

PROJECT PRODUCTION  
INSTITUTE

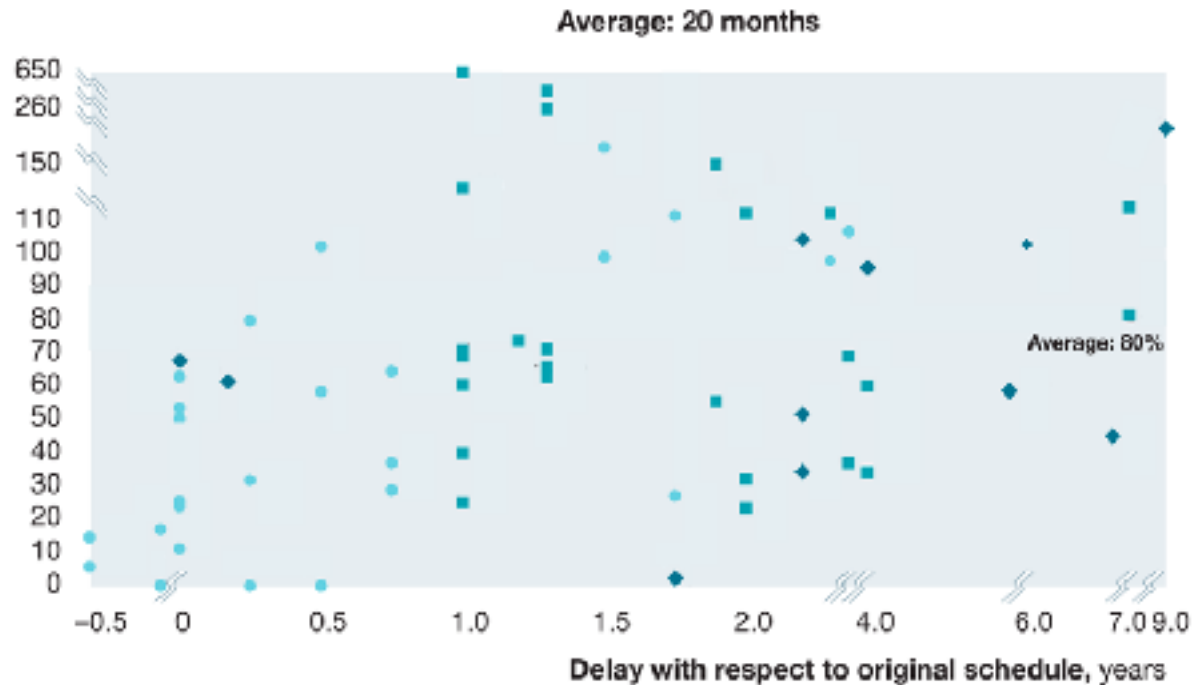
Project Production Management, Lean &  
Lean Construction – what's the difference?

CPM  
EVA/EVM  
Workface Planning  
Collaborative Planning  
Web-based Metrics Dashboard  
Partnering Workshops  
Time on Tools Analysis/Work  
Sampling  
Maximize Inventory  
Offsite Fabrication and Assembly  
Scope Reduction  
Contracting Strategies  
BIM  
RFID

PERT  
Advanced Work Packaging  
Modularization  
Monte Carlo Simulations  
Lean  
Last Planner System  
Lean Construction  
Integrated Project Delivery  
Oracle Primavera  
Microsoft Project  
Six Sigma  
Lean/Six Sigma  
Theory of Constraints  
Excel

**Capital-expenditure overrun**  
 (% of original quoted capital expenditure)

● Mining ■ Oil and gas ◆ Infrastructure



- **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

## 1.2.3.4 OPERATIONS MANAGEMENT

Operations Management is an area that is outside the scope of formal project management as described in this guide.

Operations management is concerned with the ongoing production of goods and / or service. It ensures that business operations continue efficiently by using the optimal resources needed to meet 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).

