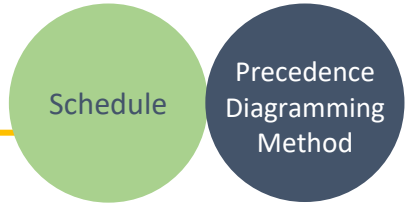
Leads and Lags

Lag Time Example

A house frame takes 5 days to put up, but it has to wait 5 days after the concrete foundation has been laid to ensure it sets properly.



Key Concepts



The precedence diagramming method (PDM) is a technique used for constructing a schedule which shows how activities are linked, and the sequence in which they need to be performed.

There are four types of relationships:

- Finish to Start (FS)
- Start-to-start (SS)
- Finish-to-Finish (FF)
- Start-to-Finish (SF)

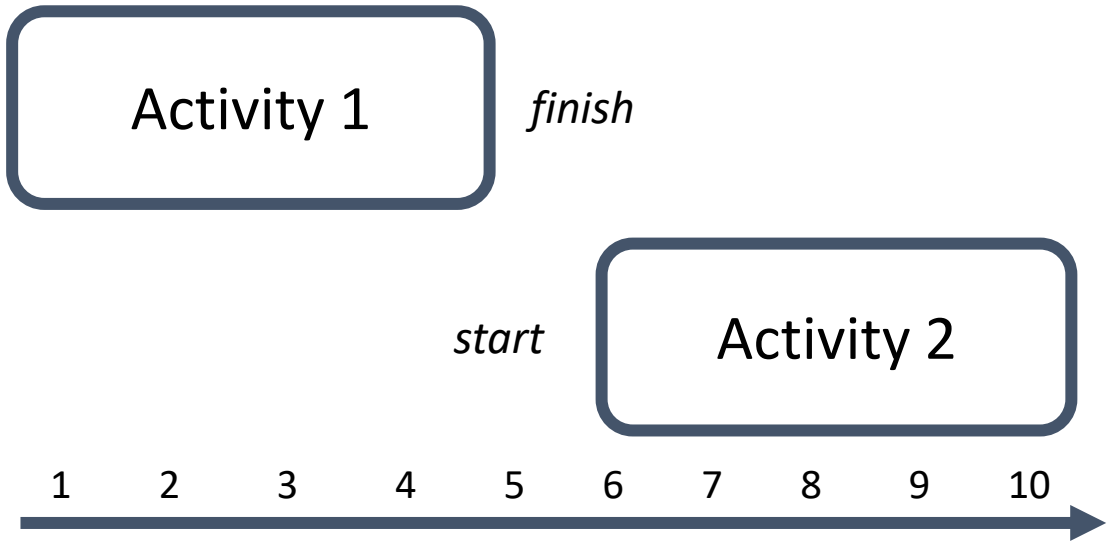
Key Concepts

Schedule

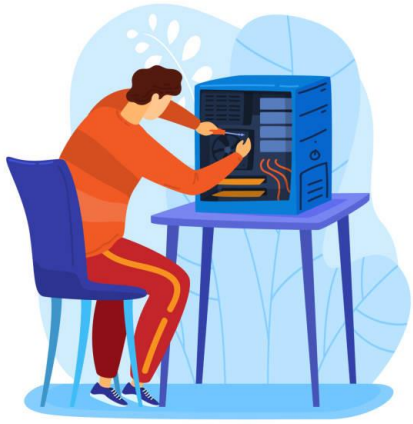
Precedence Diagramming Method

Finish to Start (FS) | Start-to-start (SS) | Finish-to-Finish (FF) | Start-to-Finish (SF)

The next activity cannot **start** until the previous activity has **finished**.



e.g. You cannot install the software (Activity 2) until you have built the computer hardware (Activity 1)



Key Concepts

Schedule

Precedence Diagramming Method

Finish to Start (FS) | **Start-to-start (SS)** | Finish-to-Finish (FF) | Start-to-Finish (SF)

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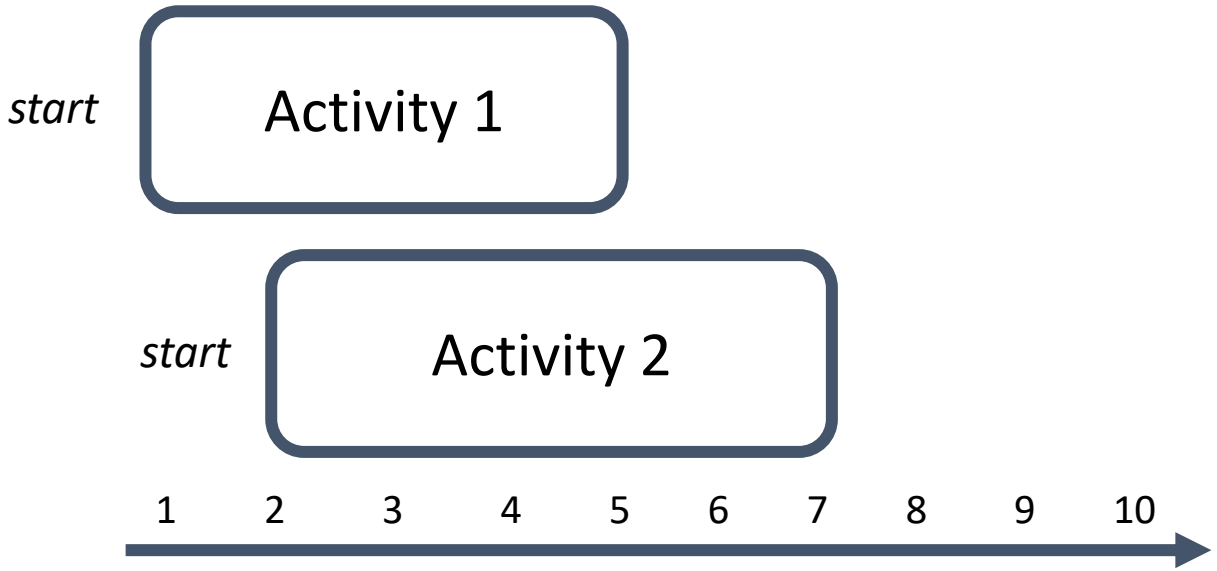


e.g. You cannot level concrete (Activity 2) until you begin pouring the foundation (Activity 1).

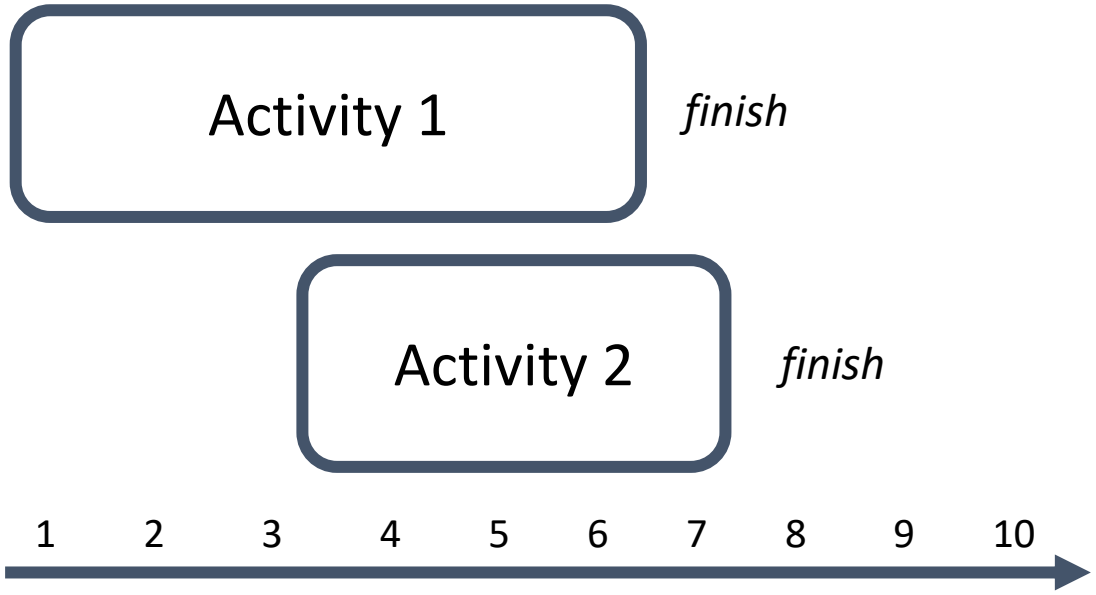
Key Concepts

Schedule

Precedence Diagramming Method

Finish to Start (FS) | Start-to-start (SS) | **Finish-to-Finish (FF)** | Start-to-Finish (SF)

The next activity cannot **finish** until the previous activity has **finished**.



e.g. A document must be finished (Activity 1) before we can finish editing (Activity 2)

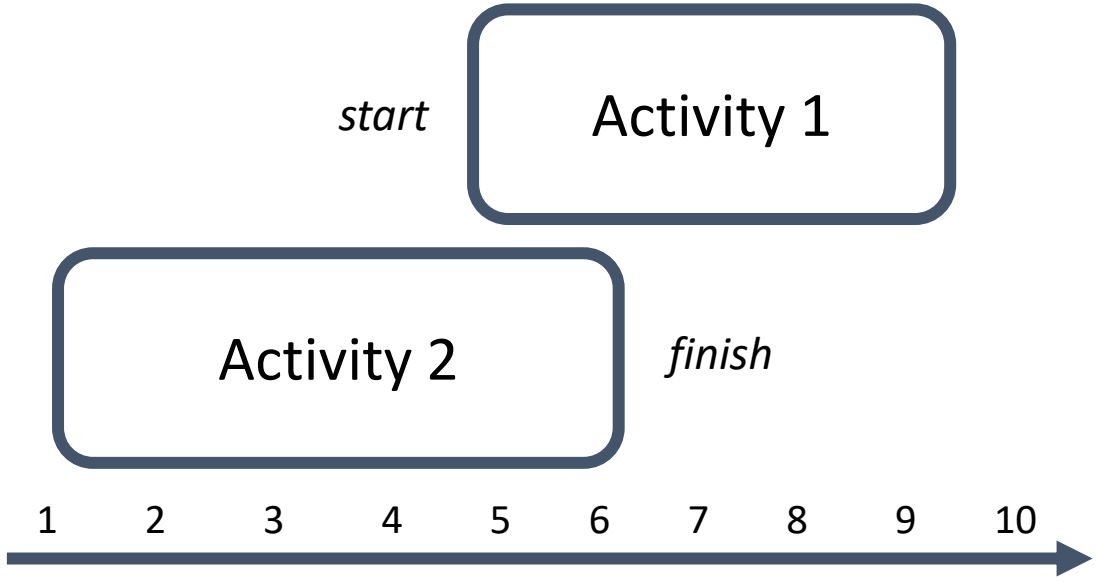
Key Concepts

Schedule

Precedence Diagramming Method

Finish to Start (FS) | Start-to-start (SS) | Finish-to-Finish (FF) | **Start-to-Finish (SF)**

The next activity cannot **finish** until the previous activity has **started**.



e.g. A new accounts payable system has to start (Activity 1) before the old one can be shut down (Activity 2)

Key Concepts

Schedule

Types of Estimating

Throughout your project you will be asked to make estimations of future performance in schedule and cost.

To do so there are four main methods:

Key Concepts

Schedule

Types of Estimating

Parametric Estimating

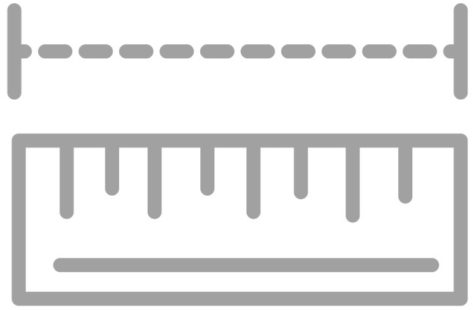
Bottom-Up Estimating

Analogous Estimating

3-point Estimating

Uses a *parameter* to estimate per item.

- $55 per square meter (or foot)
- $1000 per roll of metal
- 20 days delivery to another country
- Two week sprint per feature delivered
- Eight hours to complete a Risk Assessment



Key Concepts

Parametric Estimating

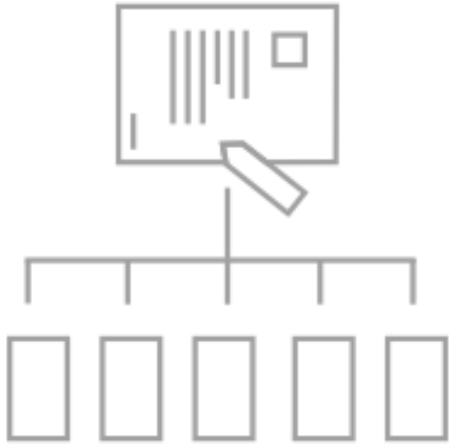
Bottom-Up Estimating

Analogous Estimating

3-point Estimating

Estimating project resources by assigning a value to the lower-level components of the Work Breakdown Structure (Work Package or User Stories)

Then we add these up and collate to an overall budget.



Key Concepts

Schedule

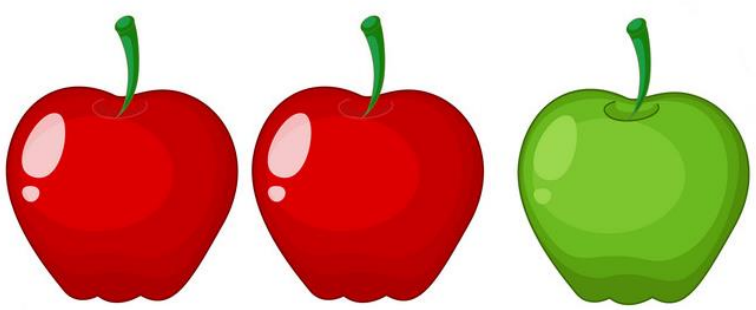
Types of Estimating

Parametric Estimating

Bottom-Up Estimating

Analogous Estimating

3-point Estimating



Estimates using data from a similar activity or project.

Frequently used to estimate project duration when there is a limited amount of detailed information about the project.

Analogous estimating is generally less costly and less time-consuming than other techniques, but it is also less accurate.

Key Concepts

Schedule

Types of Estimating

Parametric Estimating

Bottom-Up Estimating

Analogous Estimating

3-point Estimating

Uses an average of 3 points – the
Optimistic estimate,
Most likely estimate,
Pessimistic estimate

E = (O + M + P) / 3

Estimate = (5 + 9 + 10) / 3 = **8**

Key Concepts

Schedule

Resource Levelling vs Resource Smoothing

Resource optimization is used to adjust the planned use of resources to ensure your schedule is on track.

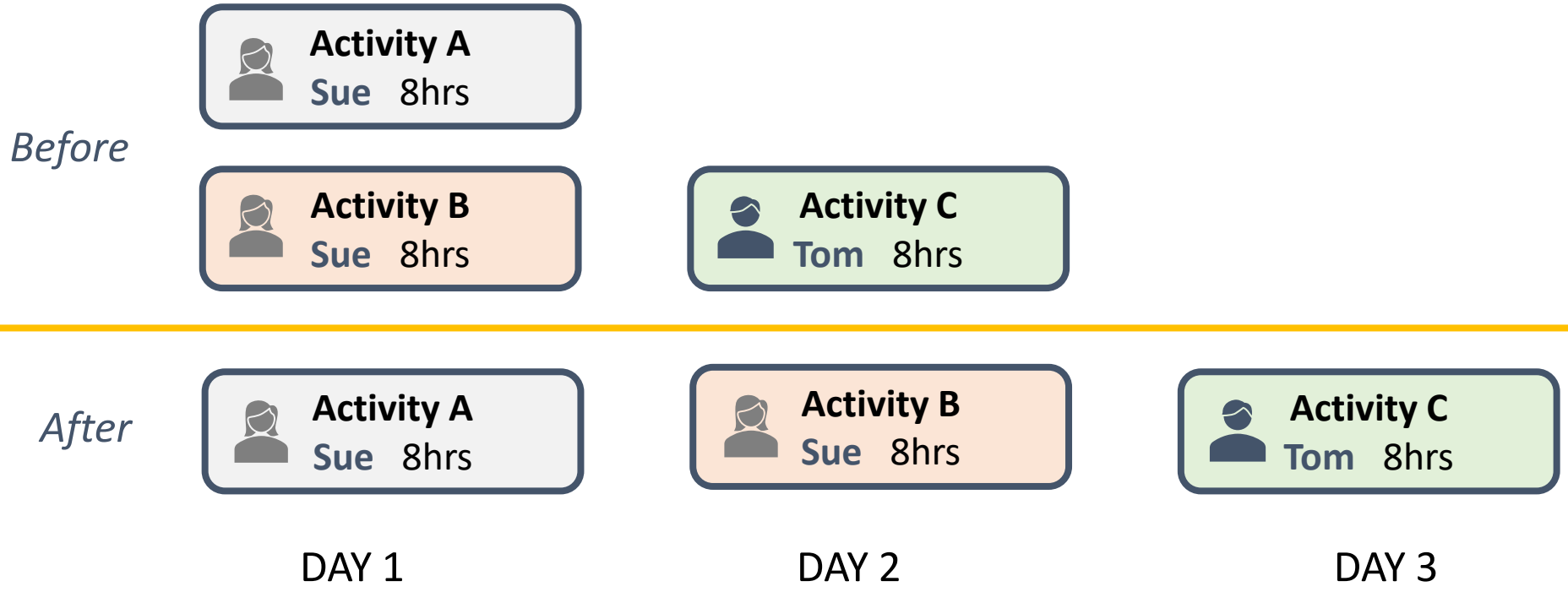
Resource Levelling and Resource Smoothing are two techniques used, where Levelling focuses on moving the resources, and smoothing focuses on moving the activities.

Key Concepts

Resource Levelling

Resource levelling can be used when shared resources are over-allocated, such as when a resource has been assigned to two or more activities during the same time period.

Resource levelling often pushes out the schedule.



Key Concepts

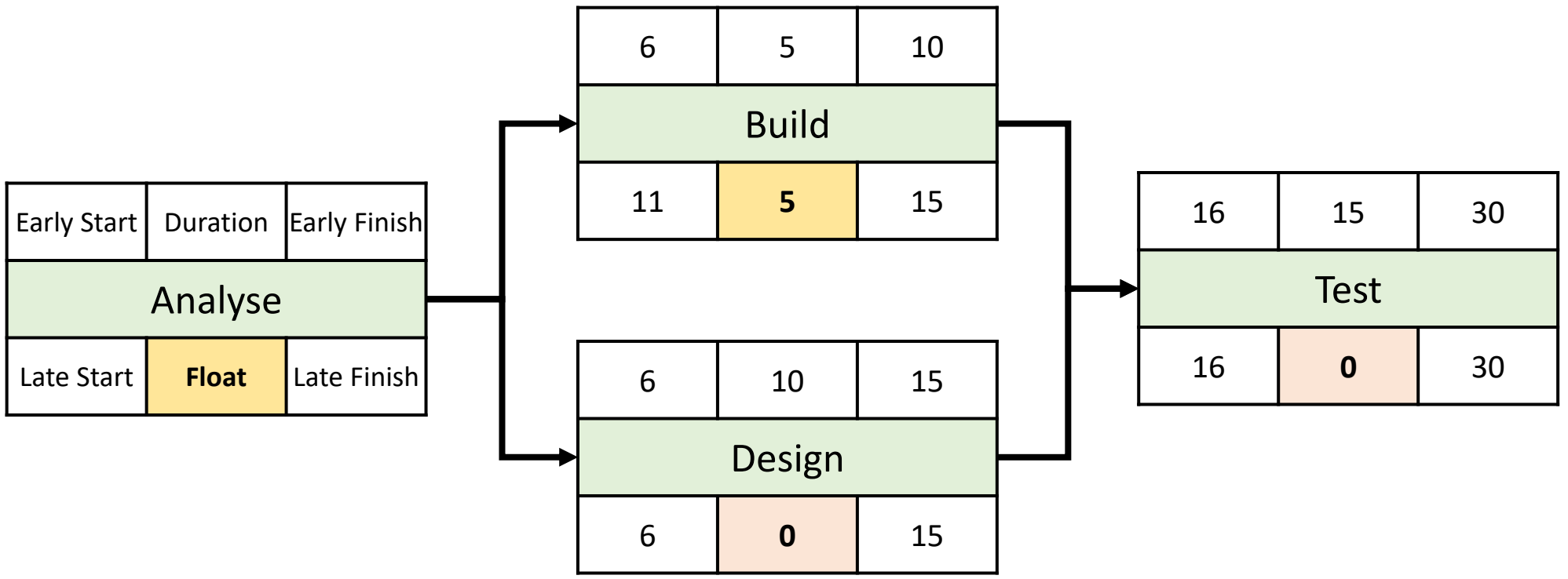
Schedule

Resource Levelling vs Resource Smoothing

Resource **Smoothing**

Resource Smoothing adjusts the *activities* of a schedule model.

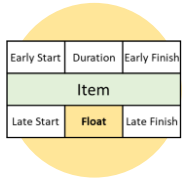
In resource smoothing, activities may only be delayed within their free and total float – the critical path is not changed.



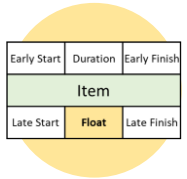
Key Concepts

Schedule

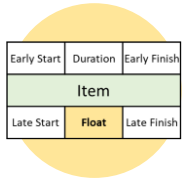
Critical Path Method (Forward & backward pass)



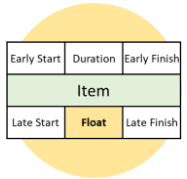
The critical path is the sequence of activities which determine the shortest possible project duration.



The Critical Path Method is used to calculate this, using the amount of free float (for an activity) and total float (total schedule flexibility) on different paths.



Calculating float is done with the Forward and Backward pass.



Float is the difference between “Late Start” and “Early Start”, and the critical path is the path that has zero float.

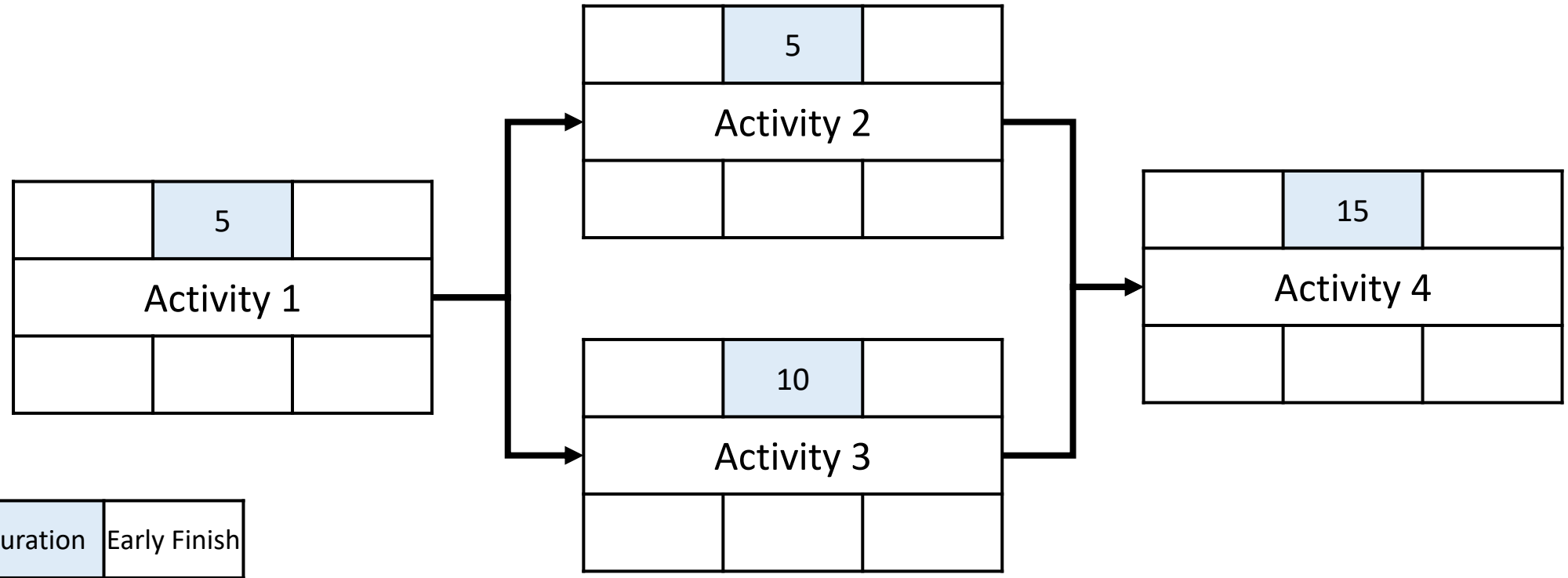
Key Concepts

Schedule

Critical Path Method (Forward & backward pass)

1 2 3 4

Enter Durations



Early Start	Duration	Early Finish
Activity Name		
Late Start	**Float**	Late Finish

Key Concepts

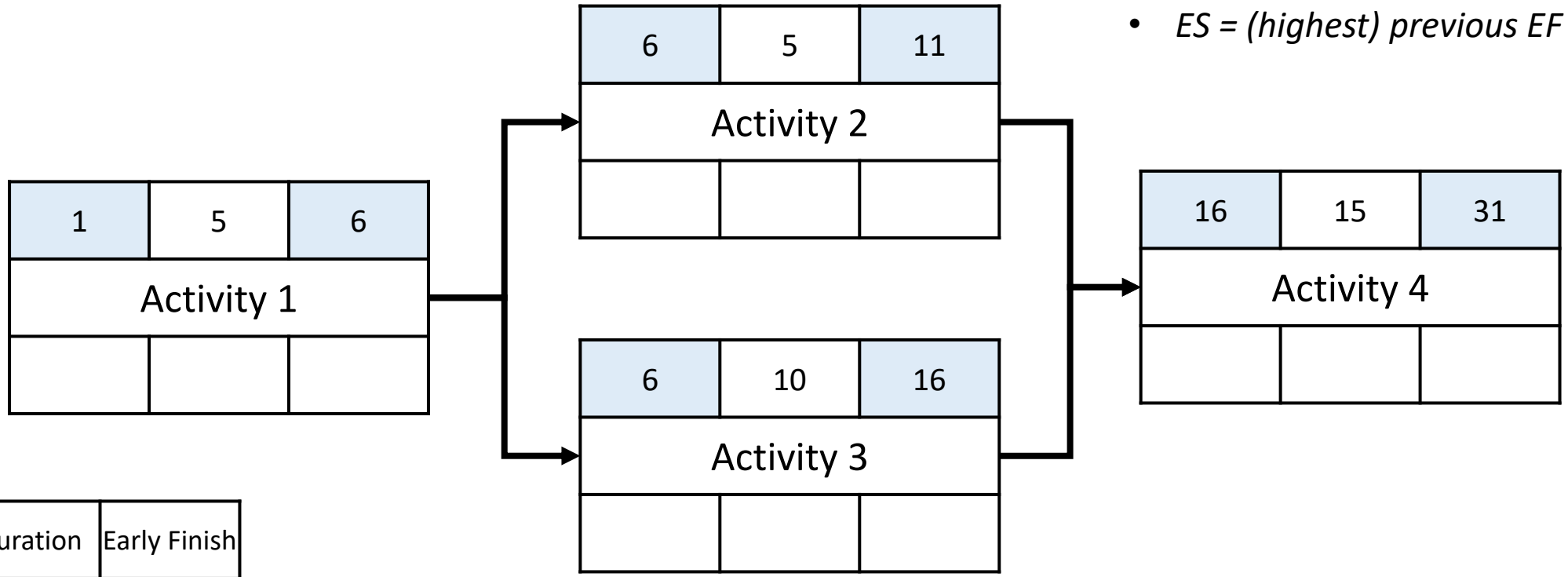
Schedule

Critical Path Method (Forward & backward pass)

1 2 3 4

Perform the Forward Pass

- ***Early start and Early finish times***
- *EF = ES + Duration*
- *ES = (highest) previous EF*



Early Start	Duration	Early Finish
Activity Name		
Late Start	**Float**	Late Finish

Key Concepts

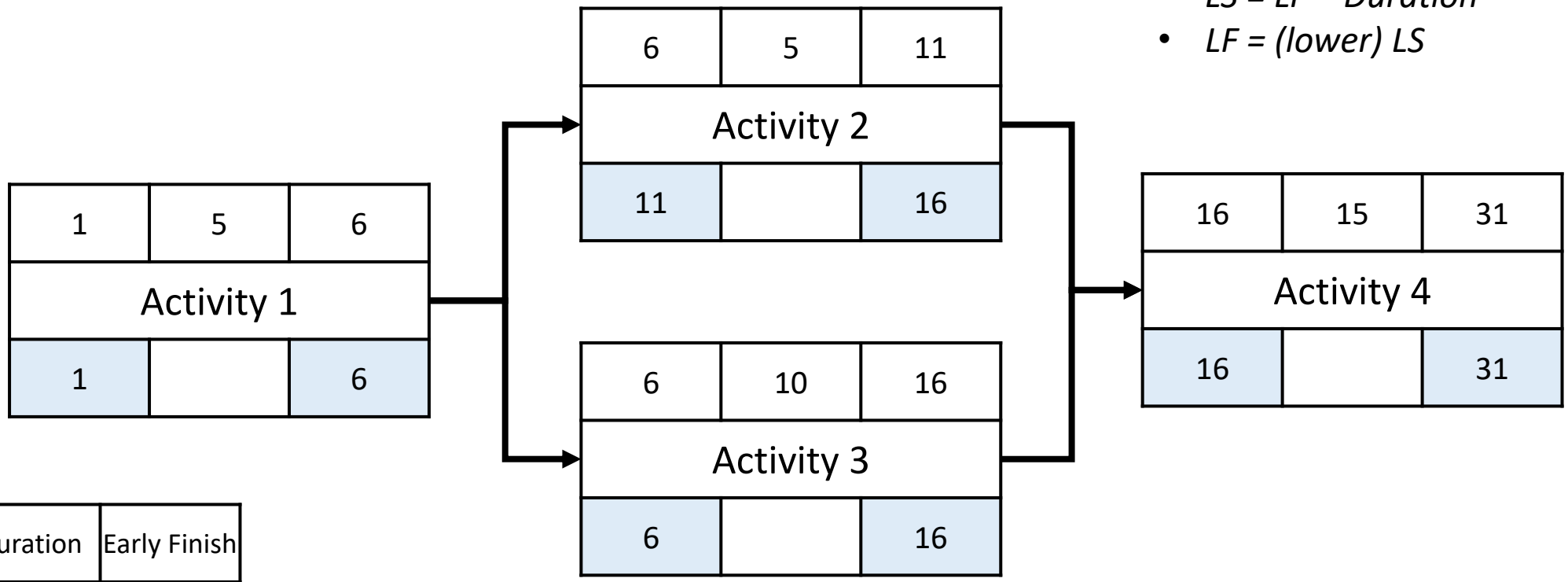
Schedule

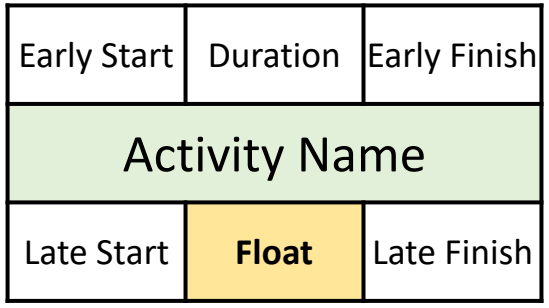
Critical Path Method (Forward & backward pass)

1 2 **3** 4

Perform the Backward Pass

- ***Late start and Late finish times***
- *Enter highest EF in last box*
- *LS = LF – Duration*
- *LF = (lower) LS*





Key Concepts

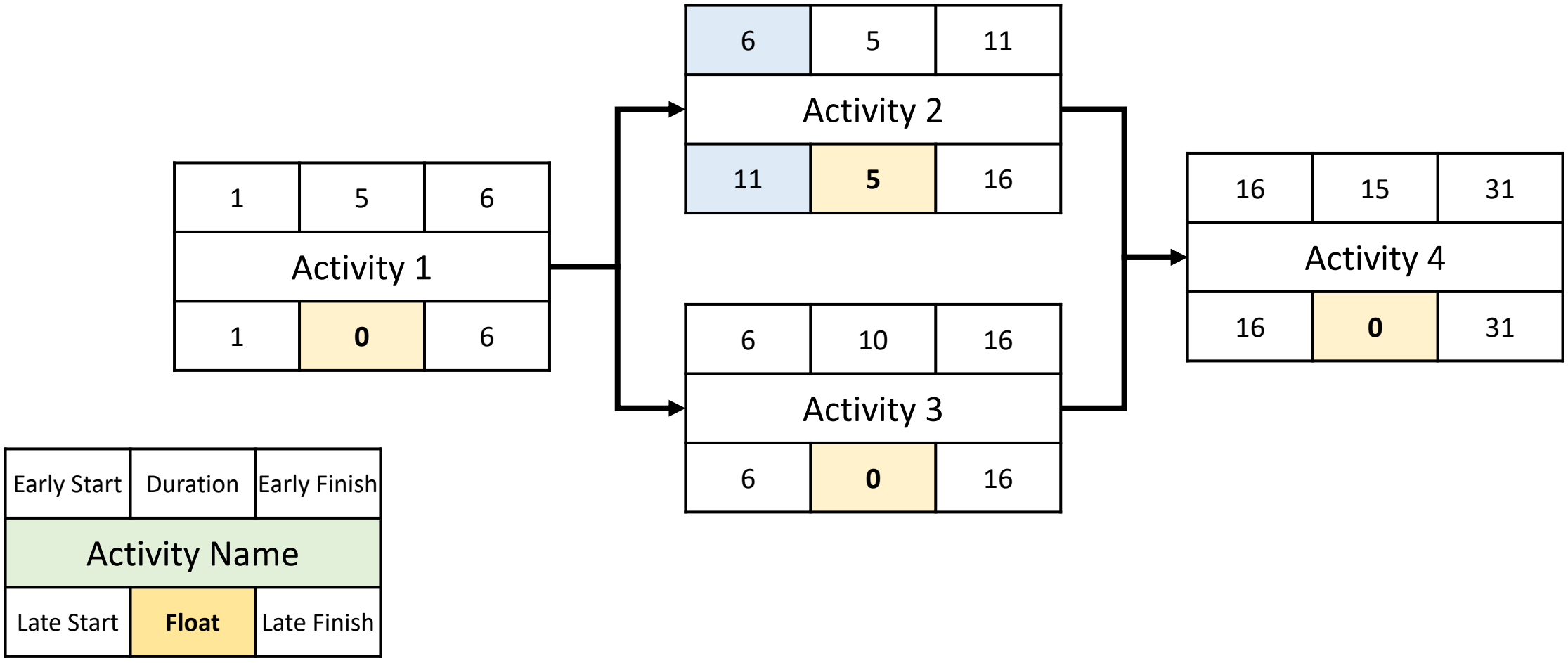
Schedule

Critical Path Method (Forward & backward pass)

1 2 3 **4**

Calculate float

- *Late start – Early Start*



Early Start	Duration	Early Finish
Activity Name		
Late Start	**Float**	Late Finish

Key Concepts

Schedule

Schedule Compression – Fast Tracking and Crashing

Schedule compression is a technique that is used to shorten or accelerate the schedule duration,

without reducing the project scope,

in order to meet schedule constraints, imposed dates, or other schedule objectives.

