

Project Procurement and Supply Chain

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PMG 433

Lecture 4



A decorative graphic on the left side of the slide consists of several overlapping circles. Inside these circles are various white line-art icons: a graduation cap, a laptop with a play button, a target with an arrow, an open book, a magnifying glass, and a group of people. The background of the circles is a warm, golden-brown color.

The project-planning chain and project-delivery chain

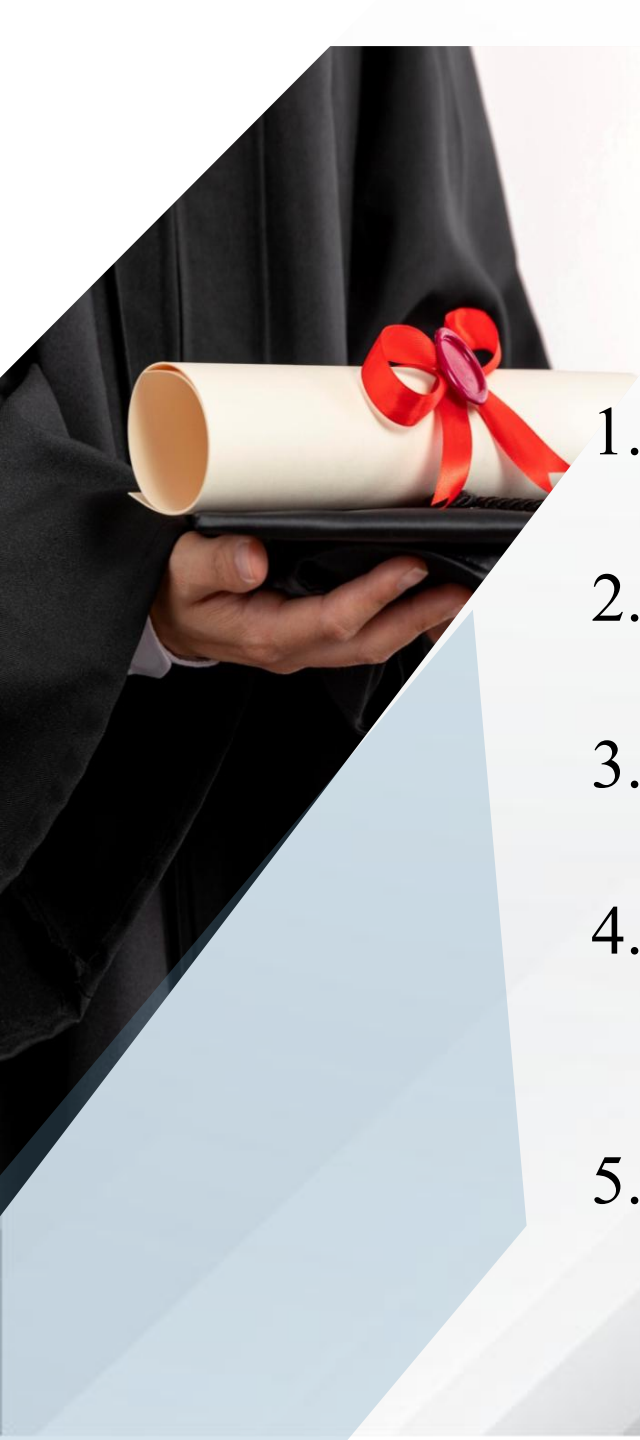
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Course Agenda

Chapter

- 
1. Define the requirements of initial planning, including the role that managing scope plays in this.
 2. Identify characteristics of the planning process and approaches to planning
 3. Understand the impact that the choice of structure will have on the achievement of project objectives.
 4. Provide a framework for the project manager to guide understanding of some of the human resource issues that they will face.
 5. Identify the elements of a control system appropriate to a particular project.

The supply chain

- **The traditional purchasing department** is concerned with the relationship with first-tier suppliers, those who supply the project organisation directly
- **Materials management** is concerned with
 - Physical goods and the logistic aspects of flow between first-tier suppliers through the project organisation to the first-tier customers
 - The product breakdown structure provides the bill of materials
- **Supply chain management** is concerned with project strategy and operations from primary industry to end-user
- **The project-planning chain and project-delivery chain**, together, they describe the full flow of a project — from initial idea and planning (planning chain) to actual execution and delivery of results (delivery chain).

