



Introduction to Project Management



600-101

PROJECT MANAGEMENT CONCEPTS

PROJECT PHASING





LESSON OBJECTIVES



- Dividing a project into phases
- The “S-curve” graph and it’s uses
- Dividing a project into Components
- Dividing a project by Professional Discipline
- Dividing a project into Deliverables
- The Role of the “Gatekeeper”
- Defining Project Directorate Interfaces and Timelines





PROJECT PHASES



Project Phasing is similar for Owner and EPC, but differ during “Implementation” and “Startup & Operations”

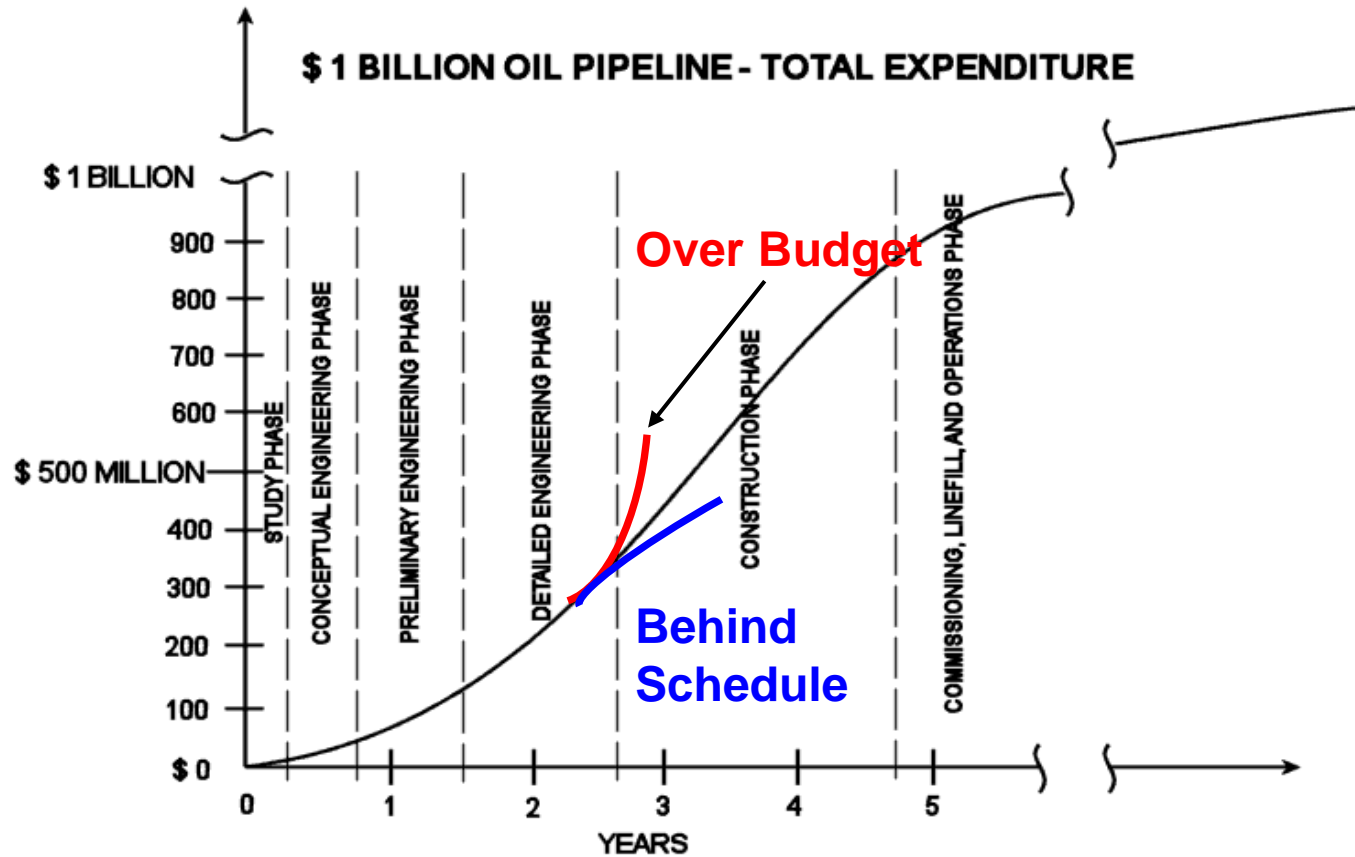
Handoffs between Owner and EPC are shown in “Gating Diagram” (page 10)