There are two main Schedule compression techniques.

Schedule Crashing	Shortens the schedule duration by adding resources.
Fast Tracking	Where activities normally done in sequence are performed in parallel.

Key Concepts

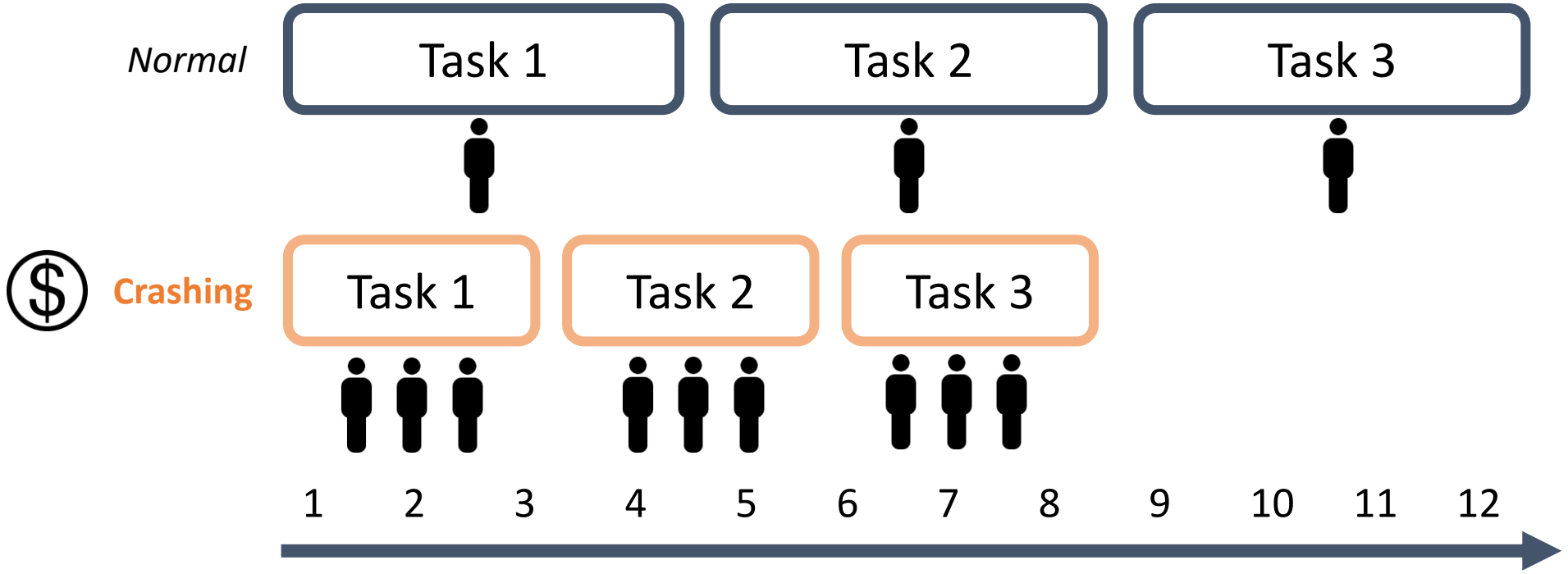
Schedule

Schedule Compression – Fast Tracking and Crashing

Schedule Crashing

Fast Tracking

Approving overtime, adding resources, or paying to expedite delivery of activities on the critical path. Crashing may result in increased cost and/or risk.



Key Concepts

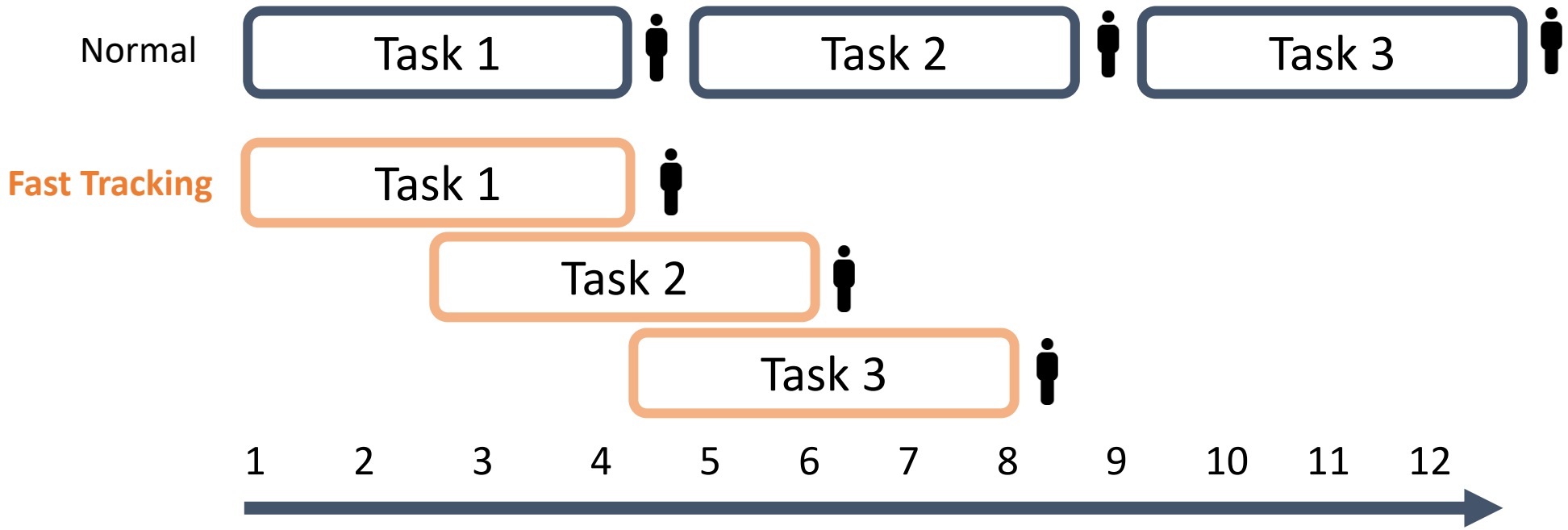
Schedule

Schedule Compression – Fast Tracking and Crashing

Schedule Crashing

Fast Tracking

Fast tracking only works when activities can be overlapped to shorten the project duration on the critical path – using Lead time.



Knowledge Areas	Initiating	Planning	Executing	Monitoring & Controlling	Closing
Project Integration	1. Develop Project Charter	2. Develop Project Management Plan	3. Direct and Manage Project Work 4. Manage Project Knowledge	5. Monitor and Control Project Work 6. Perform Integrated Change Control	7. Close Project or Phase
Stakeholders	1. Identify Stakeholders	2. Plan Stakeholder Engagement	3. Manage Stakeholder Engagement	4. Monitor Stakeholder Engagement	
Scope		1. Plan Scope Management 2. Collect Requirements 3. Define Scope 4. Create WBS		5. Validate Scope 6. Control Scope	
Schedule		1. Plan Schedule Management 2. Define Activities 3. Sequence Activities 4. Estimate Activity Durations 5. Develop Schedule		6. Control Schedule	
Cost		1. Plan Cost Management 2. Estimate Costs 3. Determine Budget		4. Control Costs	
Quality		1. Plan Quality Management	2. Manage Quality	3. Control Quality	
Resources		1. Plan Resource Management 2. Estimate Activity Resources	3. Acquire Resources 4. Develop Team 5. Manage Team	6. Control Resources	
Communications		1. Plan Communications Management	2. Manage Communications	3. Monitor Communications	
Risk Management		1. Plan Risk Management 2. Identify Risks 3. Perform Qualitative Risk Analysis 4. Perform Quantitative Risk Analysis 5. Plan Risk Responses	6. Implement Risk Responses	7. Monitor Risks	
Procurements		1. Plan Procurement Management	2. Conduct Procurements	3. Control Procurements	

Key Concepts

Project Integration

- Business Case
- Benchmarking
- Make or Buy Analysis
- Expert Judgement
- Rates of return – NPV, IRR, Cost/Benefit Ratio
- Benefits management plan
- Baselines and the Configuration Management Plan
- Change Requests and the Change Management Plan
- Project Management Information System (PMIS)
- Issue Log
- Project Management Data and Information
- Status report
- The Lessons Learned Register
- The Final Report

Stakeholder Management

- Organisational Breakdown Structure
- Stakeholder Register
- Power/Interest and Impact/Influence grids versus Salience Model
- Stakeholder Engagement Assessment Matrix
- Facilitation
- Interpersonal and Team Skills

Scope

- The Requirements Management Plan (Business Analysis plan)
- Requirement Traceability Matrix
- Brainstorming
- Voting and the Nominal Group Technique
- Prototyping (Storyboards, wireframes, models and maps)
- Prioritisation (MoSCoW, Cost/Benefit, CD3)
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- Push and Pull Communication

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Procurement

- Types of Contracts: Fixed Price Contracts versus Cost-reimbursable versus Time and Material
- Advertising versus Bidder Conferences
- Claims Administration

Key Concepts

Cost

ROM, Budget and Definitive Estimates

You may need to estimate the cost of a work package, activity, or project as a whole.

The accuracy of a project estimate will increase as the project progresses through the project life cycle.

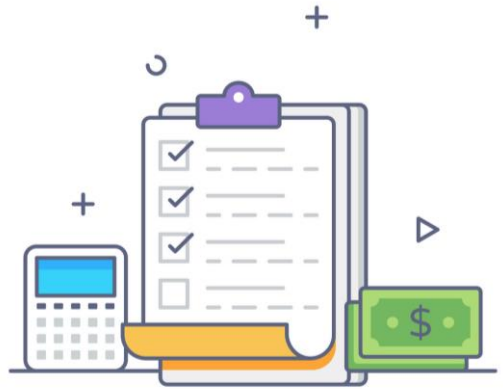
Rough Order of Magnitude	-25% to +75%
Preliminary Estimate	-15% to +50%
Budget Estimate	-10% to +25%
Definitive Estimate	-5% to +10%
Final Estimate	-0%

Top down approaches,
Using Analogous estimating,
Generally performed during the initiation phase and refining with each iteration.

Bottom up estimating,
Generally performed during Planning phase and maintained during the project and takes the most time.

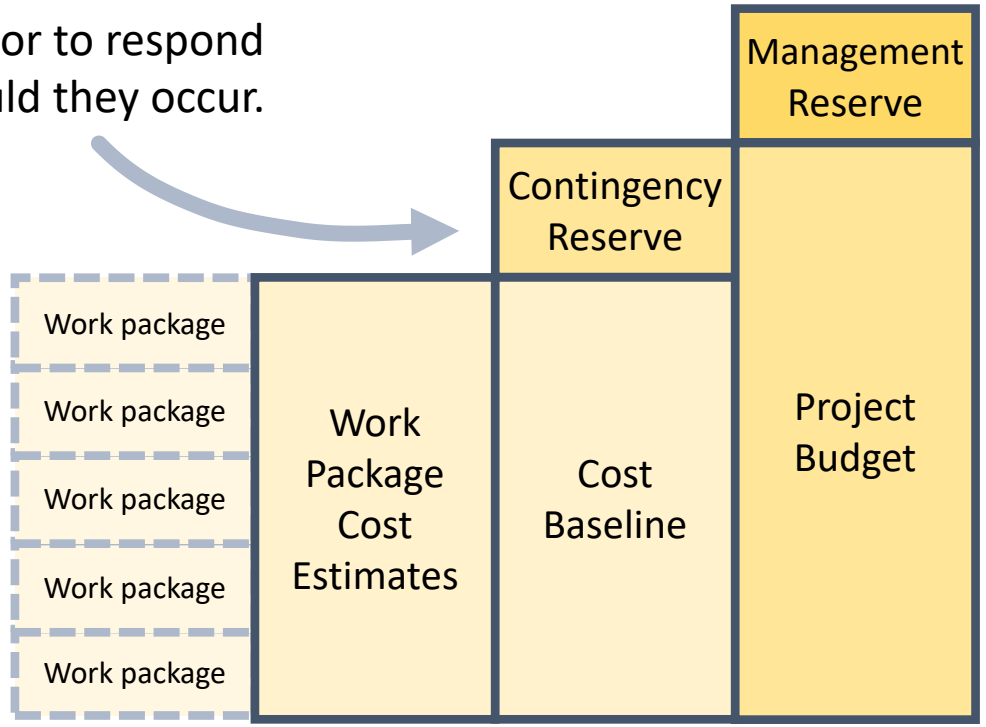
Key Concepts

Management Reserves and Contingency Reserves are used for different reasons and are often confused during the PMP exam.



Budget

Contingency reserves are set aside to implement a risk response or to respond to risk events should they occur.



Management reserves are set aside for unexpected activities related to in-scope work. Depending on the organisation, they may be managed by the project, sponsor, product owner or PMO.

Key Concepts

Cost

Accuracy versus Precision

Accuracy and Precision are different things in the PMBOK Guide, and will be different depending on the scenario.

Accuracy

Precision

Accuracy is a measure of **correctness** – how close it is to the value we want.

The lower the accuracy, the larger the potential range of values when we estimate.

An estimate at the beginning of the project will have lower accuracy than one later in the project, and will have a higher **range** as a result (i.e. +/- 25%).

Precision is a measure of **exactness** – how close the results are to each other.

An estimate of two days is also more precise than “Sometime this week”.

Precision can also be the degree to which estimates are rounded up or down e.g. $995.30 to $1,000).

Key Concepts

Earned Value Analysis compares the performance measurement baseline to the actual schedule and cost performance of the project.

There are three key measures for each Work Package:

Planned Value (PV)

At a given point in time, **PV** shows us the work that should have been completed by that time.

Budget At Completion (BAC) is the total PV at the end of the project.

Earned Value (EV)

EV is what we have actually completed at a given point in time.

Actual Cost (AC)

AC is what we have actually spent at that point in time.

Key Concepts

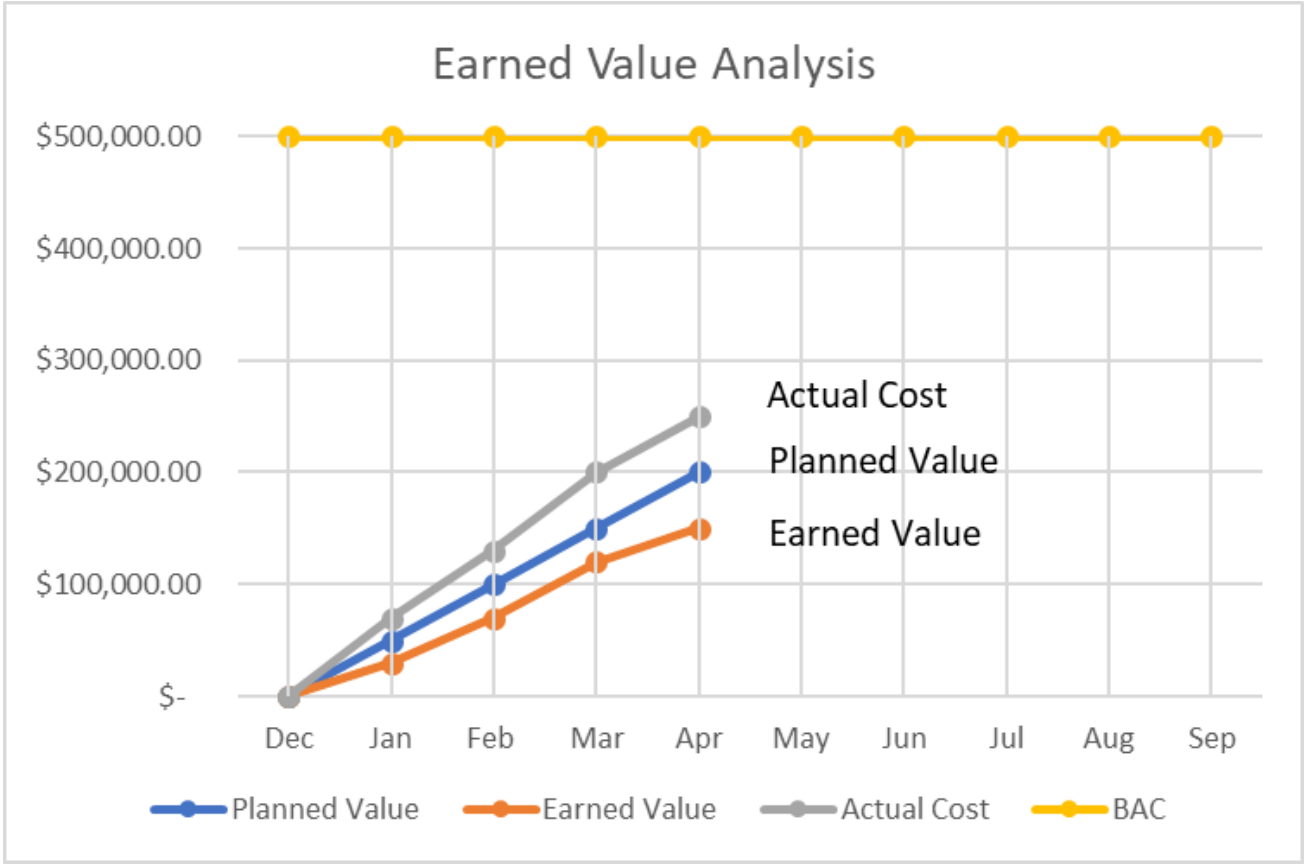
Cost

Earned Value Analysis (EVA)

EVA Example

In this example our **AC** is higher than our **PV**,
We have spent more than we planned (over budget),

Our **EV** is lower than our **PV**.
We have delivered less than we had planned (behind schedule).



Key Concepts

Variance analysis is a technique for finding the difference between the baseline and actual performance. These rarely appear on the exam, however here are the most useful analysis techniques:

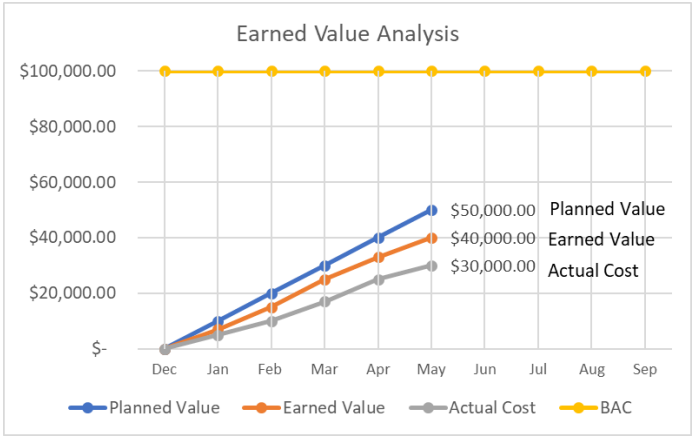
- Cost variance
- Cost Performance Index
- Schedule variance
- Schedule Performance Index
- Estimate at Completion

EV – AC

When our Actual Cost is more than our Earned value, we are over budget.

A negative Cost Variance means we are over budget.

$40,000 – $30,000 = $10,000 (positive: we are under budget)



Key Concepts

Cost

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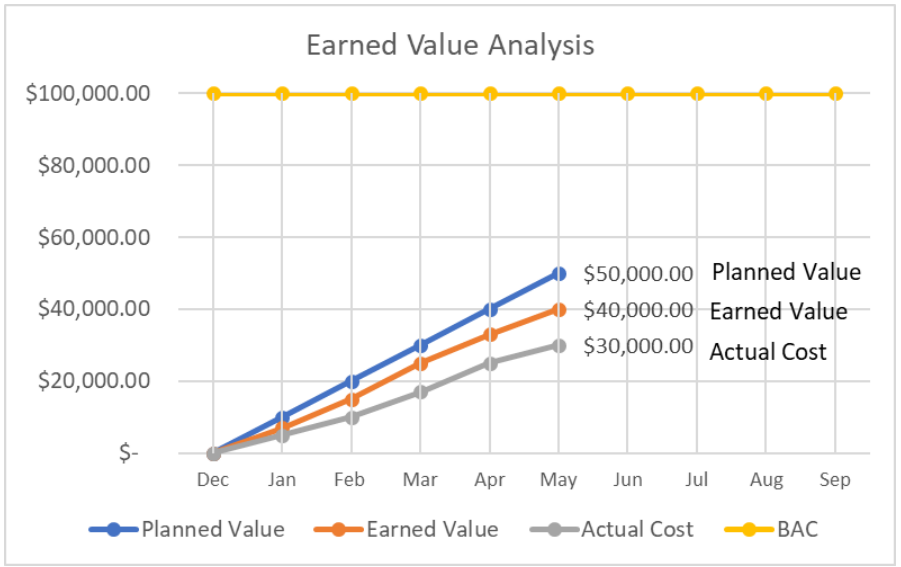
- Estimate at Completion

EV / AC

When our CPI is under 1.0 we have delivered less and we're over budget.
When our CPI is greater than 1.0 we have delivered more and we're under budget.

$40,000 / $30,000 = 1.33 (under budget)



Key Concepts

Cost

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- Cost variance
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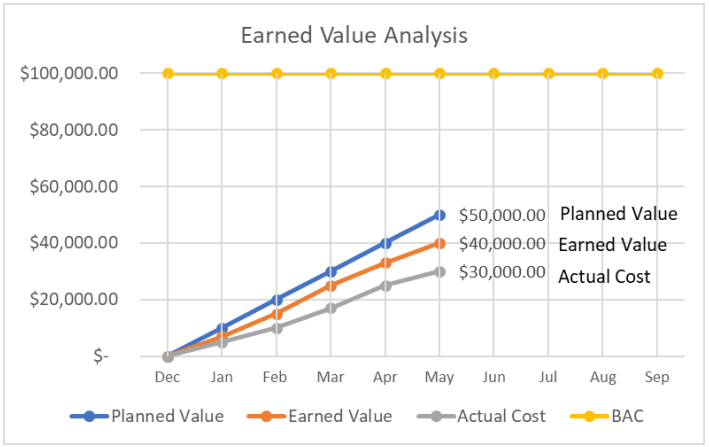
- Estimate at Completion

EV – PV

When our Planned Value is more than our Earned value, we are behind schedule.

A negative Schedule Variance means we are behind schedule.

$40,000 – $50,000 = -$10,000 (negative: we are behind schedule)



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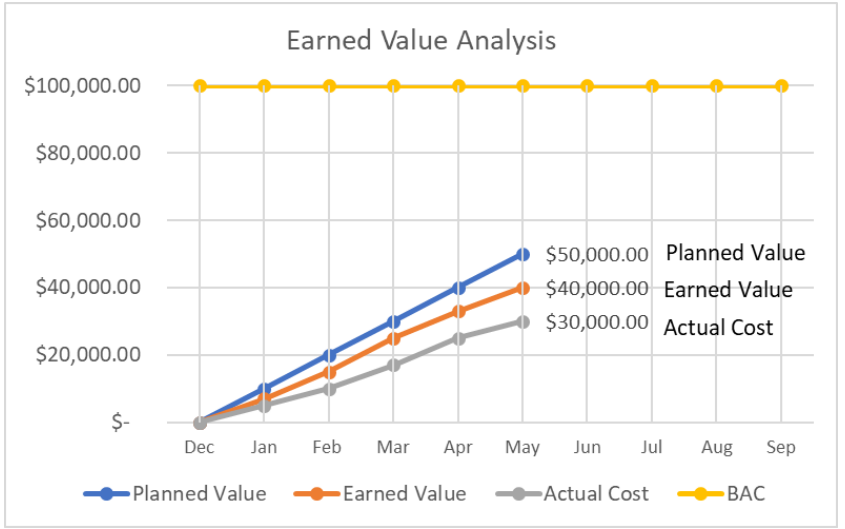

EV / PV

When our SPI is under 1.0 we have delivered less and we're behind schedule.
When our SPI is greater than 1.0 we have delivered more and ahead of schedule.

$40,000 / $50,000 = 0.80 (behind schedule)

Key Concepts

Variance analysis is a technique for finding the difference between the baseline and actual performance. These rarely appear on the exam, however here are the most useful analysis techniques:

- Cost variance
- Cost Performance Index
- Schedule variance
- Schedule Performance Index
- Estimate at Completion

Replaces the Budget at Completion as the project evolves. There are multiple ways to calculate this, but the most common is:

BAC + AC – EV

$100,000 + $30,000 - $40,000 = **$90,000**

or if Cost Performance Index is expected to be the same:

BAC / (EV / AC)

$100,000 / ($40,000 / $30,000) = **$75,187**

1.33

Knowledge Areas	Initiating	Planning	Executing	Monitoring & Controlling	Closing
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Key Concepts

Project Integration

- Business Case
- Benchmarking
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- Expert Judgement
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- Status report
- The Lessons Learned Register
- The Final Report

Stakeholder Management

- Organisational Breakdown Structure
- Stakeholder Register
- Power/Interest and Impact/Influence grids versus Salience Model
- Stakeholder Engagement Assessment Matrix
- Facilitation
- Interpersonal and Team Skills

Scope

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- Requirement Traceability Matrix
- Brainstorming
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- ROM, Budget and Definitive Estimates
- Contingency and Management Reserves
- Accuracy versus Precision
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Quality

- The Cost of Quality
- Cause and Effect Diagrams (Ishikawa)
- Histograms & Pareto Analysis
- Audits
- Inspections & Reviews
- Checklists vs Check sheets

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Key Concepts

Quality

The Cost of Quality

The Cost of Quality is the total cost required to ensure products meet the standards defined by the project.

They involve:

- Prevention Costs
- Appraisal Costs
- Internal Failure Costs
- External Failure Costs

Key Concepts

Quality

The Cost of Quality

Prevention Costs

Appraisal Costs

Internal Failure Costs

External Failure Costs

Prevention Costs are the costs to **prevent** future defects or errors in the product.

It might involve training for staff, creating models to review, updating the process or equipment, refactoring code to make it easier in the future and allowing time to do the work properly the first time.

Key Concepts

Quality

The Cost of Quality

Prevention Costs

Appraisal Costs

Internal Failure Costs

External Failure Costs

Appraisal Costs are the costs to **find** defects or errors in the product.

It might involve Testing, Audits, Inspections, and Sprint Reviews.

Key Concepts

Quality

The Cost of Quality

Prevention Costs

Appraisal Costs

Internal Failure Costs

External Failure Costs

Failure Costs are when an error or “non-conformance” **actually happens**.

Internal failure is when the product fails internally, often during testing or review.

Key Concepts

Quality

The Cost of Quality

Prevention Costs

Appraisal Costs

Internal Failure Costs

External Failure Costs

External failure is when the error or non-conformance in the product reaches the end-customer – they are external to the project or organisation.

Key Concepts

Quality

Cause and Effect Diagrams (Ishikawa)

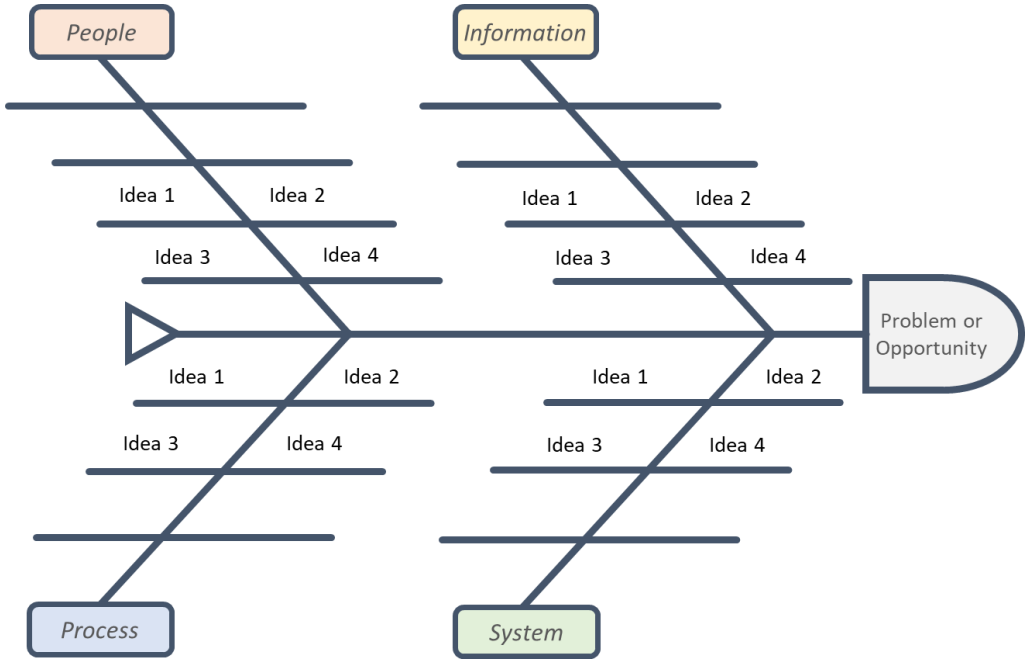
The Cause and Effect diagram breaks down the causes of an identified problem into specific buckets, helping to identify the main or root cause of the problem.

They are also known as fishbone diagrams or Ishikawa diagrams (after Kaoru Ishikawa from the University of Tokyo).

The most common buckets are:

- People
- Information
- Process
- System

- Man
- Method
- Material
- Machine



Key Concepts

Quality

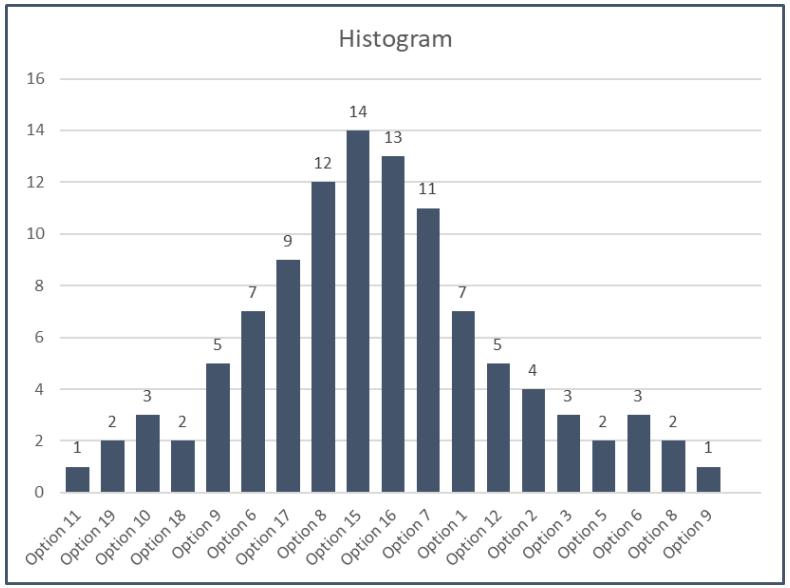
Histograms & Pareto Analysis

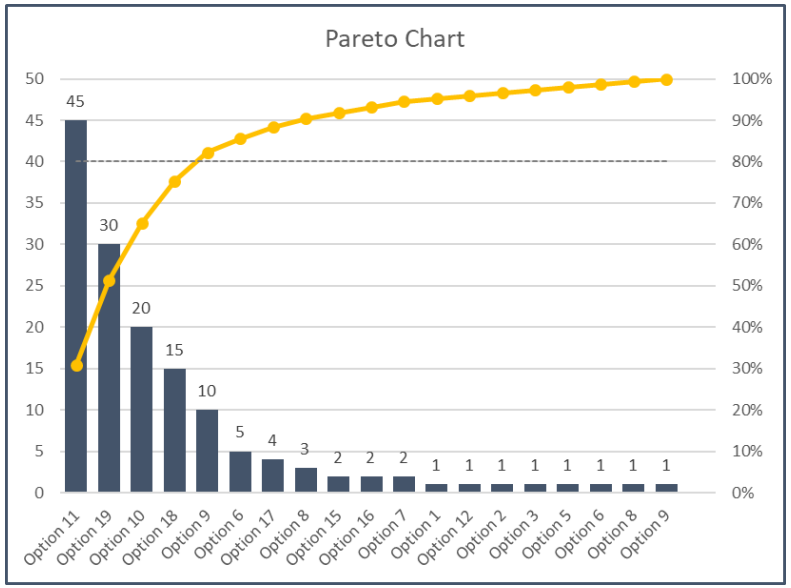
Histograms are a great way to represent a count of something – like defects, sales calls, or returns.

