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## Technical Session

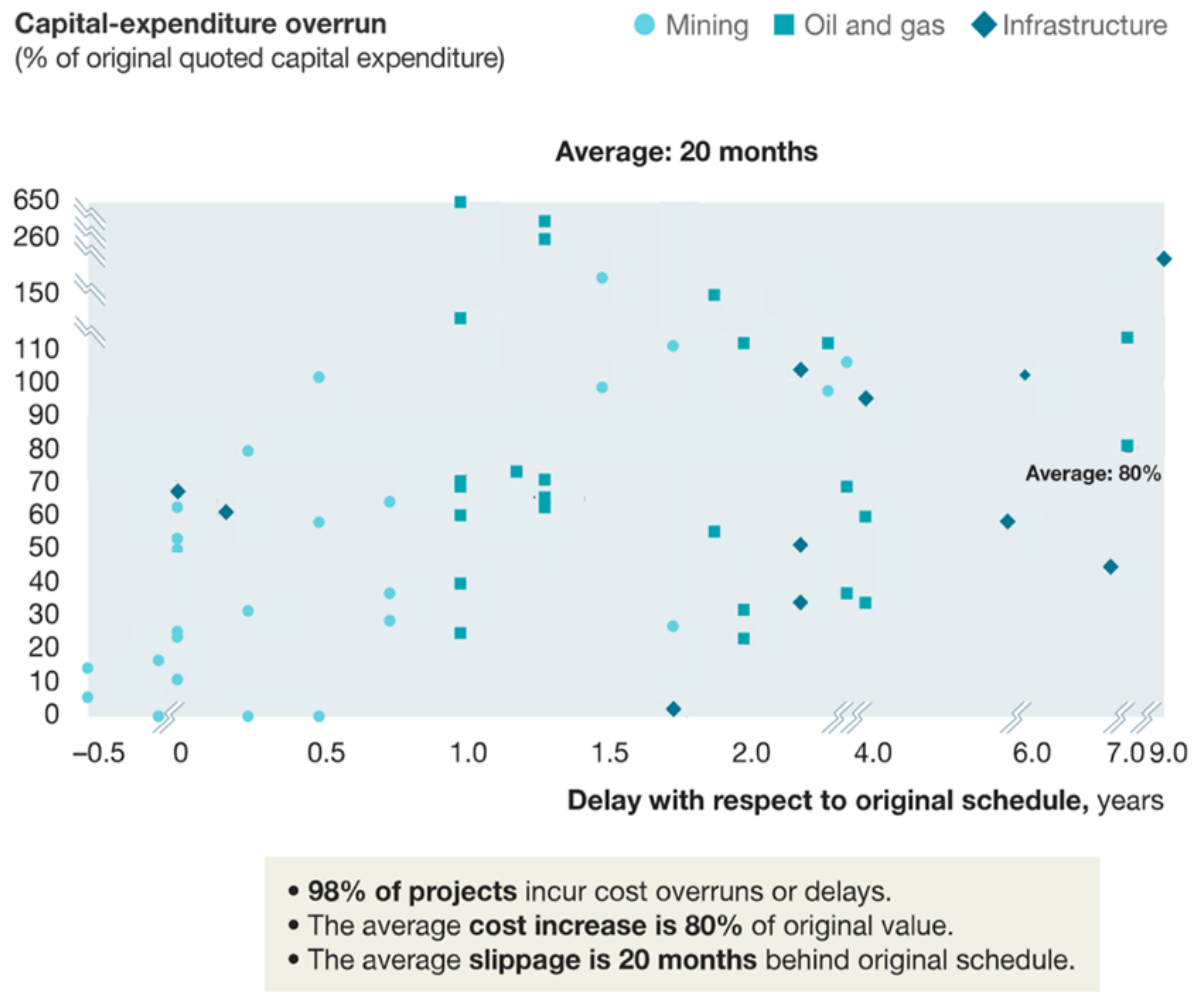
# Innovative Project Management Approach from FEL-HUC