• **Project-Planning Chain**

This is the sequence of activities involved in preparing and organizing the project before execution begins.

It typically includes:

- Identifying needs and objectives
- Feasibility studies
- Budget estimation
- Scheduling
- Resource planning
- Risk assessment

It is the thinking, analyzing, and organizing stage of the project.

- **Project-Delivery Chain**

- This is the sequence of activities involved in executing and completing the project.

- **It typically includes:**

- Procurement
- Production or construction
- Distribution
- Monitoring and control
- Final delivery to the customer

It is the implementation and execution stage of the project.

- **How important is the supply chain to the success of the project?**
- **Depends on**
 - Value of bought-in products and services relative to the total value of the project
 - The criticality of the items being purchased
 - The timing of the work being purchased
 - The impact of the quality of work purchased
 - If an organisation uses the same supplier over a period of time, suppliers usually rate highly on all four counts.
 - Considerable time must be invested in developing relationships
 - When a large organisation is being supplied by small ones, direct investment, knowledge sharing, training may be on offer

- ‘Even the longest journey begins with a single step.’
- **A project may begin in different ways**
 - Inspiration
 - Response to need
 - Exploration of an issue
 - A necessary part of a larger program

- **From personal projects** to new product development (NPD)
- **Dissertations** – in the early stages there is chaos
 - Many different ideas may be available
 - These have to be filtered according to interest, feasibility and sufficient theoretical underpinning
 - Rare to end up exactly as originally envisaged
- **Commercial NPDs** are similar, it is rarely a linear activity
 - Many different possibilities may be available
 - These need to be screened with respect to the market, financial criteria, strategic and technical implications

- **The pipeline**
 - Products at various stages of development
- The **creative** processes of **concept development**
 - Allow time and space for individuals to carry out exploration
 - Protect ownership of ideas
 - Encourage rapid prototyping
 - Senior people to act as project champions
 - Have rapid development processes ready to take ideas to fruition
 - Clear criteria as to what will be supported and what will not

❑ Costs of the planning process

- Labour (time)
- Associated expenses
- Planning tools
- Cost of preparing formal written plan
- Opportunity costs

The planning process (Continued)

- **Benefits of the planning process**
 - Avoids costs of chaos of unplanned activity
 - Provides a basis for evaluation (or filtering)
 - Identifies problems in advance
- **Output of planning**
 - Plans help decision making and guides future activities
 - Plans should change as circumstances change
 - Planning is a means to an end
 - Planning facilitates a beneficial insight into what may happen

- **The approach and uncertainty**
 - Product and/or process uncertainty
 - Planning needs to take into account such variables
- **Approaches**
- **Claim we know everything**
 - Often repeated projects
 - Beware optimism bias
- **Acknowledge we know nothing**
 - Wishful thinking
 - Set up milestones and hope we meet them
- **Both, the nearer the point in time, the more we know**
 - Rolling wave planning
 - High-level schedule of activities, detail added as project progresses
 - The 50 percent rule

- **Do plans provide information or just data?**
- Data are the numbers on the page
- Information is the part that can be usefully applied
- Noise clutters the analysis process
- The PM needs to collect data and add-value by creating information
- **The process of project planning – inputs, outputs and the process itself**
- ‘What’ happens – the tactical plan
- ‘How’ it happens – the operational plan
- Many cycles and reviews until ‘final’ plan produced
- Verify overview before further effort committed

□ Planning accuracy or precision?