| Owner Perspective | EPC Contractor Perspective |
|--------------------------|--|
| 1. Evaluation | 1. Feasibility Study Phase – Master Planning |
| 2. Selection | 2. Conceptual Engineering |
| 3. Definition (FEED) | 3. Preliminary Engineering (+ long lead procurement) |
| 4. Implementation | 4. Detail Engineering (+ procurement) |
| | 5. Construction |
| 5. Commission & Start-up | 6. Commission, Startup, Operations & Maintenance |
| 6. Operations & Maint. | |



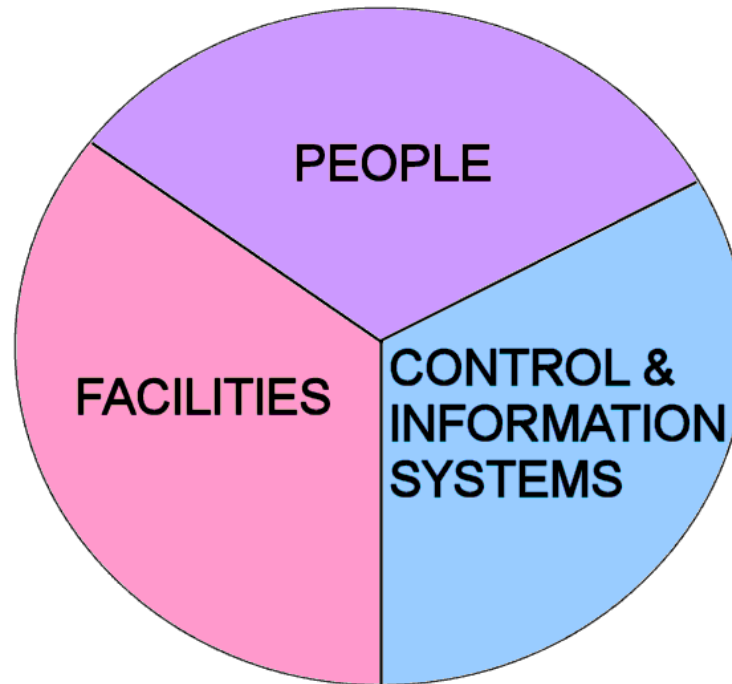


S-CURVE FOR A LARGE PROJECT – DIVIDED BY PHASE





AN ENTERPRISE CONSISTS OF PEOPLE, FACILITIES & SYSTEMS



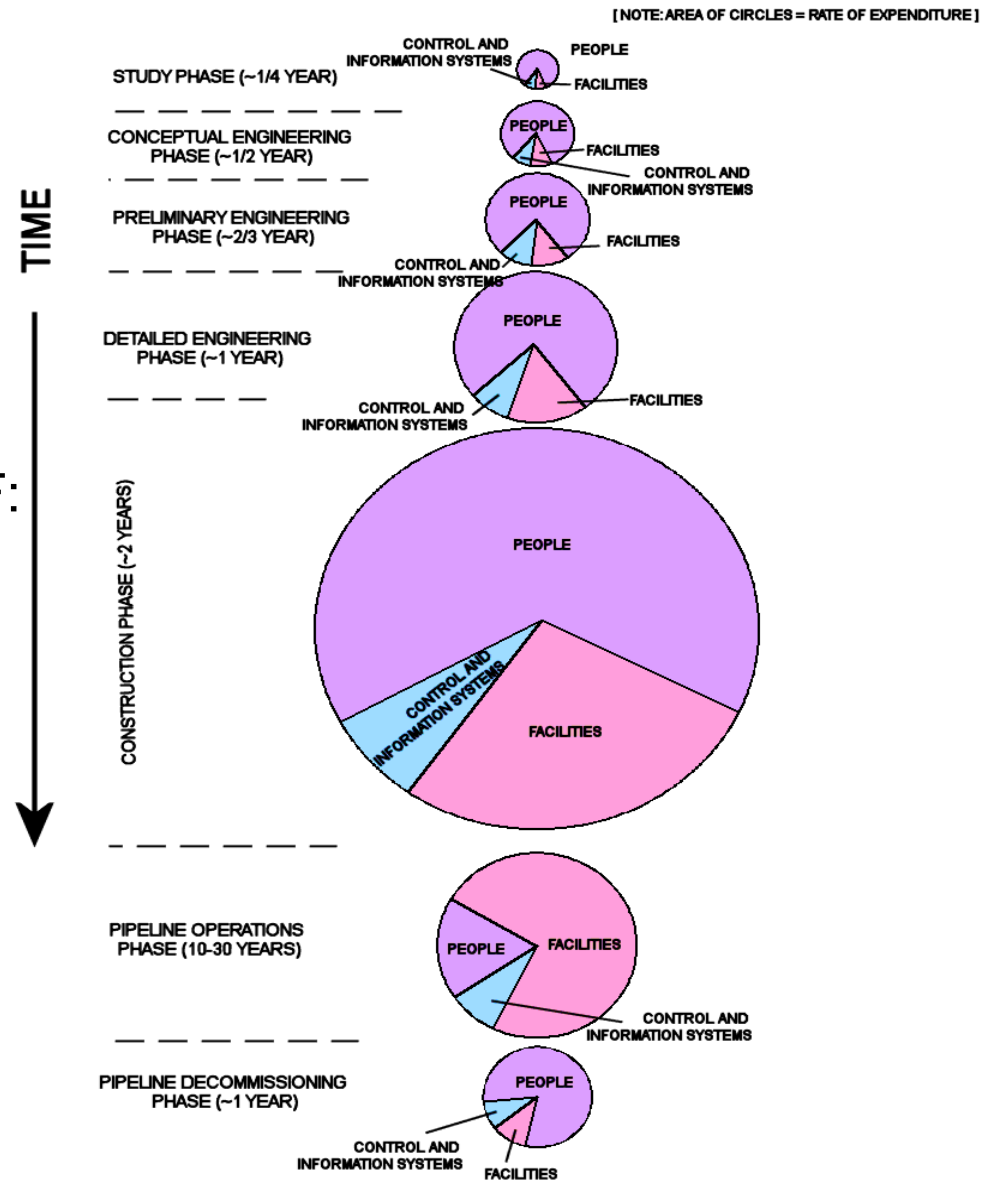
The previous diagram (S-curve) showed the combined expenditure during the project on People, Facilities and Control & Information Systems