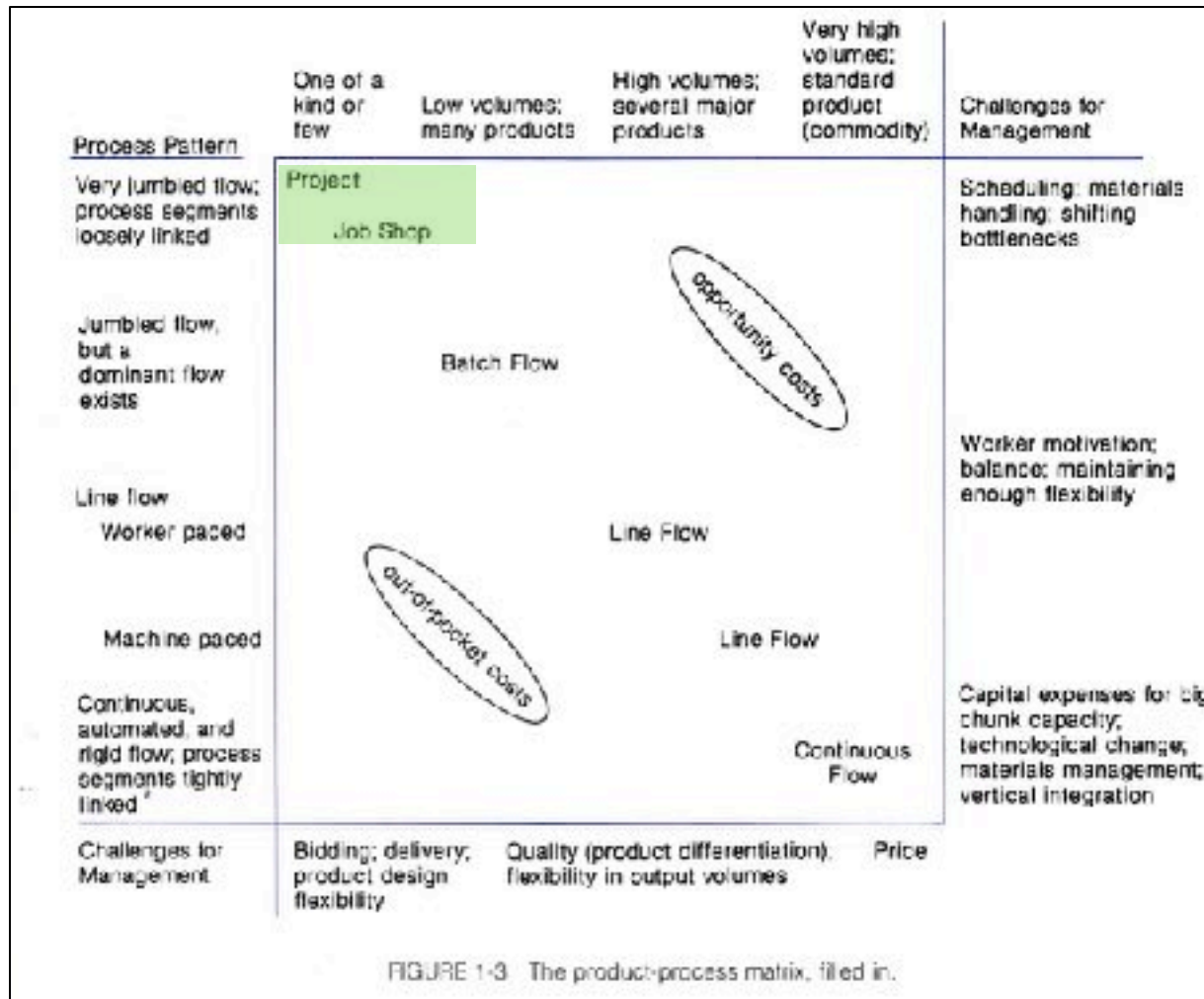
Source: A Guide to the Project Management Body of Knowledge  
(PMBOK Guide), 6<sup>th</sup> Edition, Project Management Institute, 2017

Do PPM and Operations Science  
give materially different results?

# Oversimplification of “Lean” ideas

Move from *Implementation* of Lean Principles versus  
*Understanding* why they work & when to adapt

Operations Science provides theoretical framework



Schmenner (1993) Production/Operations Management

## Lean

Mura (unevenness)

Muri (overburden)

Muda (waste)