They look like a bar chart.

A Pareto Chart takes it a step further by sorting the items from most occurring to least occurring, and showing a cumulative percentage of the items.

The idea is that 20% of the items will account for 80% of the results, and you can focus on those select few.



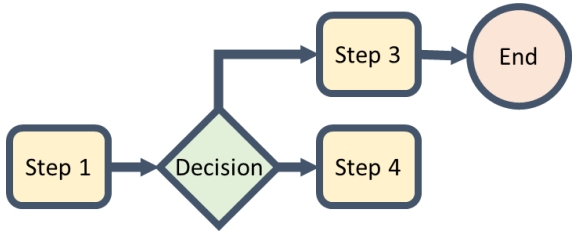


Key Concepts

During the exam and in your career you will need to know about inspections and audits, and the two are slightly different:

An Inspection examines a product – the outcome or result or a project or piece of work, to ensure it meets documented standards.

It may be a sprint review, peer reviews or walkthroughs.



An audit checks that the project processes and activities comply with organizational policies.

It is usually conducted by a team external to the project, such as the organization's internal audit department, PMO, or external auditor.

It can also help identify or advise on best practices.

Key Concepts

Quality

Checklists vs Check sheets

You may also come across Checklists and Check sheets, and the two are not the same.

Checklists

A checklist is a list of items, actions or points to be considered, often used as a process reminder.

Check sheets

Check sheets are known as tally sheets, and are used to gather data such as the number of times a defect occurs.

Defects	Day 1	Day 2	Day 3	Day 4	Total
Scratch	1	2	2	2	**7**
Bent	3	3	1	2	**9**
Missing item	5	0	2	1	**8**
Wrong colour	2	0	1	3	**6**
Label error	1	2	1	2	**6**

Key Concepts

Quality

Grade vs Quality

Product quality can be ranked by both Grade and Quality.

It may not be a problem if a low grade product has high quality.

But it will be a problem if a high grade product has low quality.

Grade

Grade in quality means a product with more, better and more desirable features.

An iPhone has a higher grade than a wind-up toy.

Quality

Quality is the degree to which the product meet requirements.

A high quality item will meet most or all or its acceptance criteria.

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Key Concepts

Resources

Responsibility Assignment Matrix and RACIs

A Responsibility Assignment Matrix (RAM) shows the connections between work packages or activities, and project team members.

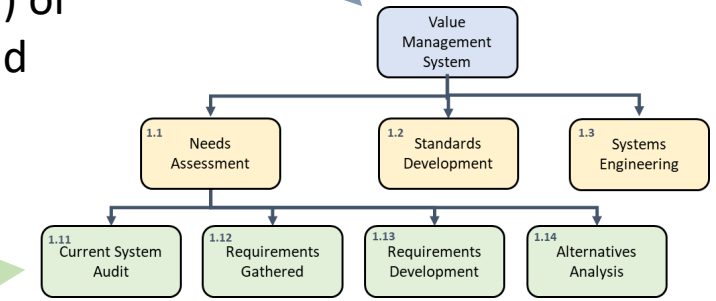
The most common RAM is a RACI:

R	Responsible - who performs the task
A	Accountable - who signs off
C	Consulted - who provides expert judgement
I	Informed - who is kept informed

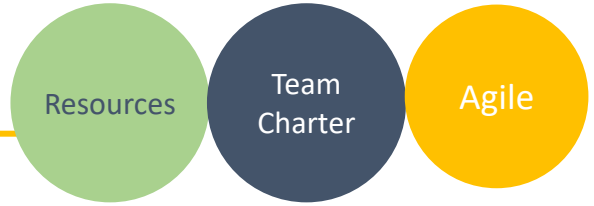
NAME	Create Charter	Collect Requirements	Submit Change Request	Develop Test Plan
Ann	A	I	I	A
Ben	R	A	A	C
Caroline	I	R	R	I
Dean	I	C	R	I
Edward	I	C	C	R

It provides clarity and reduces confusion on who should do the work.

It can be done at a high level (organisation) or low level (team and team members)



Key Concepts



The team charter is a document that establishes the team values, agreements, and operating guidelines for the team.

The team charter works best when the team develops it, or at least has an opportunity to contribute to it.

Agile Team Charter	
GENERAL INFORMATION	CHARTER DATE: 1 March 2023
BACKGROUND	Add context to where the team finds itself at a given point in time. Include a brief introduction of how the team started and where is it now.
TEAM ROLES	List the main responsibilities of each team contributor to create visibility around "who owns what" and avoid confusion that could slow the team down.
STAKEHOLDERS WE WILL WORK WITH	Agile is all about being customer-centric. An Agile team charter is an appropriate place to define who your team's true customers are on an internal as well as an external (end customer) level.
TEAM VALUES	Gather the team and decide which are the top 3 (or so) values you share and want to consistently embody in the ways you work together.
TEAM COMMUNICATION	Agree on team communication methods. Messaging, Email, Meetings, Face to Face etc.
DECISION PROCESS	Agree on how are decisions made, team collaboration, approvals or sign off points. Who is responsible and accountable?
CONFLICT PROCESS	How are conflict and blockers resolved in the team?
TEAM CEREMONIES	
SPRINT PLANNING MEETING	Every second Tuesday before the next sprint begins for 30 mins
STAND UP	Daily for 15 mins. Meeting topics include what we did yesterday, what we will do today and any blockers.
SPRINT REVIEW	Sprint Review (Customer Demonstration of usable feature) - 30 mins every other Monday
RETROSPECTIVES	Held at the end of every Iteration for 30 minutes. Actions to be taken (with owners) for challenges or improvements.
DEFINITION OF READY	Team members will pull work at the beginning of the iteration, then pull new work when existing cards are complete.
DEFINITION OF DONE	When a user story has been developed, tested and passed, or when a story is blocked

It can include things like:

- The team vision and mission
- Including what "done" looks like
- Team roles and responsibilities
- Stakeholders we work with
- Team values
- Team decision process
- Team conflict process
- Team ceremonies

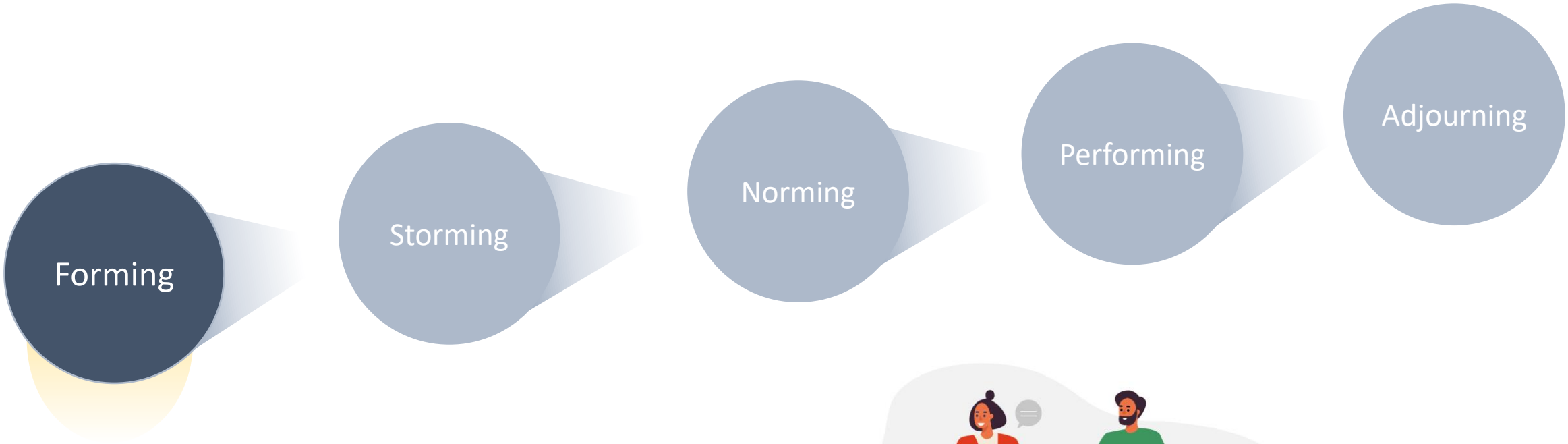
Review and update it periodically with the team to ensure a continued understanding.

Key Concepts

Resources

Tuckman's Ladder

Tuckman's Ladder is a model that focuses on the way in which a team works, from the initial formation of the team through to the completion of the project.



Team members meet and learn about their Roles & Responsibilities, starting out more **independent** & **individual**.

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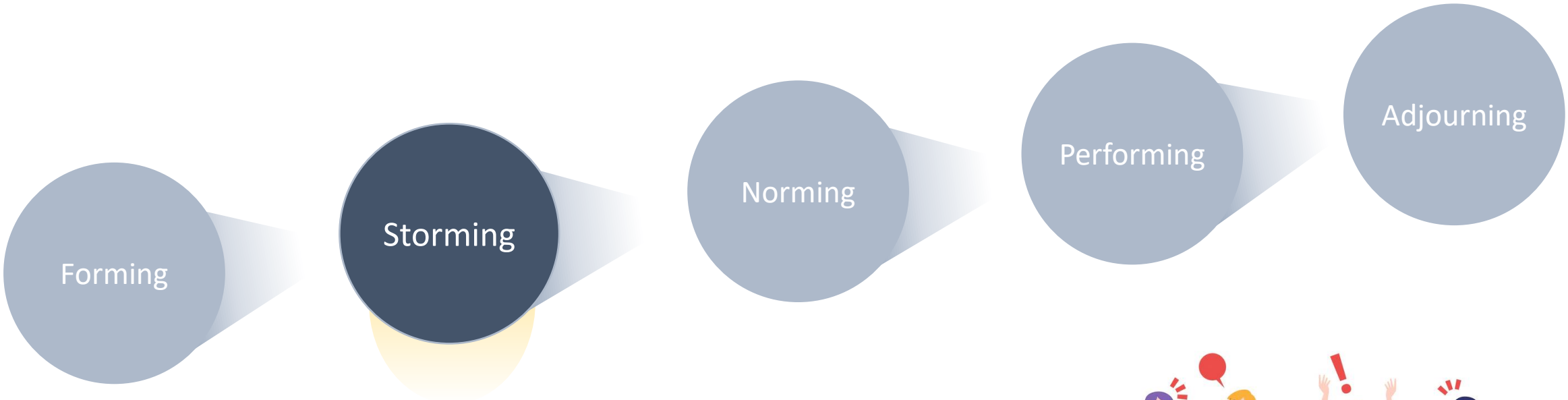

The team works together and discovers each other's working styles.

Conflict may arise. Disagreements and personality clashes must be resolved before the team can progress.

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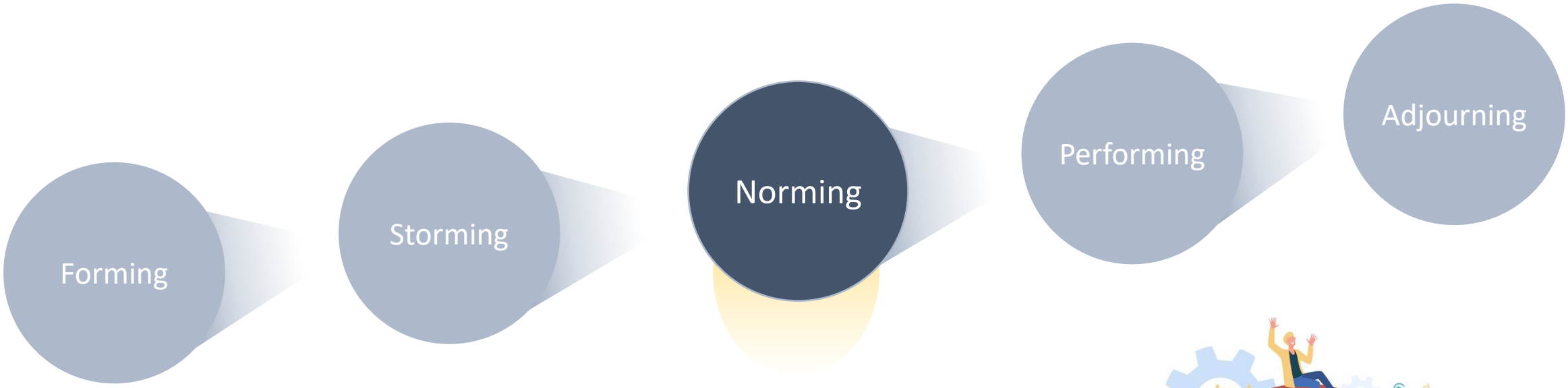

Resolved conflicts have built greater intimacy and co-operation.

The team share a common goal and all team members take responsibility and have the ambition to achieve it.

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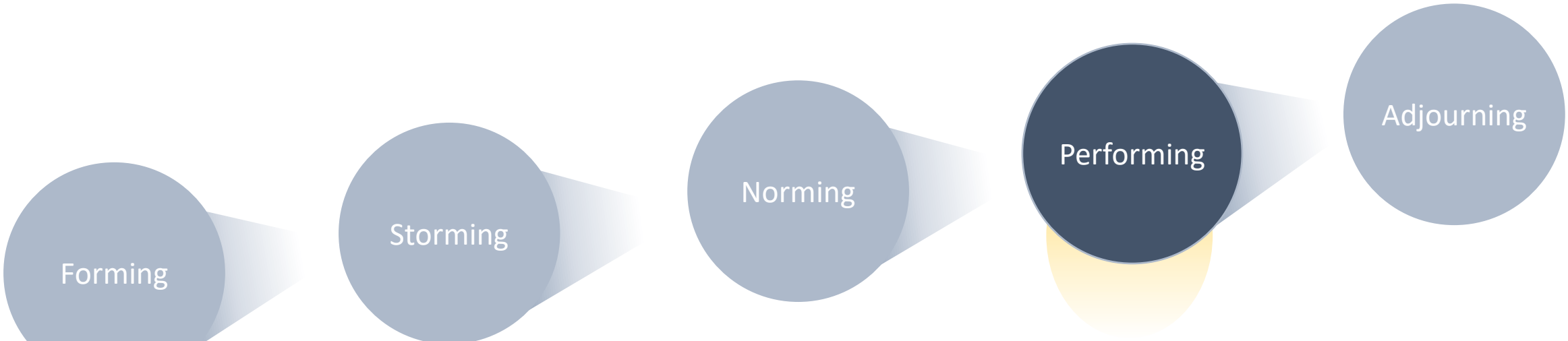

With a regular rhythm of group norms and roles established, team members focus on achieving their goal, and reach **higher levels of success.**

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Resources

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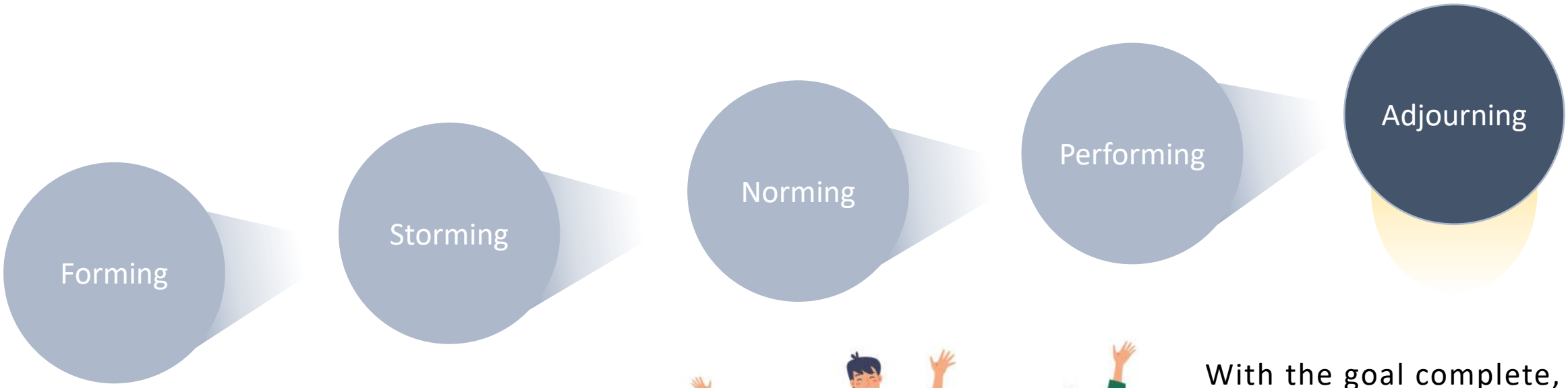


With the goal complete, the team wraps up and moves on to other projects.

Key Concepts

Resources

Meeting Management

Face-to-face or virtual meetings are used for decision making; responding to stakeholder requests; and having discussions with suppliers, vendors, and other project stakeholders.

Meeting management is taking steps to ensure meetings meet their intended objectives effectively and efficiently.

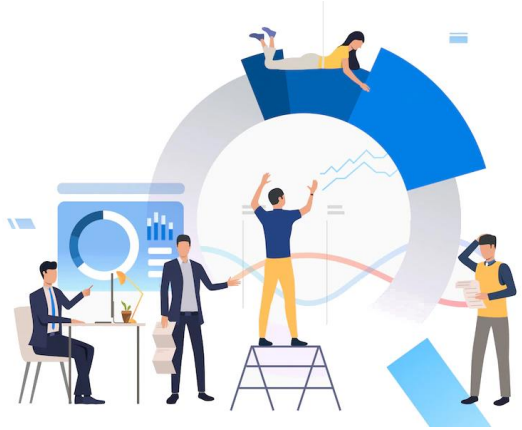
- Prepare and distribute the agenda stating the objectives of the meeting
- Ensure that the meetings start and finish at the published time
- Ensure the appropriate participants are invited and attend
- Ensure the meeting stays on topic
- Manage expectations, issues, and conflicts during the meeting
- Ensure everyone has a voice (not just the loudest or highest paid)
- Record all actions and those with responsibility for completing them

Key Concepts

Resources

Conflict Management

Conflict is inevitable in a project environment, with new or inexperienced team members, different work styles, competing for scare resources and different scheduling priorities.



A project's success depends on the Project Manager's ability to manage conflict.

Conflict should be addressed early and usually in private, using a direct, collaborative approach.

If disruptive conflict continues, formal procedures may be used, including disciplinary actions.

Key Concepts

Resources

Conflict Management

Factors that influence conflict resolution methods include:

- The importance and intensity of the conflict,
- Time pressure for resolving the conflict,
- Relative power of the people involved in the conflict,
- Importance of maintaining a good relationship, and;
- Motivation to resolve conflict on a long-term or short-term basis.

Key Concepts

Resources

Conflict Management

There are five general techniques for resolving conflict. Each has its place.

- **Withdraw / Avoid**
- Smooth / Accommodate
- Compromise / Reconcile
- Force / Direct
- Collaborate / Problem solve

Retreating from a conflict situation (actual or potential)

Postponing the issue to be better prepared, or to be resolved by others.

Key Concepts

Resources

Conflict Management

There are five general techniques for resolving conflict. Each has its place.

- Withdraw / Avoid
- Smooth / Accommodate
- Compromise / Reconcile
- Force / Direct
- Collaborate / Problem solve

Emphasizing areas of agreement rather than areas of difference;

Conceding your position to the needs of others to maintain harmony and relationships.

This can result in a lose / win situation.

Key Concepts

Resources

Conflict Management

There are five general techniques for resolving conflict. Each has its place.

- Withdraw / Avoid
- Smooth / Accommodate
- **Compromise / Reconcile**
- Force / Direct
- Collaborate / Problem solve

Searching for solutions that bring satisfaction to all parties in order to resolve the conflict.

This approach occasionally results in a lose-lose situation.

Key Concepts

Resources

Conflict Management

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- Withdraw / Avoid
- Smooth / Accommodate
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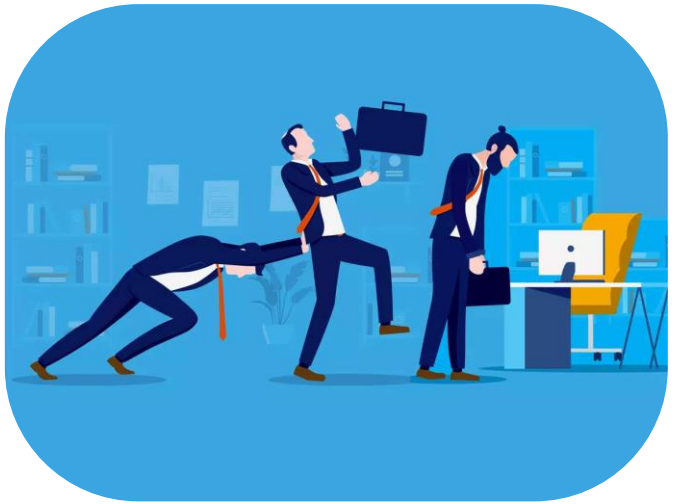
- **Force / Direct**
- Collaborate / Problem solve



Pushing your viewpoint at the expense of others;

Usually enforced through a power position to resolve an emergency.

This approach often results to a win-lose situation.

Key Concepts

Resources

Conflict Management

There are five general techniques for resolving conflict. Each has its place.

- Withdraw / Avoid
- Smooth / Accommodate
- Compromise / Reconcile
- Force / Direct
- **Collaborate / Problem solve**

Incorporating multiple viewpoints and insights from differing perspectives;

This requires a cooperative attitude and open dialogue that typically leads to consensus and commitment.

This approach can result in a win-win situation.

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Procurements		1. Plan Procurement Management	2. Conduct Procurements	3. Control Procurements	

Key Concepts

Project Integration

- Business Case
- Benchmarking
- Make or Buy Analysis
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- Accuracy versus Precision
- Earned Value Analysis (EVA)

Quality

- The Cost of Quality
- Cause and Effect Diagrams (Ishikawa)
- Histograms & Pareto Analysis
- Audits
- Inspections & Reviews
- Checklists vs Check sheets

Resources

- Responsibility Assignment Matrix and RACIs
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- Tuckman's Ladder
- Meeting Management
- Conflict Management

Communication

- Communication Models
- Communication (Skills, Methods)
- Push and Pull Communication

Risk

- Risk Categories
- Risk Register
- SWOT Analysis
- Probability and Impact Matrix
- Decision Tree Analysis
- Quantitative tools: Monte Carlo, Sensitivity/Tornado charts
- Strategies for Threats versus Strategies for Opportunities
- Reserve Analysis and Burndown Charts

Procurement

- Types of Contracts: Fixed Price Contracts versus Cost-reimbursable versus Time and Material
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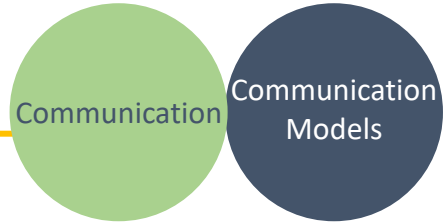
Key Concepts



Communication models represent the communication process. There are two main models to be aware of: ranging from a basic “Sender – Receiver” model to a more interactive model of communication.

Basic Sender Receiver Model

Interactive Communication Model

Key Concepts

Communication | Communication Models

Interactive Communication Model

Basic Sender - Receiver Model

The sequence of steps in a basic communication model is:

Encode → Transmit message → Decode

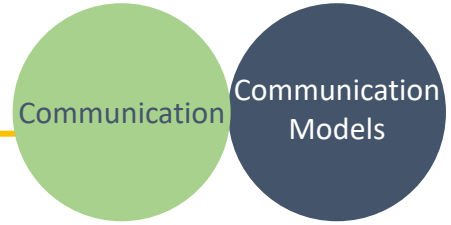
The message is “coded” into symbols, text or sound to transmit to the receiver.

The message is sent via a communication channel.

Noise and other factors may contribute to loss of information.

The message is translated by the receiver back into a form useful to them.

Key Concepts



The additional steps in an interactive communication model are:

Basic Sender - Receiver Model

Interactive Communication Model

Encode

Transmit message

Decode

Translated through: Personal biases, assumptions, experiences.

If the sender perceives that the feedback matches the original message, the communication has been successful.

(see also: Assertive Enquiry)

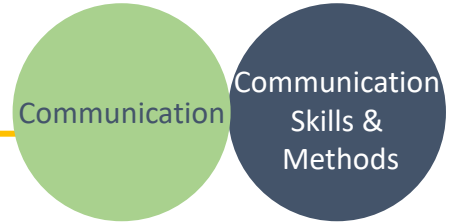
Feedback / response

The receiver encodes their understanding into a message and transmits this to the original sender.

Acknowledge

The receiver may signal receipt of the message (this doesn't mean they agree, just that they have received).

Key Concepts



The project's communications are supported by efforts to prevent misunderstandings and miscommunication and by careful selection of the methods, messengers, and messages:

- Listening actively
- Feedback
- Non Verbal
- Presentations
- Awareness of cultural or personal differences
- Managing expectations
- Enhancement of skills

Possible communications artifacts and methods include but are not limited to:

- Notice boards,
- Newsletters/in-house magazines/e-magazines,
- Letters to staff/volunteers,
- Press releases,
- Annual reports,
- Emails and intranets,
- Web portals and other information repositories (for pull communication)
- Phone conversations,
- Presentations,
- Team briefings/group meetings,
- Focus groups,
- Face-to-face formal or informal meetings between various stakeholders,
- Consultation groups or staff forums, and
- Social computing technology and media.

Key Concepts

Communication

Communication Skills & Methods

Awareness of cultural or personal differences

Managing expectations

Enhancement of skills

Feedback

Non Verbal

Presentations

Listening actively

Stay engaged with the speaker, show your interest (often by looking at them and nodding, but cultures can be different) summarise conversations or repeat their message back to check your understanding.

Key Concepts

Communication

Communication Skills & Methods

Listening actively

Managing expectations

Enhancement of skills

Feedback

Non Verbal

Presentations

Awareness of cultural or personal differences

Develop your team's awareness of cultural and personal differences – in their habits, what is important to them, their celebrations, and ways of working.

Key Concepts

Communication

Communication Skills & Methods

Listening actively

Awareness of cultural or personal differences

Enhancement of skills

Feedback

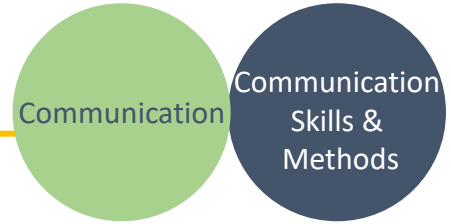
Non Verbal

Presentations

Managing expectations

Identifying and setting stakeholder expectations, and using negotiation to manage them. This reduces conflicting expectations among your stakeholders.

Key Concepts



Listening actively

Awareness of cultural or personal differences

Managing expectations

Feedback

Non Verbal

Presentations

Enhancement of skills

Enhancing your skills in the following activities:

- Persuading a person, team or organisation to perform an action
- Motivating people an providing encouragement or reassurance
- Coaching to improve performance and achieve the desired results
- Negotiating to achieve agreements between stakeholders and reduce decision delays
- Resolving conflict to prevent disruptive impacts

Key Concepts

Communication

Communication Skills & Methods

Listening actively

Awareness of cultural or personal differences

Managing expectations

Enhancement of skills

Non Verbal

Presentations

Feedback

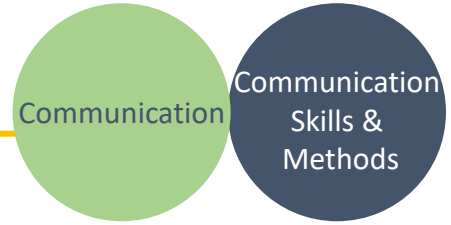
Feedback is information on people's reaction to communications, a deliverable, or a situation.

By listening to feedback – written, verbal or non-verbal, you help ensure that yours and others' messages are heard correctly.

Feedback may be collected in the following ways, but not limited to:

- Conversations; both formal and informal,
- Issue identification and discussion,
- Meetings,
- Progress reporting, and
- Surveys.

Key Concepts



Listening actively | Awareness of cultural or personal differences | Managing expectations | Enhancement of skills | Feedback | Presentations

Non Verbal

Examples of non-verbal communication include:

- Appropriate body language to transmit meaning through gestures,
- tone of voice, and;
- facial expressions.
- Mirroring and eye contact are also important techniques.

Team members should be aware of how they are expressing themselves both through what they say and what they don't say.

Key Concepts

Communication

Communication Skills & Methods

Listening actively

Awareness of cultural or personal differences

Managing expectations

Enhancement of skills

Feedback

Non Verbal

Presentations

A presentation is the formal delivery of information. These might include:

- Progress reports and information updates to stakeholders;
- Background information to support decision making;
- General or specific information about the project and its objectives,

Presentations will be successful when we take into consideration:

- The audience, their expectations, and needs; and
- The needs and objectives of the project and project team.

Key Concepts

Communication

The 5 Cs of Communication

Misunderstandings can be reduced but not eliminated through using the 5Cs of written communications:

- Concise expression and elimination of excess words
- Clear purpose and expression directed towards the needs of the reader
- Coherent, logical flow of ideas
- Controlling flow of words and ideas

Correct grammar and spelling

Poor use of grammar or inaccurate spelling can be distracting, can distort the message and reduce your credibility.

Key Concepts

Misunderstandings can be reduced but not eliminated through using the 5Cs of written communications:

Correct grammar and spelling

Clear purpose and expression directed towards the needs of the reader

Concise expression and elimination of excess words

Coherent, logical flow of ideas

Controlling flow of words and ideas

A short, well-crafted message reduces the opportunities for misunderstanding.

Key Concepts

Communication

The 5 Cs of Communication

Misunderstandings can be reduced but not eliminated through using the 5Cs of written communications:

- Correct grammar and spelling
- Concise expression and elimination of excess words
- **Clear purpose and expression directed towards the needs of the reader**
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Ensure that you factor in the needs and interests of your audience.

Key Concepts

Communication

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Controlling flow of words and ideas

A logical flow of ideas using “markers” such as an introduction and summaries of the ideas as you write.

Key Concepts

Communication

The 5 Cs of Communication

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- Correct grammar and spelling
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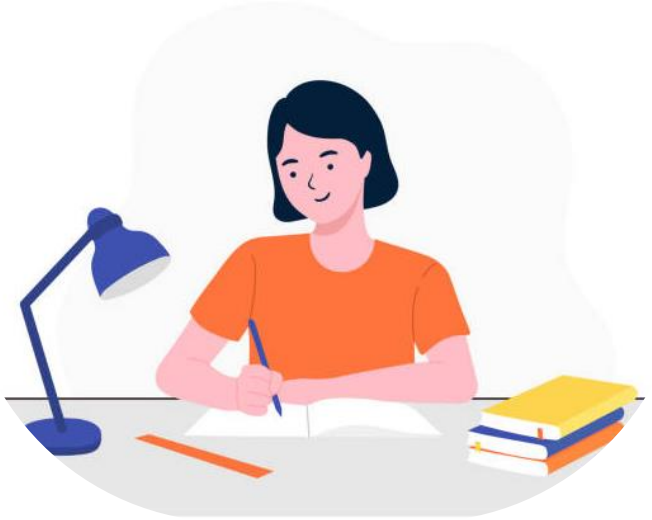
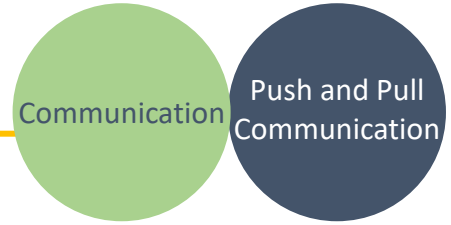
Controlling flow of words and ideas

Controlling the flow of words and ideas may involve graphics or summaries.

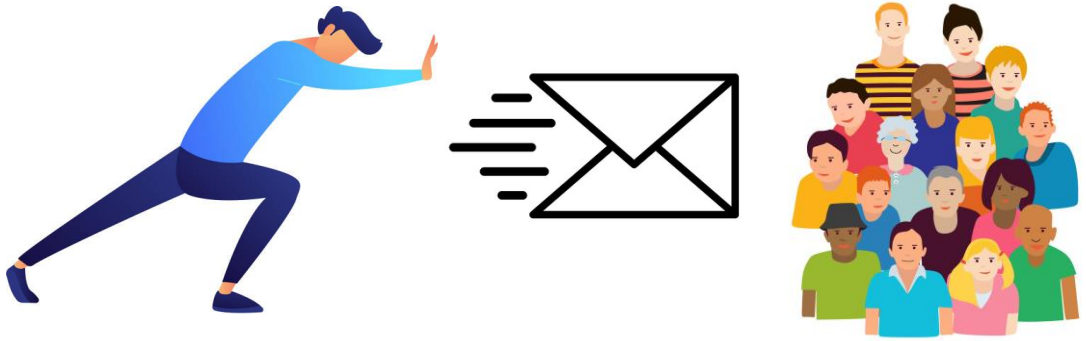


Key Concepts



There is a difference between Push and Pull communication:

Push Communication



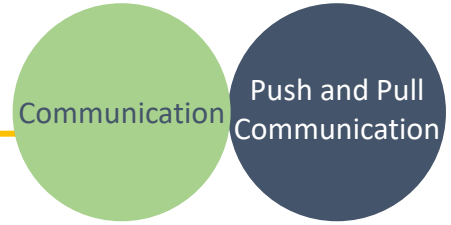
Sent to people who need to receive the information.

