MONASH University

Information Technology

FIT2002
IT Project Management

Lecture 4
Project Scope Management

Video 1: *Project Scope Management*

Learning Objectives

- Describe the process of planning scope management

What is Project Scope Management?

- **Scope** refers to all the work involved in creating the products of the project and the processes used to create them
- A **deliverable** is a product produced as part of a project, such as hardware or software, planning documents, or meeting minutes
- Project scope management includes the processes involved in defining and controlling what is or is not included in a project

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Project Scope Management Processes

- **Planning scope:** determining how the project's scope and requirements will be managed
- **Collecting requirements:** defining and documenting the features and functions of the products produced during the project as well as the processes used for creating them
- **Defining scope:** reviewing the project charter, requirements documents, and organisational process assets to create a scope statement
- **Creating the WBS:** subdividing the major project deliverables into smaller, more manageable components
- **Validating scope**: formalising acceptance of the project deliverables
- **Controlling scope:** controlling changes to project scope throughout the life of the project

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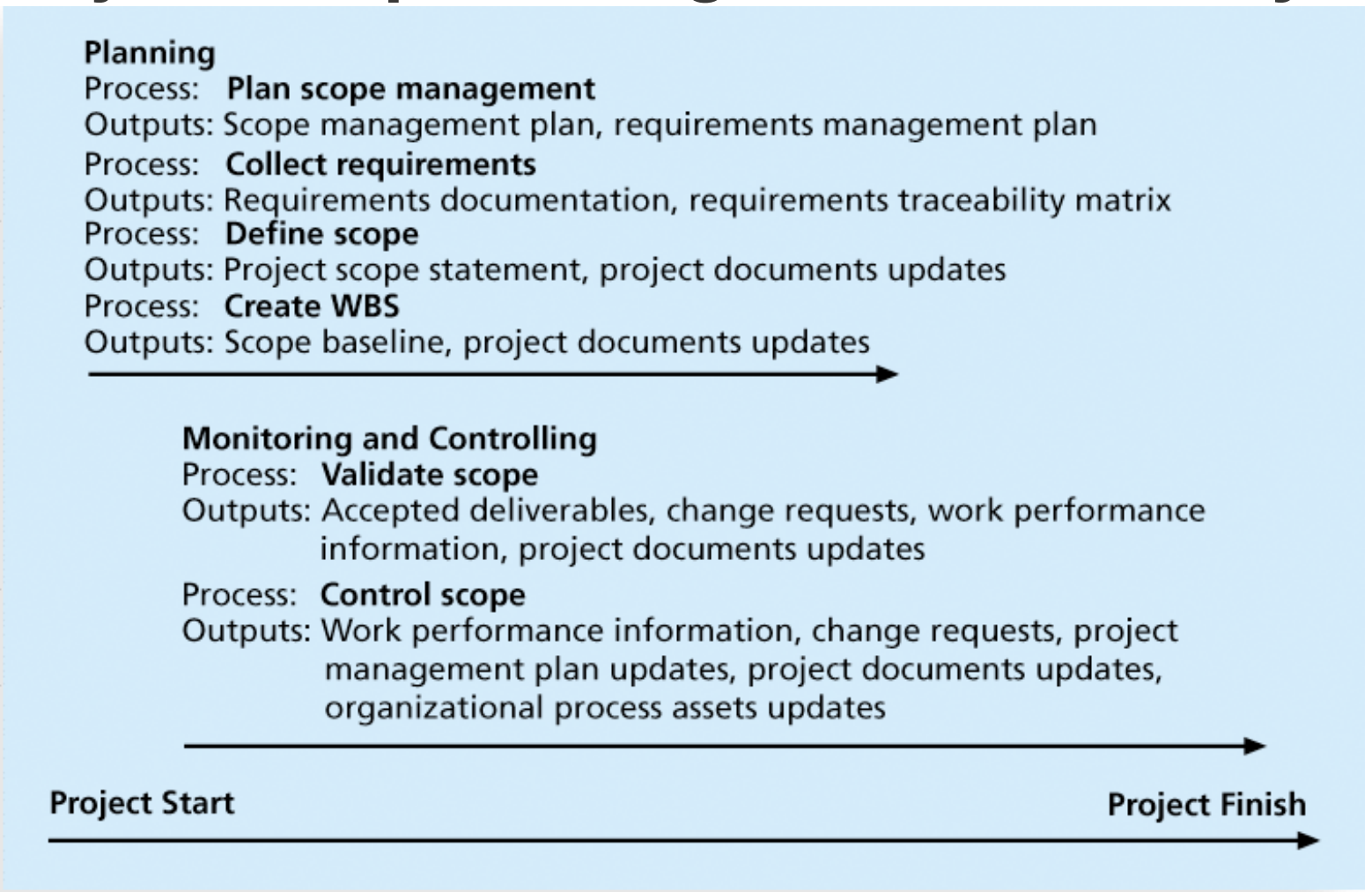
Project Scope Management Summary



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Planning Scope Management

- The project team uses **expert judgment** and **meetings** to develop two important outputs: the **scope management plan** and the **requirements management plan**
- The **scope management plan** is a subsidiary part of the project management plan
- A **scope statement** describes the characteristic of the product that the project should deliver. It should include:
  - Project justification
  - Brief description of the project's deliverables
  - Summary of all project deliverables
  - Statement of what determines project success – user acceptance criteria

Scope Management Plan Contents

- How to prepare a detailed project scope statement
- How to create a WBS
- How to maintain and approve the WBS
- How to obtain formal acceptance of the completed project deliverables
- How to control requests for changes to the project scope

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Requirements Management Plan

- The PMBOK® Guide, Fifth Edition, describes requirements as:
  - "conditions or capabilities that must be met by the project or present in the product, service, or result to satisfy an agreement or other formally imposed specification"
- Requirements need to be elicited, analyzed, and recorded in enough detail to be included in the scope baseline and be measured once project execution begins.
- The **requirements management plan** documents how project requirements will be analyzed, documented, and managed