Jaafar Altaie
Managing Director
Manaar Energy Consulting & Project

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# Ushering a New Era of Project Delivery Using Operations Science

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*Source: McKinsey & Company's public annual reports; IHS Herald Global Projects Database*

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# Labor Productivity Trends in the U.S. Construction Industry (1964-2012)

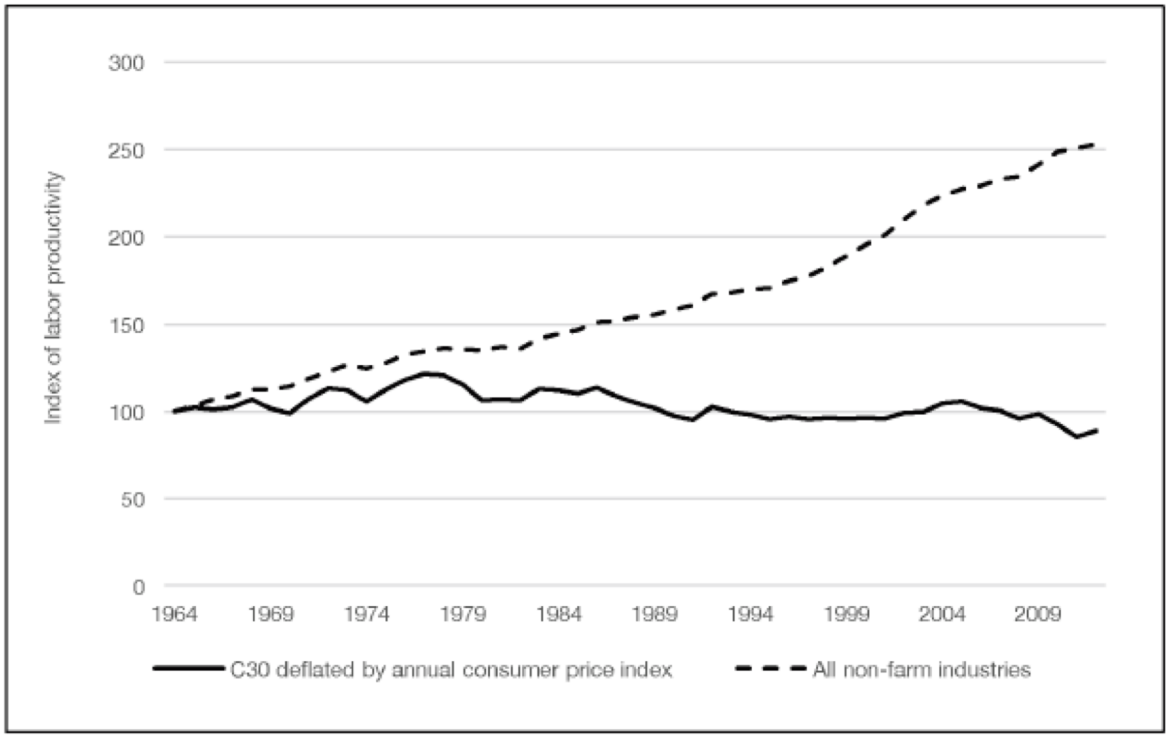


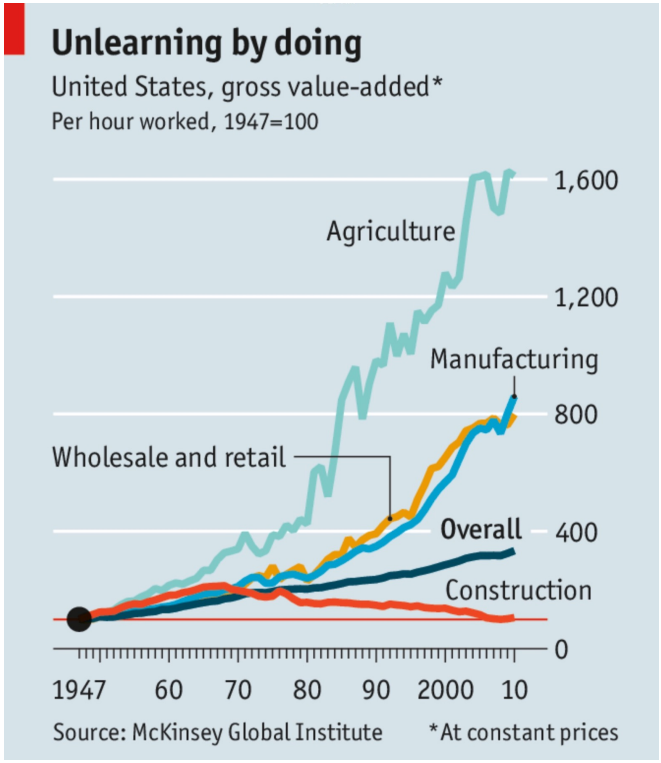

Figure 1. Deflated C30 Series of Construction vs. Non-farm Industries Labor Productivity, (1964=100)