We can send it, but that doesn't mean it has reached them, was interpreted correctly, or was understood by the intended audience.

Push communications include:

- Letters,
- Memos,
- Reports,
- Emails,
- Faxes,
- Voice mails,
- Press releases.

Key Concepts



There is a difference between Push and Pull communication:

Pull Communication

Where people can **access content** at their own discretion.

Examples include:

- Web portals,
- Intranet sites,
- Self-paced e-learning,
- Lessons learned databases or knowledge repositories.

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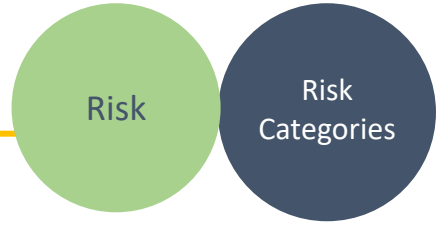
Key Concepts



Risk Categories are described in the Risk Management Plan, and are a way to group individual project risks for the project team, to ensure we consider the full range of sources of risk.

Some common strategic frameworks are more suitable for identifying sources of overall project risk, for example:

- P Political
- E Economic
- S Social
- T Technological
- E Environmental
- L Legal

- T Technical
- E Environmental
- C Commercial
- O Operational
- P Political

- V Volatility
- U Uncertainty
- C Complexity
- A Ambiguity

Key Concepts

Risk

Risk Categories

RBS Level 1	RBS Level 2
1. Technical Risk	1.1 Scope definition
	1.2 Requirements definition
	1.3 Estimates, assumptions, constraints
	1.4 Technical processes
	1.5 Technology
	Etc.
2. Management Risk	2.1 Project Management
	2.2 Operations management
	2.3 Organisation
	2.4 Resourcing
	Etc.
3. Commercial Risk	3.1 Contractual terms and conditions
	3.2 Internal procurement
	3.3 Suppliers and vendors
	3.4 Subcontracts
	Etc.
4. External Risk	4.1 Legislation
	4.2 Exchange rates
	4.3 Site / facilities
	4.4 Environmental / weather
	4.5 Competition

Risk Categories may be listed differently, depending on the **Organisational Process Assets** in a company.

You might have:

- A Risk Breakdown Structure (RBS) - a hierarchical representation of potential sources of risk.
- A custom risk categorization framework – i.e. a simple list of categories.

Key Concepts

The risk register captures details of identified project risks.
As with all things in your project, it can be high level, detailed and tailored to suit.

List of identified Risks	Each individual project risk, with a unique identifier.
Risk Owners	The person accountable for the risk and its outcome.
Risk Responses	The controls, mitigations or other responses (i.e. accepting the risk)

It may also include:

- Risk title
- Risk category
- Current risk status
- Risk triggers
- Affected WBS activities and more.

Key Concepts

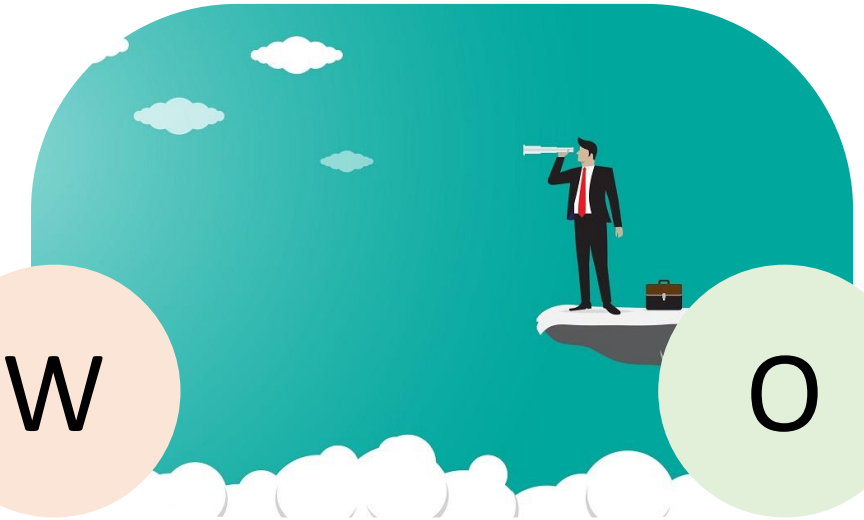
Risk

SWOT Analysis

SWOT Analysis helps identify risks to the project from the perspective of Strengths, Weaknesses, Opportunities, and Threats.

S

W



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T

Start with the identification of Strengths and Weaknesses of the organization, product or project.

Then identify any Opportunities that may arise from the Strengths,

And any Threats that may arise form the Weaknesses.

Key Concepts

Risk

Probability and Impact Matrix

A probability and impact matrix is a grid for mapping the probability of each risk occurrence and its impact on project objectives if that risk occurs.

By giving a rating, it helps us prioritise the risks.

Descriptive terms

- Very high, high, medium, low, and very low

Or numeric values

- 1, 2, 3, 4, 5

Can be used for both probability and impact. Numbers can be multiplied to give an overall score for each risk.

i.e. 4 x 3 = 12 overall risk

				Inherent Risk (Without controls)		
Unique ID	Risk Description	Caused by & Consequences	Risk Owner (s) *Name and Role*	Probability	Impact	Risk Rating
1	Risk 1	Caused by: Consequences:	Jemima Hamilton, VP Sales;	Medium	Very Low	Sustainable
2	When you enter risks, the numbers to the left will appear automatically.	Caused by: Consequences:	Michael Henry, Senior User	Low	High	Severe

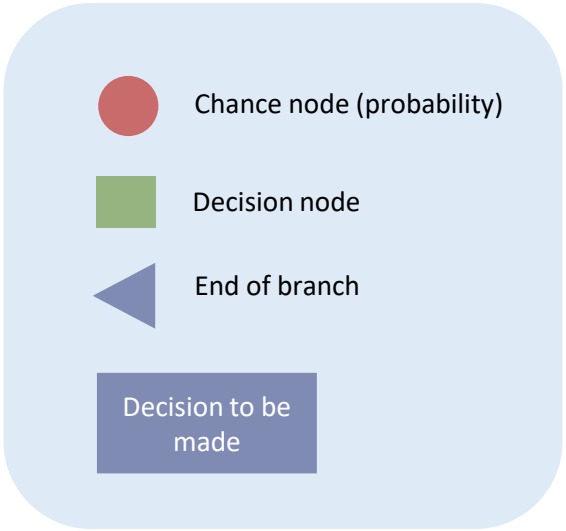
Inherent Risk Matrix (before Controls)

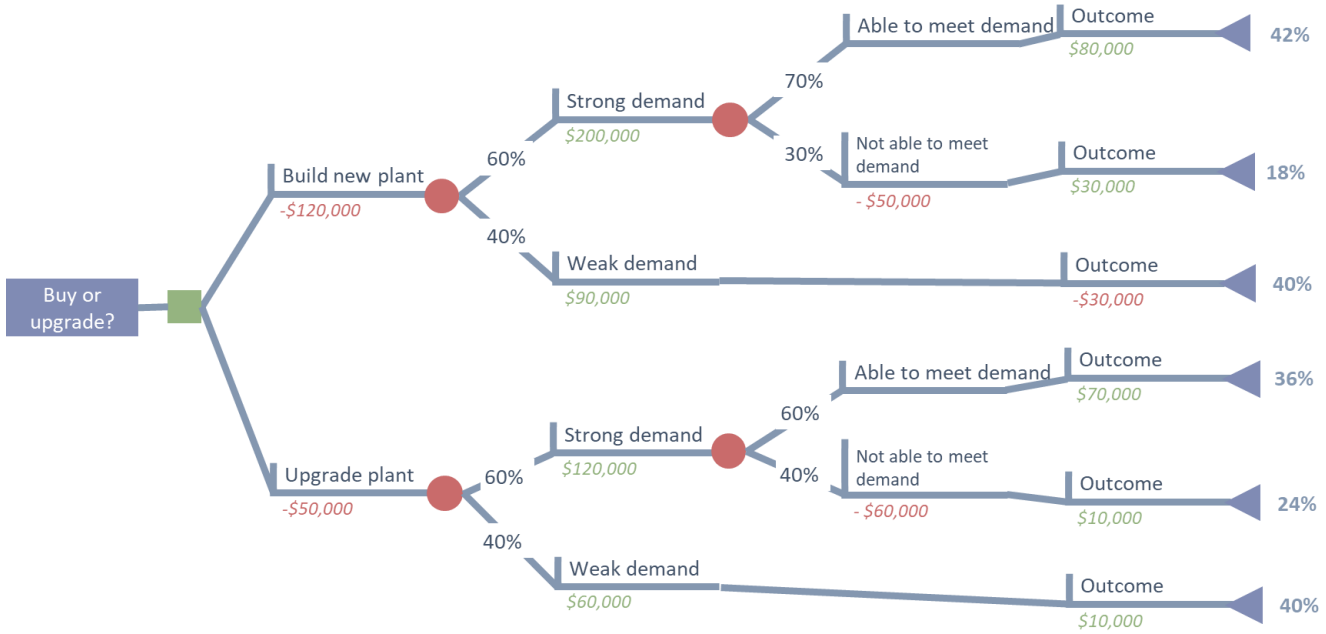
Impact		Very Low	Low	Medium	High	Very High
Probability	Very High					
	High	1			1	
	Medium	1	1	1		
	Low			1	1	
	Very Low					

Key Concepts

Decision trees are used to support selection of the best of several alternative courses of action.

Alternative paths through the project are shown in the decision tree using branches representing different decisions or events, each of which can have associated costs and related individual project risks





The decision tree is evaluated by calculating the expected monetary value of each branch (quantitative analysis).

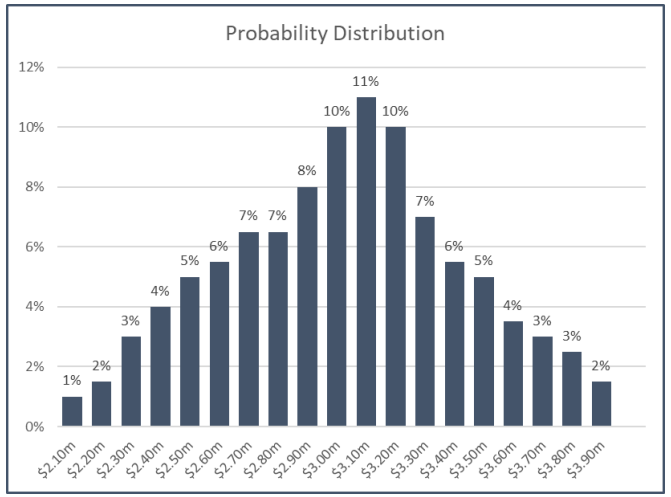
Key Concepts

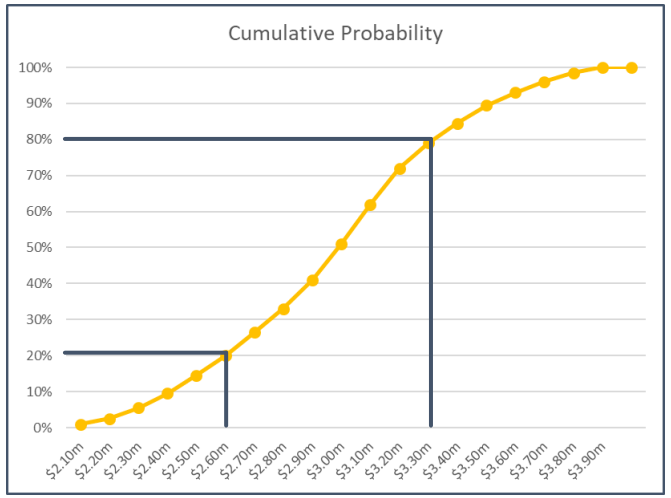
There are various quantitative tools to support gathering the data required for Quantitative risk analysis.

Monte Carlo Simulation

Sensitivity Analysis and Tornado charts

Monte Carlo Simulation calculates thousands of different outcomes (such as project end dates or end budgets) using various activity assumptions, constraints, risks, issues and other scenarios to give a probability distribution of the outcomes.





Key Concepts

Risk

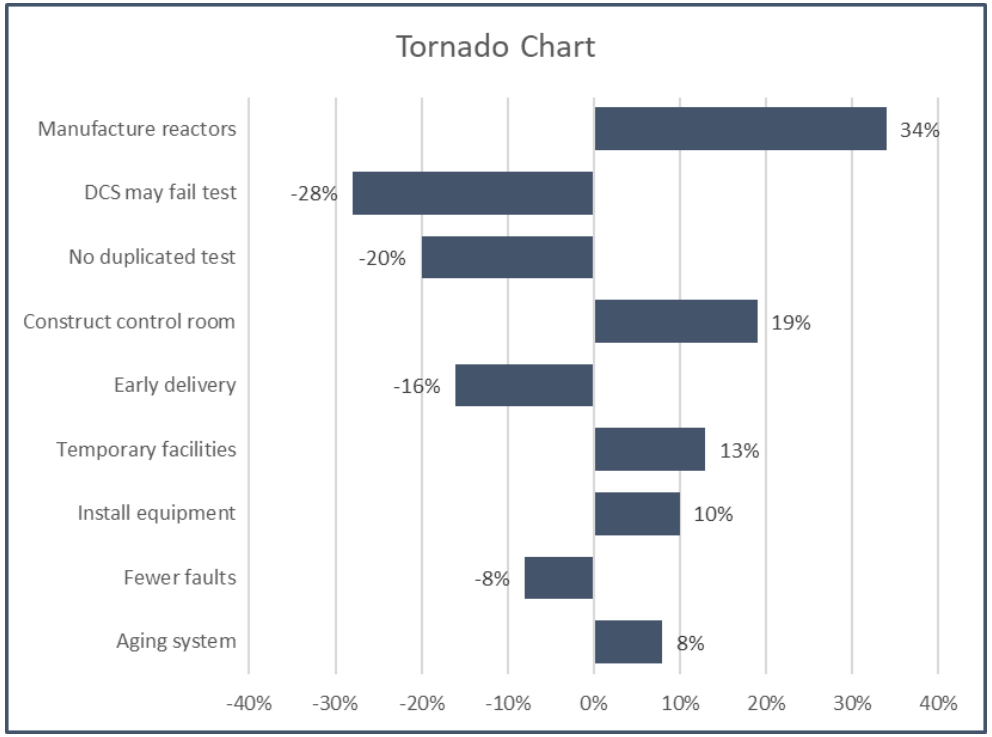
Quantitative tools

There are various quantitative tools to support gathering the data required for Quantitative risk analysis.

Monte Carlo Simulation

Sensitivity Analysis and Tornado charts

Sensitivity analysis helps determine which individual project risks could have the most impact on project outcomes.



Key Concepts

Risk

Strategies for Threats versus Strategies for Opportunities

Strategies for threats and opportunities are plans of action we can take when dealing with risks, both negative and positive.

Strategies for Opportunities
Escalate
Exploit
Share
Enhance
Accept

Strategies for Threats
Escalate
Avoid
Transfer
Mitigate
Accept

Key Concepts

Risk

Strategies for Threats versus Strategies for Opportunities

Strategies for Opportunities

- **Escalate**
- Exploit
- Share
- Enhance
- Accept

When an opportunity is outside the scope of the project or would exceed the project manager's authority to take advantage of.

They are then managed at the program level or above.

Key Concepts

Risk

Strategies for Threats versus Strategies for Opportunities

Strategies for Opportunities

- Escalate
- Exploit
- Share
- Enhance
- Accept

When we really want to exploit an opportunity, and make sure we take advantage of it. We might assign the best resources to it, prioritise it to happen soon, or assign separate funding to help make it happen.

Key Concepts

Risk

Strategies for Threats versus Strategies for Opportunities

Strategies for Opportunities

- Escalate
- Exploit
- **Share**
- Enhance
- Accept

We might want to share our opportunity, where we transfer ownership of it to a third party so that they shares some of the benefit if the opportunity occurs.

Key Concepts

Risk

Strategies for Threats versus Strategies for Opportunities

Strategies for Opportunities

- Escalate
- Exploit
- Share
- Enhance
- Accept

This is when we want to increase the probability that an opportunity occurs.

Key Concepts

Strategies for Opportunities

- Escalate
- Exploit
- Share
- Enhance
- Accept

Accepting an opportunity is when we acknowledge its existence but don’t take any action.

Key Concepts

Risk

Strategies for Threats versus Strategies for Opportunities

When the risk (or its response) is outside the Project Manager's authority, or it's appropriate to escalate to a higher level that is affected by the risk.

Strategies for Threats

- Escalate
- Avoid
- Transfer
- Mitigate
- Accept

Key Concepts

Risk

Strategies for Threats versus Strategies for Opportunities

Strategies for Threats

- Escalate
- Avoid
- Transfer
- Mitigate
- Accept

When we are changing the project objective or some aspect in the project plan (i.e schedule or scope) to eliminate the threat.

Key Concepts

Risk

Strategies for Threats versus Strategies for Opportunities

Strategies for Threats

- Escalate
- Avoid
- Transfer
- Mitigate
- Accept

Transfer involves shifting ownership of a threat to a third party to manage the risk and to bear the impact if the threat occurs, usually for a price (like insurance)

Key Concepts

Risk

Strategies for Threats versus Strategies for Opportunities

Taking action to reduce the probability of occurrence or the impact of a threat. We could use things like prototyping, more tests, less complex processes, etc.

Strategies for Threats

- Escalate
- Avoid
- Transfer
- Mitigate
- Accept

Key Concepts

Risk

Strategies for Threats versus Strategies for Opportunities

Risk acceptance acknowledges the existence of a threat, but no proactive action is taken.

Acceptance may be appropriate for low-priority threats, and may also be adopted where it is not possible or cost-effective to address a threat in any other way.

Strategies for Threats

- Escalate
- Avoid
- Transfer
- Mitigate
- Accept

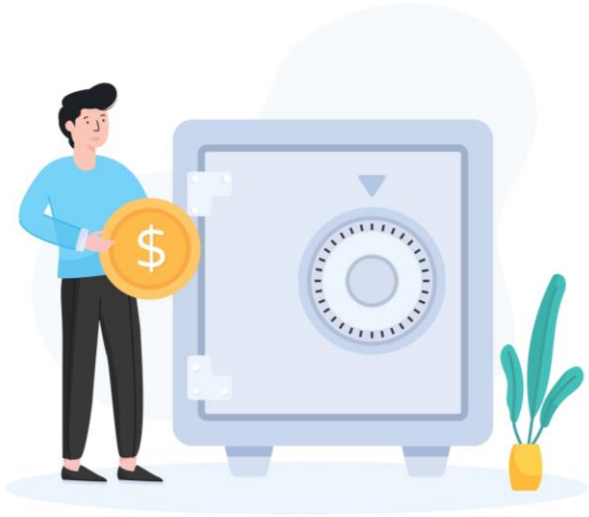
Key Concepts

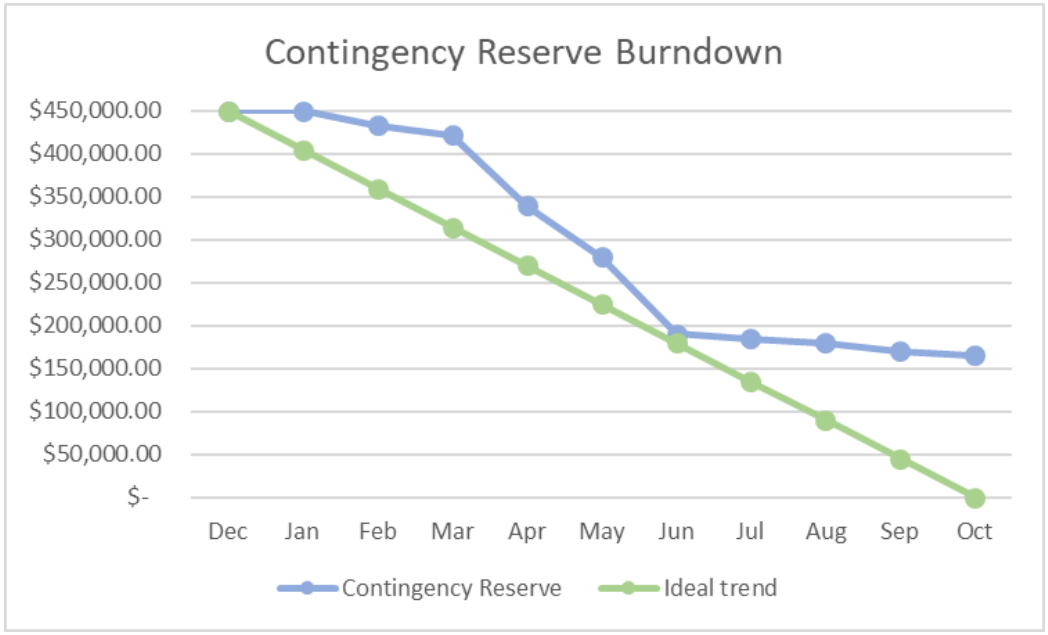
Risk

Reserve Analysis and Burndown Charts

Reserve analysis compares the amount of the contingency reserves remaining to the amount of risk remaining at any time in the project in order to determine if the remaining reserve is adequate.

One way to represent this is with a burndown chart, showing the total risk with the remaining contingency reserve amount.





Knowledge Areas	Initiating	Planning	Executing	Monitoring & Controlling	Closing
Project Integration	1. Develop Project Charter	2. Develop Project Management Plan	3. Direct and Manage Project Work 4. Manage Project Knowledge	5. Monitor and Control Project Work 6. Perform Integrated Change Control	7. Close Project or Phase
Stakeholders	1. Identify Stakeholders	2. Plan Stakeholder Engagement	3. Manage Stakeholder Engagement	4. Monitor Stakeholder Engagement	
Scope		1. Plan Scope Management 2. Collect Requirements 3. Define Scope 4. Create WBS		5. Validate Scope 6. Control Scope	
Schedule		1. Plan Schedule Management 2. Define Activities 3. Sequence Activities 4. Estimate Activity Durations 5. Develop Schedule		6. Control Schedule	
Cost		1. Plan Cost Management 2. Estimate Costs 3. Determine Budget		4. Control Costs	
Quality		1. Plan Quality Management	2. Manage Quality	3. Control Quality	
Resources		1. Plan Resource Management 2. Estimate Activity Resources	3. Acquire Resources 4. Develop Team 5. Manage Team	6. Control Resources	
Communications		1. Plan Communications Management	2. Manage Communications	3. Monitor Communications	
Risk Management		1. Plan Risk Management 2. Identify Risks 3. Perform Qualitative Risk Analysis 4. Perform Quantitative Risk Analysis 5. Plan Risk Responses	6. Implement Risk Responses	7. Monitor Risks	
Procurements		1. Plan Procurement Management	2. Conduct Procurements	3. Control Procurements	

Key Concepts

Project Integration

- Business Case
- Benchmarking
- Make or Buy Analysis
- Expert Judgement
- Rates of return – NPV, IRR, Cost/Benefit Ratio
- Benefits management plan
- Baselines and the Configuration Management Plan
- Change Requests and the Change Management Plan
- Project Management Information System (PMIS)
- Issue Log
- Project Management Data and Information
- Status report
- The Lessons Learned Register
- The Final Report

Stakeholder Management

- Organisational Breakdown Structure
- Stakeholder Register
- Power/Interest and Impact/Influence grids versus Salience Model
- Stakeholder Engagement Assessment Matrix
- Facilitation
- Interpersonal and Team Skills

Scope

- The Requirements Management Plan (Business Analysis plan)
- Requirement Traceability Matrix
- Brainstorming
- Voting and the Nominal Group Technique
- Prototyping (Storyboards, wireframes, models and maps)
- Prioritisation (MoSCoW, Cost/Benefit, CD3)
- Decomposition (incl WBS, WBSD)
- Project Scope Baseline: Statement, WBS, WBSD, Work Packages.
- Validate Scope versus Control Quality
- Variance Analysis

Schedule

- Rolling Wave Planning
- Leads and Lags
- Precedence Diagramming Method
- Types of Estimating: Three point, Analogous, Parametric, Bottom up
- Resource Levelling vs Resource Smoothing
- Critical Path Method (Forward and backward pass)
- Schedule Compression - Fast Tracking and Crashing

Cost

- ROM, Budget and Definitive Estimates
- Contingency and Management Reserves
- Accuracy versus Precision
- Earned Value Analysis (EVA)

Quality

- The Cost of Quality
- Cause and Effect Diagrams (Ishikawa)
- Histograms & Pareto Analysis
- Audits
- Inspections & Reviews
- Checklists vs Check sheets

Resources

- Responsibility Assignment Matrix and RACIs
- OBS (Organisational Breakdown Structure) versus RBS (Resource Breakdown Structure) and Product BS
- Team Charter
- Tuckman's Ladder
- Meeting Management
- Conflict Management

Communication

- Communication Models
- Communication (Skills, Methods)
- Push and Pull Communication

Risk

- Risk Categories
- Risk Register
- SWOT Analysis
- Probability and Impact Matrix
- Decision Tree Analysis
- Quantitative tools: Monte Carlo, Sensitivity/Tornado charts
- Strategies for Threats versus Strategies for Opportunities
- Reserve Analysis and Burndown Charts

Procurement

- Types of Contracts: Fixed Price Contracts versus Cost-reimbursable versus Time and Material
- Advertising versus Bidder Conferences
- Claims Administration

Key Concepts

Procurement

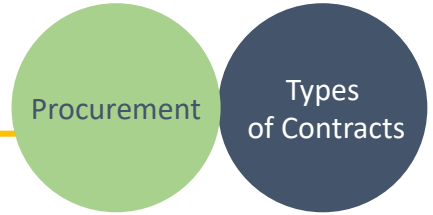
Types of Contracts

Contracts are legal agreement relationships between two or more parties.

An “Agreement” (e.g. to initiate a project with a charter) might not involve a Contract, but every contract will involve an agreement. Types of contracts include:

Fixed Price Contracts	Cost-Reimbursable Contracts	Time and Materials Contracts
Firm Fixed Price	Cost Plus Fixed Fee	
Fixed Price Incentive Fee	Cost Plus Incentive Fee	
Fixed Price with Economic Price Adjustments	Cost Plus Award Fee	

Key Concepts



- Cost-Reimbursable Contracts
  - Cost Plus Fixed Fee
  - Cost Plus Incentive Fee
  - Cost Plus Award Fee
- Time and Materials Contracts

Fixed Price Contracts

A fixed total price for a defined product, used when the requirements are well defined and no significant changes to the scope are expected.

Key Concepts

Procurement

Types of Contracts

- Cost-Reimbursable Contracts
  - Cost Plus Fixed Fee
  - Cost Plus Incentive Fee
  - Cost Plus Award Fee
- Time and Materials Contracts

Fixed Price Contracts

Firm Fixed Price

Fixed Price Incentive Fee

Fixed Price with Economic Price Adjustments

The most commonly used contract type – won't change unless scope of works changes.

Key Concepts

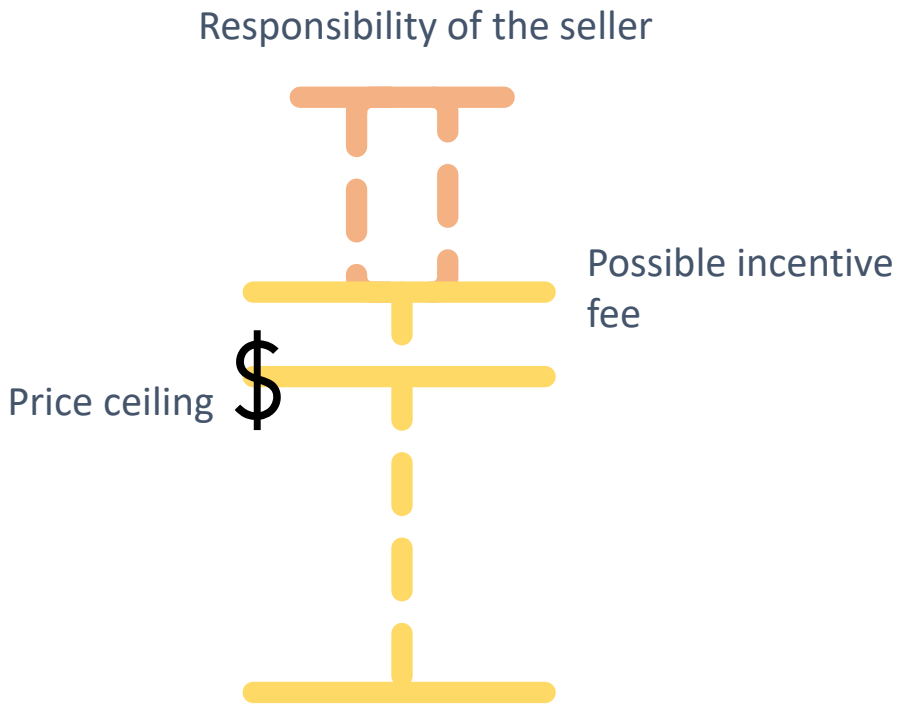
Procurement

Types of Contracts

- Cost-Reimbursable Contracts
  - Cost Plus Fixed Fee
  - Cost Plus Incentive Fee
  - Cost Plus Award Fee
- Time and Materials Contracts

Fixed Price Contracts

- Firm Fixed Price
- **Fixed Price Incentive Fee**
- Fixed Price with Economic Price Adjustments



Allows for deviation from performance, with financial incentives tied to achieving agreed-upon metrics (usually based on cost, schedule or quality)

Under FPIF contracts, a price ceiling is set, and all costs above the price ceiling are the responsibility of the seller.

Key Concepts

Procurement

Types of Contracts

- Cost-Reimbursable Contracts
  - Cost Plus Fixed Fee
  - Cost Plus Incentive Fee
  - Cost Plus Award Fee
- Time and Materials Contracts

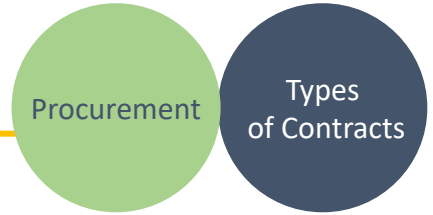
Fixed Price Contracts

- Firm Fixed Price
- Fixed Price Incentive Fee
- **Fixed Price with Economic Price Adjustments**

Possible final adjustments for currency changes etc.

A fixed-price contract, but with a special provision allowing for predefined final adjustments to the contract price due to changed conditions (e.g. if the performance period spans a considerable period of years, or if the payments are made in a different currency).

Key Concepts



Fixed Price Contracts

Time and Materials Contracts

Firm Fixed Price

Fixed Price Incentive Fee

Fixed Price with Economic Price Adjustments

Cost-Reimbursable Contracts

This type of contract involves payments (reimbursements) to the seller for all legitimate actual costs incurred for completed work, plus a fee representing seller profit.

Best used if the scope of work is expected to change significantly during the execution of the contract.

Key Concepts

Procurement

Types of Contracts

- Fixed Price Contracts
  - Firm Fixed Price
  - Fixed Price Incentive Fee
  - Fixed Price with Economic Price Adjustments
- Time and Materials Contracts

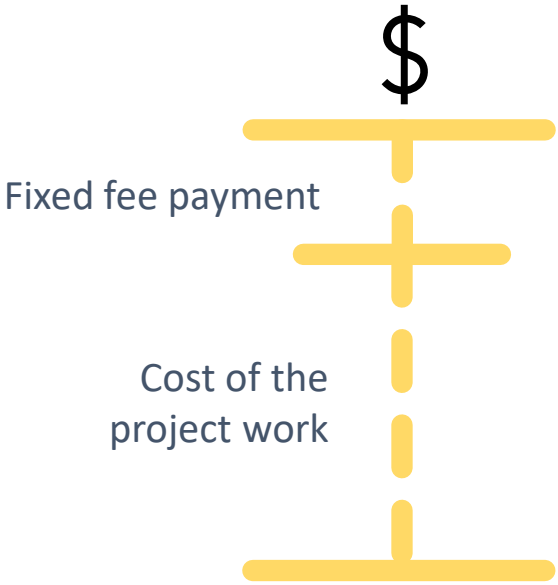
Cost-Reimbursable Contracts

Cost Plus Fixed Fee

Cost Plus Incentive Fee

Cost Plus Award Fee

The seller is reimbursed for all allowable costs for performing the contract work and receives a fixed-fee payment calculated as a percentage of the initial estimated project costs. Fee amounts do not change unless the project scope changes.