## PPM

Variability

Capacity Utilization

Optimize Cycle Time,  
Throughput, WIP



# Cycle Time Formula:

$$CT = BT + MT + ST + PT + QT$$

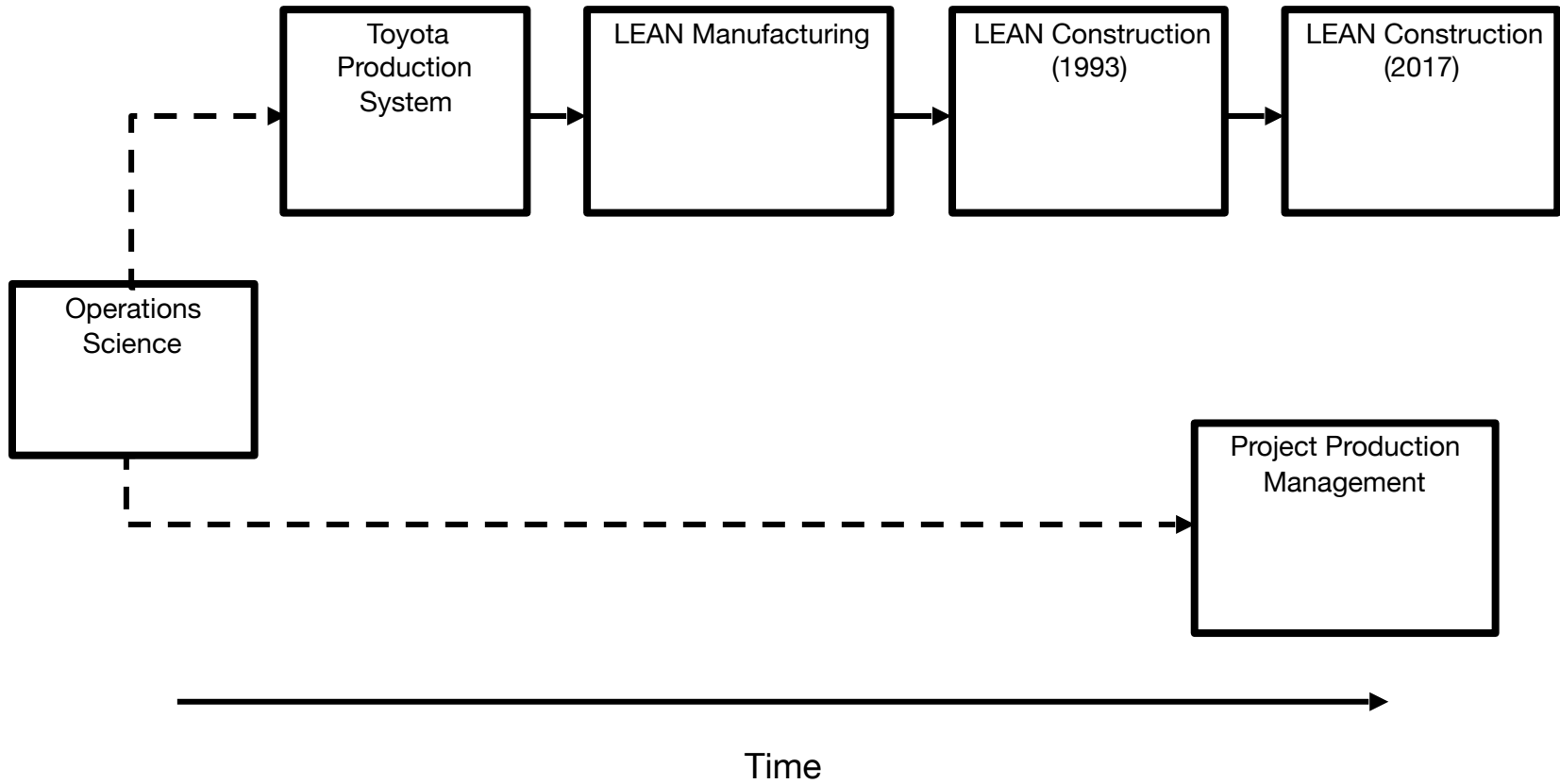
BT: Batch Time = (Waiting for Batch) + (Waiting in Batch) + (Waiting for Match)

MT: Move Time

ST: Setup Time

PT: Process Time

QT: Queue Time





Lean Construction focuses on the system of people.  
“People are at the center of Lean Construction”

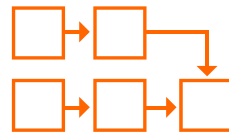
Source: “Transforming Design & Construction”, Lean Construction Institute

Cost,  
Time  
&  
Cash

=



+



+



+



+



Scope & Quality

Process Design

Capacity

Inventory

Variability

PPM focuses on the system of physical work:  
Project Physics

Variability and buffering are more fundamental than “waste” and “pull”

Operations science helps identify important and indirect sources of waste

Focus on WIP and measure output rather than control output with a schedule