Outline

- Program Management
  - Definition, Distinction from Project Management
  - Example Program (BP Azerbaijan)
- Project Portfolio Management
  - Project Selection Process
  - Example Portfolio (PreQuip)
Concept Question 1

What is the *largest* number projects you have worked on or managed at the same time (in parallel)?

- 1
- 2
- 3
- 4
- more than 4
Programs – PMBOK Definition

- **Program.** A *program is a group of projects managed in a coordinated way to obtain benefits not available from managing them individually.*

  - Many programs also include elements of ongoing operations. For example:
    - The “XYZ airplane program” includes both the project or projects to design and develop the aircraft as well as the ongoing manufacturing and support of that craft in the field.
    - Many electronics firms have “program managers” who are responsible for both individual product releases (projects) and the coordination of multiple releases over time (an ongoing operation).

  - Programs may also involve a series of repetitive or cyclical undertakings, for example:
    - Utilities often speak of an annual “construction program,” a regular, ongoing operation which involves many projects.
    - Many non-profit organizations have a “fundraising program,” an ongoing effort to obtain financial support that often involves a series of discrete projects such as a membership drive or an auction.
Develop a product platform that can be “scaled” or “stretched” in one or more dimensions to satisfy a variety of market niches.

- Boeing 737 is divided into 3 platforms:
  - Initial-model (100 and 200)
  - Classic (300, 400, and 500)
  - Next generation (600, 700, 800, and 900 models)

- The Boeing 777 has also been designed knowing that it will be “stretched”
Airbus Aircraft Program

- Airbus A3XX Family: common height, width, cockpit

  The A330 cockpit is common to all other Airbus types while Boeing’s 767-400 cockpit is common only with the 757. This enabled the A330-200, a less efficient “shrink” of a larger aircraft, to outsell Boeing’s 767-400ER, a more efficient “stretch” design of a smaller aircraft.
Sample Program: BP ACG (Azerbaijan)

Capex: $9bn total / $6m / day
90,000 te topsides
90,000 te jackets
1000 km offshore pipelines

One of world’s largest terminals
7 years of execute
74 million man-hours total so far
Over 3 million man-hours/month

80% of man-hours in Azerbaijan
20% across another 10 countries
New Workforce - 9000 Azeris

Source: Adrian Luckins, BP
ACG Reservoir Size
ACG Full Field Development - Production

Phase 3
Phase 2
Phase 1
Chirag

mbd

Geographical Challenges

- Jacket Pre-Fabrication, Italy
- Drilling Construction (CA), France
- Engineering & Procurement, UK
- Drilling Construction (WA/EA), Holland
- Living Quarters Fabrication, Sweden
- Drilling Construction (CA), France
- Installation Design, Croatia
- C&W/ terminal pre-fabrication, Turkey
- Topsides Pre-Fabrication, Dubai
- Topsides Fabrication, Jacket Fabrication, Terminal Construction, Engineering Design, Azerbaijan

Transport routes:
- By Trailer
- By Rail
- By Sea

Logistics
- 5000 Trailer trips
- 6000 rail trips
- 200 river boats
## Project Schedules

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**Objectives**:
- Learning Curve Benefits – Faster, Cheaper
- Elimination of Inefficiency
- Continually Reduce Unit Costs

**Strategy**:
- Standardization
- Contracting – Natural Choice at Right Price
- Organisation – People Continuity
- Right Pace for capital efficiency
**Project Challenges – ACG & Shah Deniz**

**Phase 1**
- **CA-PDQ**
  - Topsides
  - Detail
  - Design
  - 42 Mhrs Per Tonne

**Phase 2**
- **WA-PDQ**
  - 50% Copy
  - 31 Mhrs Per Tonne
- **EA-PDQ**
  - 95% Copy (WA)
  - 11 Mhrs Per Tonne
- **DWG-DUQ**
  - 60% Copy (WA/EA)
  - 28 Mhrs Per Tonne