Key Concepts

Procurement

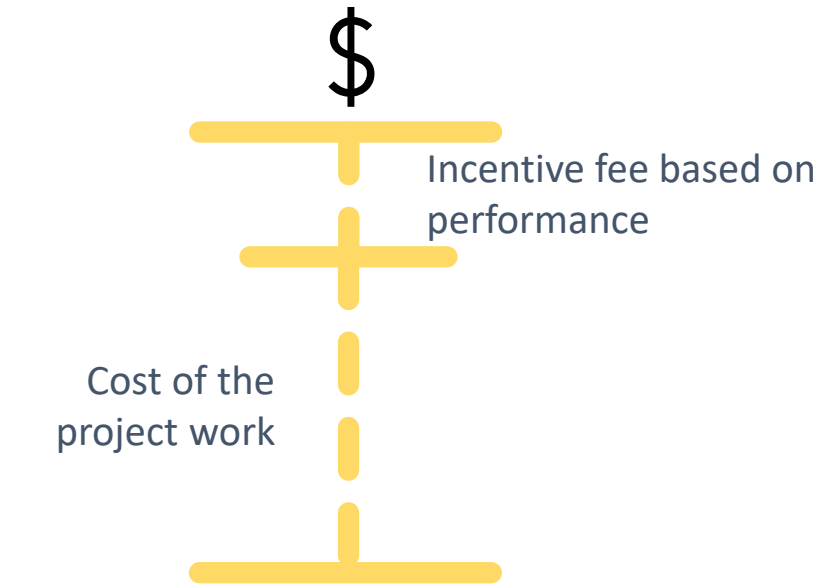
Types of Contracts

- Fixed Price Contracts
  - Firm Fixed Price
  - Fixed Price Incentive Fee
  - Fixed Price with Economic Price Adjustments
- Time and Materials Contracts

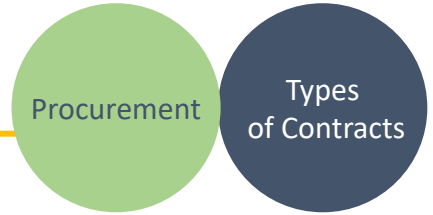
Cost-Reimbursable Contracts

- Cost Plus Fixed Fee
- **Cost Plus Incentive Fee**
- Cost Plus Award Fee

The seller is reimbursed for all allowable costs for performing the contract work and receives a predetermined incentive fee based on achieving certain performance objectives as set forth in the contract.



Key Concepts



- Fixed Price Contracts
  - Firm Fixed Price
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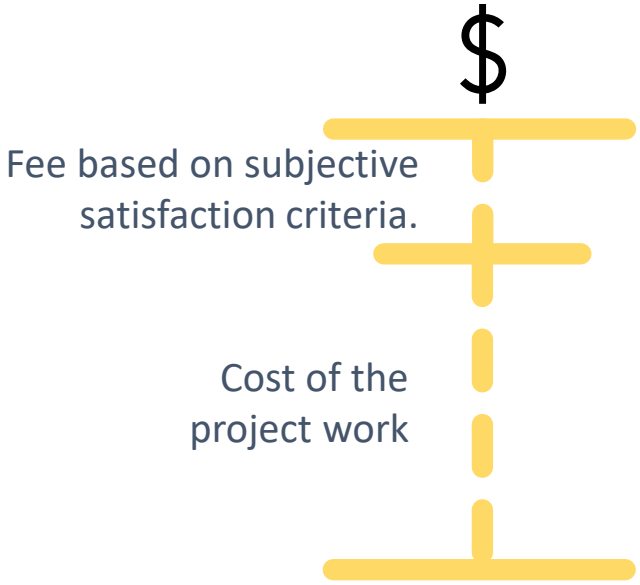
- Time and Materials Contracts

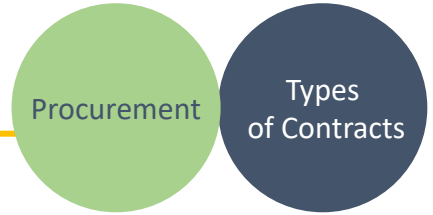
Cost-Reimbursable Contracts

- Cost Plus Fixed Fee
- Cost Plus Incentive Fee
- **Cost Plus Award Fee**



The seller is reimbursed for all legitimate costs, but the majority of the fee is earned based on the satisfaction of certain broad subjective performance criteria that are defined and incorporated into the contract.

Key Concepts

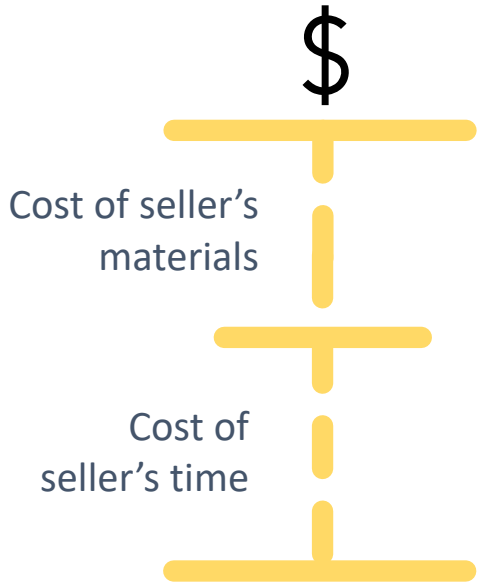


Cost-Reimbursable Contracts	Fixed Price Contracts
Cost Plus Fixed Fee	Firm Fixed Price
Cost Plus Incentive Fee	Fixed Price Incentive Fee
Cost Plus Award Fee	Fixed Price with Economic Price Adjustments

Time and Materials Contracts

A hybrid type of contractual arrangement with aspects of both cost-reimbursable and fixed-price contracts.

They are often used for staff augmentation, acquisition of experts, and any outside support when a precise statement of work cannot be quickly prescribed.



Key Concepts

Procurement

Advertising versus Bidder Conferences

Advertising and Bidder Conferences are not the same:

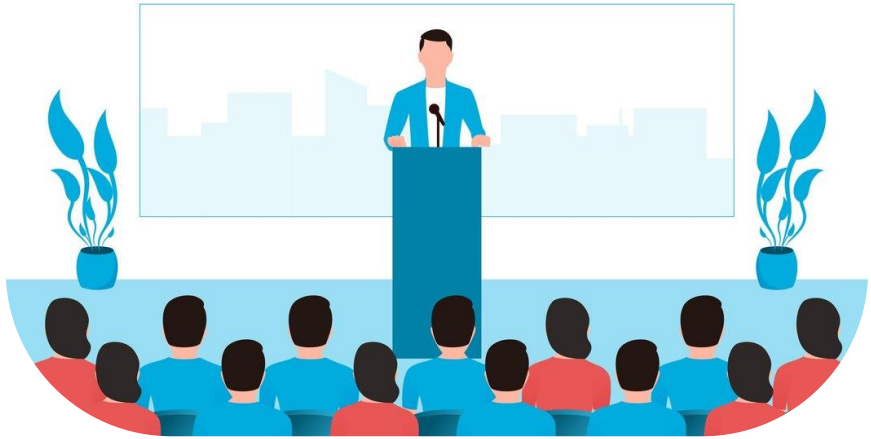
Bidder Conferences

Advertising

Also called contractor conferences, vendor conferences, and pre-bid conferences.

They are meetings between the buyer and prospective sellers prior to proposal submittal.

They are used to ensure that all prospective bidders have a clear and common understanding of the procurement and no bidders receive preferential treatment.



Key Concepts

Procurement

Advertising versus Bidder Conferences

Advertising and Bidder Conferences are not the same:

Bidder Conferences

Advertising

Existing lists of potential sellers often can be expanded by placing advertisements in the right places (i.e. specialty trade publications or websites)

Most government jurisdictions require public advertising or online posting of pending government contracts.

We can also advertise to potential users of a product, service, or result.

Key Concepts

Procurement

Claims Administration

Claims are contested items in a project, when the buyer and seller cannot reach an agreement on a change or its compensation.

If they cannot resolve a claim, it may have to be handled with a third party – an alternative dispute resolution (ADR).

The claims process, including ADR, should be outlined in the contract.

We will need negotiation skills to help settle claims.

Prevent Claims	Mitigate Claims	Pursue Claims	Resolve Claims
During initial concept or design, before a contract is signed.	During contract preparation and pre-contract negotiation.	During project execution.	Settle outstanding issues after the finalisation of accounts.

Project Management Professional

Course Slides

- *Project Process*
- *Key Concepts*
- *Agile Overview*
- *Agile Considerations for each Process*

1.1 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.

These are supported by the ***12 clarifying principles***.

1.2 The Twelve Clarifying Principles

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, developers, and users should be able to maintain a constant pace indefinitely.

9.
Continuous attention to technical excellence and good design enhances quality.

10.
Simplicity – the art of maximising the amount of work not done – is essential.

11.
The best architectures, requirements, and designs emerge from self organising teams.

12.
At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behaviour accordingly.

1.3 The Agile Mindset

Four Values

- Individuals and interactions
- Working software
- Customer collaboration
- Responding to change

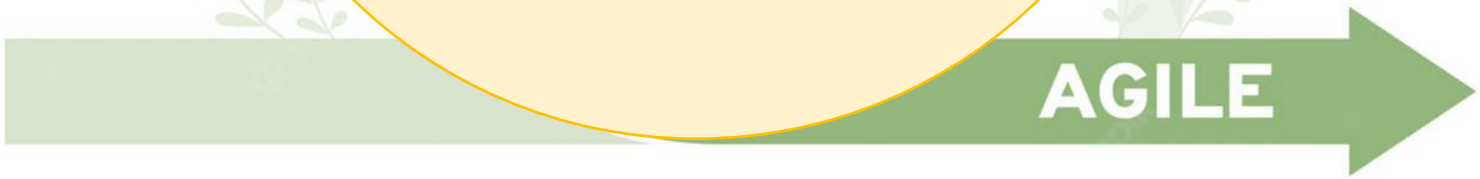
Twelve Principles

- Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.
- Business people and developers must work together daily throughout the project.
- Working software is the primary measure of progress.
- Simplicity – the art of maximising the amount of work not done – is essential.
- Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.
- Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.
- Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.
- The best architectures, requirements, and designs emerge from self organising teams.
- Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.
- The most efficient and effective method of conveying information to and within a development team is face to face conversation.
- Continuous attention to technical excellence and good design enhances quality.
- At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behaviour accordingly.

Core Practices

- The Whole Team Approach
- Servant Leadership
- Early and Frequent Feedback
- Sticky / Stable Teams
- Continuous Integration
- Rolling Wave Planning
- Build in Quality
- Visual Management
- Daily Stand-ups
- Collaborative User Story Creation
- Backlog Preparation
- Retrospectives

Agile doesn’t fit everywhere

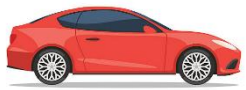


Definable work vs High Uncertainty Work

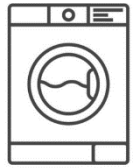
There are two types of work:

Definable Work

- Clear processes that have proved successful on similar projects in the past.
- The production and process is well understood.
- Low levels of uncertainty, ambiguity, or risk.



Production of a car



Making an appliance

Building a home

High-Uncertainty Work

- Designing new things and problem solving.
- Exploratory work that hasn't been done before.
- High rates of change, complexity and risk.

Design and engineering new products

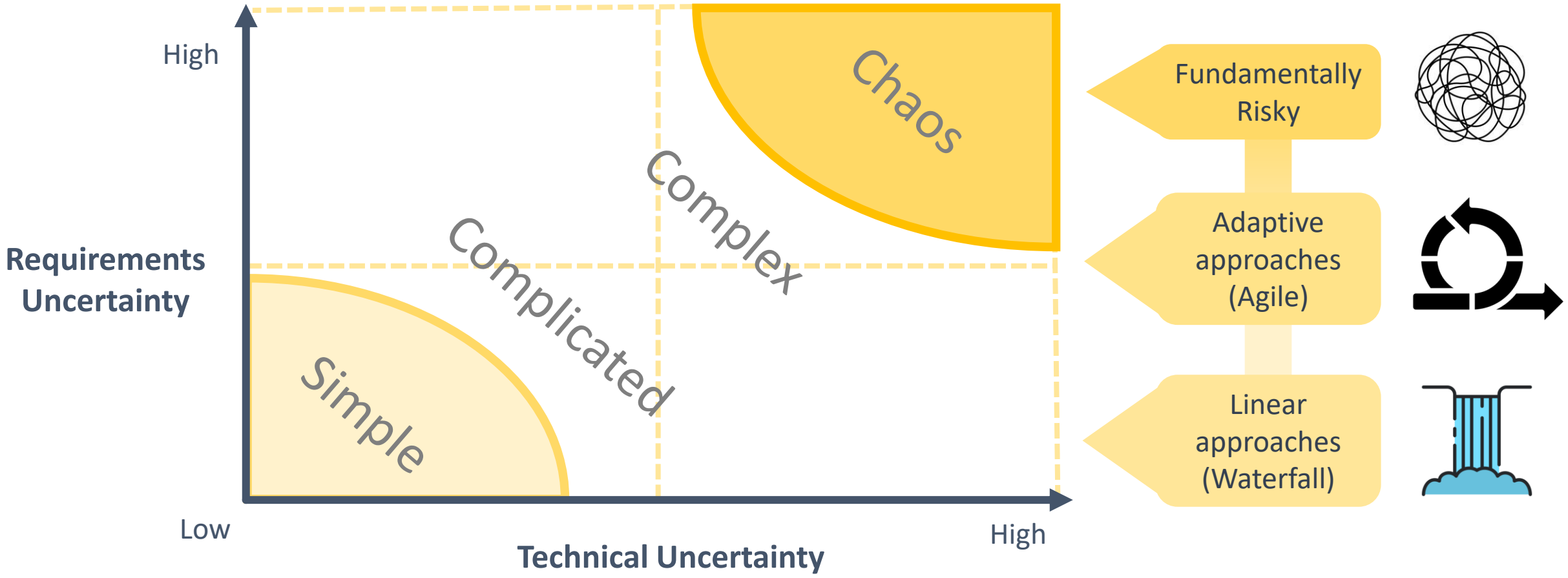
Knowledge work

Ever-changing customer needs

Teams work through problems and ambiguity piece-by-piece instead of planning everything up-front.

Agile Doesn't Fit Everywhere

No life cycle can be perfect for all projects. Instead, each project finds a place on the continuum that provides an optimum balance.

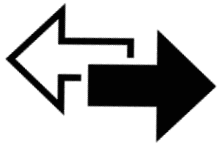


Adapted from the **Stacey Complexity Model**

Uncertainty, Risk, and Life-cycle Selection

Some projects have:

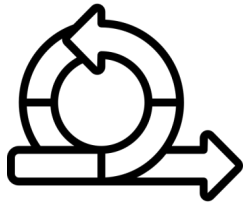
- Unclear requirements
- Uncertainty around current technology
- High rates of change
- High rates of complexity



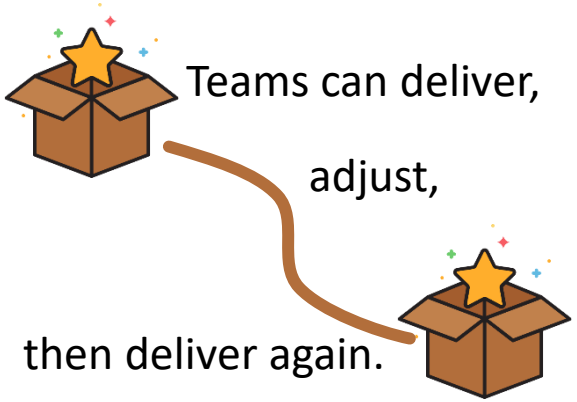
As uncertainty increases, so does **rework**.

To mitigate the effects of:

Teams select a delivery approach that can:



- Deliver in small increments
- Have short feedback loops
- Frequent improvement of process
- Reprioritise features



- This explores uncertainty in a shorter time,
- reduces risk, and;
- delivers business value earlier.

Development Approaches

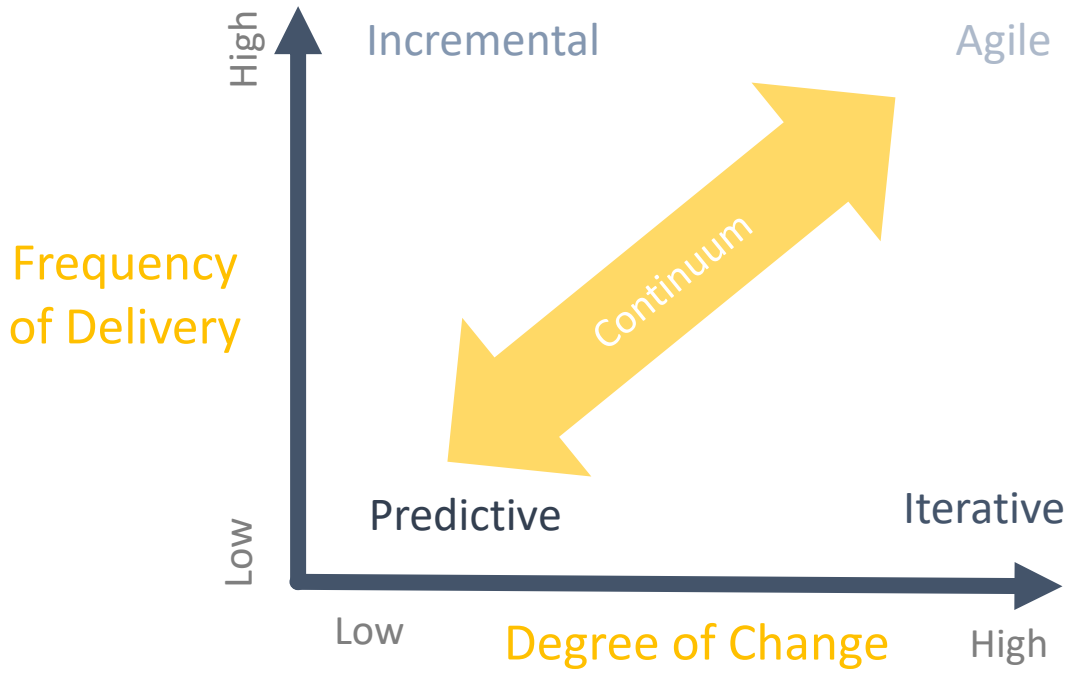
Predictive
(Waterfall)

Iterative

Incremental

Adaptive
(Agile)

Hybrid



Development approaches

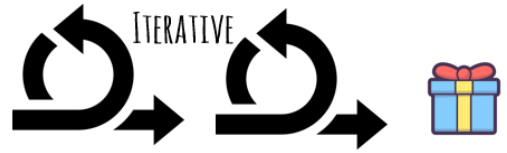
Approach	Requirements	Activities	Delivery	Goal
Predictive	Fixed	Performed once for the entire project	Single delivery	Manage cost

Also known as Waterfall, useful when there is a stable team, firm requirements, and low risk.

The team can operate in a sequential manner - planning up front and performing step by step.

Development approaches

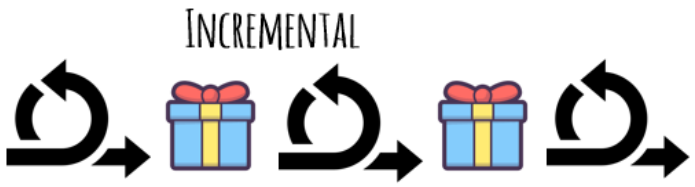
Approach	Requirements	Activities	Delivery	Goal
Iterative	Dynamic	Repeated until correct	Single delivery	Correctness of solution



Useful when the product or result needs to go through successive prototypes or proofs of concept, before a final release.

Development approaches

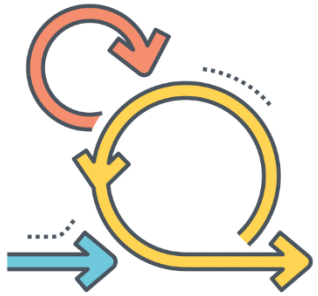
Approach	Requirements	Activities	Delivery	Goal
Incremental	Dynamic	Performed once for a given increment	Frequent smaller deliveries	Speed



Useful when customers are willing to receive parts of the overall solution delivered incrementally.

Development approaches

Approach	Requirements	Activities	Delivery	Goal
Agile	Dynamic	Repeated until correct	Frequent small deliveries	Customer value via frequent deliveries and feedback



Useful when you expect requirements to change. Incremental delivery uncovers hidden or misunderstood requirements.

Development approaches

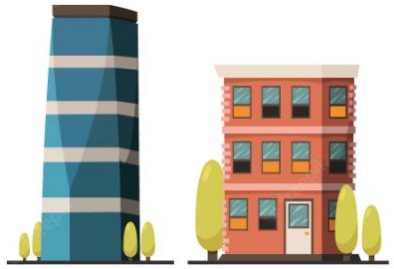
Approach	Requirements	Activities	Delivery	Goal
Predictive	Fixed	Performed once for the entire project	Single delivery	Manage cost
Iterative	Dynamic	Repeated until correct	Single delivery	Correctness of solution
Incremental	Dynamic	Performed once for a given increment	Frequent smaller deliveries	Speed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

Hybrid approaches

A hybrid approach uses some parts of the predictive approach, and some parts of an adaptive approach (Agile).

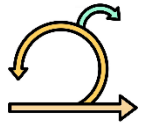
Hybrid may be used as a transition strategy:

Perhaps the team is transitioning to Agile and using Stand-ups, retrospectives, but not estimation or visualised work.



Hybrid may be used intentionally:

A campus construction may have multiple buildings to improve and build. An incremental approach would complete some buildings earlier than others to deliver value and use those learnings for future buildings.

Hybrid Approach	Example
 "Mostly" Agile, with some Predictive	Integrating an external component developed in full by an external vendor – then a single iteration might be required after their component is delivered
 "Mostly" Waterfall, with some Agile	Delivering a straight forward project (a shed or patio), but trialling a new roofing material in incremental releases.
 A combined Predictive and Agile approach	A linear project, where tasks are tracked using Kanban and daily scrums are used for updating work.

Development Approaches

Predictive
(Waterfall)

Iterative

Incremental

Adaptive
(Agile)

Hybrid

Analyse → Design → Build → Test → Deliver

Development Approaches

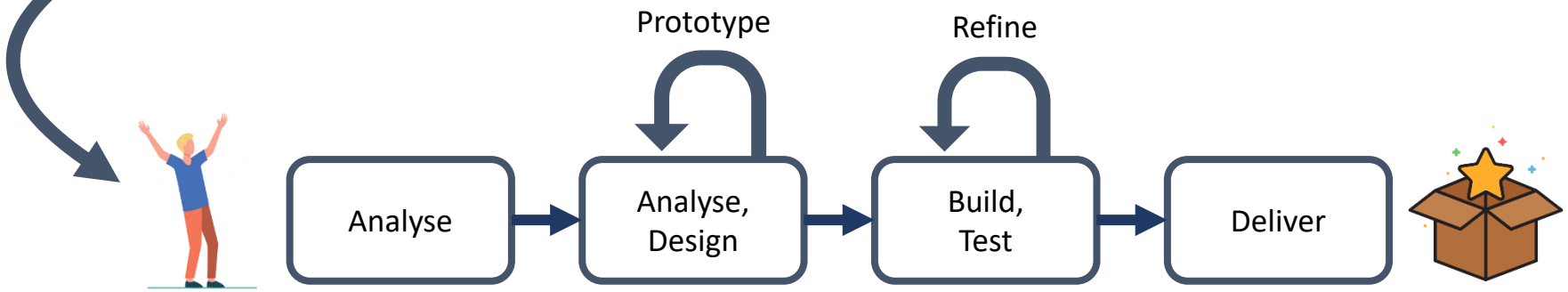
Predictive
(Waterfall)

Iterative

Incremental

Adaptive
(Agile)

Hybrid



Development Approaches

Predictive
(Waterfall)

Iterative

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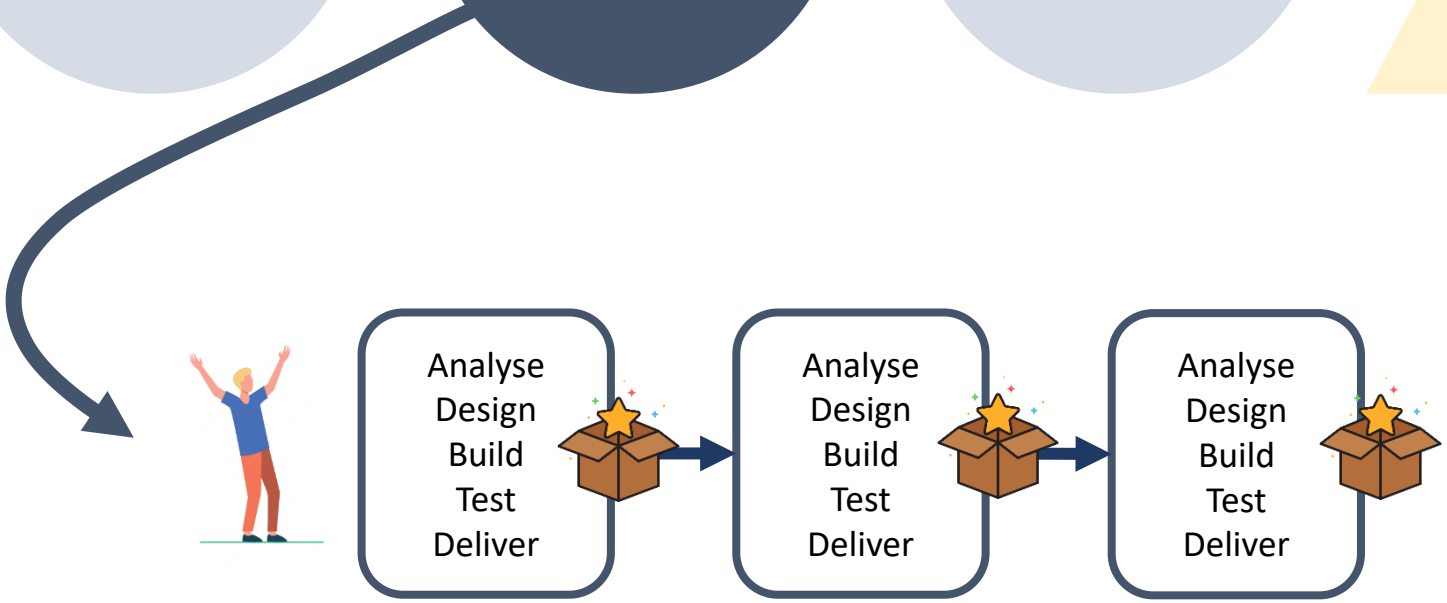
Hybrid



Development Approaches

Predictive
(Waterfall)

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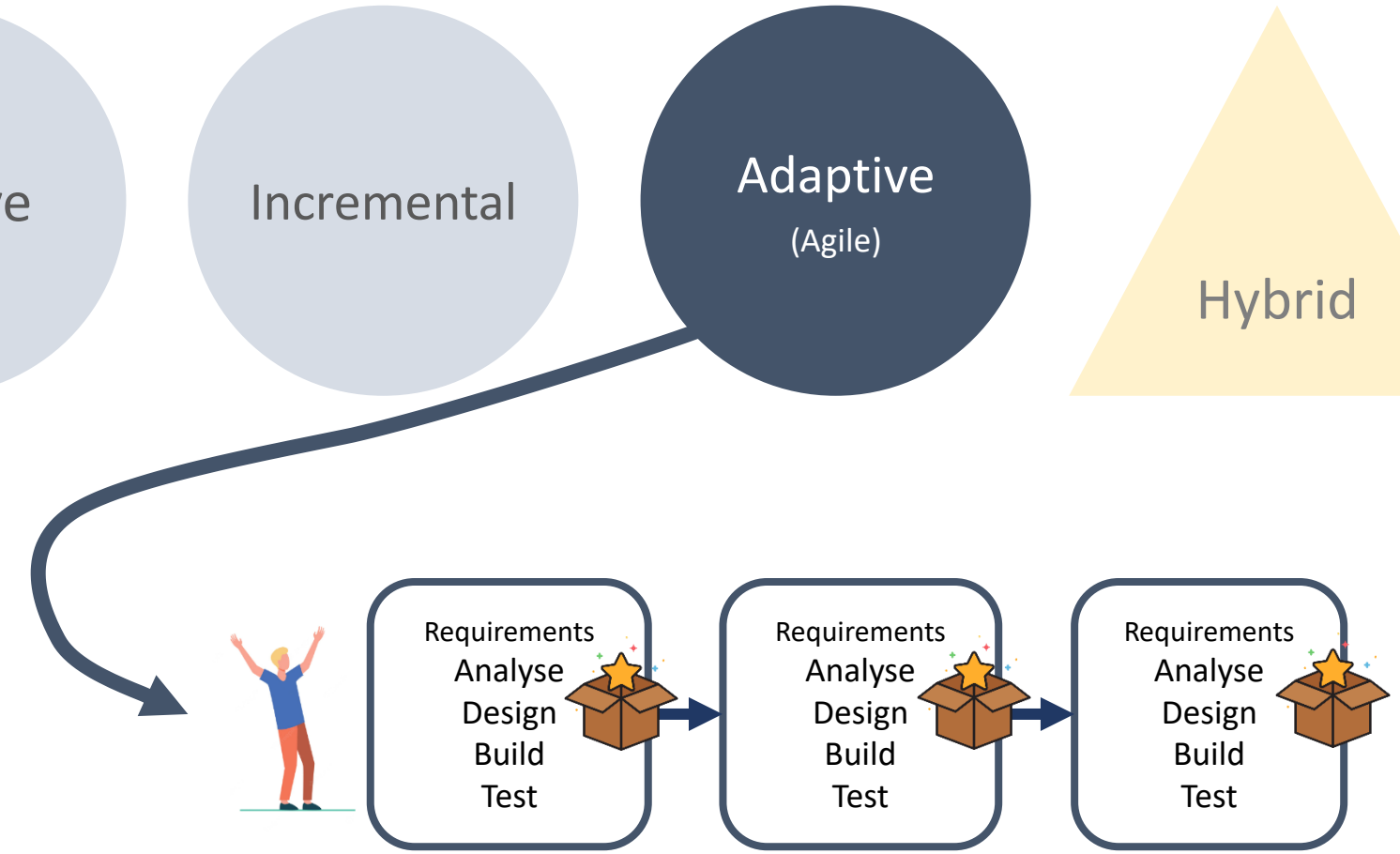
Adaptive
(Agile)

Hybrid

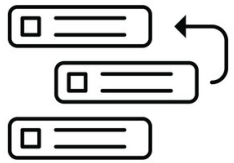


A Typical Agile Project

Every project will be different and every product and stakeholder group are slightly different. However, this is an example of a regular Agile approach:

The Product Owner creates (or approves) a list of features bringing customer value – prioritising highest value first.

Product Backlog



The team decide how much work can fit in a 2-week sprint, based on their velocity.

Sprint Planning

The team meet every day (often at the Kanban board) to discuss progress and remove blockers.

Daily Stand-up

The team break down the features into User Stories small enough to complete in a sprint, estimate sizing and add Acceptance Criteria.

Backlog Refinement

The team demonstrate what they have completed during the sprint, to the customer and stakeholders.

Sprint Review

The team meet to review their process – what went well, what challenges them, and what still puzzles them.