Methods for Collecting Requirements

- Interviewing
- Focus groups and facilitated workshops
- Using group creativity and decision-making techniques
- Questionnaires and surveys
- Observation
- Prototyping
- **Benchmarking**, or generating ideas by comparing specific project practices or product characteristics to those of other projects or products inside or outside the performing organisation, can also be used to collect requirements

Requirements Documentation

- **Functional** and **non-functional** requirements
  - **non-functional** requirements describe **how the system works**, while **functional** requirements describe **what the system should do**
- **Business rules**
- **Impacts** on any other systems and/or departments
- Support and **training requirements**
- Specific **acceptance criteria** for each requirement
- **Quality** requirements

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Requirements Traceability Matrix

- A **requirements traceability matrix (RTM)** is a table that lists requirements, various attributes of each requirement, and the status of the requirements to ensure that all requirements are addressed
- Sample entry in an RTM

Requirement No.	Name	Category	Source	Status
R32	Laptop memory	Hardware	Project charter and corporate laptop specifications	Complete. Laptops ordered meet requirement by having 4GB of memory.

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Video 2: *Project Scope Management*

Learning Objectives

- Explain the scope definition process and describe the contents of a project scope statement
- Discuss the process for creating a work breakdown structure using the analogy, top-down, bottom-up, and mind-mapping approaches

Defining Scope

- **Project scope statements** should include at least a product scope description, product user acceptance criteria, and detailed information on all project deliverables.
- It is also helpful to document other scope-related information, such as the project boundaries, constraints, and assumptions.
- The project scope statement should also reference supporting documents, such as product specifications
- As time progresses, the scope of a project should become more clear and specific

Creating the Work Breakdown Structure (WBS)

- A **WBS** is a deliverable-oriented grouping of the work involved in a project that defines the total scope of the project
- WBS is a foundation document that provides the basis for planning and managing project schedules, costs, resources, and changes
- **Decomposition** is subdividing project deliverables into smaller pieces
- A **work package** is a task at the lowest level of the WBS
- The **scope baseline** includes the approved project scope statement and its associated WBS and WBS dictionary

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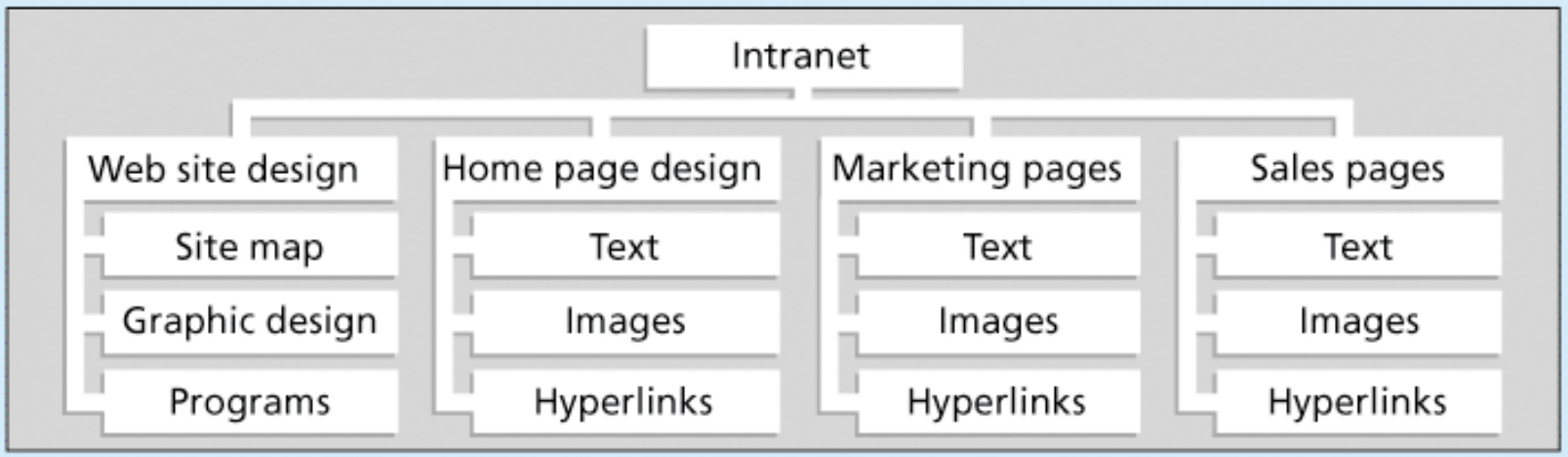
Sample Intranet WBS Organised by Product



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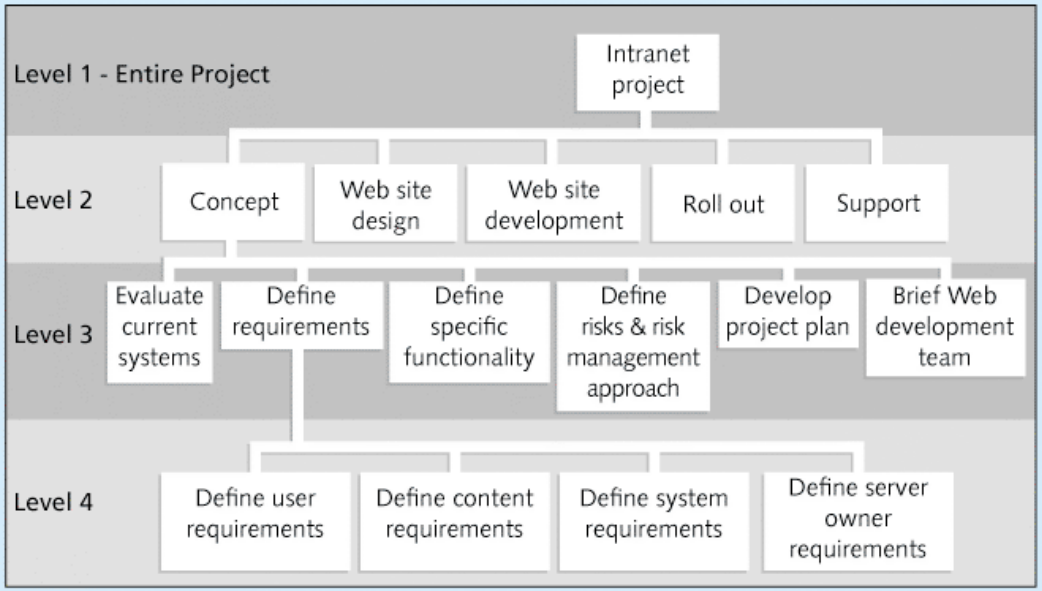
Sample Intranet WBS Organized by Phase