*Source: Paul Teicholz, "Labor Productivity Declines in the Construction Industry: Causes and Remedies," AECbytes Viewpoint. Issue 4, April 14, 2004.*

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# The Engineering & Construction Performance Gap

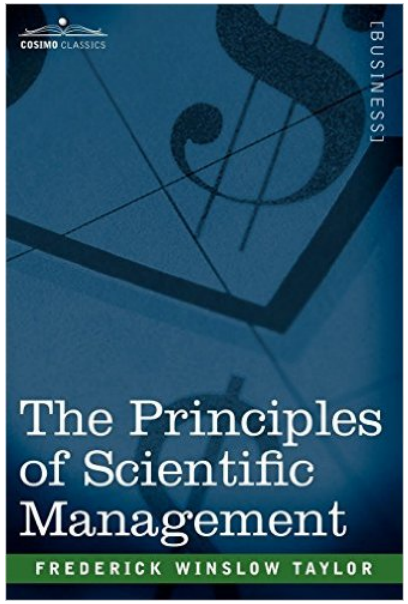



*Source: The Economist - August 17, 2017*

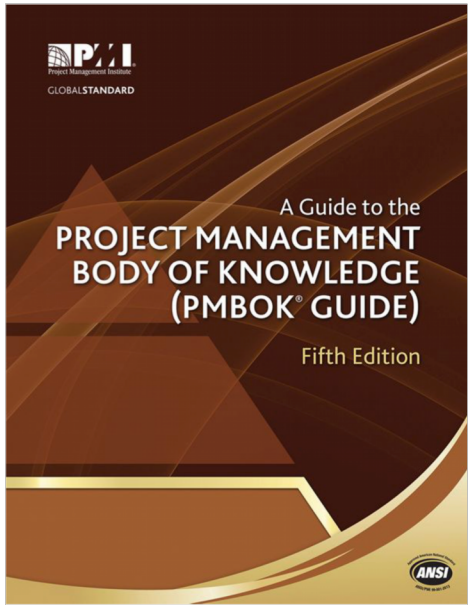
The Engineering & Construction industry incumbents have not improved productivity and have not closed 'the Gap' with others in over 50 years

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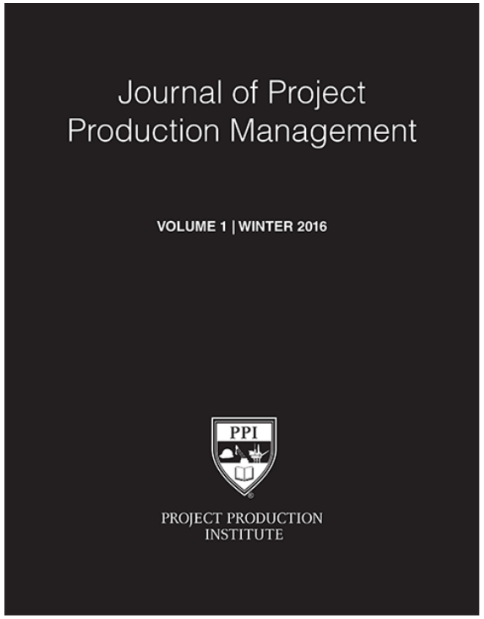
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1910's
Era-1 Productivity