- ‘Quick and dirty’ approach (accurate)
- Months of painstaking planning approach (precise)
- First assess the overview
 - Has basic criteria (financial, technical) been satisfied?
 - Are fundamental flaws revealed?
- Followed by detailed planning

□ Managing the planning process

- Traceability
- Systematic approach
 - Manageable chunk and logical sequence
 - Estimate time and resources
 - Provides logic for decisions, framework for assessment, shows effects on other systems, enables filtering of frivolous ideas and activities
 - Essential for revision/refinement process
 - Allows lessons to be learnt -Facilitates communication

- **The PID (project initiation document)**

- The output of the planning process
- The project brief
- Project team management structure
- Job descriptions
- The project approach
- The project quality plan
- The project plan
- The business case
- A risk log
- Project controls
- A communication plan

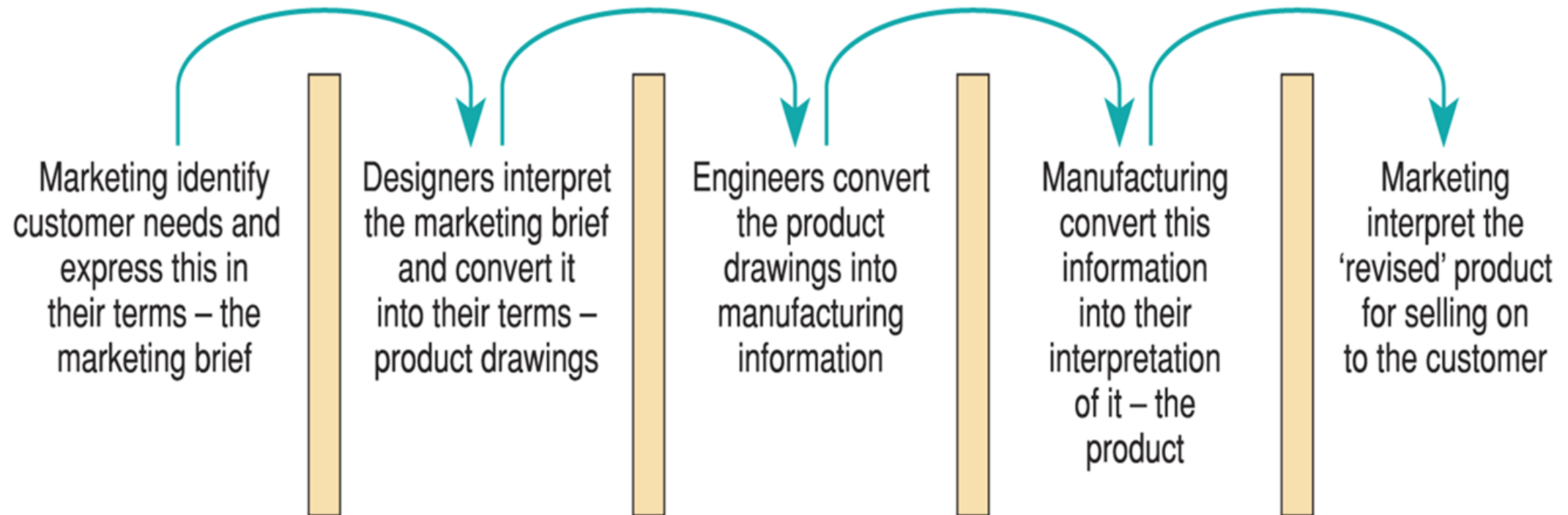
- **Formalisation**

- What level of formalisation is required?
- Project complexity
- Custom and practice
- Who is the proposal for
 - Internal/external customers
 - The range of people
- Why is the proposal required
 - Competitive bid
 - First examination
 - Organisational policy
- Opportunity to sell to potential customers
- Executive summary, main body of report, appendices

Basic project landscapes: stages and gates, activities and stages, and maps

- Divide project into phases/stages
- Determine the nature and objectives of each phase
- Gates between phases give opportunity to review progress
- Lay down criteria for passing to the next phase in advance
- Failure at a gate
 - Wind up activities
 - Maximise potential benefit while minimising risk or expenditure
 - Take on a joint partner
- ‘Fuzzy gates’
 - Project allowed to continue until proper review can be conducted
 - Gates don’t slow project down
 - Can be confusion over which activities can continue/be stopped at the gate

Basic project landscapes: stages and gates, activities and stages, and maps (Continued)



Conventional approach to new product development

☐ Concurrent engineering/fast track projects

- Importance of time and reduced costs to market
- Overlap activities/run activities in parallel
- Requires co-operation in planning and high levels of communication
- **Benefits**
 - Reduced project time
 - Reduced rework
 - Reduced project costs
- **Disadvantages**
 - Increased overheads
 - Costs of co-location
 - Cultural resistance
 - Inappropriate application at times

