Implementing Best Practices In Capital Project Management

R.W. Dietrich
Director, Engineering Services
sanofi pasteur limited
Agenda

- Introduction
- Context
- Best Practices Overview
- The Seven Project Stages
- The Stage Gate Review Process
- Project Performance Metrics
- Results to Date
- Next Steps
Introduction

- Who is sanofi pasteur?
- Where is sanofi pasteur?
- Engineering at sanofi pasteur
- Capital projects at sanofi pasteur

Sanofi Pasteur
The vaccines business of sanofi-aventis Group
2002 benchmarking of capital projects determined...

- **Industry**
- **Pharms**
- **sanofi pasteur 2002**

**Absolute Capital Cost**

0.90
0.95
1.00
1.05
1.10
1.15
1.20
1.25
1.30

**Overall Schedule (excluding qualification)**

0.90
0.95
1.00
1.05
1.10
1.15
1.20
1.25
1.30

- **Pharms**
- **Industry**
- **sanofi pasteur 2002**
Best Practices Overview

- Derived principally from
  - Current sanofi pasteur practices
  - PMI PMBOK
  - ISPE
  - IPA

- Focuses on planning (aka Front End Loading, or FEL)
The 7-stage PM Process:
- Stage 0: Needs Analysis
- Stage 1: Feasibility Study
- Stage 2: Preliminary Engineering
- Stage 3: Basic Engineering
- Stage 4: Execution
- Stage 5: Qualification
- Stage 6: Close-Out
The Seven Project Stages
The Seven Project Stages

- **Stage 0: Needs Analysis**
  - ‘Pre-project’ stage, concluded by a Go/No-Go decision
  - Typically involves a Project Sponsor, Engineering Director, Area V.P.
  - Rarely involves external support
  - Goal is to establish technical solutions for end-user needs and develop a supporting business case
  - Establishes order-of-magnitude boundaries for potential project (cost, schedule)
The Seven Project Stages

Stage 1: Feasibility Study
- Project Leader is identified in this phase
- SME’s are used on an as-needed basis
- Project feasibility is assessed with respect to resources, risk
- Options are assessed with respect to benefits, economic justification, functionality
The Seven Project Stages

Stage 1: Feasibility Study

- Key activities and deliverables:
  - Project charter
  - Initial User Requirements Specifications
  - Process description
  - Block diagrams
  - Material balances
  - General arrangement diagrams
  - Cost/benefit analysis
  - Early stage risk analysis
The Seven Project Stages

- **Stage 2: Preliminary Engineering**
  - Project team and steering committee are defined and engaged at this stage
  - Objective is to define the project scope
  - External resources are assigned
    - Design consultants
    - Construction manager
  - This stage (and stage 3) may be subject to capital funding
Stage 2: Preliminary Engineering

Key activities and deliverables:

- Team charter
- Scope statement
- Preliminary project plan
- Final User Requirements Specifications
- Process and utility flow sheets
- Impact assessment (on site and environment)
- Preliminary cost estimate and time schedule (± 25%)
- Initial VMP development
- Initial procurement plan
The Seven Project Stages

■ Stage 3: Basic Engineering
  - Objective of this stage is to develop the design based on scope established in stage 2
  - At the completion of this stage, the project is ready for full capital funding
The Seven Project Stages

- **Stage 3: Basic Engineering**
  - Key activities and deliverables:
    - P&ID’s
    - Architectural layouts
    - Material, personnel, product flow diagrams
    - Major equipment specifications
  - Project reviews:
    - Constructability
    - Maintainability
    - HAZOP
    - FMEA…
The Seven Project Stages

- **Stage 3: Basic Engineering**
  - Key activities and deliverables (cont.):
    - Product impact assessment
    - Further development of VMP
    - Functional design specifications
    - Enhanced design review and qualification
    - Finalized project plan with control schedule and cost estimate (± 5%)
    - Final procurement plan
    - Purchase of long lead equipment
The Seven Project Stages

- Stage 4: Execution
  - Objective of this phase is to complete the design details and carry out construction/installation
The Seven Project Stages

- **Stage 4: Execution**
  - Key activities and deliverables:
    - Development of final drawings, specifications and tender packages
    - Implementation of cost and schedule monitoring and control systems
    - Permitting
    - Development of qualification rationales
    - Finalization and approval of the VMP
    - Development of IQ and OQ protocols
The Seven Project Stages

- **Stage 4: Execution**
  - Key activities and deliverables (cont.):
    - Development of commissioning plan
    - Construction coordination and inspection
    - Safety inspections
    - Final acceptance of construction works
Stage 5: Qualification

- The objective of this stage is to start up, commission and qualify the systems constructed and installed in stage 4
- Commissioning and qualification are optimized per ISPE Baseline Guide
- Includes training of end users and maintenance staff
The Seven Project Stages

- **Stage 5: Qualification**
  - Key activities and deliverables:
    - Pre-start reviews
    - Maintenance plans and task lists
    - Executed commissioning plan and reports
    - Executed IQ and OQ protocols and reports
    - Operation and maintenance manuals and SOP’s
    - Instrument calibration
    - Regulatory registrations
    - Training
The Seven Project Stages

■ Stage 6: Close-out
  □ This stage involves the transition from ‘Project’ status to ‘Operational’ status
  □ Includes closure of all external contracts and dissolution of project team
  □ Includes final reporting and financial closure of the project
The Seven Project Stages

Stage 6: Close-out

- Key activities and deliverables:
  - Engineering turn-over package (ETOP)
  - Lessons Learned
  - Registration of assets
  - Final project report
  - Entry of project data into benchmark database
The Seven Project Stages

- The Project Management Process Flowchart
The Stage Gate Review Process
The Stage Gate Review Process

- Performed at the end of key project stages
- Objective is to review activities and deliverables and approve advancement to next stage
The Stage Gate Review Process

- Originally, stage gate review board consisted of sponsor, senior area management
- Currently, stage gate review board consists of engineering services peers
- In future, development of a dedicated global stage gate review team?
The Stage Gate Review Process

Stage Gate Review Process:

Stage 0: Needs Analysis
Stage 1: Feasibility Study
Stage 2: Preliminary Engineering
Stage 3: Basic Engineering
Stage 4: Execution
Stage 5: Qualification
Stage 6: Close-out

- Change Management Initiated
- Change Control Initiated
- Go/No-go Decision
- Pre-planning Capital Funding
- Full Project Capital Funding
- Turn-over to Owner and Maintenance

- Stage Gate Review
Project Performance Metrics

- FEL Index
- Team Development Index
- Project Controls Index
2004 benchmarking of capital projects determined…

Results to Date
Results to Date

- 2004 benchmarking of capital projects determined...
  - Overall, annual savings around $38 MCDN
  - Overall, average schedule reduction of 10 months
IPA’s Value Improving Processes:

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