1960's
Era-2 Predictability




2000's
Era-3 Profitability

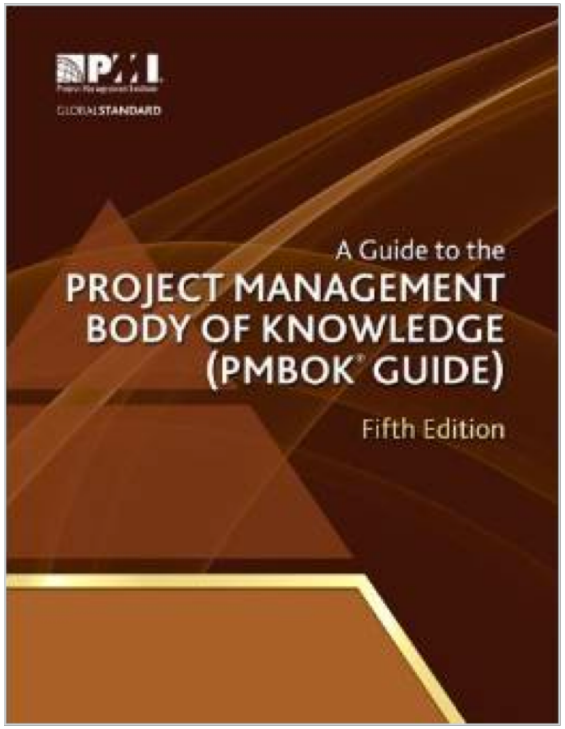
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# Key Attributes Era 1 (Scientific Management)

- Separation of planning from doing
- Advent of functional support foreman
- Development of Bar Chart (H. Gantt)

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**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:

| | | |
|---|---|---|
| Integration | Scope | Time |
| Cost | Quality | Procurement |
| Human resources | Communications | Risk management |
| Stakeholder management | | |

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# Evolution of the Project Management “Iron Triangle”

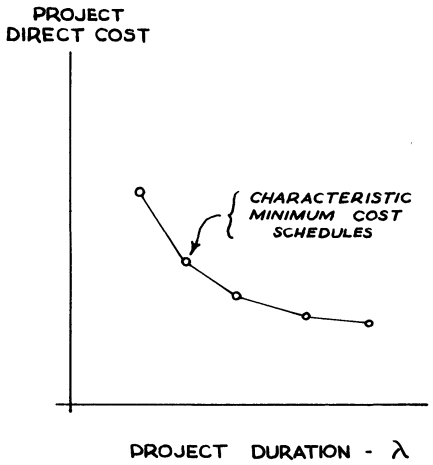
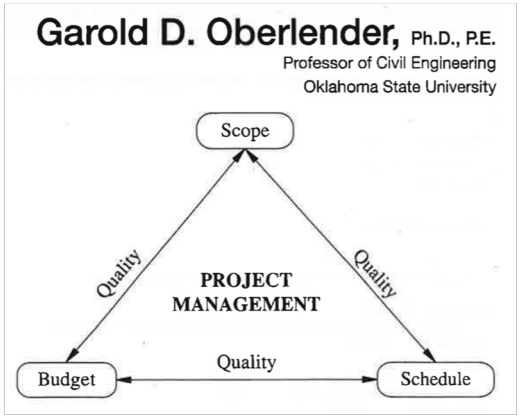
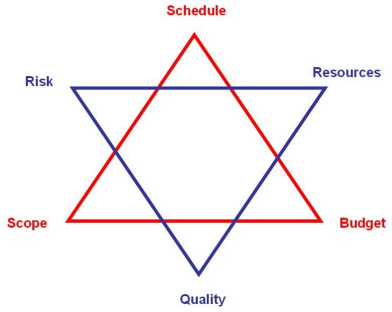


Fig. 3—Typical project cost curve.