- **Activity maps**

- An overview of what the project will look like
- One graphical technique
 - Four fields mapping (FFM)/Deployment flow chart (DFC)
 - **Relates four information fields**
 - The team members
 - The logical phases of an activity
 - Tasks to be performed including decisions made
 - **The standards that apply for each task**
 - Controls are specified
 - Information is shared
 - Entry and exit criteria specified
 - No phase can be completed until all errors have been corrected and the cause identified

- **Planning** – the production of plans add value
 - it is not an end in itself
- **The planner** has the opportunity of analysing the project system
 - Revealing opportunities for improvement
 - Revealing possible problem preventions
 - Sets out the basis on how the project will proceed
- Benefits are realised when they are communicated

Constructing a time plan

- How long will it take to complete the project?
- How precise do you need to be?
- How long did it take last time?
- What could cause significant delay?
- What other tasks might get in the way?
- Estimates are guesses
- Beware treating these numbers in a scientific way
- Estimation continues through the project lifecycle
- The nearer the completion, the more certainty about time, resources and costs

- Gathering together individuals and making them a cohesive whole is a fundamental role of the project manager
 - Possible problems....
- The mix of personalities that will ensure the group dynamics are right is **a project issue**
- How this project team fits in with the structure of the organisation is **a strategic issue**
- Forming the project team across multiple organisations (e.g. joint ventures) and/or multiple geographic locations (virtual teams) are extra challenges

- **Large organisations are traditionally structured in functional disciplines or ‘silos’**
 - Grouping all specialisms together is efficient
 - The function of the silos is focused and clear
 - Career paths are defined
 - Administration systems are geared to this way of working
- **Can be detrimental**
 - To creativity of individuals
 - To responsiveness to changing market needs
 - Managers may build empires, creating work for themselves regardless of adding value
 - Departmental head count appears to be the measure of status
- Large organisation traditionally ordered in a hierarchical pyramid

Teams (Continued)

- **De-layering attempts to minimise the number of layers in an organisation**
 - Simplifies decision making and communication
 - Removes a considerable overhead
- **Alternative structures:**
 - Product group
 - Customer type
 - Geographical area
 - Functions
 - Mixture depending on nature of business and integration of supply chain

The role of teams

- One single function will rarely provide the customer's entire needs
 - 'Cross-functional' activity is required
- Where a project involves more than one function, the project manager should define organisational forms
- The nature of the work organisation is important
 - Defines **responsibility** and **authority**
 - Outlines **reporting** arrangements
 - Determines the management **overhead**
 - Sets the structure behind the organisational **culture**
 - Determines one group of **stakeholders** in project activities

The role of teams

- Many organisations use ‘dotted-line’ responsibility
 - The individual has responsibility to one functional manager with a **dotted-line responsibility** to a second, signalling a link to their goals.
- It encourages/enforces communication and integration between departments
 - It allows specialists/specialist departments to be involved but does not allow them to hold responsibility, have power or empire-build
 - To ensure integration
 - Additional administrative procedures are needed
 - There are often interminable meetings
 - There are mountains of bureaucracy

Teams have various stages of development

- Collection
- Entrenchment
- Resolution
- Synergy
- Decline
- Break-up
- The PM can identify the stage at which the team is operating
- The PM can ensure the decline stage is held back for as long as possible
 - Take development backwards by changing team composition
 - Add a new challenge by expanding the range or scope of tasks

Personality and roles

- The project manager can benefit from understanding the ways in which individuals behave in group situations
- Designing the team
 - **Eligibility** – qualifications and experience
 - **Suitability** – how the individuals in the team fit together
 - **Balance** – portfolio of characteristics relative to the task to be undertaken

- **A project runs late, is over budget, does not deliver to requirements**
 - Question: How did this happen?
 - Answer: Very gradually
- **Need system in place to**
 - detect occurrences
 - offer opportunity to instigate corrective activities
- **Caveat**
 - If there has been poor planning, there may be considerable confusion
 - Projects are rarely static
 - Controlling by conformance to plan that may not be relevant is unlikely to be beneficial

