Managing Project Risk
Lessons learned at Sutter Health

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the Truth is out there


There are hardly any reports showing underruns. ... in 3500 projects drawn from all over the world in several different industries, [cost] overruns are the norm, being typically between 40 and 200 per cent.

2002: From Flyvberg’s “Understanding costs in public works projects: error or lie?”

90% of projects overrun their budgets at an average rate of 28%.


18 [of 32] projects have experienced cost increases and 11 have experienced schedule delays ... Five projects have experienced a cost increase of over 100 percent. ...Thirteen projects have experienced cost increases of between 1 and 100 percent ... 11 projects have experienced schedule delays, 4 of which are more than 24 months.

2012: From CII’s Performance Assessment Study of 957 projects (ave. value $65MM)

Only 30% of projects meet/exceed their cost and schedule goals.

Summary
Performance is terrible yet nothing changes
2012: CII’s Performance Assessment Study of 957 projects
Average project size $65MM

Only 30% of projects meet/exceed their cost and schedule goals
Risk Management 101

1. Identify what you care about
2. Identify what puts that at risk
3. Eliminate, mitigate or manage those risks
1. Project delivery performance is awful
2. Everybody is making money

- We’re good at managing our individual company’s risks
- The contracts we use allow us to manage our risks by blaming someone else and getting more money or more time

- We’re not good at managing overall project risk
- Because there’s never been much incentive to get good at that
Risk Management 101

1. Identify what you care about
   1. Delivering what was asked for
   2. On budget
   3. On time

2. Identify what puts that at risk
   1. Lack of alignment on what was asked for
   2. Poor cost projection methods
   3. Poor work-planning methods

3. Eliminate, mitigate or manage those risks
   1. What typically goes wrong
   2. What could go wrong on this project
   3. Strategy for every item
Risk Management 101

1. **Identify what you care about**
2. Identify what puts that at risk
3. Eliminate, mitigate or manage those risks
The most neglected phase of project delivery ☹

From the paper: “4 Phase Project Delivery & the Pathway to Perfection”
The Visual Work Environment

Create a Dashboard for Every Important Part of the Value Definition
Purpose of Dashboard:

To drive a conversation about something important
Every Dashboard Needs
a Goal
a Variance
and often a Trend
The “Are we ON BUDGET?” Dashboard

Pop Quiz 😊

1. Where is the goal?
2. Where is the latest variance?
3. Where is the trend?
4. Is the goal important?

YES
Easy to understand & Measures something important

Therefore it drives a conversation worth having
Goal
Variance must exceed -5%

Mission Bernal Campus Hospital

The “Are we DELIVERING WHAT WAS ASKED FOR?” Dashboard
3 days late
Final Response to INQ-3842
Install wood for First-In-Place Mock-up
Provide Comments on First-In-Place of Ambassador Suite Lights at...
Resolve Comments on First-In-Place Mock-ups
Approve First-In-Place for Ambassador Suite Devices
Install Wood Plants in Ambassador Suite
Install fire sprinklers in Ambassador Suite

7 days late
Amico ship FRS replacement panels CL#2350
Install replacement panels
Install Plywood on Inside of Fumed Wall (Per ACD 371) *validated

5 days late
DSE Approval of MRI Shielding - RF12295
Install Plywood on Inside of Fumed Wall (Per ACD 371) *validated

21 days late
Complete drawings for K-Line railing for DOC review
DSE Approval of changes to K-Line railing

1 day late
Approve sample for K-Line railing
Procure Sample for K-Line railing Material
K-line/Plaza rail shops

Float Tile
Install handrail posts and lid support at lobby star
Install pipe embeds and lid support at lobby star
Install handrail posts and lid support at lobby stair
Culture: Weekly Planning
Business Intelligence (BI) Dashboarding

The Future?
BIM is a Risk Management Tool
Not Appearing in the Presentation

The 1 day of training just on using BIM as a risk management tool
Cliff Notes of the amazing day of training

1. BIM is a risk management tool, not a design tool. It can be used to manage the risk related to:
   1. Scope
   2. Schedule
   3. Cost

2. Focus on the workflow you’ll use to create the model before you create the model

3. Model the Build, then Build the Model

4. Have the latest version of the model available to all at any time

5. Go to the model when discussing any problems in design, or construction (‘go to the gemba’)

6. Don’t be distracted by how you’ll “handover the BIM into operations”
Good BIM Implementation is about managing risk
The focus is on doing Representation so well that Realization is easy
Budgetary Risk Part I