Chart form →



Tabular form with PMI numbering

1.1 Concept
- 1.1.1 Evaluate current systems
- 1.1.2 Define requirements
  - 1.1.2.1 Define user requirements
  - 1.1.2.2 Define content requirements
  - 1.1.2.3 Define system requirements
  - 1.1.2.4 Define server owner requirements
- 1.1.3 Define specific functionality
- 1.1.4 Define risks and risk management approach
- 1.1.5 Develop project plan
- 1.1.6 Brief Web development team

1.2 Web site design
1.3 Web site development
1.4 Roll out
1.5 Support

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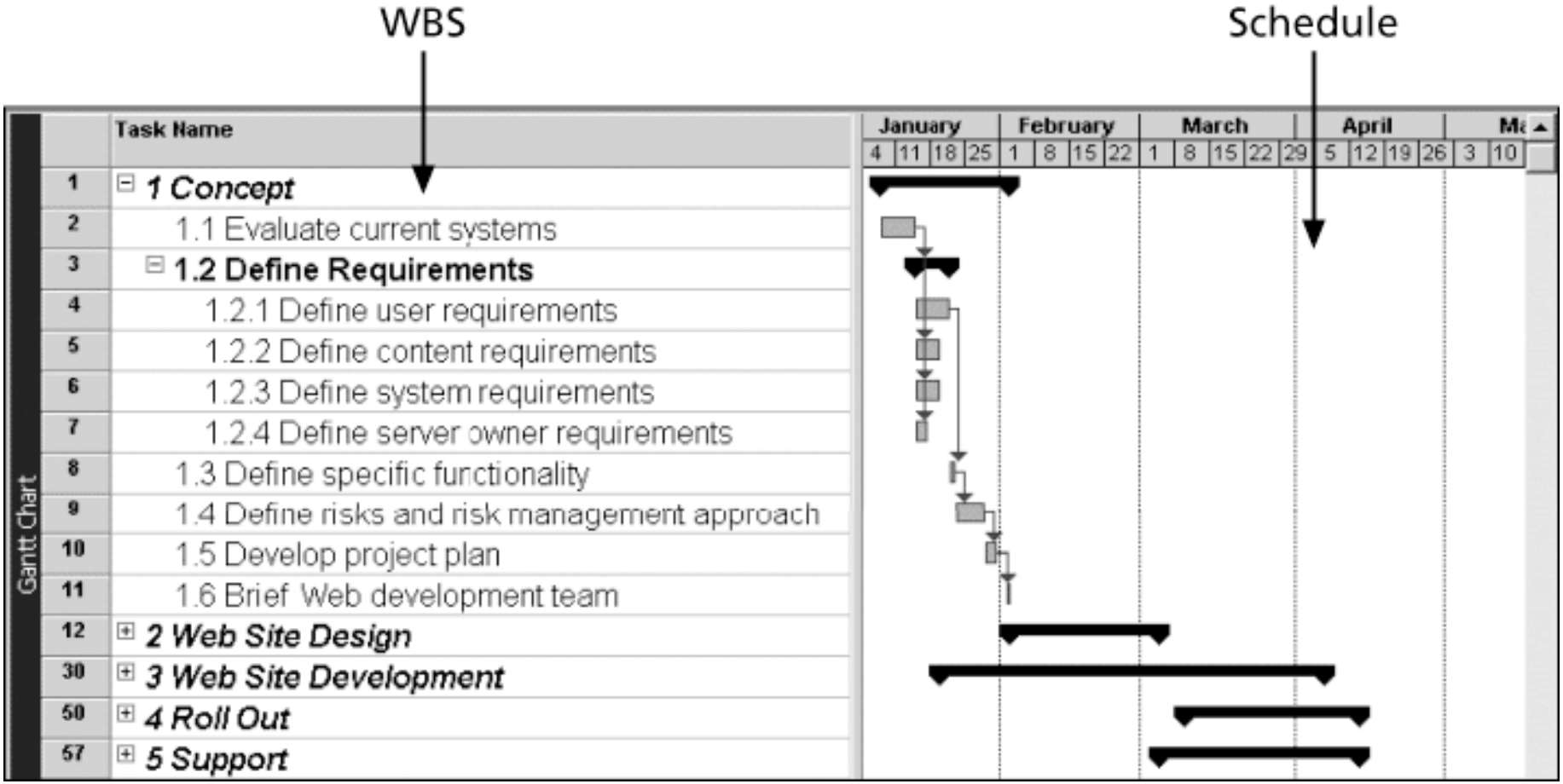
Intranet WBS and Gantt Chart in Microsoft Project