Retrospective

2 week Iteration / Sprint

Small (3-12), co-located teams

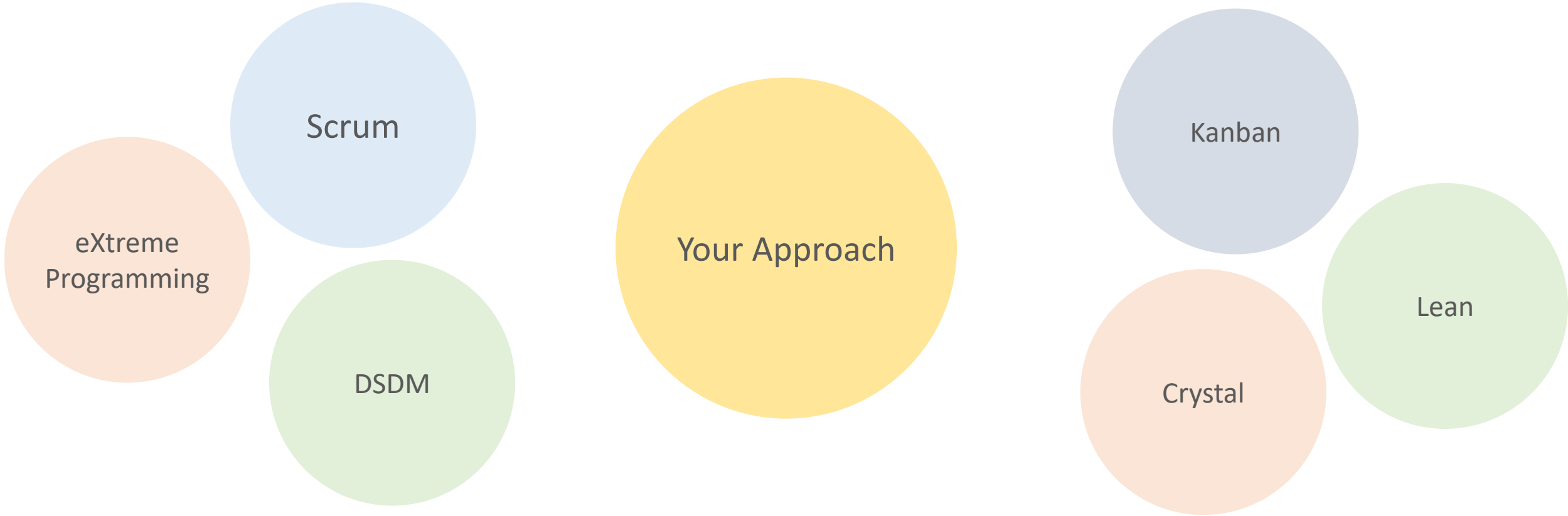
Visual Management / Information Radiator / Kanban Board

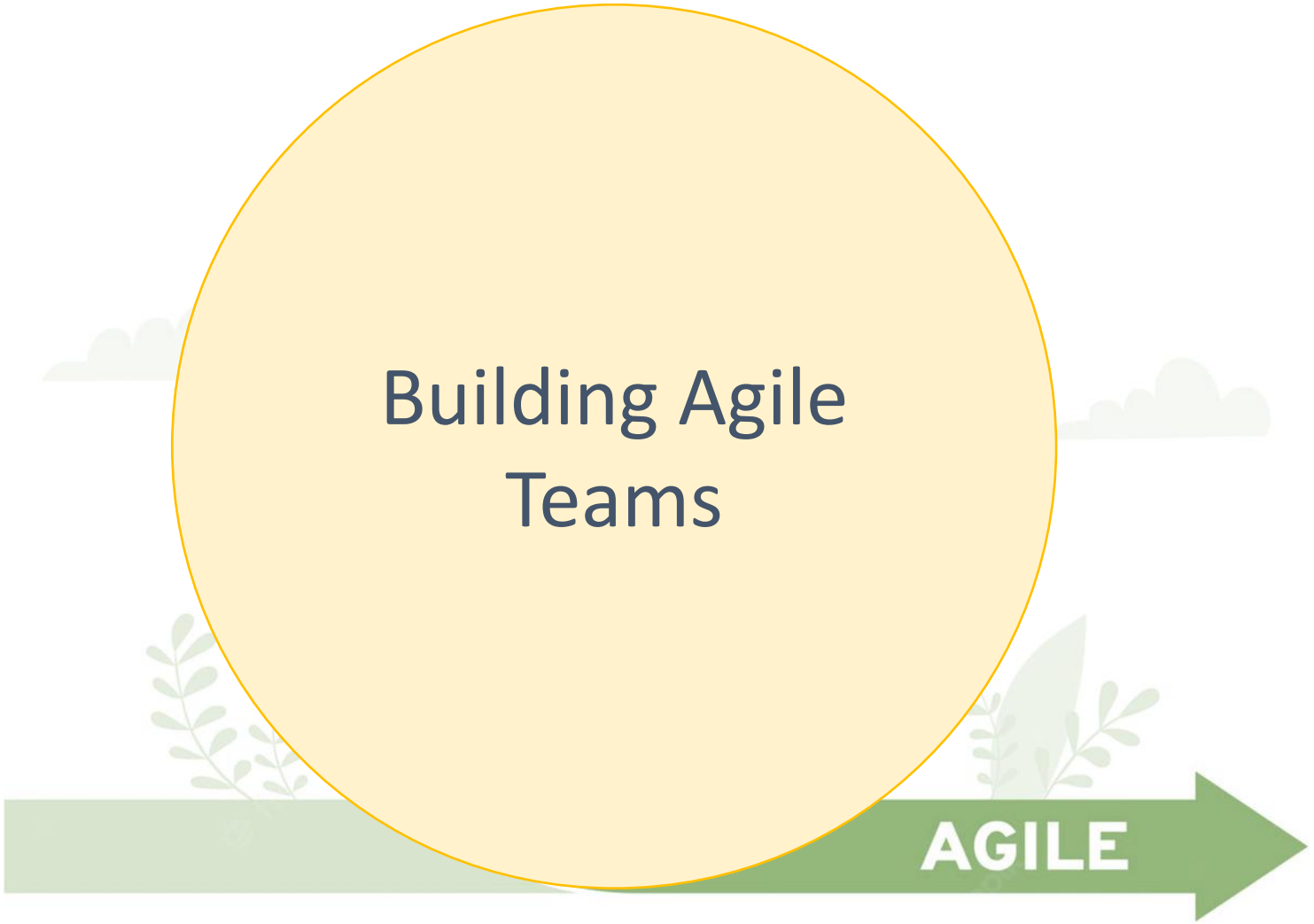
Pairing to code, Swarming around problems

Mixing Agile Approaches

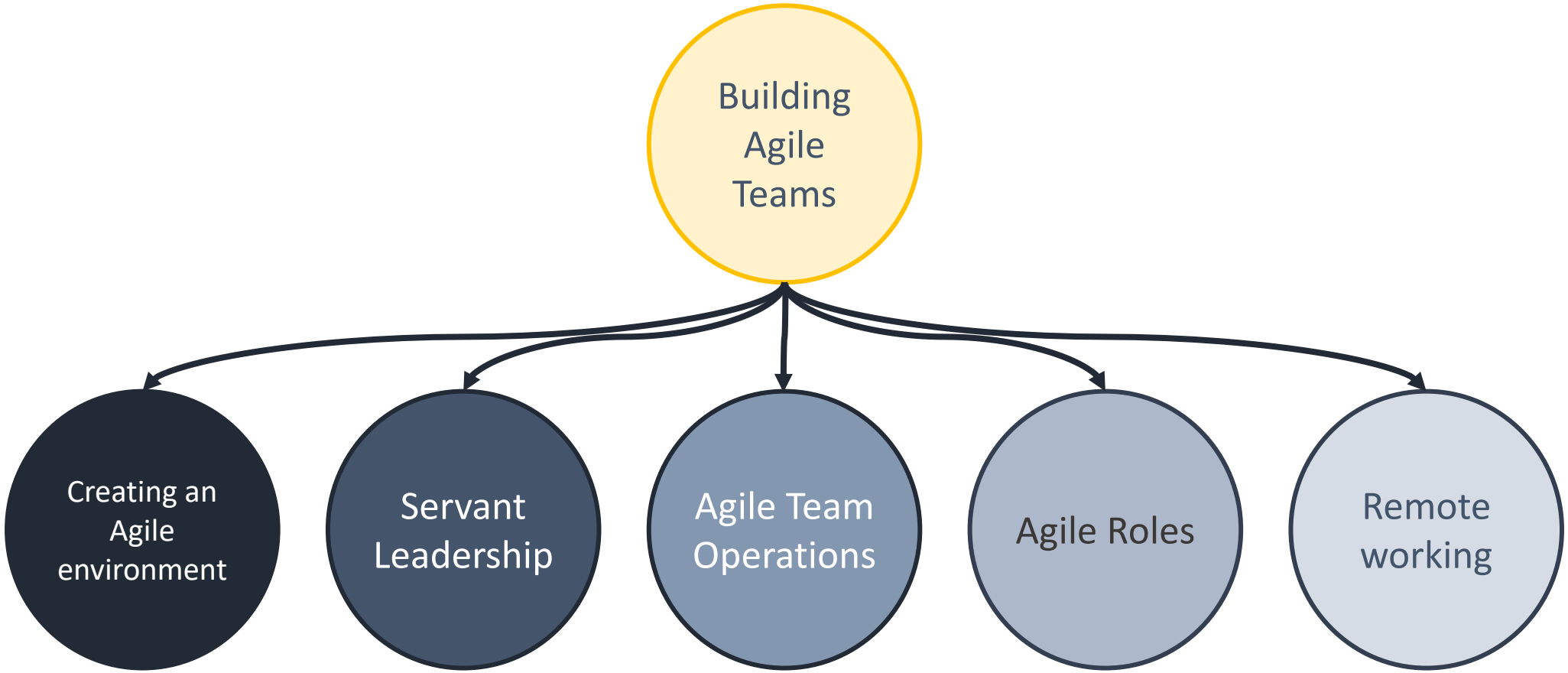
While the fundamentals are the same, there are many Lean and Agile frameworks to choose from - the most common being Scrum, XP and Kanban.

Often teams will tailor these to suit and practice their own special blend of Agile.



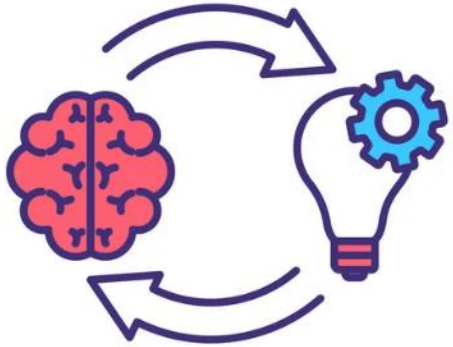

Building Agile
Teams
AGILE

Building Agile Teams



Creating an Agile Environment

Start with an Agile Mindset



To help foster an Agile mindset, ask these questions:

?

How can a servant leadership approach benefit the achievement of the team's goals?

What can the team deliver quickly to obtain feedback and benefit the next delivery cycle?

How can the team make work visible and transparent?

What work can be avoided in order to focus on high-priority items?

Servant Leadership

Servant Leadership **Empowers** the Team

Servant leadership is the practice of leading through service to the team, understanding and addressing their needs to enable the highest team performance.

Characteristics of Servant Leadership

- Listening
- Helping people grow
- Serving those on the team
- Promoting self-awareness
- Coaching versus Controlling
- Promoting the energy and intelligence of others.
- Promoting psychological safety, respect and trust.
- Making it safe to make mistakes and raise concerns.

Servant Leadership

The Role of the Servant Leader

The role of a servant leader is to facilitate the team's discovery and definition of agile, approaching the work in this order:

Purpose	The team's "Why", their goal or reason for being.
People	Encouraging an environment where everyone can contribute and succeed.
Process	It doesn't have to be perfect, look for results. When a cross-functional team delivers finished value often and reflects on the product and the process, the team is agile.

Servant Leadership

Servant Leader Responsibilities

- Facilitate
- Remove Impediments
- Grow the team
- Pave the way for others' contribution

Servant Leadership

Servant Leader Responsibilities

Remove Impediments

Grow the team

Pave the way for others' contribution

Facilitate

Facilitators are the "impartial bridge builders" who facilitate answers from the team (but may not have the answers themselves).

Facilitators encourage:

- Team participation,
- Shared understanding and responsibility for the output
- Creating acceptable solutions

To do this they use Interactive meetings, informal dialog, and knowledge sharing & visibility.

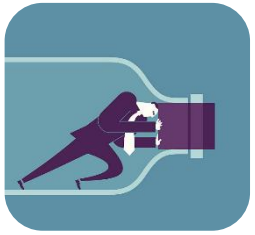
Servant Leadership

Servant Leader Responsibilities

Facilitate

Pave the way for others' contribution

Remove Impediments



Servant Leaders remove blockers and bottlenecks, and bring dependencies into the team.

Grow the team

Servant leaders mentor and grow the team in their Agile knowledge and role capability.

Servant Leadership

Servant Leader Responsibilities

Facilitate

Grow the team

Remove Impediments

Pave the way for others' contribution

It's not about "me" it's all about "we".

When project managers become servant leaders in Agile, the emphasis changes from managing co-ordination, to facilitating collaboration.

The value of project managers is not in their position, but in their ability to make everyone else better.

Agile Team Operations

The most effective Agile teams:

- Range in size from three to nine members → Dedicated small teams increase focus and productivity.
- Are co-located in a team space → Better communication & team dynamics, knowledge sharing, commitment and learning by osmosis.
- Are generalising specialists
- Are 100% dedicated to the team → More answers more quickly, multiple people are able to do similar roles.

Agile Team Operations

Are 100% dedicated to the team

Why?

Multi-tasking or task-switching results in a 20% to 40% loss of productivity, as people switch tasks and get back up to speed.

If a person is on two projects, they are not 50% - 50% on each project, they are often only 20% - 30% on each project.

Overcoming Organisational Silos

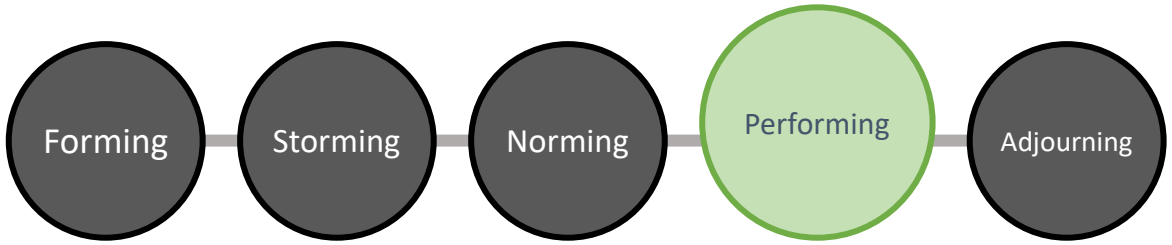
To overcome organisational silos, work with the managers of outside team members and have them dedicate the necessary individuals to the cross-functional team.

Agile Team Operations

This unlocks:

Stable teams:

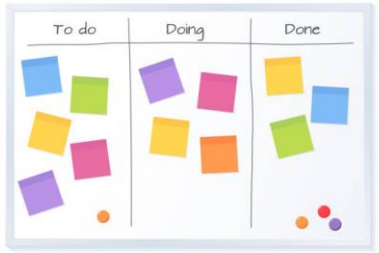
- Ensure simplified team cost calculations
- Depend on each other to deliver
- Preservation of intellectual capital
- Stay in “Performing" for longer



The Tuckman Model

Agile Team Operations

Teams have visual workspaces showing work in progress.



The team limits Work in Progress (WIP) so they can collaborate, avoid task-switching and get work done faster.

They collaborate through:

Pairing

Working in pairs to complete, check and learn together.

Swarming

Multiple members getting around a problem to solve it quickly.

Mobbing

Teams working closely together around a core outcome.

Balance the team space with open workspaces and private areas to focus and meet.

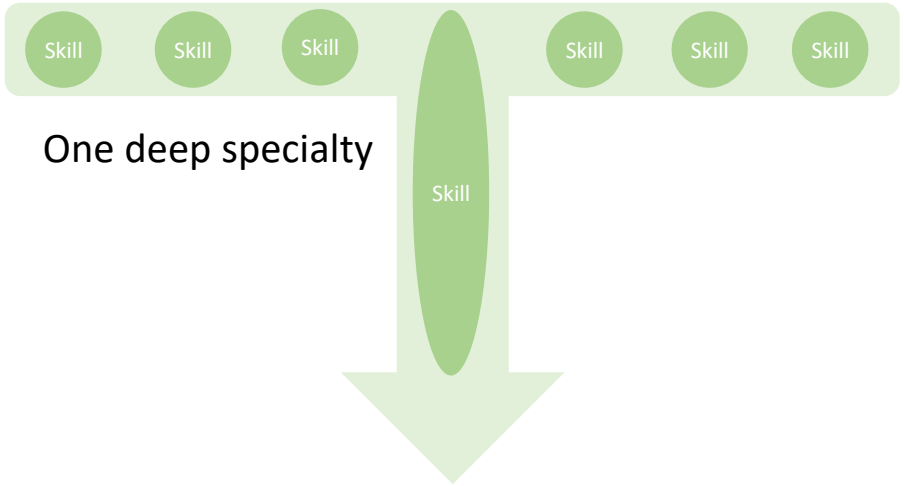
Agile Roles

Generalising Specialists

Agile teams are cross functional - made up of "generalising specialists" or "T-shaped" people.

You can build this with co-located teams through osmosis, or pairing on tasks.

plus a wide range of experience across other skills.



Cross-functional team member

Including everyone needed to deliver a working increment. Typically consists of developers, business analysts, designers, testers, subject matter experts - anyone with the skills necessary to produce a working product.

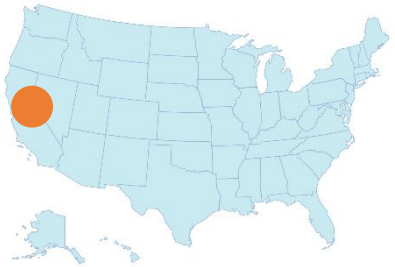
Product Owner

Responsible for guiding direction of the product towards the highest value for the customer. Prioritising and reprioritising increments, giving high level requirements, balancing benefit versus effort.

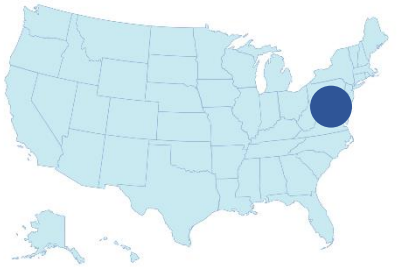
Team Facilitator

May also be called team coach, team lead, project manager, Scrum master, servant leader. They focus on facilitation, helping the team gather answers, reduce impediments, bottlenecks and blockers to the work.

Remote Working



Remote work situations may have cross functional team members in different locations.



In these situations:

Pair team members up to complete, check and learn from each other.

Use virtual information radiators such as backlogs, Kanban boards, burndown charts and risk matrices.

Use virtual communication tools for stand-ups, sprint planning and retrospectives and showcases.


Core
Practices
AGILE

Agile Core Practices

Agile Foundations

Early and Frequent Feedback
The Whole Team Approach
Continuous Integration
Rolling Wave Planning
Sticky / Stable Teams
Visual Management
Servant Leadership
Build in Quality

Core Practices

Charter the Project and the Team
Collaborative User Story Creation
Demonstrations / Sprint Review
Backlog Refinement
Backlog Preparation
Story Card Sizing
Daily Stand-ups
Sprint Planning
Retrospectives

Execution Practices

That help teams deliver value

Measurements in Agile Projects

Agile Foundations

Agile Foundations

- The Whole Team Approach
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- Visual Management

Agile Foundations

Servant Leadership

Early and Frequent Feedback

Sticky / Stable Teams

Continuous Integration

Rolling Wave Planning

Build in Quality

Visual Management

The Whole Team Approach

Bringing any external dependencies from outside the team to inside the team where possible.

Helps increase knowledge sharing and collaboration.

Increases dedication to the project.

Reduces task-switching, and speeds up the output.

Agile Foundations

The Whole Team Approach

Early and Frequent Feedback

Sticky / Stable Teams

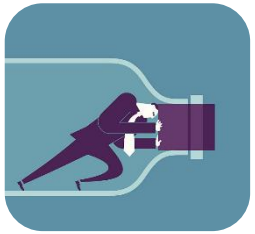
Continuous Integration

Rolling Wave Planning

Build in Quality

Visual Management

Servant Leadership



Leading by serving the team

By removing impediments and bottlenecks to the work

Growing the team's capability, and;

Facilitating problem solving.

Agile Foundations

The Whole Team Approach

Servant Leadership

Sticky / Stable Teams

Continuous Integration

Rolling Wave Planning

Build in Quality

Visual Management

Early and Frequent Feedback

Early feedback on the **product** (through small deliveries)
and the **process** (through retrospectives)
speeds and increases learning for future releases.

Agile Foundations

The Whole Team Approach

Servant Leadership

Early and Frequent Feedback

Continuous Integration

Rolling Wave Planning

Build in Quality

Visual Management

Sticky / Stable Teams

Teams of three to 12 people are funded and formed around a core discipline, feature set or area.

They build up a high level of expertise in that area over time, ensuring work flows more smoothly.

Agile Foundations

The Whole Team Approach

Servant Leadership

Early and Frequent Feedback

Sticky / Stable Teams

Rolling Wave Planning

Build in Quality

Visual Management

Continuous Integration

Code is merged regularly (daily when possible) and regression tested, often automatically,
to catch any defects as a whole.

Agile Foundations

The Whole Team Approach

Servant Leadership

Early and Frequent Feedback

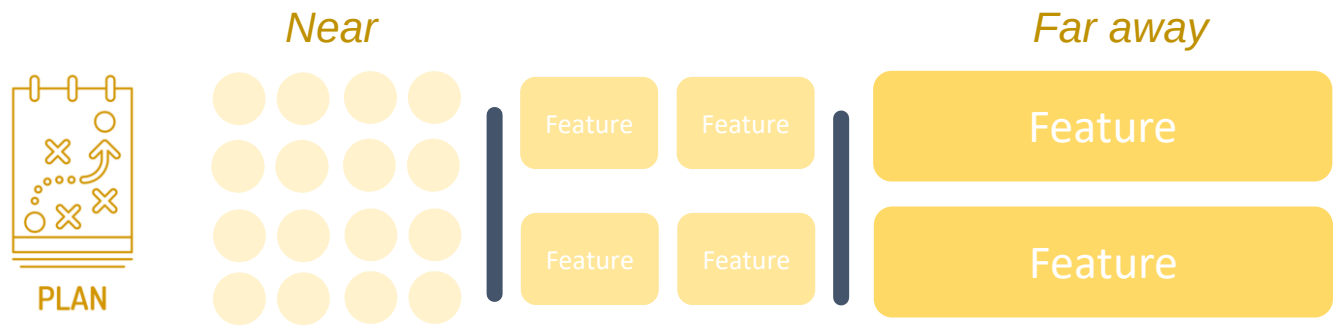
Sticky / Stable Teams

Continuous Integration

Build in Quality

Visual Management

Rolling Wave Planning



Future features are created and estimated on broadly at first, then broken down and elaborated in detail the closer they get to being worked on.

Estimates and Acceptance Criteria become more refined with each pass.

Agile Foundations

The Whole Team Approach

Servant Leadership

Early and Frequent Feedback

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Continuous Integration

Rolling Wave Planning

Visual Management

Build in Quality

Technical debt in future issues resulting from messy code or a “hacky” solution. It is always top-of-mind and reduced during solution and development.

We refactor regularly. A “slack” card of 3 to 5 points can be added to a sprint for Technical Debt, that drops off if other urgent cards arise.

Use peer reviews, test-first (Test Driven Development) and simple solutions over complex ones.

Agile Foundations

Agile Foundations

The Whole Team Approach

Servant Leadership

Early and Frequent Feedback

Sticky / Stable Teams

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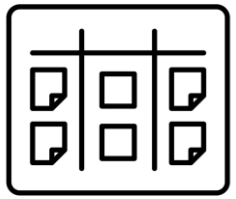
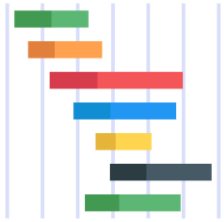
Visual Management





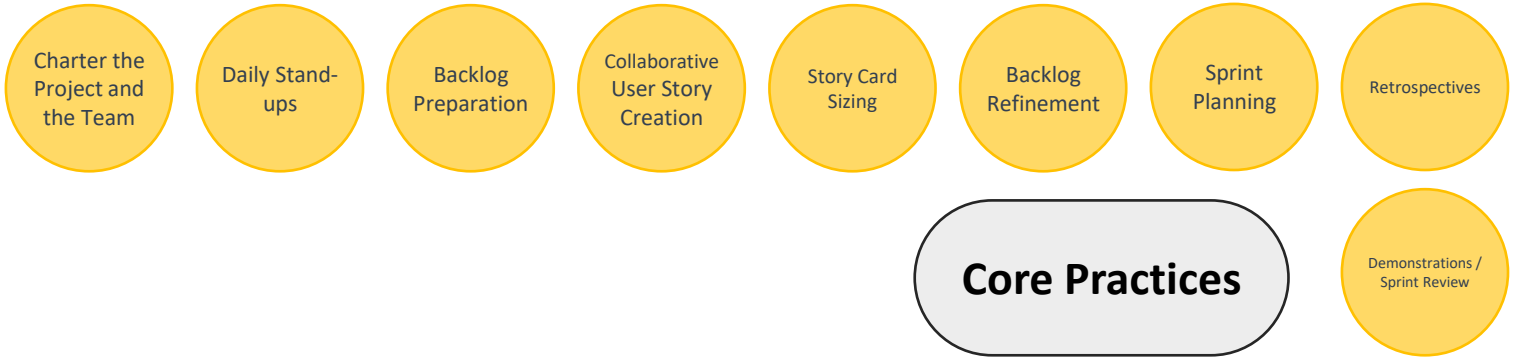
Team information is clearly available to all – including the Backlog, sprint Kanban board, Product Roadmap, team Velocity.

Agile Core Practices

Agile Foundations | **Core Practices** | Execution Practices | Measurements in Agile Projects

Charter the Project and the Team
Collaborative User Story Creation
Demonstrations / Sprint Review
Backlog Refinement
Backlog Preparation
Story Card Sizing
Daily Stand-ups
Sprint Planning
Retrospectives

Agile Core Practices



Agile Core Practices

Daily Stand-ups | Backlog Preparation | Collaborative User Story Creation | Story Card Sizing | Backlog Refinement | Sprint Planning | Retrospectives | Demonstrations / Sprint Review

Charter the Project and the Team

Every project needs a charter so the team knows why they are here and the project objective.

A Team Charter adds how the team will work together around a team vision and clear working agreements.

- Why are we doing this project?
- Who benefits, and how?
- What does done mean for this project?
- How are we going to work together?
- Team values - sustainable pace and core hours
- Definition of ready and done
- Ground rules and group norms

Agile Core Practices

Charter the Project and the Team | Backlog Preparation | Collaborative User Story Creation | Story Card Sizing | Backlog Refinement | Sprint Planning | Retrospectives | Demonstrations / Sprint Review

Daily Stand-ups

A stand-up is a short team meeting (where members typically stand up) where the team "walks" through current Kanban board tasks.

- What did I complete since the last stand-up?
- What am I planning to complete by next stand-up?
- Is anything blocking me?

Teams use stand-ups to micro-commit to each other.

Blockers are raised so the team can swarm around any issues once the stand-up is over and solve them quickly.

Add any issues to a parking lot and solve separately to the stand-up.

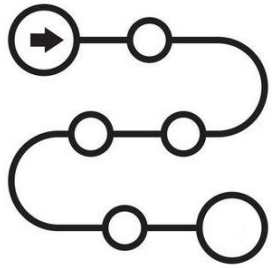
Agile Core Practices

Charter the Project and the Team | Daily Stand-ups | Collaborative User Story Creation | Story Card Sizing | Backlog Refinement | Sprint Planning | Retrospectives | Demonstrations / Sprint Review

Backlog Preparation

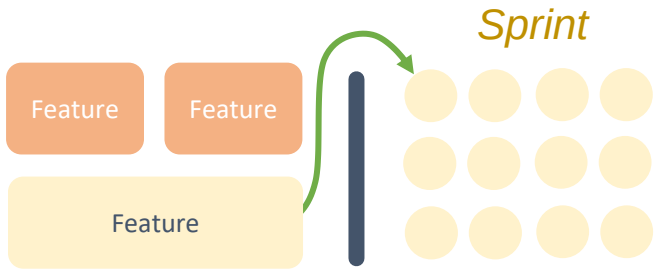
A Backlog is a prioritised list.

A product backlog is the list of upcoming features for a product.
The sprint backlog is the list of User Stories for a sprint.



The Product Owner may produce a Product Roadmap - a high-level sequence of features to be delivered. The Product Owner replans the roadmap based on what the team produces.

The Product Owner may also use high level prototypes showing how the product fits together.



The team uses Rolling Wave Planning – high level features are broken down into User Stories that go into the Sprint backlog for a person to work on during a sprint.

Agile Core Practices

Charter the Project and the Team | Daily Stand-ups | Backlog Preparation | Story Card Sizing | Backlog Refinement | Sprint Planning | Retrospectives | Demonstrations / Sprint Review

Collaborative User Story Creation

The team comes together in “triads" of:

- Developer
- Tester
- Business representative (often a Product Owner, Senior User or Business Analyst)

This combination is also known as the “three amigos".

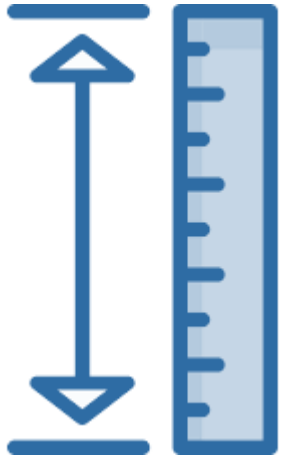
This team works together to:

1. Provide the requirements for user stories,
2. Document those requirements into the cards,
3. Determine a solution and effort required,
4. and size the cards accordingly.

Agile Core Practices

Charter the Project and the Team | Daily Stand-ups | Backlog Preparation | Collaborative User Story Creation | Backlog Refinement | Sprint Planning | Retrospectives | Demonstrations / Sprint Review

Story Card Sizing



Performed during Backlog Refinement, User story creation, or on its own.

The team takes user stories that are “Ready” and estimate their effort.

There are many different ways to size story cards – the most common are T-shirt sizes (S, M, L, XL), and “relative sizing” using Story Points, based on the Fibonacci number sequence (1, 2, 3, 5, 8, 13, 21).

User Stories should be small enough to fit in a sprint or iteration.

Agile Core Practices

Charter the Project and the Team | Daily Stand-ups | Backlog Preparation | Collaborative User Story Creation | Story Card Sizing | Sprint Planning | Retrospectives | Demonstrations / Sprint Review

Backlog Refinement

The Product Owner works with the team to:

Ensure the work is in the right order, based on technical dependencies and customer value,

Ensure cards are sized for effort to complete,

Ensure the team has enough work to do during the next sprint, and;

Help the team prepare user stories for the next 1 to 2 sprints or iterations (of around 2 weeks each).

Agile Core Practices

Charter the Project and the Team | Daily Stand-ups | Backlog Preparation | Collaborative User Story Creation | Story Card Sizing | Backlog Refinement | Retrospectives | Demonstrations / Sprint Review

Sprint Planning

Sprint planning involves selecting the current highest priority user stories, ensuring they are sized, and checking the team's current velocity (or average throughput).

The number of sized cards are then added to the next sprint (including any cards rolling over from the previous iteration) to match the current velocity.

In Kanban, teams may measure throughput (average number of User Stories completed) and limit the Work In Progress (WIP).

Planning is ongoing - done through backlog preparation and refinement, story card collaboration, the product roadmap as well as Sprint Planning.

Agile Core Practices

Charter the Project and the Team | Daily Stand-ups | Backlog Preparation | Collaborative User Story Creation | Story Card Sizing | Backlog Refinement | Sprint Planning | Demonstrations / Sprint Review

"At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behaviour accordingly."

Retrospectives

The retrospective is a meeting, often facilitated by the team lead role at the end of an iteration, where the team comes together to discuss:

- What went well?
- What challenges us / could be improved?
- What did we learn?
- What still puzzles us / questions do we have?

This helps the team improve its process.

It can also be held anytime the team is stuck, when a team completes or ships something, or if more than a few weeks have passed since the last retrospective.

Agile Core Practices

Charter the Project and the Team | Daily Stand-ups | Backlog Preparation | Collaborative User Story Creation | Story Card Sizing | Backlog Refinement | Sprint Planning | Retrospectives

Demonstrations / Sprint Review

The team completes usable features over time in the form of multiple user stories in each Sprint. The aim is to complete something demonstrable in each iteration.

The usable feature is then demonstrated to the customers (either directly or through the Product Owner) who accept the item or give feedback on it.

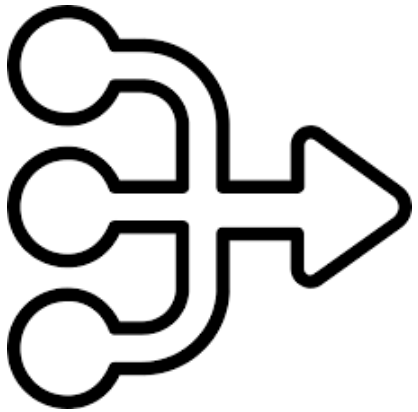
This ensures the team is moving forward on the right track, and gives feedback close in person, place and time.

Execution Practices that help teams deliver value

- Continuous Integration
- Test at all levels
- Acceptance Test Driven Development
- Behaviour Driven Development
- Spikes

Execution Practices that help teams deliver value

Continuous Integration | Test at all levels | Acceptance Test Driven Development | Behaviour Driven Development | Spikes



Work is frequently incorporated into the whole product, then retested to ensure it still works as intended.

Execution Practices that help teams deliver value

Continuous Integration

Test at all levels

Acceptance Test Driven Development

Behaviour Driven Development

Spikes

Unit testing for each piece (User Story),

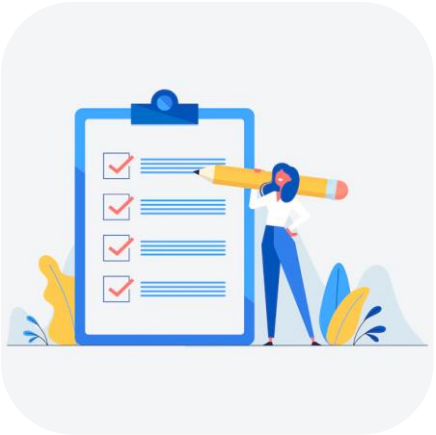
System Testing the product end-to-end,

User Acceptance Testing to test from a customer’s perspective,

Regression Testing to check if anything existing has broken.

Execution Practices that help teams deliver value

Continuous Integration | Test at all levels | **Acceptance Test Driven Development** | Behaviour Driven Development | Spikes



The team agrees on the Acceptance Criteria for the work,

writes the test first,

ensures the test fails,

then writes the code to pass the test.

Execution Practices that help teams deliver value

Continuous Integration | Test at all levels | Acceptance Test Driven Development | **Behaviour Driven Development** | Spikes

Writing the test as the behaviour we want.

(BDD) Given, When, Then

(User Stories) As a, I want, so I can.

Execution Practices that help teams deliver value

Continuous Integration

Test at all levels

Acceptance Test Driven Development

Behaviour Driven Development

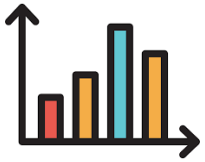
Spikes

Timeboxed research or learning, often for technical solutions or acceptance criteria.

Measurements in Agile Projects

Agile metrics focus on delivering working products of demonstrable value to customers.

Completed features is more useful than “percent done”.



Predictability:

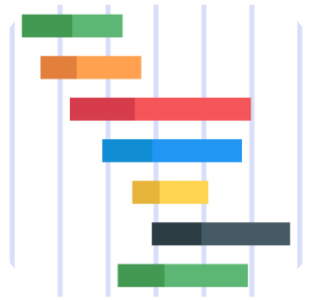
How much was committed versus how much was completed in a given iteration?

Cycle time for user stories and product features.

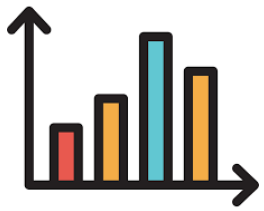
The number of cards in each state may be reviewed to ensure work is flowing.

