Technical Session
Innovative Project Management Approach from FEL-HUC

Pathman Arulampalam
Senior General Manager, Developments
Hess Exploration & Production Malaysia
Ushering a New Era of Project Delivery Using Operations Science
98% of projects incur cost overruns or delays.
The average cost increase is 80% of original value.
The average slippage is 20 months behind original schedule.

Source: McKinsey & Company’s public annual reports; IHS Herald Global Projects Database
Labor Productivity Trends in the U.S. Construction Industry (1964-2012)

Figure 1. Deflated C30 Series of Construction vs. Non-farm Industries Labor Productivity, (1964=100)

The Engineering & Construction industry incumbents have not improved productivity and have not closed ‘the Gap’ with others in over 50 years.
1910’s Era-1 Productivity

1960’s Era-2 Predictability

2000’s Era-3 Profitability
Key Attributes Era 1 (Scientific Management)

- Separation of planning from doing
- Advent of functional support foreman
- Development of Bar Chart (H. Gantt)
**Project management**, then, is the application of knowledge, skills and techniques to execute projects effectively and efficiently. It's a strategic competency for organizations, enabling them to tie project results to business goals — and thus, better compete in their markets.

It has always been practiced informally, but began to emerge as a distinct profession in the mid-20th century. PMI's *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)* identifies its recurring elements:

Project management *processes* fall into five groups:

- Initiating
- Planning
- Executing
- Monitoring and Controlling
- Closing

Project management *knowledge* draws on ten areas:

<table>
<thead>
<tr>
<th>Integration</th>
<th>Scope</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>Quality</td>
<td>Procurement</td>
</tr>
<tr>
<td>Human resources</td>
<td>Communications</td>
<td>Risk management</td>
</tr>
<tr>
<td>Stakeholder management</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Evolution of the Project Management “Iron Triangle”

"Pick any two" 

You are given the options of Fast, Good, and Cheap, and told to pick any two. Here Fast refers to the time required to deliver the product, Good is the quality of the final product, and Cheap refers to the total cost of designing and building the product. This triangle reflects the fact that the three properties of a project are interrelated, and it is not possible to optimize all three – one will always suffer. In other words you have three options:

- Design something quickly and to a high standard, but then it will not be cheap.
- Design something quickly and cheaply, but it will not be of high quality.
- Design something with high quality and cheaply, but it will take a relatively long time.

STR Model

The STR model is a mathematical model which views the "triangle model" as a graphic abstraction of the relationship:

Scope = Time × Resources

Scope refers to complexity (which can also mean quality). Resources includes humans (workers), financial, and physical. Note that these values are not considered unbounded. For instance, if one baker can make a loaf of bread in an hour, that doesn't mean ten bakers could make a loaf in six minutes.
1.2 What is a Project?

A project is a temporary endeavor undertaken to create a unique product, service, or result. Project Management Institute (2012-09-01).

1.5.1.1 Operations Management

Operations management is a subject area that is outside the scope of formal project management as described in this standard.

Operations management is an area of management concerned with ongoing production of goods and/or services. It involves ensuring that business operations continue efficiently by using the optimum resources needed and meeting customer demands. It is concerned with managing processes that transform inputs (e.g., materials, components, energy, and labor) into outputs (e.g., products, goods, and/or services).

<table>
<thead>
<tr>
<th>PRODUCT CHARACTERISTICS</th>
<th>Low volume unique products</th>
<th>Low volume multiple products</th>
<th>Higher volume Standardized products</th>
<th>Very high volume commodity products</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROCESSES CHARACTERISTICS</td>
<td>Jumbled flow (Job Shop)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Disconnected line flow (Batch)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Connected line flow (Assembly line)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Continuous flow</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Project Management

Cost, Time & Cash  =  Scope & Quality  +  Schedule  +  Resource Use

Project Production Management

Cost, Time & Cash  =  Scope & Quality  +  Process Design  +  Capacity  +  Inventory  +  Variability
PPM at Hess

Leveraging Bakken Knowledge

Owning LPC – Metrics Driven & People Focused

STD Process

Operating Rhythm

Bakken Engagements

Daily, Weekly, Quarterly Lookaheads

Legacy Planning

Manage Value Stream to Drive Efficiencies

Utica VSM – Manage WIP, Inventory, Cycle Time

STD Work & Training

LPC Metrics – Leading Indicators for Delivery

LPC Assessments linked to PE

Leveraging Bakken Knowledge
Why is this important

- This is Operational Physics – it is a science
  - For our industry it is as important to understand this just like it is important to understand fluid flow, the laws of thermodynamics etc.

It’s a science that can used by you or happen to you…which would you prefer?

Need to understand the operational science our work is governed by...for example do target dates drive the rate of work or does the rate of work drive target dates?
For further information: go to Project Production Institute @

https://projectproduction.org/