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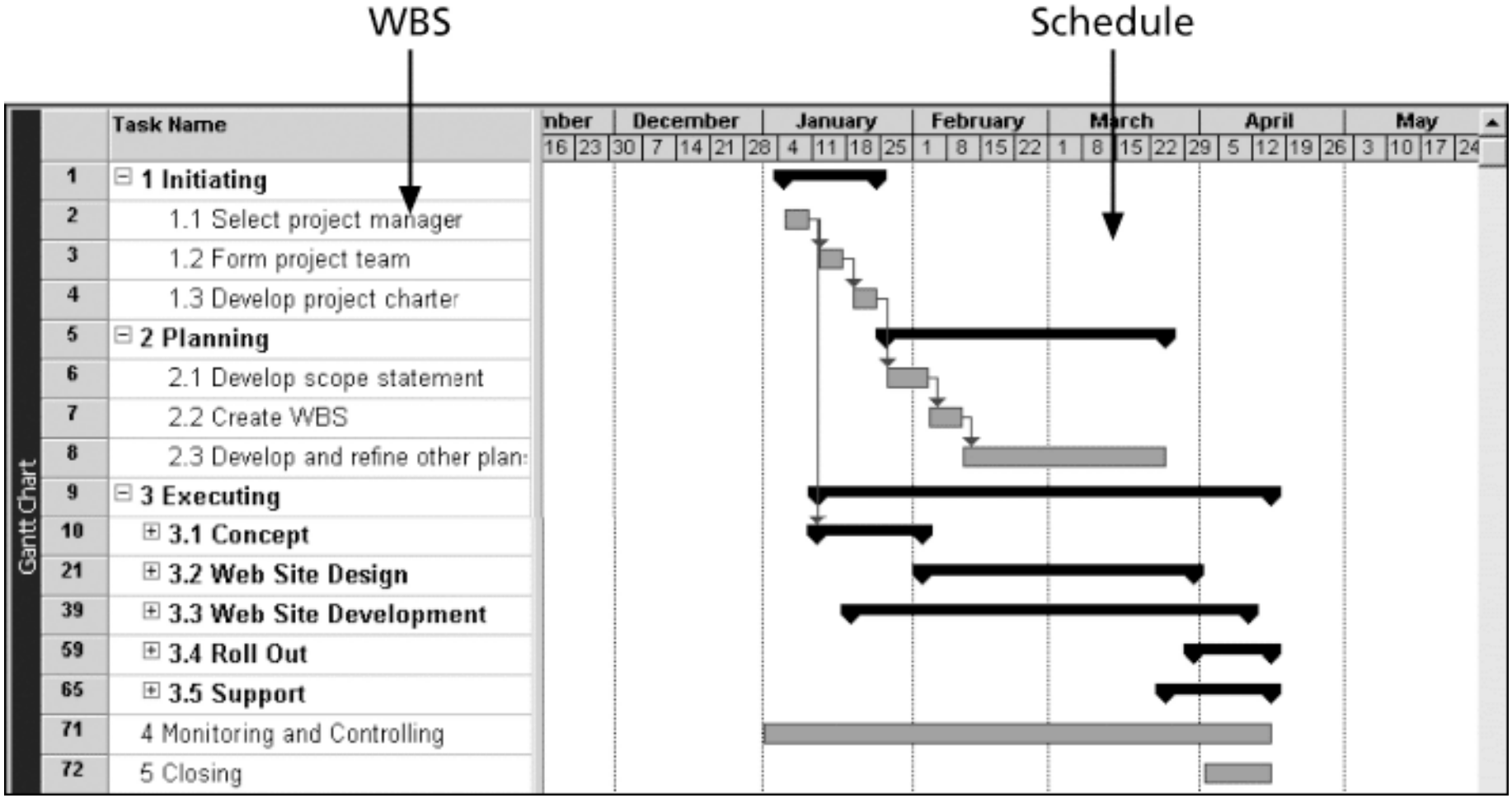
Intranet Gantt Chart Organized by Project Management Process Groups



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Approaches to Developing WBSs

- Using guidelines: Some organisations, like the DOD, provide guidelines for preparing WBSs
- The **analogy approach**: Review WBSs of similar projects and tailor to your project
- The **top-down approach**: Start with the largest items of the project and break them down
- The **bottom-up approach**: Start with the specific tasks and roll them up
- Mind-mapping approach: **Mind mapping** is a technique that uses branches radiating out from a core idea to structure thoughts and ideas

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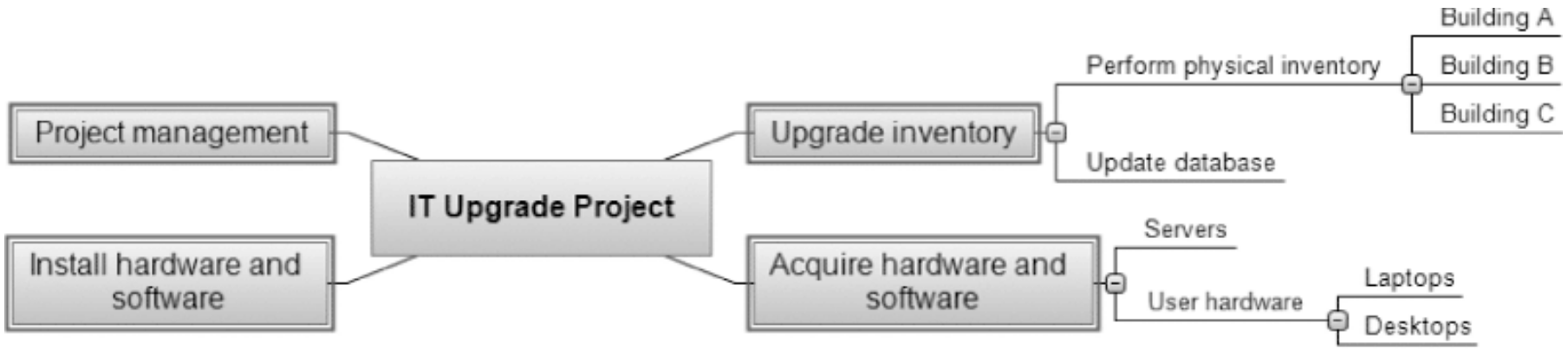
Sample Mind-Mapping Approach for Creating a WBS