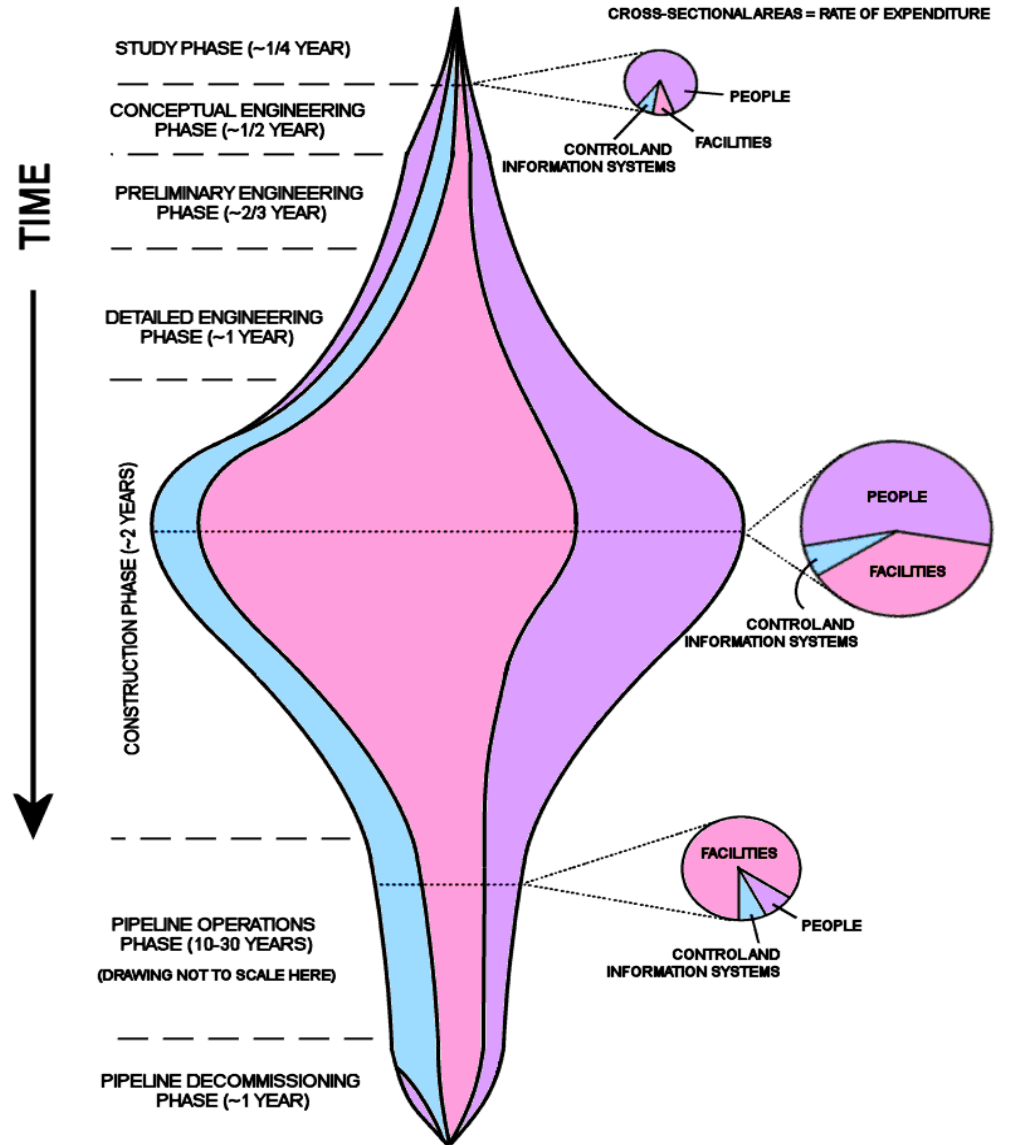
COMBINING THE CONCEPTS OF:

- Enterprise Components
- Project Phases





EXPENDITURES ARE CONTINUOUS EVEN ACROSS PHASE BOUNDARIES





ORGANIZE THE EPC BY “PROFESSIONAL ROLE”

----- 6xx Project Management Roles -----

- 600 Project Management & Control
- 610 Project Controls
- 640 Project Procurement

----- 7xx Engineering Roles -----

- 700 General Engineering
- 710 Process Engineering
- 720 Civil / Structural/Architectural Engineering
- 730 Mechanical Engineering
- 740 Electrical Engineering
- 750 Piping Engineering
- 760 Oil & Gas Field Engineering
- 770 Control & Information Systems
- 780 Industrial Computer Systems

----- 8xx Construction Roles -----

- 800 Construction Management
- 810 Field Support Services
- 820 Construction Supervision

Divide Project organization & Deliverables by:

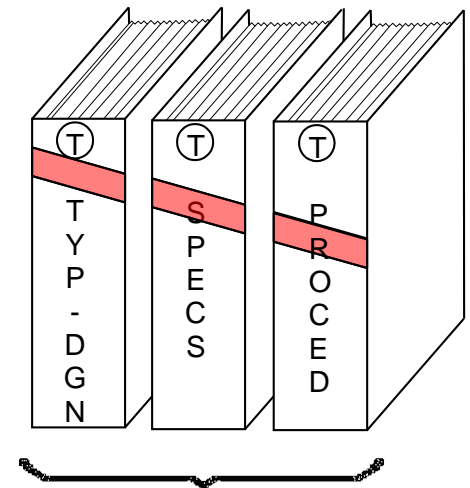
- Professional Role
- Project Phase



DEFINE PROJECT STANDARDS & DELIVERABLES IN PPM

A Project Procedure Manual (PPM) includes:

- A Desktop Reference for each major Profession/Role
- A description of Project Procedures & Standards
- Provide References for:
 - Procedures
 - Specifications
 - Forms and Templates
 - Installation Details
 - Reference Designs



Company Standards

- Unified Typical Designs
- Purchase Specifications
- Company Procedures





DELIVERABLES



- Deliverable: an item, document, or drawing produced by the project team *as agreed in the contract*
- Each Project Phase has deliverables
- The goal of phasing is to manage information
- A “gate” is required *prior to beginning the next phase*

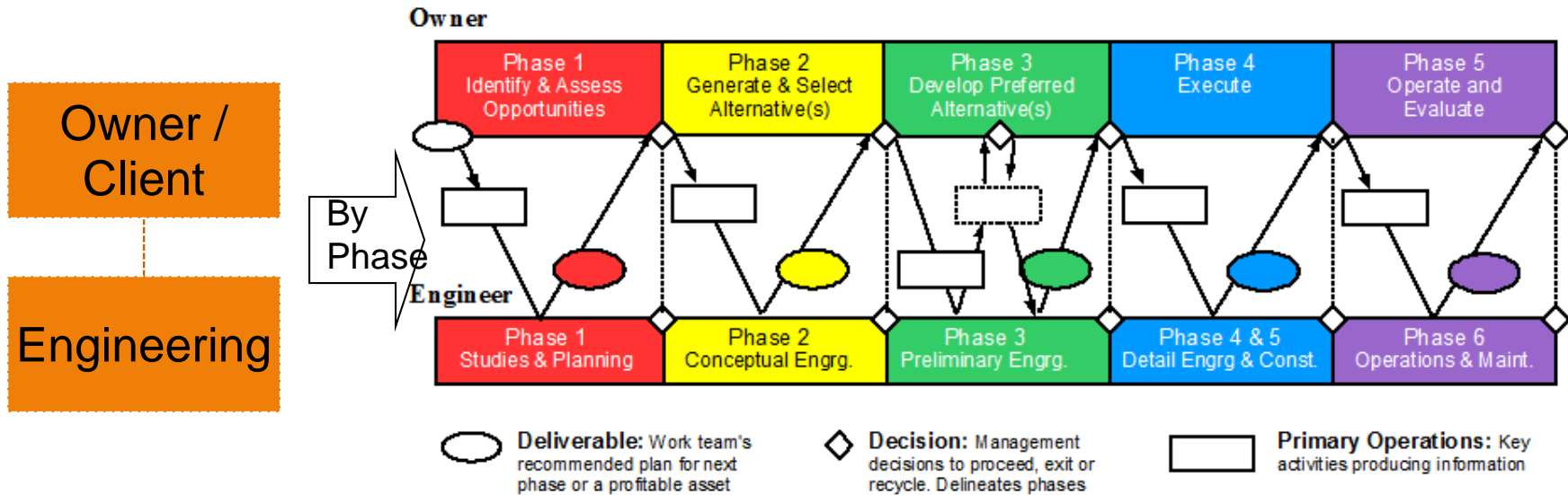




WITH PHASED ENGINEERING, THE OWNER EXCHANGES DELIVERABLES WITH ENGINEERING AS BELOW



Stage Gate Process (for Engineered Facilities)