“Triple Constraint” in Project Management




## "Pick any two" [edit]

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 [edit]

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

$$\text{Scope} = \text{Time} \times \text{Resources}$$

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.

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# 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.

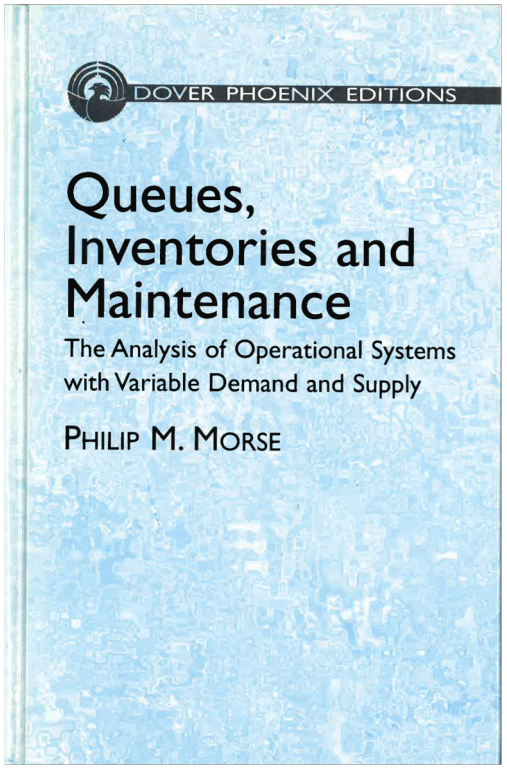
Operations management is an area of management concerned with ongoing production of goods and/or services. It involves ensuring that business operations continue efficiently by using the optimum resources needed and meeting customer demands. It is concerned with managing processes that transform inputs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

A Guide to the Project Management Body of Knowledge ( PMBOK® Guide )—Fifth Edition (ENGLISH) (Kindle Locations 601-602). Project Management Institute. Kindle Edition.

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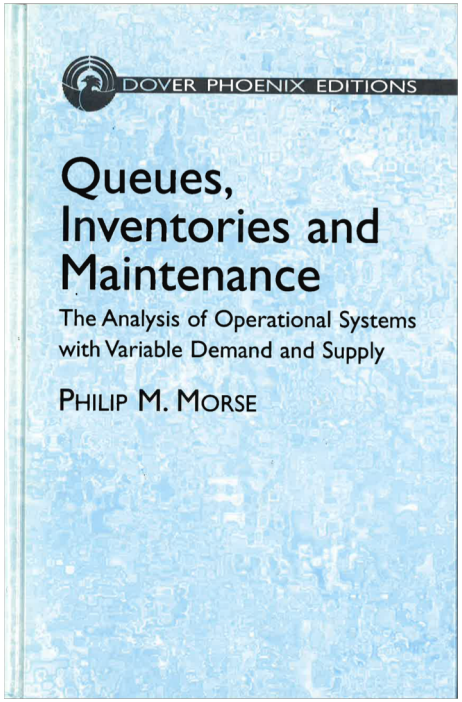
| PROCESSES CHARACTERISTICS | PRODUCT CHARACTERISTICS | | | |
|---|---|---|---|---|
| | Low volume unique products | Low volume multiple products | Higher volume Standardized products | Very high volume commodity products |
| Jumbled flow (Job Shop) | ■ | | | |
| Disconnected line flow (Batch) | | ■ | | |
| Connected line flow (Assembly line) | | | ■ | |
| Continuous flow | | | | ■ |