Source: MatchWare's MindView 4 Business Edition

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The WBS Dictionary and Scope Baseline

- Many WBS tasks are vague and must be explained more so people know what to do and can estimate how long it will take and what it will cost to do the work
- A **WBS dictionary** is a document that describes detailed information about each WBS item
- Refer to the textbook (Pg 207) on advice in creating a good WBS

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Video 3: *Project Scope Management*

Learning Objectives

- Explain the importance of validating scope and how it relates to defining and controlling scope
- Understand the importance of controlling scope

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Validating Scope

- It is very difficult to create a good scope statement and WBS for a project
- It is even more difficult to verify project scope and minimize scope changes
- **Scope validation** involves formal acceptance of the completed project deliverables
- Acceptance is often achieved by a customer inspection and then sign-off on key deliverables

Controlling Scope

- Scope control involves controlling changes to the project scope
- Goals of scope control are to
  - influence the factors that cause scope changes
  - assure changes are processed according to procedures developed as part of integrated change control, and
  - manage changes when they occur
- **Variance** is the difference between planned and actual performance

What Went Wrong?

- A project scope that is too broad and grandiose can cause severe problems
  - Scope creep and an over-emphasis on technology for technology's sake resulted in the bankruptcy of a large pharmaceutical firm, Texas-based FoxMeyer Drug
  - In 2001, McDonald's fast-food chain initiated a project to create an intranet that would connect its headquarters with all of its restaurants to provide detailed operational information in real time. After spending $170 million on consultants and initial implementation planning, McDonald's realized that the project was too much to handle and terminated it

Some Best Practices

- Best practices to avoid major scope problems:
  1. Keep the scope realistic.
  2. Involve users in project scope management.
  3. Use off-the-shelf hardware and software whenever possible.
  4. Follow good project management processes.
- Principles from IBM's Rational Unified Process® (RUP):
  - Adapt the process
  - Balance competing stakeholder priorities
  - Collaborate across teams
  - Demonstrate value iteratively
  - Elevate the level of abstraction
  - Focus continuously on quality