GATE-KEEPER DECISION-MAKING AUTHORITY



Upon completing the end-of-phase review, the gatekeeper (or committee) must have the authority to:

- Approve the project to continue
- Order changes in the project
- Suspend the project activity
- Recycle the project
- Cancel the project





GATE-KEEPER DECISION-MAKING RESPONSIBILITIES



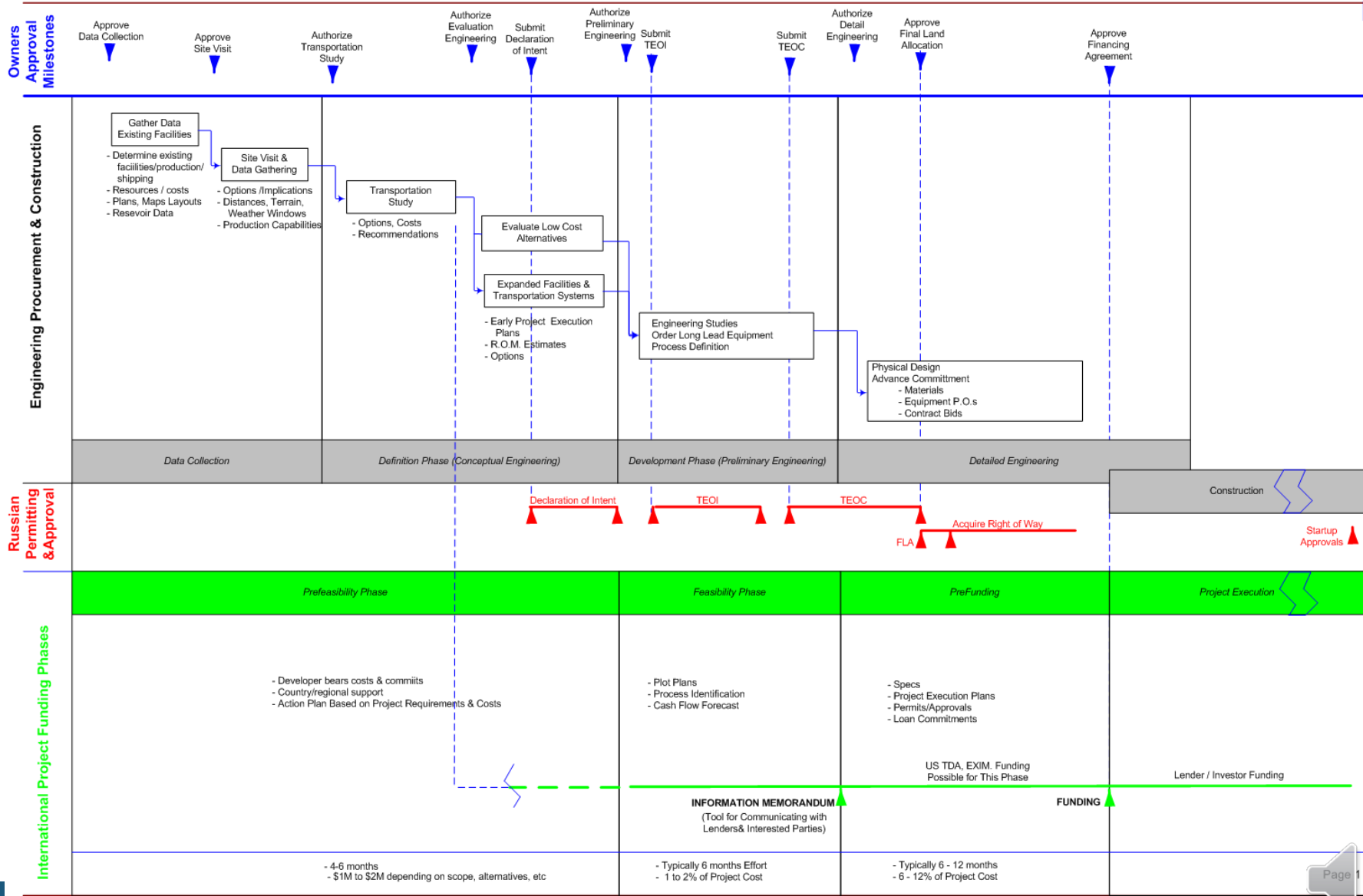
Gate-keeper(s) must decide whether:

- the project still meets the overall company strategy
- deliverables from the completed phase are adequate to proceed
- the present cost estimate is sufficiently detailed
- the total final cost will result in an acceptable ROI



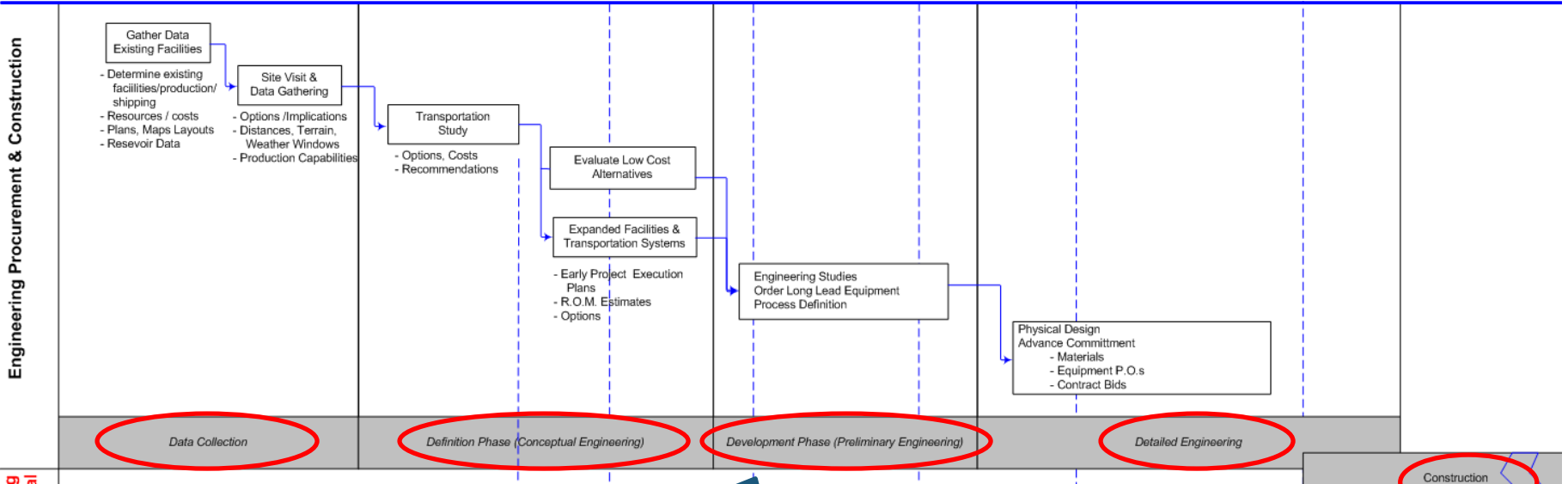


PROJECT DIRECTORATE INTERFACES





PROJECT DIRECTORATE INTERFACES



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Performed by Owner/Consultant

Performed by the Engineering Consultant

Performed by the Front-End Engineering Contractor

Performed by the Detail Engineering Contractor

Performed by the Construction Contractor





PROJECT PHASING SUMMARY NOTES

WHAT TO DO



- Make each phase discrete
- Review the project's progress and deliverables at the end of each phase (critical reviews after Phases 1, 2, & 3)
- Maintain quality of deliverables
- Communicate results of the review to the project team





PROJECT PHASING SUMMARY NOTES

WHAT TO AVOID



1. Allowing the division between phases to become blurred
2. Allowing the scope of work to change without proper approval
3. Skipping critical reviews in order to maintain a schedule
4. Allowing the interests of the Project Team to supersede the Owner's interests