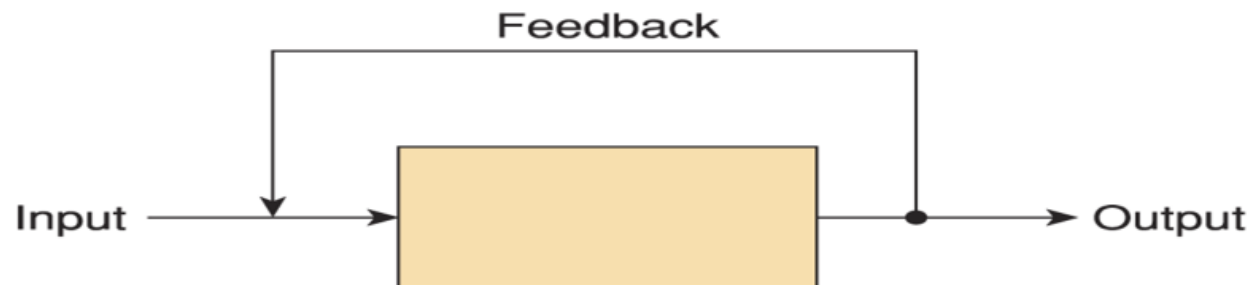
- Control activity predominantly during execution phase
- Needs careful consideration during planning phase

The control system:

- Based on easy and simple measures that reflect the objectives of the project
- **Basic requirements are**
 - Defining system characteristics of importance
 - Defining limits to their variation
 - Measurement of those characteristics
 - Making progress visible
 - Feedback of performance to the team
 - Instituting corrective action where required

- **The output of a process**

- Monitor to determine characteristics of the output
- Interpret data
- Feedback to make changes to the process
- Acceptable deviations from desired performance defines corrective action



Basic model of control

Defining system characteristics of importance

- Typically: time, cost, quality
- Dependent on project strategy and available resources
- One constraint could be sacrificed rather than compromise the other two?
- Other issues of strategic importance Examples
 - Legal, ethical, environmental, etc.
 - Other concerns possible

Defining limits to their variation

- Performance will vary across people and activities
- When does a deviation become a problem?
- **Examples**
 - Health and safety – zero tolerance
 - For some organisations, 1% on cost acceptable whilst one day's delay is unacceptable
- Always some variation expected
- Should expect positive and negative
- In theory: the positive's benefits should cancel the negatives
- In reality: the former are difficult to harness, the latter accumulate
- Negatives should trigger further monitoring to ensure keeping on track

Measurement of characteristics

- **When to measure?**
 - Balance: too late to take action vs permanently harassing people to find out progress
 - Need to satisfy control process vs project team's work/report ratio
- **How often to measure?**
 - Continuously sense activity, assess feedback, take action
 - Control failures
 - time delay in receiving information
 - time delay in implementing reaction
- **When do key characteristics take place?**
 - Input: designs, labour, materials
 - In process: work methods, checks
 - Output: number of defects, customer/user sign-off

Making progress visible and feedback of performance

- The principle if visible signs
 - lights on indicate a problem
 - display of quantity of output relative to target

Instituting corrective action

- What to do about the deviation?
- ‘You can only manage the future, what has happened is history’
- ‘Whilst knowing where you are is important, what you do next will make the difference’

Instituting corrective action

- A single event is the product of many linked smaller events
 - All smaller events should
 - have progress monitored
 - appropriate action taken to keep them on track
 - The system for overall control can be viewed as a system of smaller systems of control
- Feedforward
 - Look for problems or situations that **will/may** be faced
 - Make changes to protect the project outcomes
 - Risk management
 - should be performed at the start of the project
 - and be on-going

Configuration control

- **Change happens...**
 - It costs
 - Technology, requirements, markets, people change
- **Change control systems need to be established early**
 - Not to constrain change
 - But to recognise it, accommodate it, plan for it
- **Need to ensure that everyone is working on the latest (current) version of the designs and specifications**
 - Fundamental even in smallest project
 - Can be undertaken centrally by project office

Summary of Learning Objectives

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Thank You