

UNINTENDED CONSEQUENCES OF CURRENT PRACTICE



PROJECT PRODUCTION
INSTITUTE

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PURPOSE

Explore the causes of poor outcomes in the major capital projects industry and the role that conventional practices play in those outcomes

Agenda

- Share the story of the VIRGINIA class submarine (SSN 774)
- Explore the history of several conventional project management practices and their practical impact
- Identify the most obvious indicator of major capital project health
- Discuss the need to evolve conventional practice



A TALE OF TWO SUBMARINES

Department of Defense Project Management

USS SEAWOLF (SSN 21)



- Commissioned July 1997
- Delivered cost \$2.9B (Fiscal Year 2005)
- Budgeted cost \$2.8B (Fiscal Year 2005)

USS VIRGINIA (SSN 774)



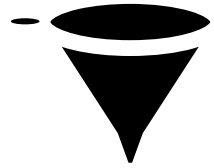
- Commissioned October 2004
- Delivered cost \$3.7B (Fiscal Year 2005)
- Budgeted cost \$2.2B (Fiscal Year 2005)

What happens if the future does not look like the past?
The DoD and conventional project management toolkit is built around prediction and often fails to meet even that objective.



HISTORY OF SELECT CONVENTIONAL PROJECT MANAGEMENT PRACTICES (1/2)

Many evolved from 1940-1960 Department of Defense precursors



Practice

Stage or
Phase Gating

History

- Developed for new product launch by Professor Robert G Cooper
- Adapted by Association for Advancement of Cost Engineering for estimating (1958)
- Used by major government agencies for program management

Unintended consequences

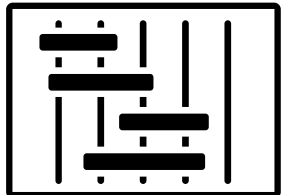
- Excessive WIP and inventory buffers to shield production
- Sequential execution of design, construction, fabrication, and installation activity



Earned Value
Project
Management

- One of the earliest codified uses on the Minuteman Missile program in 1960s
- Documented 35 criteria that have since evolved to track and monitor program progress in government budgeting

- Progression of out of sequence work and accumulation of WIP and inventory



Critical Path
Project
Management

- Codified by James Kelley and Morgan Walker of DuPont and Remington Rand respectively in the 1950s
- Outgrowth of the Manhattan Project in 40s

- Articulates a fixed time cost tradeoff that does not hold if variability is reduced



HISTORY OF SELECT CONVENTIONAL PROJECT MANAGEMENT PRACTICES (2/2)

Other conventional practices also have unintended results



Practice

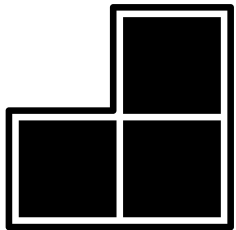
Functional
Project
Organizations

History

- Can be traced to Daniel Hauer in 1908 and the publication of "Modern Management Applied to Construction"

Unintended consequences

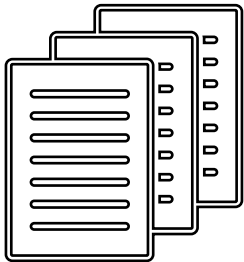
- Insular behavior and decision making



Modularization

- One of the earliest documented modern uses in homebuilding over 200 years ago
- Intended to move work upstream in the supply chain to more controlled environments and speed installation

- Extension of lead time
- Can result in poor quality
- Deflections may be unsatisfactory in ultimate fit-up



Workface
Planning

- Codified by Construction Industry Institute study groups in 2010-2015
- Focuses on the breakdown of major construction projects into Construction Work Areas, Engineering Work Packages and Field Work Installation Packages

- Creates larger than manageable batch sizes and the accumulation of incomplete work



INVENTORY AND WIP: THE MOST OBVIOUS INDICATOR OF PROJECT HEALTH



- Experience suggests that the level of accumulated inventory and WIP are among most obvious indicators of project health
- Application of many elements of the conventional project management toolkit exacerbate the accumulation of inventory and WIP beyond optimum levels
- Critical WIP – the minimum WIP level that is necessary to achieve maximum throughput in a production system, wherein there is no variability, can be calculated
- A new project delivery paradigm is needed



BUT DON'T TAKE MY WORD FOR IT....

"[The stage gate process] has been accused of being too linear, too rigid, and too planned to handle more innovative or dynamic projects. And it's been said that it's not adaptive enough, does not encourage experimentation, and is not context-based (one size should not fit all). The system is reportedly too controlling financially-based and bureaucratic, loaded with checklists and too much non value-add work."

Robert G. Cooper, creator of the Stage-Gate system
in reference to the next generation system needing
more agility, adaptability, and acceleration





THANK YOU

Q & A SESSION

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