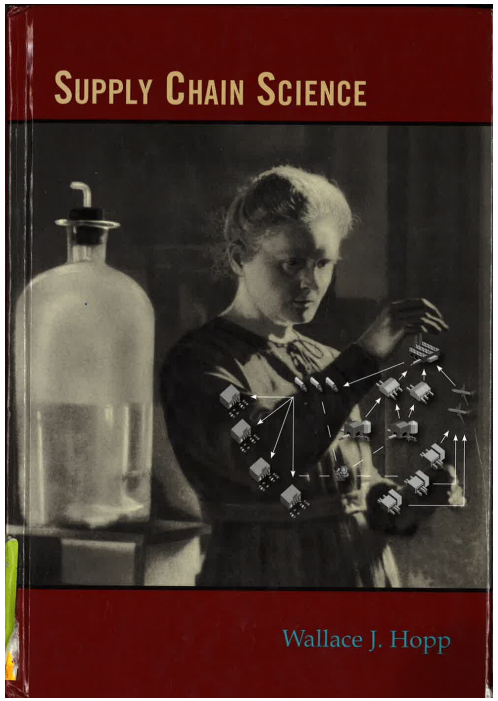
*Product-Process Matrix – modified from Schmenneter (1993)*

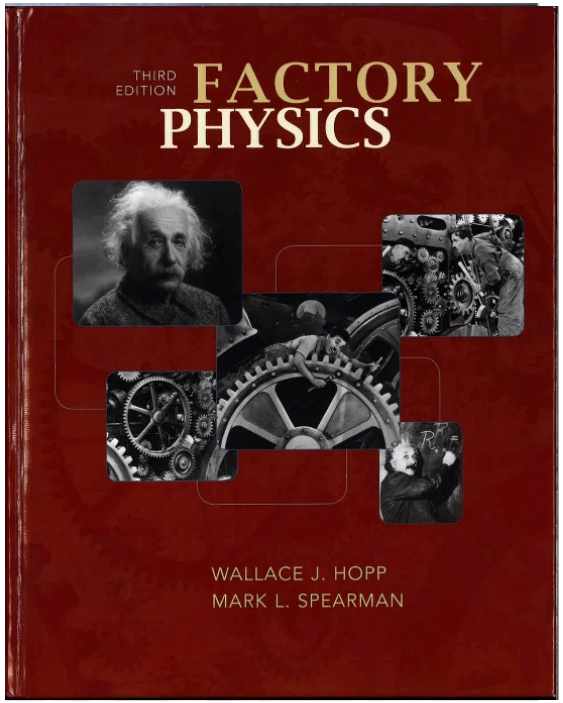



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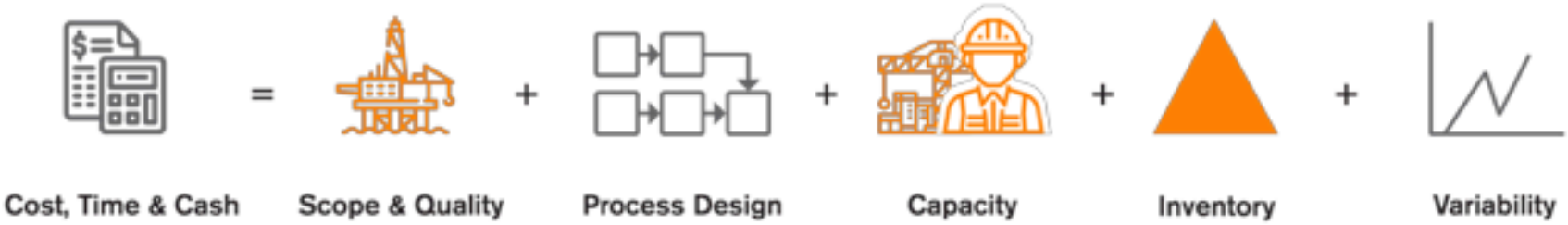