**Phase 3**
- **CB-PDQ**
  - 30% Copy
  - 30 Mhrs Per Tonne

**Phase 4**
- **DWG-PCWU**
  - 20% Copy (C&WP/WA)
  - 19 Mhrs Per Tonne

**Phase 1**
- **CA-C&WP**
  - Topsides
  - Detail
  - Design
  - 21 Mhrs Per Tonne

**Seeds Building Blocks**: Yellow

**Copied Building Blocks**: Purple

**New Design**: Blue
Benefits realised through standardisation: Engineering

Engineering Benefits

Production Facilities Engineering Costs

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Drilling Facilities - Engineering Costs (Eiffel/KCA)

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Direct Man-hours/te

Phase 3 (Manhours/te)
- DWG: 29 contract
  - 25 stretch
- DUQ: 28
- PCWU: 20
Benefits realised through standardisation: Fabrication

Fabrication Benefits

**Topsides Fabrication Costs**

- Phase 1: $18042/te
- Phase 2: $16122/te (-10%)
- Phase 3: $15228/te (-6%)

**Jacket Fabrication Costs**

- Phase 1: $6181/te
- Phase 2: $5751/te (-7%)
- Phase 3: $5521/te (-4%)
Concept Question 2

- In our organization we pursue mainly:
  - Programs – sets of directly related projects
  - Portfolios – sets of indirectly related projects
  - Individual single projects
  - Not applicable
A portfolio of projects is a collection of projects owned or managed by the same organization that are only indirectly related.

- Projects may not be directly related to each other, as in a program, i.e. outputs from one don’t necessarily feed into the other.
  - Usually no or only minimal commonality and standardization.
- Portfolio is chosen with diversity of projects, some of them may be “negatively correlated”
- Mix of large scale potentially less risky and small risky projects that act as “pathfinders”
- Project portfolio may not have a single manager.
Project Portfolio Planning

Advanced R&D Projects

Product Changes
- New Core Product
- Next Generation Product
- Addition to Product Family
- Add-ons and Enhancements

Breakthrough Projects
- New Core Processes
- Next Generation Process
- Single Dept. Upgrade
- Tuning and Incremental

Process Changes
- Platform Projects
- Derivatives (Enhancements, Hybrids, and Cost Reduced Versions)

Source: (Wheelwright & Clark, 1992)
Aggregate Project Plan
Classifications

- Advanced R&D Projects
  - Innovations and technology development that provides a precursor to commercial development

- Breakthrough Projects
  - Projects that involve significant change in the product and process establish a new core product and process

- Platform Projects
  - Projects provide a base for a product and process family that can be leveraged over several years

- Derivative Projects
  - Cost-reduced versions of an existing product or platform or add-ons or enhancements to an existing production process

- Allied Partnerships
  - Partnerships in any of these project areas to leverage development resources and activities

Source: (Wheelwright & Clark, 1992)
Project Planning at PreQuip – Part 1

- PreQuip’s Development Projects (30) before the Aggregate Project Plan

PreQuip’s Development Projects (11) after the Aggregate Project Plan

- Mass spectrometers
- Liquid chromatographs
- Gas chromatographs
- Data processing and handling products

Concept Question 3

What is the most challenging issue you have encountered working in a multi-project environment?

- Conflicts due to financial resource contention
- Inefficiency due to multi-tasking
- Staffing dynamics (trying to get the “A” team)
- Friction between program and project manager
- Enforcing standard work procedures
- Ensuring commonality at the parts and module level
- Other
Portfolio Management Issues

- Risk Correlation across Portfolio
- Constraints on Shared Resources
  - Late and over-budget projects delay ramp-up of downstream projects
  - Shared resources (e.g. test facilities) can also create bottlenecks
  - Staff working simultaneously on multiple projects create inefficiencies and delays

Typically dealt with via exogenous inputs to single-project models, or via portfolio models
Program Manager Challenges

- Creating a *vision* for the program as a whole
- Scheduling and prioritization of individual projects in the program
- Dealing with project interdependencies
  - Resource contention, CAPEX phasing
  - Staffing, avoid firefighting
  - Ensuring learning and commonality across projects
- Program Manager is a very different and more strategic role than project manager
  - Typically requires more strategy and diplomacy than individual project management
Discussion / Q&A
ESD.36 System Project Management
Fall 2012

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