Video 4: *Project Scope Management*

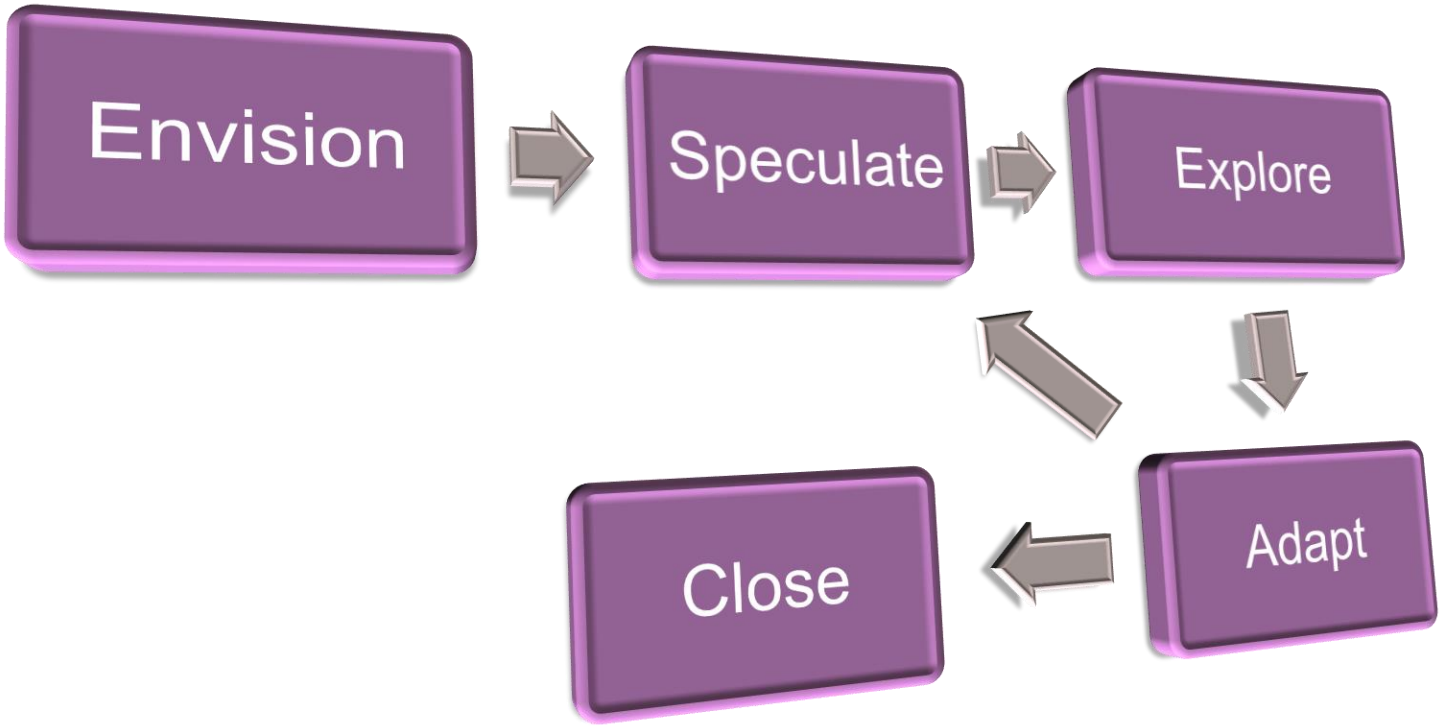
Learning Objectives

- Understand how scope management works in an Agile environment

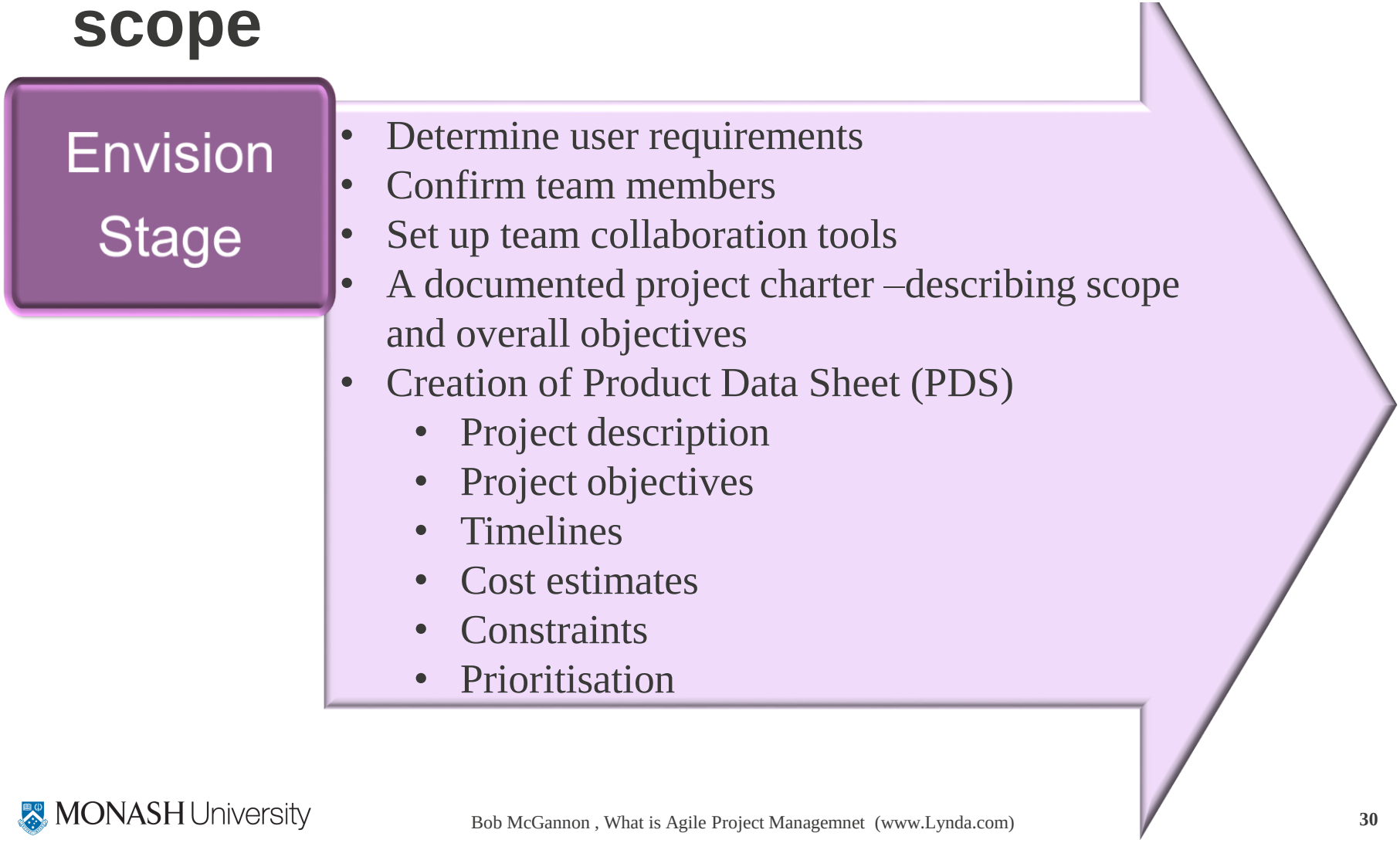
What is ‘Scope Creep”? - is it applicable in an Agile framework?

- Scope Creep
  - changes to the scope baseline of a project (i.e. the addition of new product features that occur after the project scope has been determined and/or approved)
- Is it a bad thing?
- How do we accommodate change?
- Enter “Agile”… does this changes how we manage scope?