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## Project Management




## Project Production Management

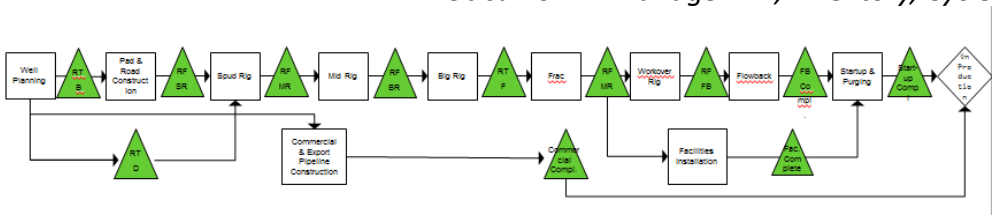


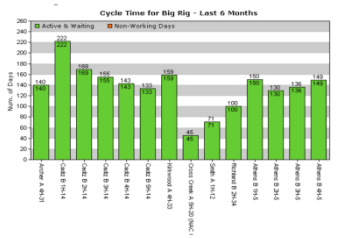

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# PPM at Hess

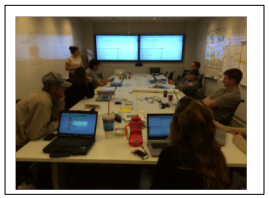
*Utica VSM – Manage WIP, Inventory, Cycle Time*



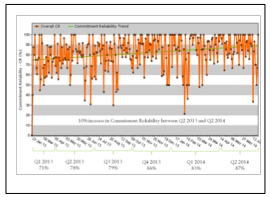



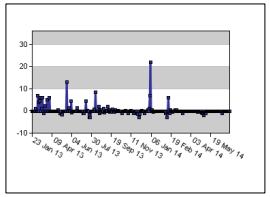

## Manage Value Stream to Drive Efficiencies

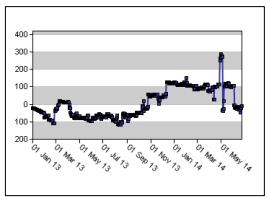
*STD Work & Training*



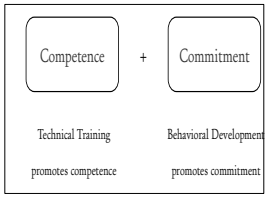
*LPC Metrics – Leading Indicators for Delivery*

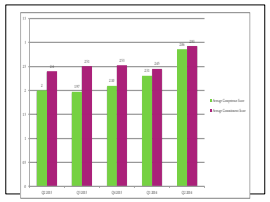






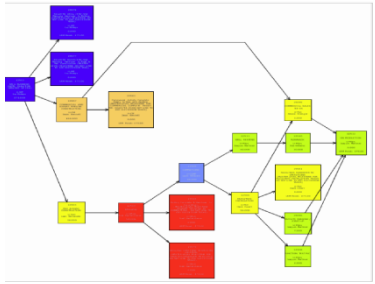
*LPC Assessments linked to PE*



## Owning LPC – Metrics Driven & People Focused

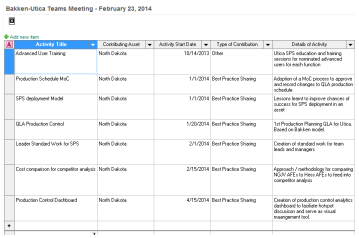
*STD Process*



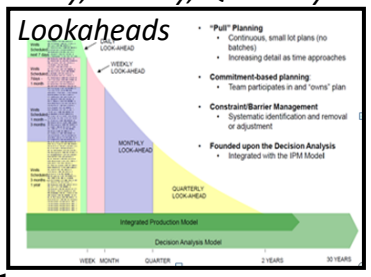
*Operating Rhythm*



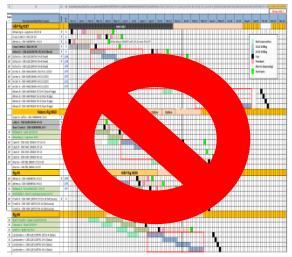
*Bakken Engagements*




*Daily, Weekly, Quarterly Lookaheads*




*Legacy Planning*



## Leveraging Bakken Knowledge

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# Why is this important

This is Operational Physics – it is a science

For our industry it 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?

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