
Delivering Effective and Result-oriented Engineering Projects

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Presentation Objectives

- Review Engineering Projects from the Project Management Perspective
- Highlight factors for Project Distress and Failure
- Highlight key success factors
- Questions

“Project”

- The guide to Project Management Body of Knowledge (PMBOK), 4th Edition defines “Project” as “a temporary endeavor undertaken to create a unique product service or result”
- Key Characteristics of a Project
 - “Temporary” i.e. Definite Duration
 - Defined Deliverables / Outcome / Scope
 - Clear Performance / Quality Requirements and Specifications
 - Comprise a Sequence of Unique and Connected Activities
 - Completed within Defined Budget (for business results)
 - Meet Client (End User) Expectations
 - Meet Other Stakeholders’ Expectations

“Project Management”

Indispensable for Business Results

- The guide to Project Management Body of Knowledge (PMBOK), 4th Edition defines “Project Management” as “the application of knowledge, skills, tools and techniques to project activities to meet the project requirements”
- Distinct from “Product Management”;
 - Conceptualization – R&D – Launch – Promotions – Re-launch – Re-branding – Retirement
- Vital for Successful Delivery of Engineering Projects (which are complex)
- Vital for Delivering Corporate Strategies

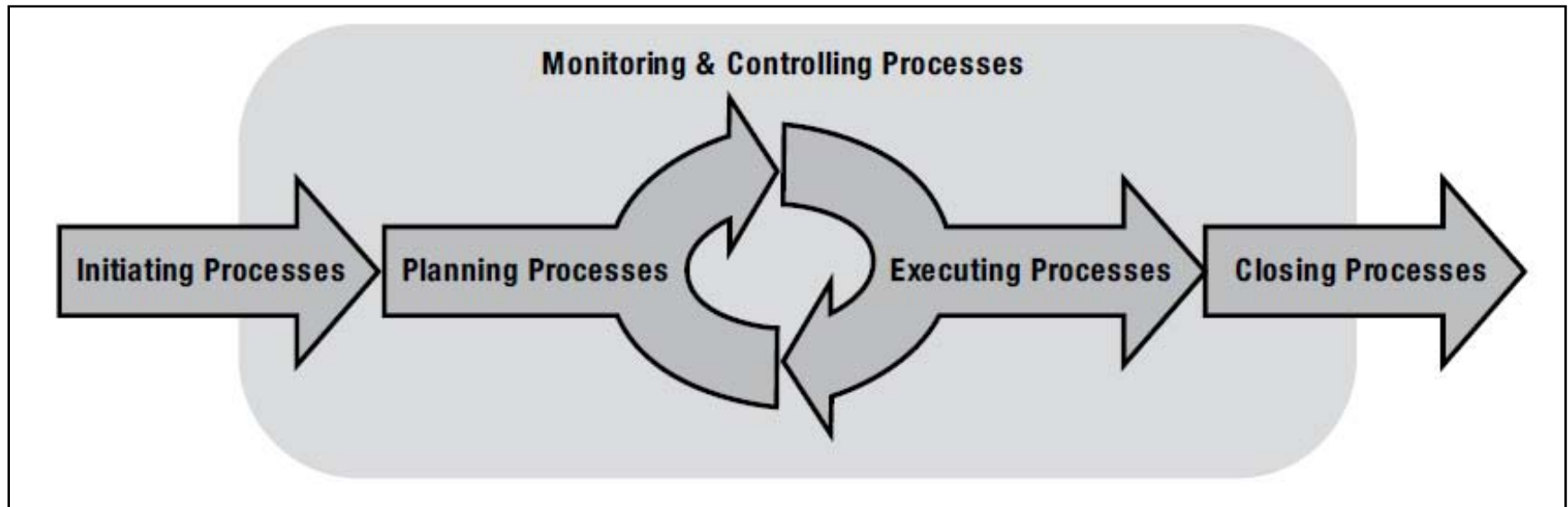
Classification of Projects

Category	Description
Outcome	<ol style="list-style-type: none">1. Tangible2. Intangible3. Regular/Bespoke4. Innovation/Invention
Outcome Destination	<ol style="list-style-type: none">1. Internal2. External
Sector	<ol style="list-style-type: none">1. Public2. Private3. Public-Private Partnership (PPP)
Focus	<ol style="list-style-type: none">1. Engineering2. Financial3. Social4. Religious

Project Phases

- Divisions within a project where extra control is needed to effectively manage the completion of a major deliverable”. PMBOK (2008)
- Each phase is unique and involve work that has a distinct focus, skill set.
- Occur sequentially or may overlap
- Require extra degree of control to successfully achieve the primary deliverable/objective
- Typical Phases
 - Engineering – Procurement - Construction – Installation – Commissioning – Handover
 - Need Identification – Project Conception – Feasibility Studies – Charter – Designs – Execution – Commissioning – Handover – Post-project Evaluation

Project Management Process Groups



Source: PMBOK, 2008

Project Distress & Failure

- Project is considered failed if;
 - cancelled or abandoned at some point after commencement without producing any or all deliverables or outcome
 - outcome or deliverables grossly and verifiably do not meet specification or performance requirements
 - The client expectations are grossly and verifiably unmet
- Project is considered challenged or distressed if;
 - Major and un-anticipated reductions are made to project scope or quality after commencement
 - Significantly delayed or completed but substantially behind schedule
 - Subsisting or complicated with major, unanticipated cost overruns
- Statistics...