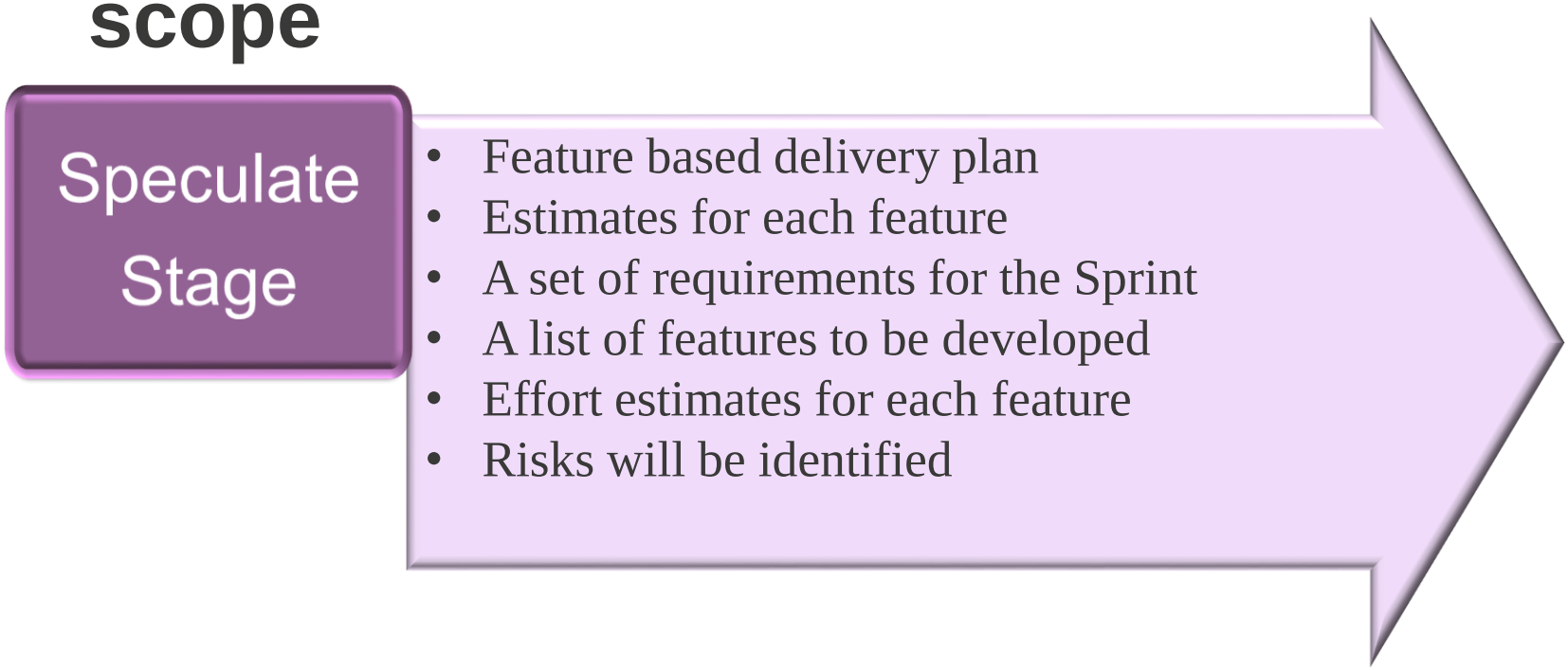
The Agile Lifecycle



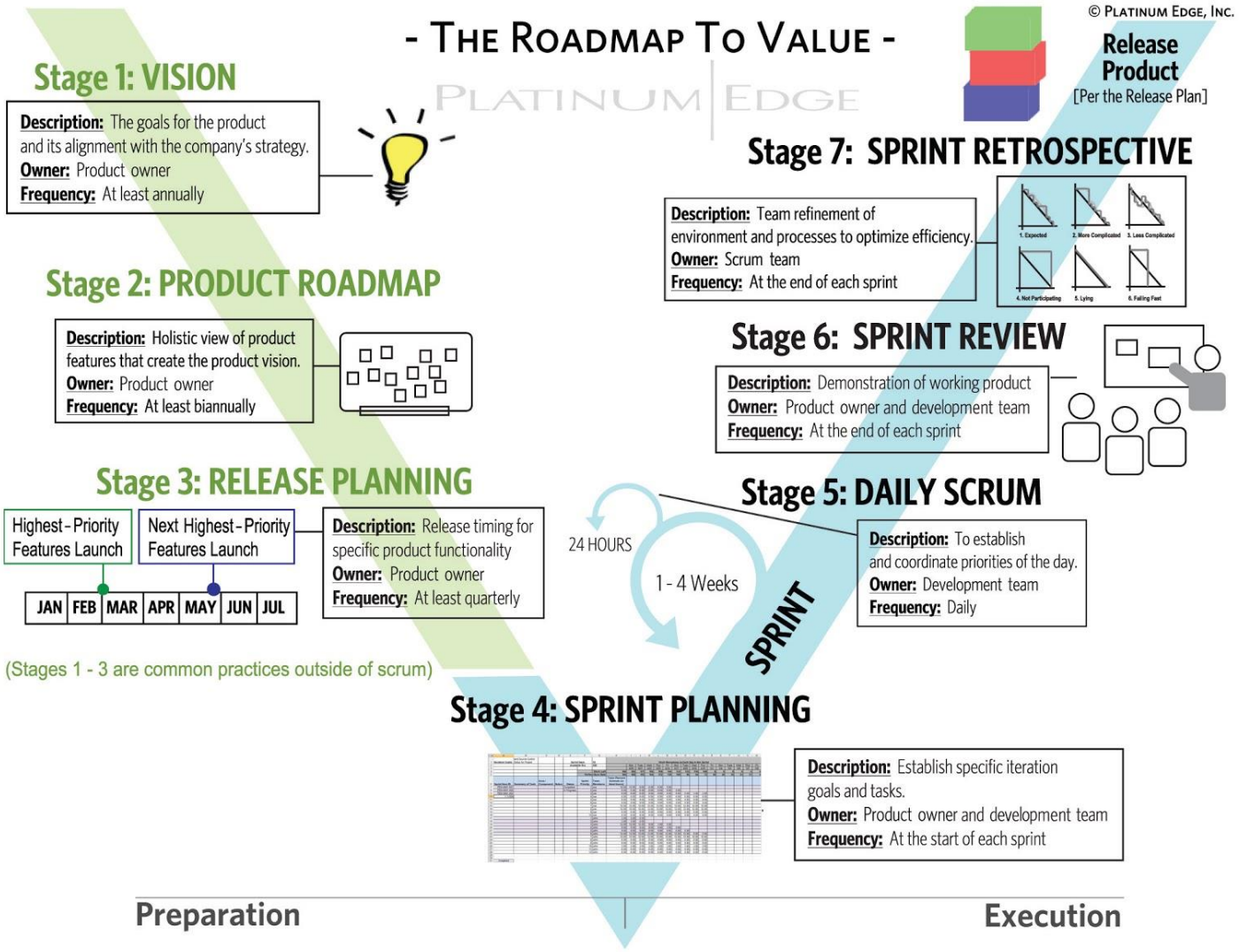
Scoping your project and managing the scope