Measurements in Agile Projects

When teams are not multitasking their capacity can become stable, allowing better planning.



Measurements in Agile Projects



When teams are not multitasking their capacity can become stable, allowing better planning.

Burndown charts are used to measure the iteration's work

Cycle time is the time to complete a piece of work (i.e. user stories)

Lead time is the time from the customer order to delivery (i.e. features)

Velocity is the average number of story points a team completes each sprint

Measurements in Agile Projects

Core Practices

When teams are not multitasking their capacity can become stable, allowing better planning.

Burndown charts are used to measure the iteration's work

Cycle time is the time to complete a piece of work (i.e. user stories)

Lead time is the time from the customer order to delivery (i.e. features)

Velocity is the average number of story points a team completes each sprint

Products, solutions and features vary.

The number of points a team will complete is unique to that team – do not use it as a measure *outside* the team.

Project Management Professional

Course Slides

- Project Process
- Key Concepts
- Agile Overview
- Agile Considerations for each Process

Develop Project Charter

Develop Project Charter

Process & ITTOs

Agile Considerations

Agile Considerations

In Agile, we might have a Team Charter as well as a Project Charter.

- Team vision or mission
- Team roles and responsibilities
- Stakeholders we work with
- Team values
- Decision processes
- Conflict Processes
- Team Ceremonies

We might also use a business case (or similar, with cost-benefit analysis) for each Increment, or Feature – to ensure it adds business value and to help us prioritise the highest value ones first.

Agile Team Charter	
GENERAL INFORMATION	**CHARTER DATE: 1 March 2023**
BACKGROUND	Add context to where the team finds itself at a given point in time. Include a brief introduction of how the team started and where is it now.
TEAM ROLES	List the main responsibilities of each team contributor to create visibility around "who owns what" and avoid confusion that could slow the team down.
STAKEHOLDERS WE WILL WORK WITH	Agile is all about being customer-centric. An Agile team charter is an appropriate place to define who your team's true customers are on an internal as well as an external (end customer) level.
TEAM VALUES	Gather the team and decide which are the top 3 (or so) values you share and want to consistently embody in the ways you work together.
TEAM COMMUNICATION	Agree on team communication methods. Messaging, Email, Meetings, Face to Face etc.
DECISION PROCESS	Agree on how are decisions made, team collaboration, approvals or sign off points. Who is responsible and accountable?
CONFLICT PROCESS	How are conflict and blockers resolved in the team?
TEAM CEREMONIES	
SPRINT PLANNING MEETING	Every second Tuesday before the next sprint begins for 30 mins
STAND UP	Daily for 15 mins. Meeting topics include what we did yesterday, what we will do today and any blockers.
SPRINT REVIEW	Sprint Review (Customer Demonstration of usable feature) - 30 mins every other Monday
RETROSPECTIVES	Held at the end of every Iteration for 30 minutes. Actions to be taken (with owners) for challenges or improvements.
DEFINITION OF READY	Team members will pull work at the beginning of the iteration, then pull new work when existing cards are complete.
DEFINITION OF DONE	When a user story has been developed, tested and passed, or when a story is blocked

Identify Stakeholders

Develop Project Charter

Process & ITTOs

Agile Considerations

Agile Considerations

Stakeholders on an Agile team may operate slightly differently, and we need to keep in mind:

The Whole Team Approach

Agile prefers everyone needed to create the project to be a part of the project team – not in separate departments.

Small, Co-located Teams

Agile also prefers small teams of 3 to 12 people, co-located in the same space to take advantage of osmosis.

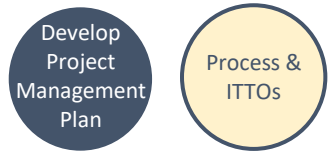
Close Customers

Agile works with customers of the project every day, and prefers them as part of the whole team as well.

Information Radiator

Information Radiators – visual project information on schedule and scope and risks – are a part of the project area, and any stakeholder can see where it is up to at any time.

Develop Project Management Plan

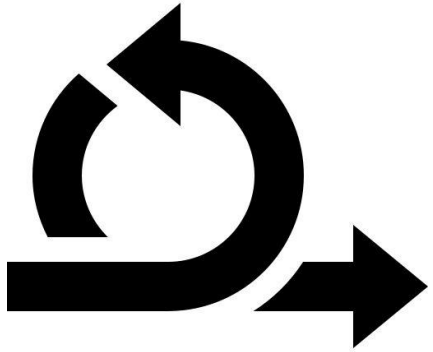


Agile Considerations

Agile Considerations

Whether we are planning a Predictive project (Waterfall),

or an Agile project, or something in between, we still need a plan.
In Agile our plan may not be done all at the beginning.



Some things to consider:

Scope Plan

Our “Scope Plan” might be a Product Backlog – a list of features, often created or approved by the Product Owner, that we are going to deliver over time.

Schedule Plan

Our “Schedule Plan” might be a Product Roadmap – that shows the features and the order they will be delivered (if not on a rough schedule as well)

Cost Plan

Because Agile favours stable / sticky teams, with everyone needed to create the product part of the team, our Cost should be stable as well.

Stakeholder Plan

Again with the Whole Team Approach, all the people necessary should be part of our project team.

Plan Stakeholder Engagement

Plan Stakeholder Engagement | Process & ITTOs

Agile Considerations

Agile Considerations

Engaging our stakeholders is still important in an Agile project.
There are a few things to consider:

Servant Leadership

An Agile leader aims to engage the team by serving the team – including stakeholders and especially project customers (who receive the benefit).

Remove Blockers

Grow the team

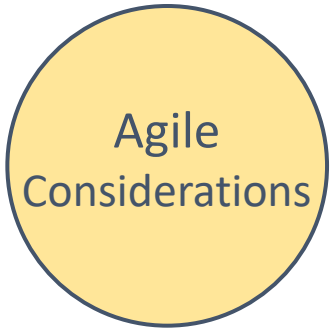
Leaders remove blockers to smooth the flow of work, and unlock intrinsic motivation by helping the team learn and grow.

Close Customer

The Customer – our key stakeholder - is often a part of the project team (or at least represented by the Product Owner), and works with the development team every day to ensure engagement all around.

Plan Scope Management

Agile Considerations



How we manage scope may be slightly different in an Agile Project.

The Product Owner represents the customer.

Product Backlog

They place a list of features to deliver in the Product Backlog.

Sprint Backlog

The team break down the features into User Stories, and place enough to fill a single sprint (usually 2 weeks)

Sprint

The team develop, test and sign off on the work.

Release

The team release the feature, gather feedback from the customer, and begin again.

Collect Requirements

Collect Requirements | Process & ITTOs

Agile Considerations

Agile Considerations

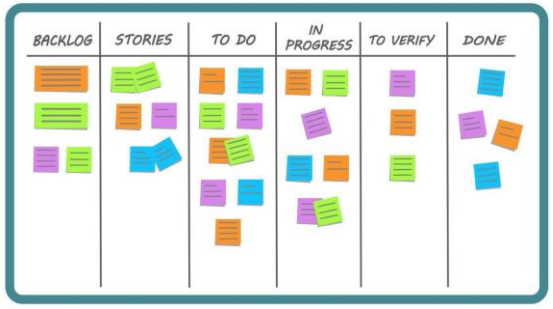
Collecting requirements may have a few differences in an Agile environment.

User Stories

Requirements will often take the shape of User Stories. User stories are small pieces of work (part of the Feature we are going to release) that can be completed in a sprint. They have acceptance criteria on them, such as "Given, When, Then."

Iterative Releases

Because we are working on one small feature from the Product Backlog at a time, in 2-week sprints, we just need requirements and solutions to be ready for the next few 2-week sprints.



Product Owner and Customers

In Agile the customer should be part of the Team, working with developers every day. At the very least the Product Owner will represent the customer, and have the final say on requirements.

Define Scope

Agile Considerations

Agile Considerations

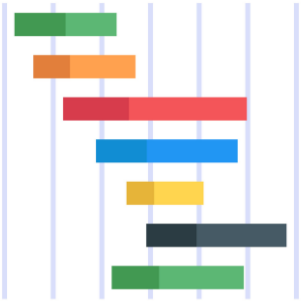
As with collecting requirements, Agile project are iterative and we may only need to define our scope for the next few sprints (around 2 weeks each). High level scope is defined or approved by the Product Owner using these tools:

Product Backlog

A list of features that meet our customer requirements. These are later broken down into user stories to complete pieces in a sprint.

Product Roadmap

Similar to a schedule, this lists the features on a timeline so we can see the order (and sometimes timeframe) they will be done in.



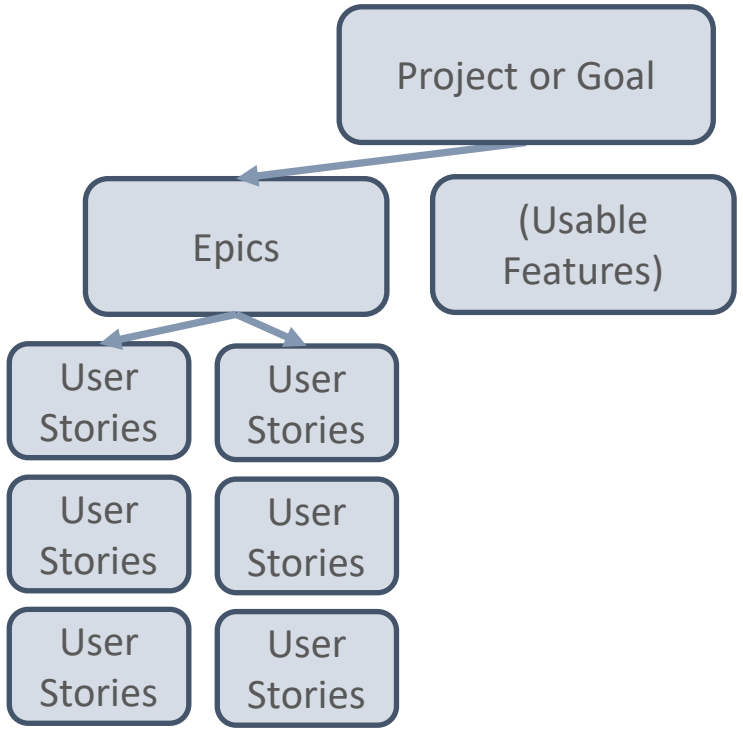
Create WBS

Agile Considerations

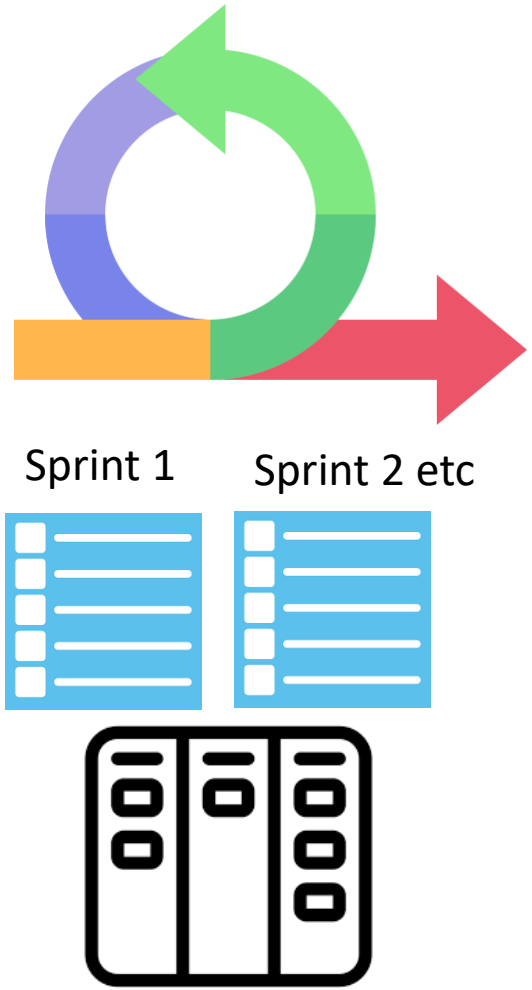
Agile Considerations

We still need to break down the work in an Agile project. We might use a WBS, or it might happen organically from the Product Backlog into User Stories.

WBS? It's all the same….



Product Backlog



Completed and released

Plan Schedule Management

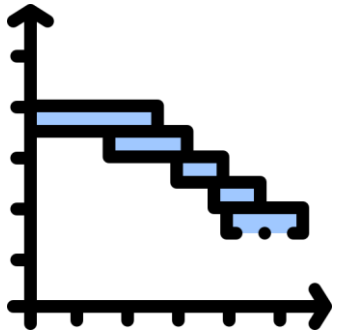
Agile Considerations

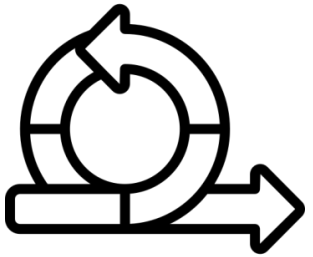
Agile Considerations

We still need to manage a schedule on an Agile project. The methods might be slightly different but the need is the same.

Product Roadmap

Instead of a “Project Schedule”. This is our high level Features (or Epics) displayed in order of delivery, and sometimes on a timeline. It can look like a Gantt Chart if we wish, or a Product Breakdown Structure.





Velocity

As we manage our schedule, we might use the current “Velocity” of our team to see when something can be released.

Velocity is the rate at which we’re completing work (usually User Stories), measured by Story Points.

Cycle Time and Lead Time

Lead time is the time from Customer order to customer delivery – when a feature is known to when it is released.

Cycle time is the time it takes for one process or one piece within that feature (i.e. a User Story, or just the testing for that user Story).

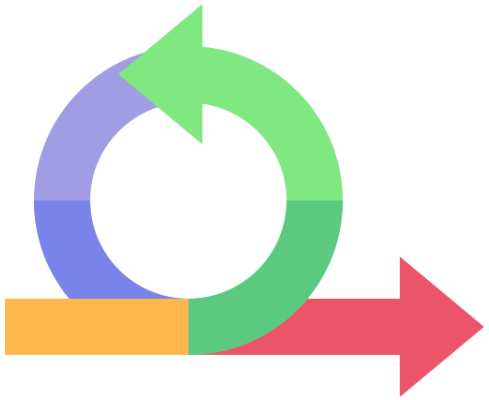
Define Activities

Agile Considerations

Agile Considerations

Breaking down our work is done slightly differently in an Agile Project.

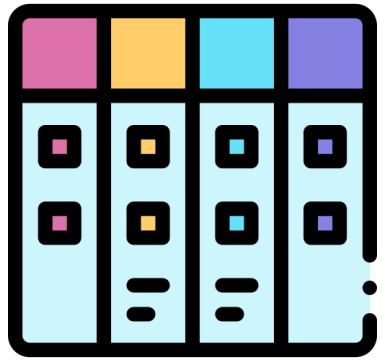
It's less about "Activities" and more about creating "small pieces of customer value".



This means we break down Features into User Stories, and the User Stories have the Acceptance Criteria needed for approval and release.

Developers and testers then go about creating that small piece of value.

The "activity" is implied.



Sequence Activities

Agile Considerations

Agile Considerations

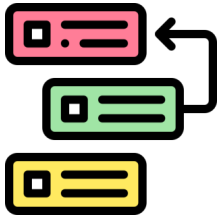
In agile, we use Prioritisation of increments of value, more than just sequencing.

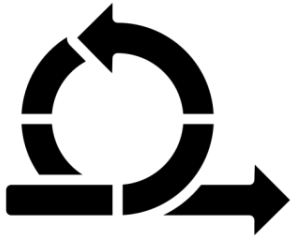
Product Owner prioritises the highest value Features

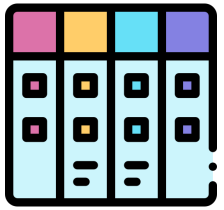
The Team gives input into any Technical dependencies

The Team break them down into User Stories

And complete what they can in a sprint







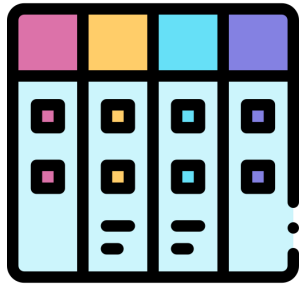
Estimate Activity Durations

Agile Considerations

Agile Considerations

Estimating is done slightly differently on Agile projects, but the idea remains the same.

We want to estimate the **effort** to complete small increments of value – from Features (Epics) to User Stories.



T-Shirt Sizing

T-Shirt sizes of Small, Medium, Large and Extra Large are perfect for a high-level estimate e.g. for a Feature.

Story Points

User Stories with acceptance criteria should be small enough to be completed in a sprint of 2 weeks.

We usually estimate with “Story Points”. The points could represent days, but the most common Agile way is “Relative Sizing”, where each card is sized relative to the smallest card (“1”).

It often goes up in the Fibonacci scale of 1, 2, 3, 5, 8, 13, 21.

Planning Poker

Estimating is done by the people doing the work – usually Developers and Testers.

Each person gives their estimate for the User Story. High and Low estimators explain their reasons, and they vote again until a consensus is reached.

Develop Schedule

Develop Schedule | Process & ITTOs

Agile Considerations

Agile Considerations

It is still a good idea to develop and show a schedule on an Agile project.

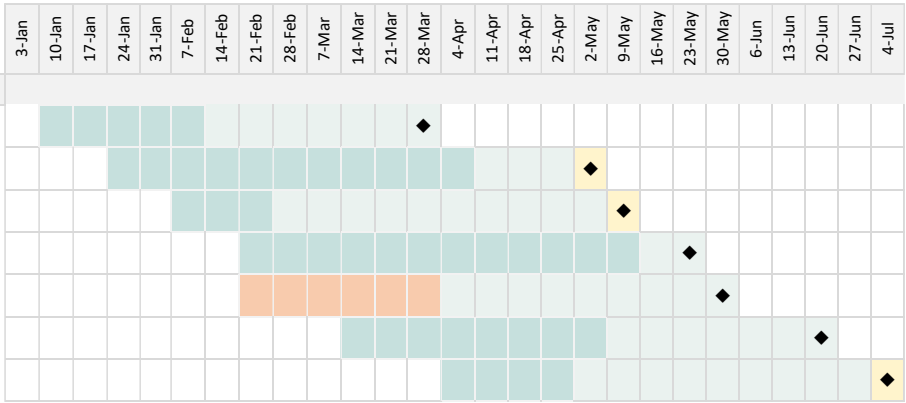
It typically takes the form of the Product Roadmap.

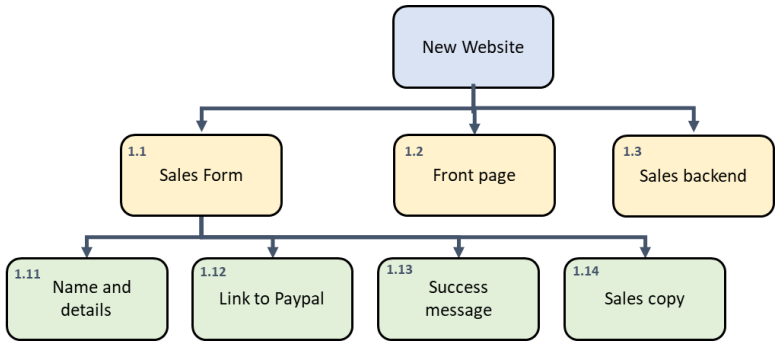
Product Roadmap

Either a Gantt-style roadmap of features we are looking to deliver on a timeline, or a now-next-later sequence-based view of features we're delivering, similar to a Product Breakdown Structure and without a timeline.

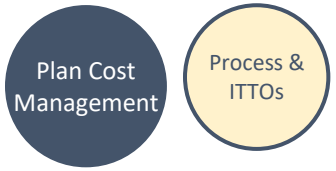
Project Name: *Project*

#	Feature	Start	End
1	Feature 1	10-Jan-22	1-Apr-22
2	Feature 2	30-Jan-22	2-May-22
3	Feature 3	7-Feb-22	9-May-22
4	Featuer 4	21-Feb-22	23-May-22
5	Feature 5	22-Feb-22	30-May-22
6	Feature 6	20-Mar-22	20-Jun-22
7	Feature 7	04-Apr-22	04-Jul-22

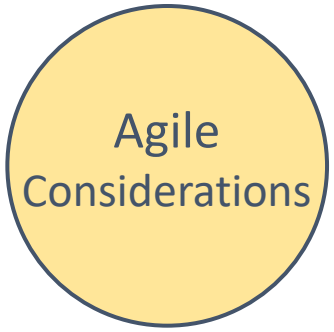




Plan Cost Management



Agile Considerations



In Agile we favour stable or sticky teams, and the whole team approach. This may impact our budget, but with stable resources, cost is often fixed and we keep delivering features until the time and money run out.

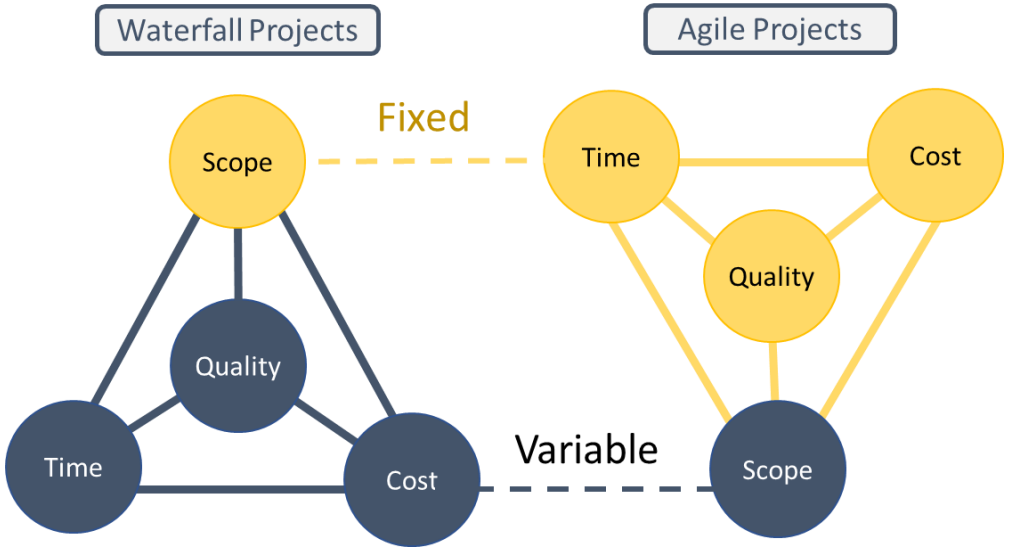
The Whole Team Approach

This means we want everyone necessary to deliver the feature (i.e. Customer, Product Owner, Developers, Testers, Business Analysts) within the team and dedicated 100%.

No context switching!

Stable Teams

This means we have our whole team paid for and dedicated for the amount of time we want – no flexing on or off – and we deliver features until we run out of time or money.



Estimate Costs

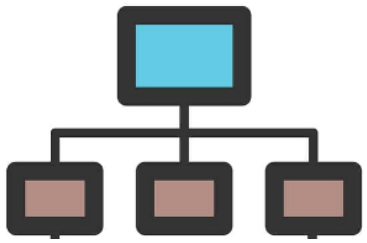
Agile Considerations

Agile Considerations

In Agile, we estimate effort instead of cost.

We prefer to have a fixed cost – with a stable team funded for a certain period of time.

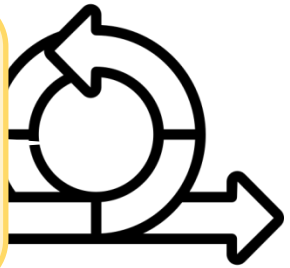
The team break features down into User Stories, and add Acceptance Criteria.



The team estimate the effort to complete each User Story.

Typically this is relative estimating, relative to the smallest Story, using the Fibonacci sequence:
(1, 2, 3, 5, 8, 13, 21)

Enough User Stories are placed into the next Sprint's backlog, to match the team's Velocity.



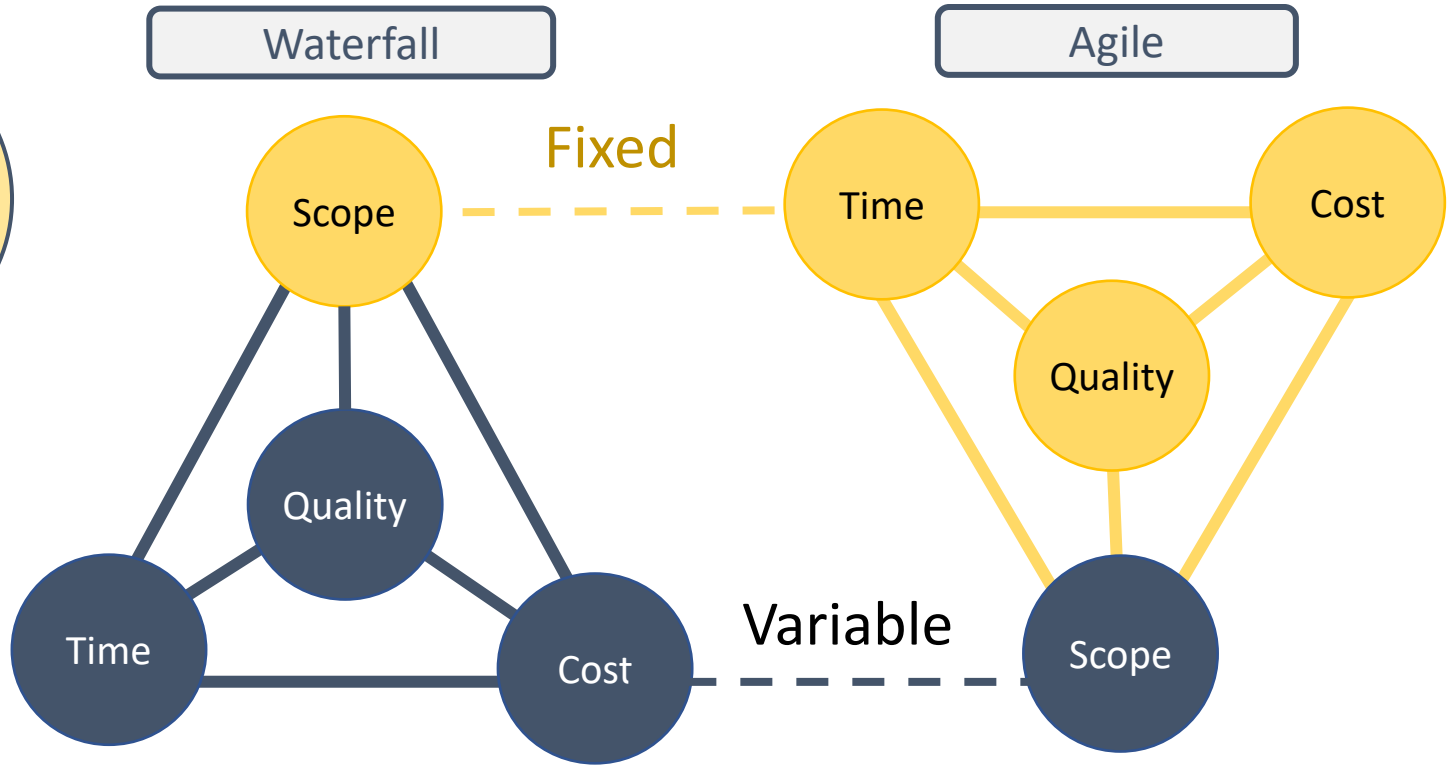
Velocity is the average amount of Story Points the team completes in a Sprint.

Determine Budget

Determine Budget | Process & ITTOs

Agile Considerations

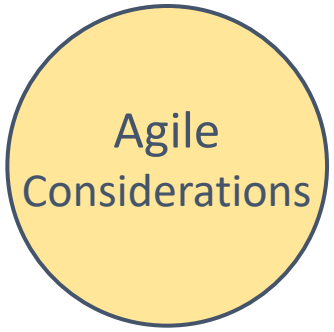
Agile Considerations



In Agile, we prefer a fixed cost with a stable team, delivering features until the money and / or time runs out.

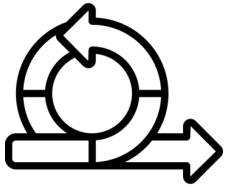
Plan Quality Management

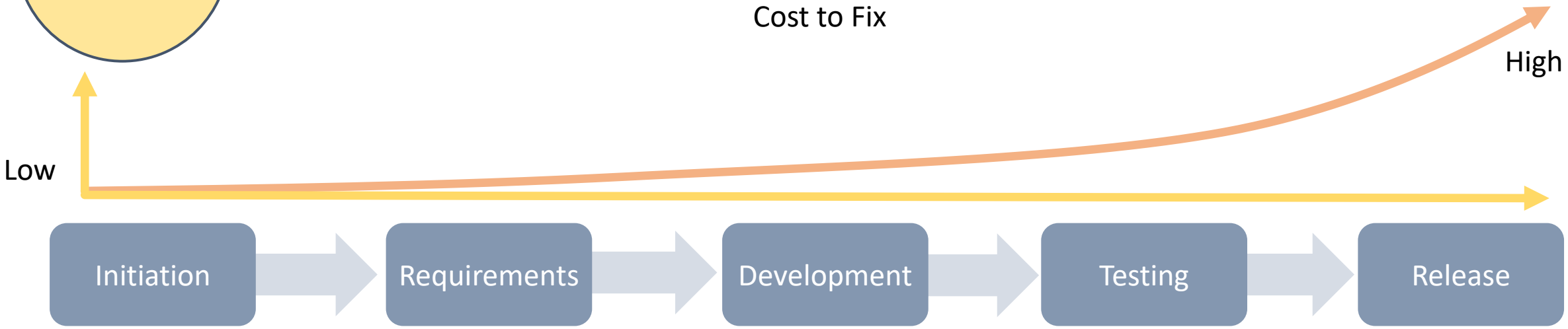
Agile Considerations



In Agile, Quality is everyone's responsibility.

Quality issues also cost more, the later they are found in product development.





The Product Owner ensures the team is working on the highest priority features that meet customer demand.

The team ensure Acceptance Criteria is correct on the User Story, through pairing with Customers, Peer Reviews or shoulder checks.

The team use Test Driven Development to ensure quality, Pair Programming, and refactor code regularly to reduce errors in the future.

The team tests at all levels: Unit Testing, System Testing, User Acceptance Testing, Regression Testing.

The Customer and/or Product Owner sees the feature in use at the Sprint Review before release.

Plan Resource Management

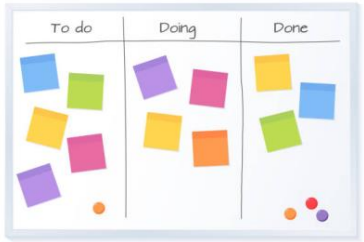
Plan Resource Management | Process & ITTOs

Agile Considerations

Agile Considerations

Building on the Organisational Theory from this Process, Agile aims to unlock the intrinsic motivation of staff. There is a LOT of great research that supports this.

Small features and short sprints reduce Parkinson's Law (work expanding to fit a long timeframe).



Kanban Boards and Daily Stand-ups help remove blockers and give a sense of progress – a primary motivator found by Teresa Amabile at Harvard.

Regular checking in with (i.e. Daily Stand ups) the team also increased engagement by 14% in a study at Stanford Health.

Purpose, Autonomy and Mastering a skill were three keys to intrinsic motivation found by Dan Pink. Working closely with customers gives a higher purpose.

Estimate Activity Resources

Estimate Activity Resources | Process & ITTOs

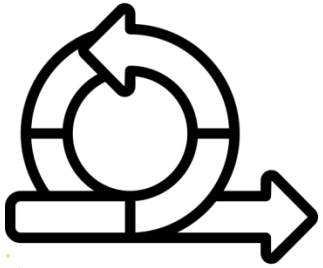
Agile Considerations

Agile Considerations

In Agile, we prefer small (3 to 12 people), stable (fully funded), sticky teams.

This means they are funded for the entire time required, and release features as long as they are available.

This typically avoids the large estimating efforts required for larger Waterfall projects, but it does not suit every situation.



Plan Communications Management

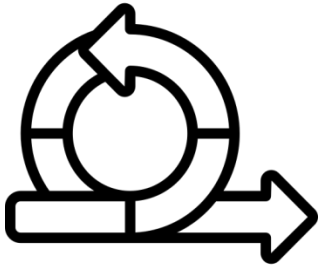
Agile Considerations

Agile Considerations

In Agile, we communication can be slightly different to a normal project.

Pull Communication

Visual Management and Information Radiators



Agile favours Pull communication, where the information is transparent and visible to all. Stakeholders can see how the project is doing at any time, without having to ask.

An Information Radiator is an open team space where the team is co-located, with the team's Kanban board, burndown chart, risks and other visual information. It can also be virtual – as long as it is open to all.

Plan Risk Management

Agile Considerations

Plan Risk Management

Process & ITTOs

Agile Considerations

Managing Risk is done much the same as other tasks on an Agile project.

Discover risks through Retrospectives and Stand-ups.

Manage risks through the Risk Adjusted Backlog

Retrospectives

Stand-ups

Risk Adjusted Backlog

We ask and take actions for:

What went well?
What challenges us?
What did we learn?
What still puzzles us?

Every day we meet and raise blockers to our work, so we can swarm around and fix them.

Risks, with their Probability and Impact, are added as User Stories to the backlog and prioritised against the value of normal tasks.