Factors for Project Failure

Poorly managed	Undefined objectives and goals	Lack of management commitment
Lack of a solid project plan	Lack of user input	Lack of organizational support
Centralized proactive management initiatives to combat project risk	Enterprise management of budget resources	Provides universal templates and documentation
Poorly defined roles and responsibilities	Inadequate or vague requirements	Stakeholder conflict
Team weakness	Unrealistic time frames and tasks	Competing priorities
Poor communication	Insufficient resources(funding and personnel)	Business politics
Overruns of schedule and cost	Estimates for cost and schedule are erroneous	Lack of prioritization and project portfolio management
Scope creep	No change control process	Meeting end user expectations
Ignoring project warning signs	Inadequate testing process	Bad decisions

Public Sector Specific

Policy instability	Poor legal framework	Weak institutions
Budget indiscipline	Integrity, Responsibility and Accountability	Stakeholders' involvement and consultation.

Key Success Factors

- Prerequisite:
 - Suitable Project Management methodology
 - Competent project leadership
 - Key stakeholders' commitment and support
- Project Charter
- Project Management Organization
- Company Structure
 - Organization Structure
 - Performance Management, Motivation & Rewards
 - Corporate Policies
 - Organizational Culture (support teamwork, integrity, innovation & safety?)
 - Corporate Mission, Vision & Core Values

Key Success Factors (2)

- Technical Considerations
 - Codes, Standards, Specifications
 - Design & Constructability
 - Construction, Installation & Commissioning Assurance
 - Handover processes
- Project management processes

Project Management Processes

Area	Initiating	Planning	Executing	Monitoring & Controlling	Closing
Project Integration Management	Project Charter	<ol style="list-style-type: none"> 1. Project Management plan 2. Project Coordination Procedure 	Direct & Manage Project Execution	<ol style="list-style-type: none"> 1. Project Performance Reports 	<ol style="list-style-type: none"> 1. Close-out reports 2. Handover Documentation
Project Scope	Scope clearly stated in Project Charter	<ol style="list-style-type: none"> 1. Scope Management Plan 2. Change Management Plan 	Constantly verify scope	<ol style="list-style-type: none"> 1. Variation Notices 2. Change orders 	Scope at completion and Lesson Learnt included in close-out report.
Project Schedule	Duration stated in Project Charter	<ol style="list-style-type: none"> 1. Detailed WBS 2. Delivery Schedule 	Manage schedule through; progress meetings, look-ahead extract, and recovery plans.	<ol style="list-style-type: none"> 1. Progress Measurement Tool 2. S-curves 	Lesson Learnt included in close-out report.

Project Management Processes (2)

Area	Initiating	Planning	Executing	Monitoring & Controlling	Closing
Project Cost	Total Cost stated in Project Charter	<ol style="list-style-type: none"> Detailed Cost Breakdown Project Budget Cash Flow Plan 	Manage project finance through invoicing and expenditure approval mechanism.	<ol style="list-style-type: none"> Project Cost Control templates 	Lesson Learnt included in close-out report.
Project Quality	Specifications and Performance Requirements stated in Project Charter	<ol style="list-style-type: none"> Project Quality Plan Inspection & Test Plans 	Manage quality through inspections, tests, appraisals etc.	<ol style="list-style-type: none"> Inspection Reports 	As-built conditions included in Handover Documentation. Lesson Learnt included in close-out report.
Project Resource	Total Resource Loading stated in Project Charter	<ol style="list-style-type: none"> Project Resource Plan 	Acquisition, Development and Management of Project Resources	<ol style="list-style-type: none"> Resource Loading Chart (actual vs planned) 	Lesson Learnt included in close-out report.

Project Management Processes (3)

Area	Initiating	Planning	Executing	Monitoring & Controlling	Closing
Project Communications	Identify Stakeholders	1. Communication Plan	Manage Stakeholder Expectations	1. Performance Report	Lesson Learnt included in close-out report.
Project Risk	Major risks and risk appetite stated in Project Charter	1. Risk Management Plan 2. Risk Management Register	Manage risk by watching out for early warning indicators and monitoring impact of risk response actions.	1. Risk Reports	Lesson Learnt included in close-out report.
Project Procurement	Procurement strategy stated in project Charter	1. Procurement Management Plan	Solicitation, Bid Reviews, Contracts	1. Post-contract management templates	Work Completion Certificates

End Notes:

Engineering Projects are expected to create value and positive impact on;

- Quality of life
- Businesses
- GDP/Economy

The effectiveness of delivery of Engineering Projects will;

- Reduce wastage and loss
- Assure value-for-money (taxpayers', investors')
- Satisfy all stakeholders

Reference: Project Management Institute (PMI), A Guide to the Project Management Body of Knowledge (PMBOK), 4th Ed., Newtown Square, PA: Project Management Institute, Inc., 2008

Thank You!