Scoping your project and managing the scope



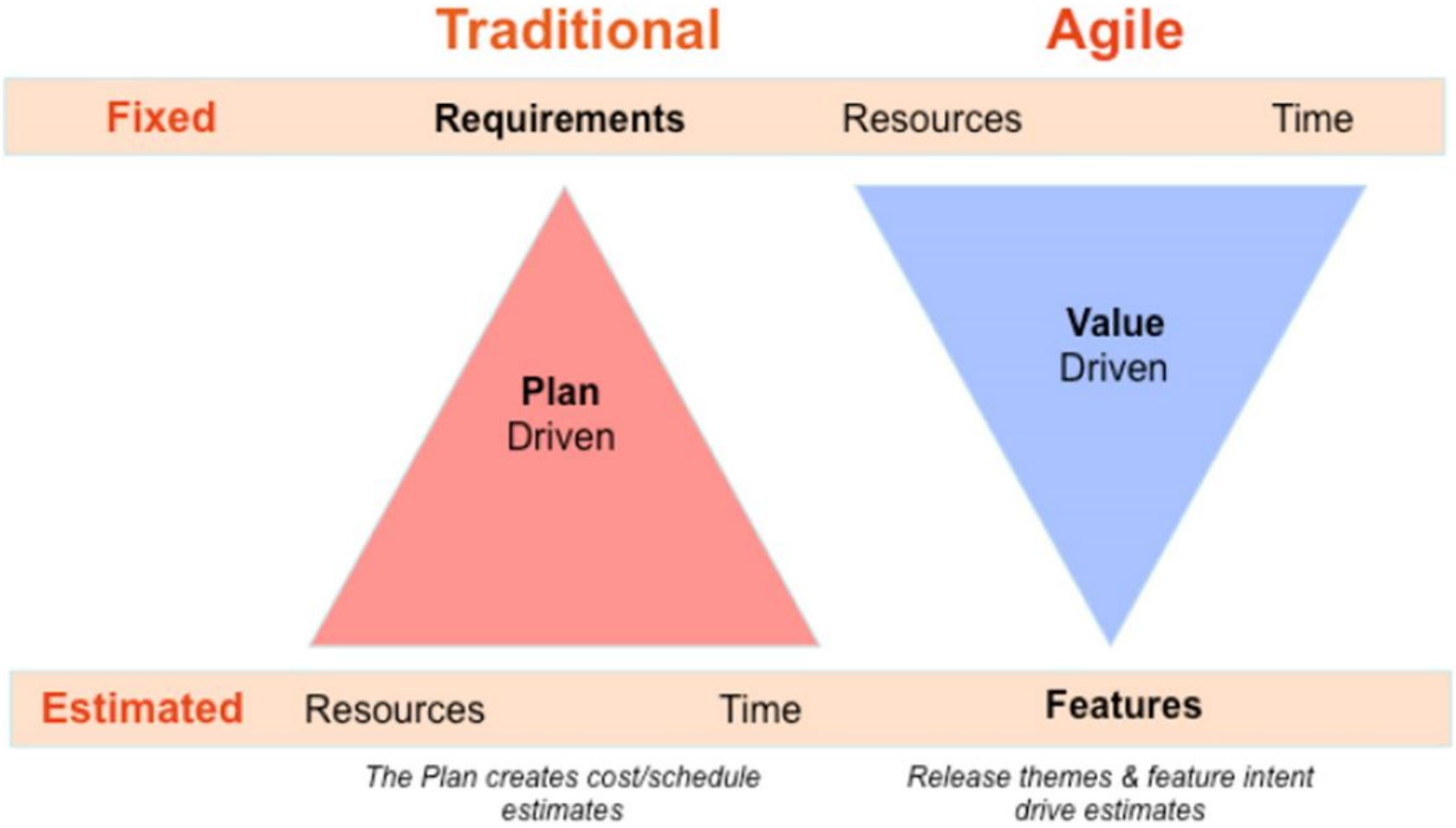
Understanding scope throughout the project



(Ref: Mark C. Layton, Steven J. Ostermiller. (2017). Agile Project Management For Dummies, (2e) For Dummies)

Flipping the Triangle (DSDM Consortium)

(DSDM = Dynamic System Development Method)



Sliger, M. (2010). Goodbye, scope creep—hello, agile! Paper presented at PMI® Global Congress 2010—North America, Washington, DC. Newtown Square, PA: Project Management Institute

Agile Principles in regards to Scope Management

The agile principles that relate to scope management:

- (1) The highest priority is to satisfy the customer through early and continuous delivery of valuable software.
- (2) Changing requirements are welcomed – even late in development. Agile processes harness change for the customer's competitive advantage.
- (3) To deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.

Does Agile Projects have control mechanisms?

- Agile-specific techniques help manage and monitor your Agile Projects.
- Scope is managed by the backlog list.
- Scope is controlled by completing features and adding new features
- Never adjust the scope of the current sprint!

What's different between traditional and Agile Scope Management

Traditional Approach	Agile Approach
Project teams attempt to identify and document complete scope at the beginning of the project	High level requirements are gathered at the beginning of the project and refined throughout the project
Organizations view scope change after the requirements phase is complete as negative.	Organizations view change as a positive way to improve a product as the project progresses.
Project managers rigidly control and discourage changes once stakeholders sign off on requirements.	Change management is an inherent part of agile processes. The product owner determines the value and priority of new requirements and adds to the product backlog.

What's different between traditional and Agile Scope Management (cont…)

Traditional Approach	Agile Approach
The cost of change increases over time, while the ability to make changes decreases.	You fix resources and schedule initially. New features with high priority don't necessarily cause budget or schedule slip; they simply push out the lowest-priority features. Iterative development allows for changes with each new sprint.
Projects often include scope bloat, unnecessary product features included out of fear of mid-project change.	Scope is determined based on which features directly support the project vision, the release goal, and the sprint goal. Creates the most valuable features first to guarantee their inclusion. Less valuable features might never be created.

Which to use?

- Agile methods are not for EVERY kind of project.
- For projects where scope will not change, more traditional methods are perhaps a better choice.
- For projects with high levels of change, Agile methods tend to be a better choice.
- Agile frameworks are designed to welcome and manage change – change is expected and accepted throughout the life of the project.
- PMI does not advocate any particular methodology