Identify Risks

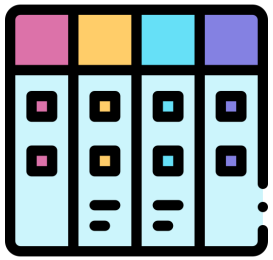
Agile Considerations

Identify Risks

Process & ITTOs

Agile Considerations

Identifying risk is done organically on an Agile project, through its natural way of working and ceremonies.



Visual Management

Retrospectives

Stand-ups

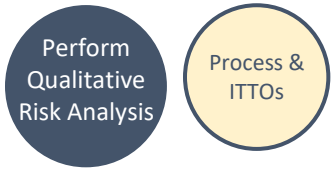
With our Information Radiator – our Kanban Board, Burndown Chart, Risk Register, Product Backlog and Roadmap are visible to all, so anyone can see how we are tracking at any time.

We ask and take actions for:

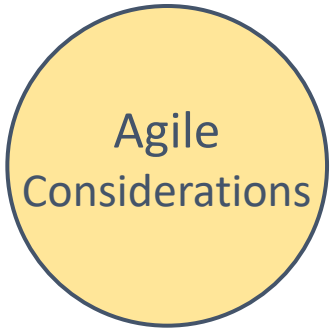
What went well?
What challenges us?
What did we learn?
What still puzzles us?

Every day we meet and raise blockers to our work, so we can swarm around and fix them.

Perform Qualitative Risk Analysis



Agile Considerations



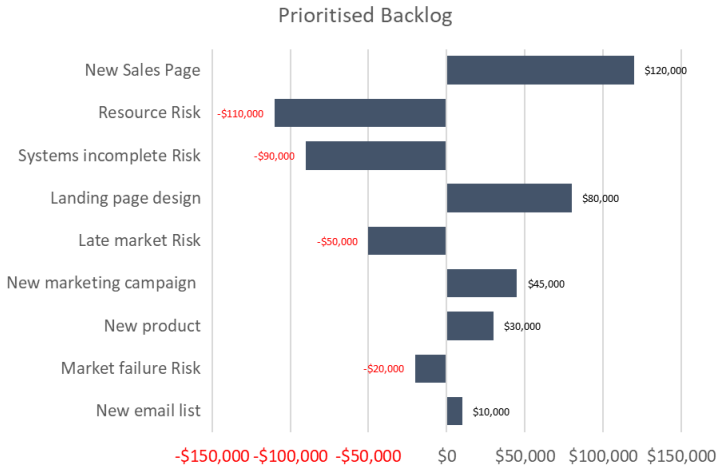
We still want to analyse the risks we find on an Agile project.

We can add Likelihood and Impact ratings to the Risk stories we place in our backlog, to help us prioritise them against value-added User Stories.

Hold risk workshops, or raise risks from stand-ups or retrospectives.

Add them as a Risk user story to the backlog, with their Probability and Impact information.

Prioritise the negative risk impact or the risks, versus the positive value added by the user story or feature.



Plan Risk Responses

Plan Risk Responses

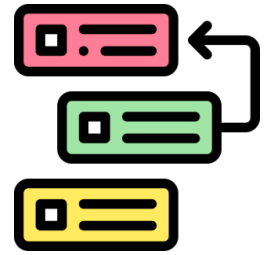
Process & ITTOs

Agile Considerations

Agile Considerations

Risk responses have many places in an Agile project.

Where possible, we want to raise and solve risk close to when and where it happens.



When blockers are raised during stand-up, we want to solve them close in person, place and time.

Retrospectives

Ensure we take actions (with owners) for anything that challenges us during a sprint.

Pairing

Working in pairs to complete, check and learn together.

Swarming

Multiple members getting around a problem to solve it quickly.

Mobbing

Teams working closely together around a core outcome.

Risk Adjusted Backlog

Risks are prioritised, just like a normal project, except risk cards are prioritised against user stories in the product backlog.

Plan Procurement Management

Agile Considerations

Plan Procurement Management

Process & ITTOs

Agile Considerations

Agile favours customer collaboration over contract negotiation, and small, complete teams. Ideally we'll bring the vendor into the team, or favour a full service supplier over multiple suppliers. If we must use a third-party seller there are a few things we can do to help.

Multi-tired structure

Describe different agreements (waterfall / agile) in different documents i.e. an Appendix)

Emphasize value delivered

Milestones and payment terms can be structured based on value-driven deliverables.

Graduated time and materials

The supplier can be awarded with a higher hourly rate when delivery is earlier than the contracted deadline.

Fixed price increments

Decompose the scope into fixed price micro-deliverables, even down to the story.

Not-to-exceed time and materials

This limits the overall budget to a fixed amount.

When the customer wants to incorporate new ideas, they prioritise.

Dynamic scope option

On contracts with a fixed budget, the supplier may offer the customer the option to vary (prioritise) the scope.

Early Cancellation option

When the supplier delivers sufficient value with only half the scope completed, they should not be obligated to pay the remaining half.

Direct and Manage Project Work

Direct and Manage Project Work

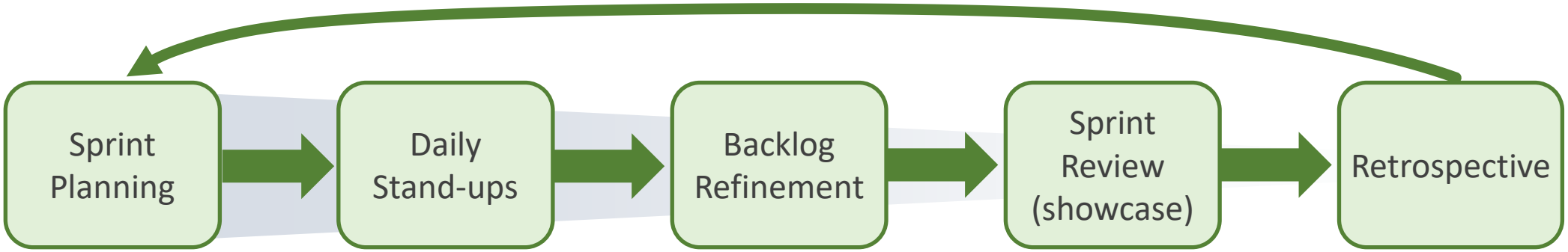
Process & ITTOs

Agile Considerations

Agile Considerations

The way we manage and direct project work may be slightly different in an Agile Project.

We deliver small, usable features as regularly as possible (2 – 8 weeks). Every sprint of two weeks we want to showcase something usable to our customer as well. Any scope changes are added by the Product Owner, and prioritised against other existing work.



Manage Project Knowledge

Manage Project Knowledge

Process & ITTOs

Agile Considerations

Agile Considerations

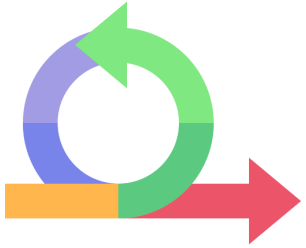
Agile project knowledge is ideally made visible to anyone who wants it via the team's Information Radiator. We also want to gain the benefit of learning by osmosis.

Information Radiator

Learning by Osmosis

Set up in the Team Space – often physical but can be virtual, this is the team's Kanban Board, Burndown Chart, Product Backlog and anything else that shows the progress at a glance.

Anyone should be able to walk through and see how the project is going, without having to ask.



Information we pick up "second-hand" from surrounding conversations or the environment around us is called "Learning by osmosis".

This is why Agile teams prefer to be co-located in the same space, why we swarm around problems, and why programmers sometimes pair up to code and review.

Manage Stakeholder Engagement

Manage Stakeholder Engagement

Process & ITTOs

Agile Considerations

Agile Considerations

Keeping our team engaged mostly through intrinsic motivation is a key part of Agile practices and methods.

Engagement through Transparency

Nothing is secret or hidden – anyone can see where the project tis up to at any time.

Engagement through Progress

Small features, small stories and short sprints give us regular wins and progress.

Engagement through a higher purpose

Regular connection to the customer and customer value ensures meaning and purpose.

Engagement through continuous improvement

Improving our process through Retrospectives each sprint ensures everyone has a voice and can make a difference.

Engagement through regular touch points

Daily stand-ups, co-location where possible and regular communication increase communication.

Manage Quality

Agile Considerations

Manage Quality

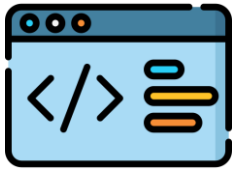
Process & ITTOs

Agile Considerations

We already looked at how Quality is everyone's responsibility on an Agile team, with correct requirements, acceptance criteria, refactored code, pair programming, customer showcases and sign offs. With regard to testing, we also Test First, Test at All Levels and use Continuous Integration.

Test First (Test Driven Development)

Test Driven Development (TDD) writes the test case before writing the code. The test fails first(with no solution written), then passes once the code is written.



Test at All Levels

Test at all levels means:
Unit testing, of each User Story,
System Testing, of stories integrated together in the system,
User Acceptance Testing, to check it meets the user's requirements, and
Regression Testing (usually **automated**) to see if any other functions are broken.

Continuous Integration

Continuous Integration is where we merge the code into the main "branch" or product as often as possible and test it as a whole – ideally daily and ideally automated.

Acquire Resources

Agile Considerations

Agile Considerations

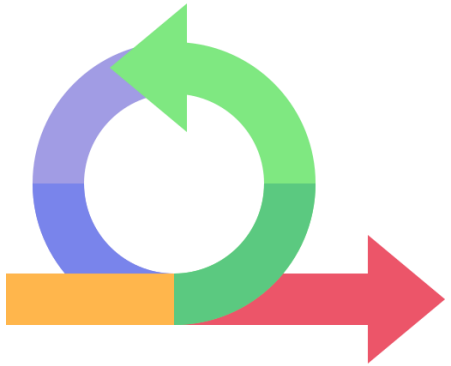
Acquiring resources can be slightly different in an Agile team.

We prefer small, stable / sticky teams, funded for the entire time needed. We also prefer “T-shaped” generalising specialists in the team.

T-shaped Generalising Specialists

Person with a broad range of skills
(e.g. business knowledge, design, development, testing)

One deep specialty
(e.g. development)



Stable / Sticky teams

Fund small teams (between 3 and 12 people) for as long as you can and allow them to release the highest priority features continuously.

Develop Team

Agile Considerations

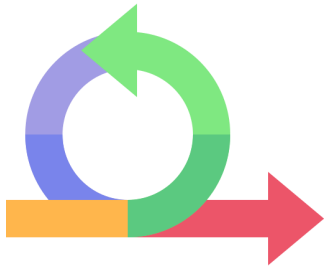
Develop Team | Process & ITTOs

Agile Considerations

Developing our team can come organically in an Agile project, with:

- Team process improvements from Retrospective outcomes,
- Pair Programming to code and learn together,
- Swarming around problems as soon as they happen and learning as a team.

Servant Leadership



Team engagement in Ceremonies

Agile encourages everyone to be servant leaders, but especially the Product Owner and Scrum Master.

We focus on these every day:

- Growing the team,
- Removing blockers.

Some “soft” measures to assess our team might include:

- Engagement in team ceremonies – feeling safe to speak up, to challenge ideas.
- Sick days or days off – High sick days or absences are an indicator of low engagement.

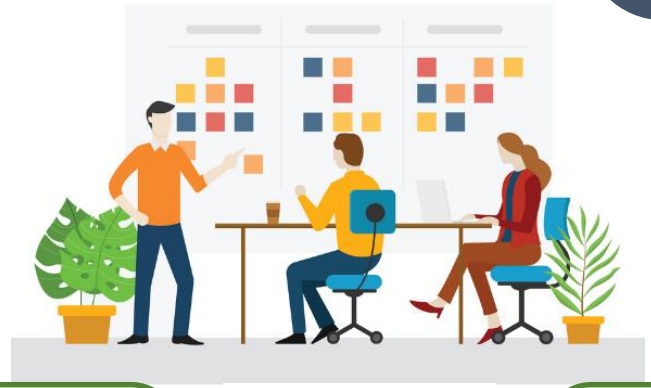
Manage Team

Manage Team | Process & ITTOs

Agile Considerations

Agile Considerations

Managing a team can be done slightly differently in an Agile project.



Team Velocity

Each User Story has an estimate of effort in “Story Points”. Our team’s velocity is the average number of story points it completes each sprint. Each team and product will be different, but we can measure this to ensure the work is stable, and see how long features might take.

Remove Blockers

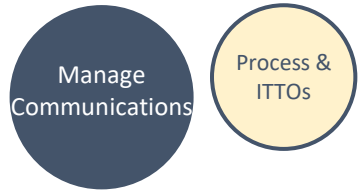
The Scrum Master focuses less on disciplining a team and more on problem solving with the team, removing anything that is slowing them or blocking their work.

Swarm around problems

If an issue is raised during Stand-Up, we find the right people and swarm around the problem to fix it immediately.

Manage Communications

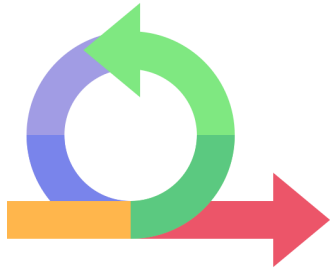
Agile Considerations



Agile Considerations

Agile teams prefer close, face to face communication where possible, and Pull communication.

Effectiveness of Communication Channels

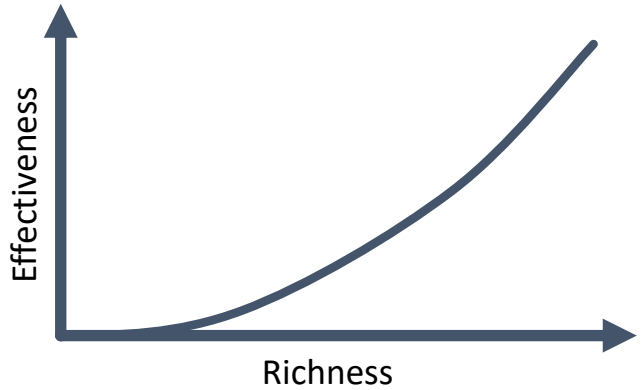


Pull Communication

Developed by Alistair Cockburn as part of Crystal, we measure communication effectiveness by its richness. Richness means:

- We're able to handle multiple information cues simultaneously,
- Get rapid feedback,
- It is personal, and
- Uses natural language.

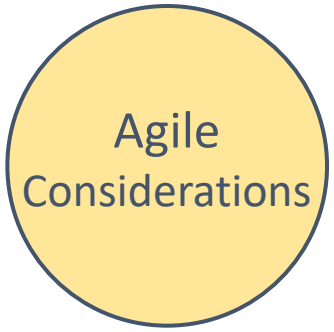
(i.e. speaking face to face)

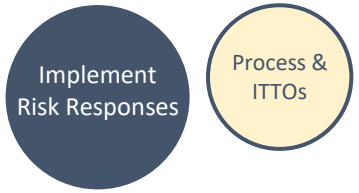


Pull communication is when our stakeholders or customers can get the information they need without having to ask – such as from a visual board information radiator.

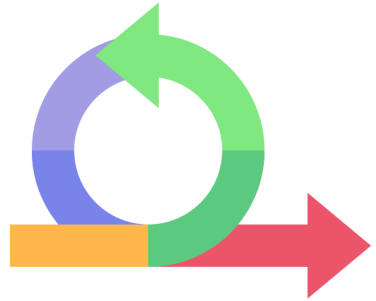
Implement Risk Responses

Agile Considerations

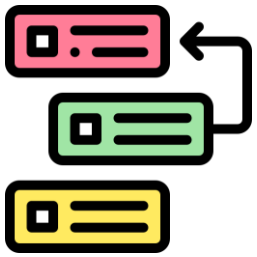


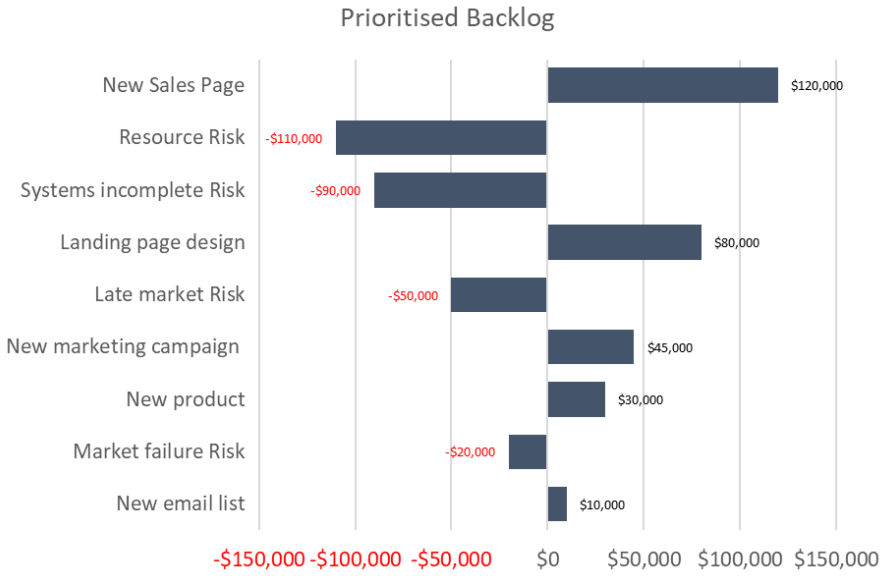


In an Agile team, we are focusing on risk continuously.



Risk Adjusted Backlog





Risks are added to the backlog as risk User Stories, with their financial impact information. They are prioritised by the Product Owner against normal features with their financial benefits.

A Tornado Chart is a good fit for showing this priority.

Conduct Procurements

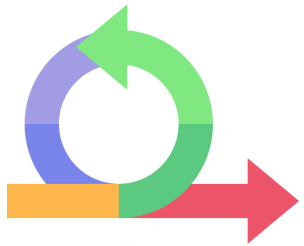
Agile Considerations

Conduct Procurements

Process & ITTOs

Agile Considerations

Although Agile prefers co-located small teams, with T-Shaped existing knowledge of the customer or organisation, there are a few options when working with a seller.



Bring the Vendor into the Team

Bringing the vendor into the team and even co-locating with them can improve communication and reduce timeframes for collaborating and getting answers.

Favour a full service supplier

One full service supplier will be easier to manage than multiple suppliers or teams doing the work, with fewer communication channels.

N x (N – 1) / 2

Dynamic scope option

Having a vendor for a fixed amount of time and continuously releasing the highest priority features is another agile-centric way to do it.

Monitor and Control Project Work

Monitor and Control Project Work

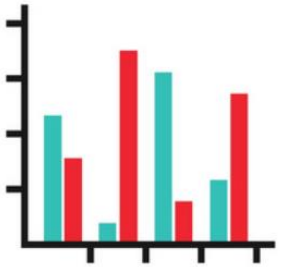
Process & ITTOs

Agile Considerations

Agile Considerations

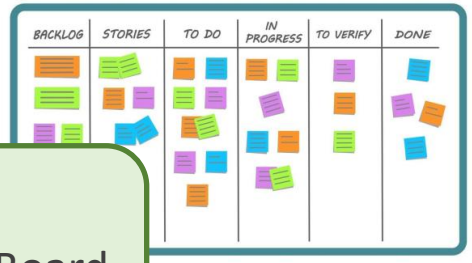
Agile project teams use the project information we gather on a daily basis. Things like Kanban boards, burndown charts, Velocity charts can also double as our Work Performance Reports.

Velocity



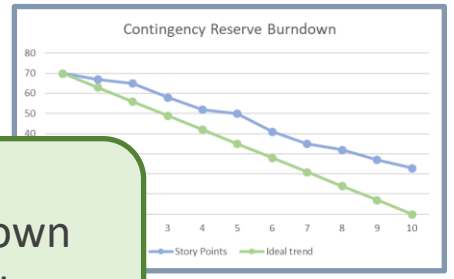
An Agile team measures velocity – the number of story points completed on average each sprint. In a Kanban-only project (not Scrum) we can use Cycle time and Throughput.

Kanban Board



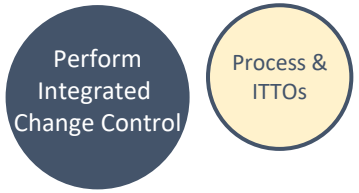
The Kanban board shows us the work in each "phase" – analysis, development, testing, sign off, and where the bottlenecks are so we can unblock them.

Burndown Charts

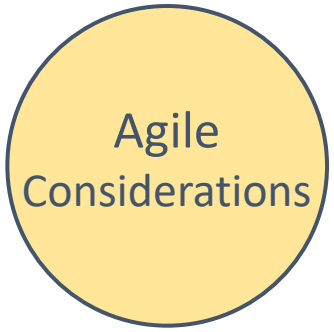


The burndown chart shows the ideal trend of story points to be completed during the sprint, versus the actual work completed during the sprint.

Perform Integrated Change Control

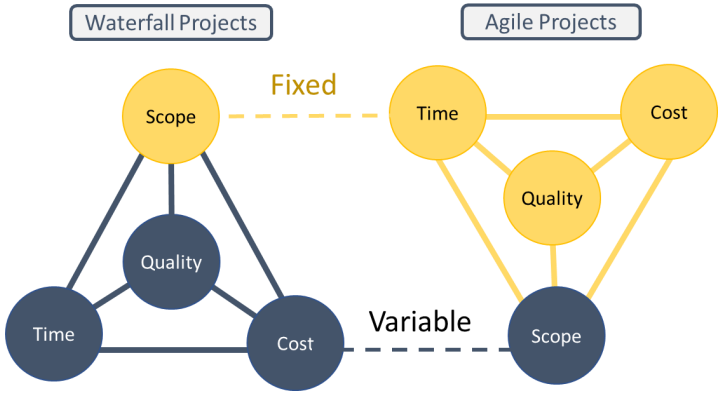


Agile Considerations

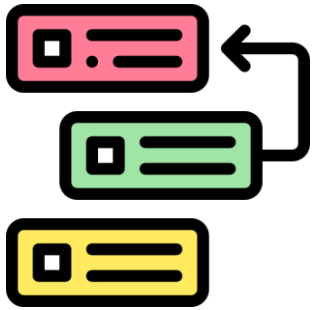


Agile projects typically have fixed cost and schedule (time).

The only thing that changes is the scope, and what we can achieve.



For speed, the Product Owner (who represents the customer) has Autocratic decision making powers as well – meaning they can approve or reject changes to scope, and other have to convince them of any changes.



Updated or new features are added to the Product Backlog, and updated User Stories are added to the next Sprint Backlog.

Monitor Stakeholder Engagement

Agile Considerations

Agile Considerations

Engagement is done more organically in an Agile project, with stand-ups to check in, pairing and retrospectives to tackle issues quickly, and regular small wins.

Monitoring team engagement can be done in a few ways.

Formal Team Monitoring

During a Retrospective (or any other time) we can ask our team to complete an anonymous “Team Temperature” survey.

They rate how they are feeling from 1 to 10, with a one-word response. The Scrum Master invites people to talk through the low scores if they wish (or any score).

Informal Team Monitoring

Noticing who attends ceremonies (or doesn’t) and how much they interact, can also give us tips on team engagement.

e.g. a Customer who doesn’t attend Sprint Review, or doesn’t care about the feature produced.

Validate Scope

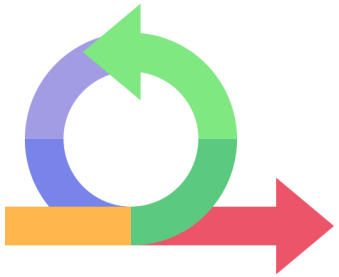
Agile Considerations

Validate Scope

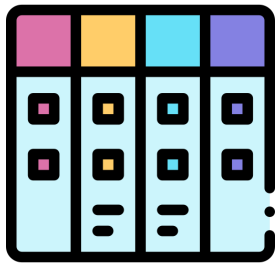
Process & ITTOs

Agile Considerations

In Agile teams, we deliver value for the customer.
The Product Owner represents the customer, and validates the scope in the Sprint Review.



Sprint Review

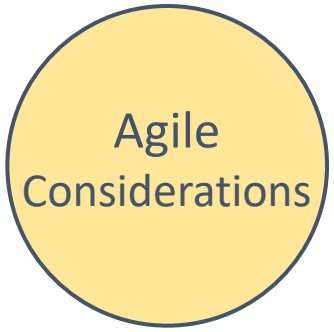


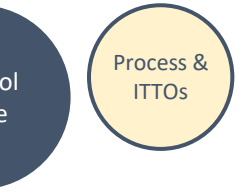
A typical sprint of two weeks has a Sprint Review at the end, where the team demonstrate the usable feature or piece of value that they created, to the customer and/or Product Owner. This gives the Product owner a chance to give feedback or accept it.

The Product Owner may choose to sign off on each User Story after it has been tested as well – but this is up to the team.

Control Scope

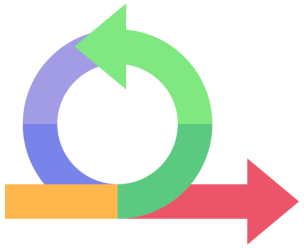
Agile Considerations



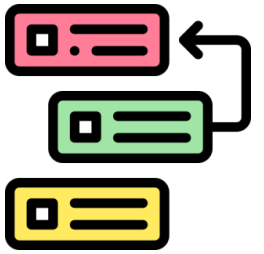


Because scope should be the only thing that changes on an Agile project (cost and schedule are fixed), there are a few things to note:

Product Owner



Product Backlog



Any changes to scope are managed by the Product Owner. They represent the customer, and ensure we're delivering the highest value items.

The Product Owner can either come up with ideas or changes themselves, or approve ideas from the team, customers or stakeholders.

Usable increments (features) of customer value are added to the Product Backlog, and prioritised according to the highest value (sometimes against the lowest effort also).

Control Schedule

Control Schedule | Process & ITTOs

Agile Considerations

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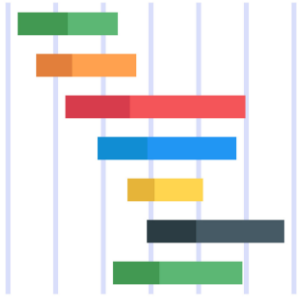


Depending on the project, we can use a few Agile tools to control our schedule, if needed.

Burnup or Burndown Chart	Reprioritise Remaining Work in the Backlog	Determine Velocity	Conduct Retrospectives
To see variances in planned versus actual work completed.	To work on things when resources or systems are available.	The average Story Points per sprint can help us forecast future work.	Take actions for challenges and improve the process as we go.

Control Costs

Control Costs | Process & ITTOs

Agile Considerations

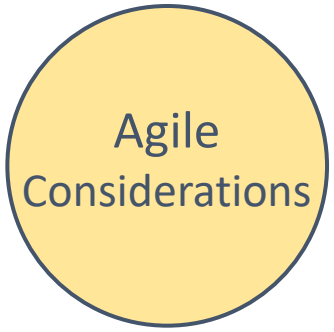
Agile Considerations

Similar to controlling our schedule, we can use some Agile tools to keep our project on track.

Burnup or Burndown Chart	Reprioritise Remaining Work in the Backlog	Conduct Retrospectives
To see variances in planned versus actual work completed.	To balance the work for the lowest use of resources if needed.	Take actions for challenges and improve the process as we go.

Control Quality

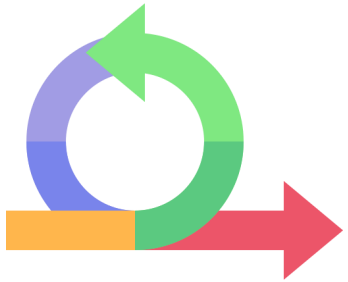
Agile Considerations



Quality is everyone's responsibility on an Agile team. The Control Quality activities can be performed by all team members throughout the project life cycle. We've seen Test First / Test Driven Development, Test at All Levels. We can also use:

Unit Testing

Where our developers or testers run tests on each User Story as they are developed.



Continuous Integration

Where we integrate all the new pieces (User Stories, or Features) into the main system as often as possible (ideally daily), and run automated Regression Tests to ensure the overall product still works.

Control Resources

Agile Considerations

Control Resources | Process & ITTOs

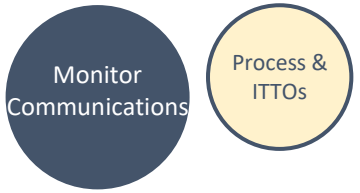
Agile Considerations

Agile teams prefer T-shaped, dedicated project teams.

The specific roles often don't matter as much as having everyone needed within the team to complete the product features.

Then we focus on collaborating and learning quickly by osmosis (especially when co-located).

Monitor Communications



Agile Considerations

Agile Considerations

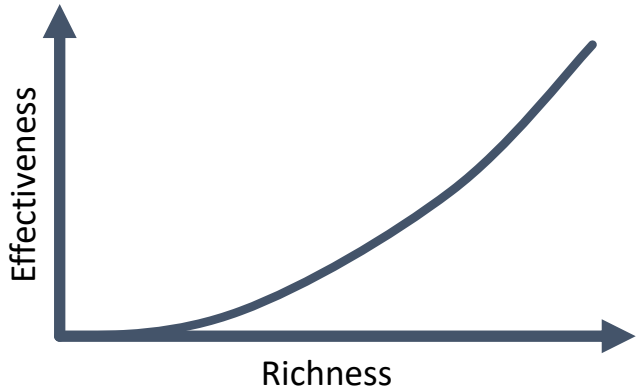
Agile favours face-to-face communication to get information quickly, plus co-located teams and paired team members to increase learning, by osmosis.

Invite Stakeholders to Ceremonies

Retrospectives

Agile is more transparent than other frameworks. Can we bring our stakeholders into our existing team area, or ceremonies for some rich communication? High richness means:

- We get rapid feedback
- Get multiple information cues,
- It is personal,
- Uses natural language.



While some frameworks (i.e. Scrum) prefer only the team at a retrospective, we can also gather feedback from our stakeholders if they attend, or have one separately. Is our process working for them? Do we need an action to improve it?

Monitor Risks

Agile Considerations

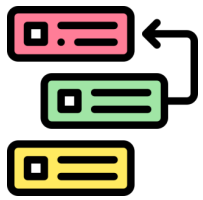
Monitor Risks

Process & ITTOs

Agile Considerations

Just like quality, Risk is everyone's responsibility on an Agile project.

We can still hold separate Risk Review sessions if we like, but risks are made visible and are managed through the backlog, like everything else.



Risk Adjusted Backlog

Risks are raised as User Stories, with their Probability and Impact ratings. We can then prioritise them against the normal features / User Stories of value in our backlog.

Inherent Risk Matrix (before Controls)

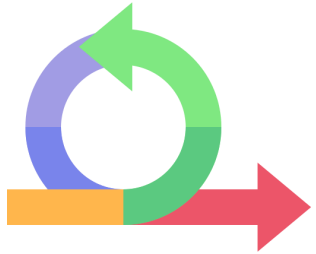
	Impact	Very Low	Low	Medium	High	Very High
Probability	Very High					
	High	1			1	
	Medium	1	1	1		
	Low			1	1	
	Very Low					

We might also display all our risks on a Matrix in our Information Radiator or team area.

Control Procurements

Agile Considerations

Agile Considerations



Agile projects prefer “Customer collaboration over contract negotiation”.

There are a few ways we can do this, even when working with vendors.

The Whole Team Approach

Bring the external party into the team, or co-locate them at the very least.

Dynamic Scope Option

If we fix the contract cost and time, we can deliver the highest priority features until the time and money run out – just like a real Agile project.

Fixed Price Increments

Decompose the scope into fixed-price features, or micro-deliverables.

Close Project or Phase

Close Project or Phase

Process & ITTOs

Agile Considerations

An Agile project can be closed and go through the same activities as a Waterfall project. We'll still need to ensure customer acceptance, transition the product to BAU, etc.

Agile Considerations

Final Showcase

We can give a final, overall showcase of the entire working product to our customers. The Product Owner can also outline the benefits achieved.

Final Retrospective

We can hold a final retrospective to gather all the lessons learned for future projects.

Transition Activities

While Agile favours "Working software over comprehensive documentation", we may still need change activities (processes, training) for the receiving customer.

Knowledge Areas	Initiating	Planning	Executing	Monitoring & Controlling	Closing
Project Integration	1. Develop Project Charter	2. Develop Project Management Plan	3. Direct and Manage Project Work 4. Manage Project Knowledge	5. Monitor and Control Project Work 6. Perform Integrated Change Control	7. Close Project or Phase
Stakeholders	1. Identify Stakeholders	2. Plan Stakeholder Engagement	3. Manage Stakeholder Engagement	4. Monitor Stakeholder Engagement	
Scope		1. Plan Scope Management 2. Collect Requirements 3. Define Scope 4. Create WBS		5. Validate Scope 6. Control Scope	
Schedule		1. Plan Schedule Management 2. Define Activities 3. Sequence Activities 4. Estimate Activity Durations 5. Develop Schedule		6. Control Schedule	
Cost		1. Plan Cost Management 2. Estimate Costs 3. Determine Budget		4. Control Costs	
Quality		1. Plan Quality Management	2. Manage Quality	3. Control Quality	
Resources		1. Plan Resource Management 2. Estimate Activity Resources	3. Acquire Resources 4. Develop Team 5. Manage Team	6. Control Resources	
Communications		1. Plan Communications Management	2. Manage Communications	3. Monitor Communications	
Risk Management		1. Plan Risk Management 2. Identify Risks 3. Perform Qualitative Risk Analysis 4. Perform Quantitative Risk Analysis 5. Plan Risk Responses	6. Implement Risk Responses	7. Monitor Risks	
Procurements		1. Plan Procurement Management	2. Conduct Procurements	3. Control Procurements	