Sophisticated Budgetary Risk Assessment Tool

Probability of Risk \times \text{Estimated Cost of Risk} = \text{Net Risk}
Probability of Risk #1 \times \text{Estimated Cost of Risk #1} = \text{Net Risk #1}

Probability of Risk #2 \times \text{Estimated Cost of Risk #2} = \text{Net Risk #2}

Probability of Risk #3 \times \text{Estimated Cost of Risk #3} = \text{Net Risk #3}

Probability of Risk #4 \times \text{Estimated Cost of Risk #4} = \text{Net Risk #4}

Probability of Risk #5 \times \text{Estimated Cost of Risk #5} = \text{Net Risk #5}

Probability of Risk #6 \times \text{Estimated Cost of Risk #6} = \text{Net Risk #6}

Probability of Risk #7 \times \text{Estimated Cost of Risk #7} = \text{Net Risk #7}

\text{Net Risk to the Project} = X,XXX

• Deduct $X,XXX from the Shared Incentive Pool you created
• Track the size of that pool every week
Purpose of Risk & Opportunity Log

1. Early sharing of risks to maximize possibility that they will be:
   • Eliminated
   • Mitigated
   • Managed

2. Uncovers confusion around what issues can be an owner change and what are the team’s risk
   • Especially likely on IFOA contracts
   • Will drive unhelpful behavior if not uncovered & resolved

3. Builds team culture of making decisions in the interest of the project as a whole
Culture: Weekly Risk & Opportunity Review
Best Practices for Risk / Opportunity Management

1. Meet at least bi-weekly to review as a team – builds team culture
   • PM’s / Leads from each team / company
   • Need at least one person to be familiar with every item to be discussed
2. Any team member familiar with the issue can put a risk / opportunity on the log
3. Encourage early identification of low probability risks & opportunities
4. Use the actual R/O Log and update it live in the meeting
5. At the end see the net change in impact on the size of the contingency
6. Post the contingency value and trend graph where everyone can see it

7. Have team goal of keeping contingency at 100% of its starting value
8. Encourage opportunities to be listed
9. Filter by largest net risks first
10. Get aligned early on how accurate the $ value needs to be before it gets transferred into the actual projected cost
   • Especially important on IFOA’s
Budgetary Risk Part II

The Risk of Teams not being good at Projecting the Cost to Complete their work
Estimate Structures

1. Design estimates are always time-based
   • Resource loaded work plans (RLWP’s)
   • You can see & question variances month by month

2. Construction estimates are normally scope-based
   • Conceptual estimates
   • Take-offs
   • Schedules of value
   • The time-based thinking can be hidden/hard to find
Some Classic Problems in our Industry

1. The industry is poor at projecting its cost to complete
   • Creates late-breaking stress & poor working environments, fuels conflict.
   • Is often why projects go over budget toward the end of a project and not before

2. Internal communications can be poor
   • Trade PM’s can be financially focused
   • Superintendents can be scope and schedule focused
   • Sometimes they don’t talk to each other as much as you’d think
   • They can be unaware that they are over-budget

3. Some companies project their cost to complete like this:
   • Cost to Complete = Contract Value – Amount Billed to Date
   • When they run out of money they go after change orders

4. Even large experienced companies sometimes wait till completing 50% of their scope before they’re confident if they’ll be over or under their estimate
   • This is often too late to do anything about if they’re over
1. Team agrees the scope
2. Team agrees the estimated cost of each element
3. Team agrees the sequence of construction
4. Team allocates the estimated cost across the sequence of construction
5. As each element is complete the team compares the actual to the estimate
6. Team projects its total cost to complete as:

**Actual Cost to Date + Estimated Cost Allocated across Remaining Sequence of Construction**
Cost to Complete Best Practice

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2. Team agrees the estimated cost of each element
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4. **Team allocates the estimated cost across the sequence of construction**
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   **Actual Cost to Date + Estimated Cost Allocated across Remaining Sequence of Construction**
Addressing Cost to Complete Issue Near Project Start

1. Get each partner to present how they calculate their cost to complete to the team
2. Encourage discussion about pros and cons of each partner’s method
3. Get the best partners to ‘manage up’ their less accomplished partners

4. At minimum get each partner to convert their take-off estimate to a time-based estimate containing:
   1. Weekly / Monthly cost of labor
   2. Weekly / Monthly cost of materials
   3. Weekly / Monthly cost of lower-tier buyouts

5. For GC’s have them also break out:
   4. Weekly / Monthly cost of General Conditions / General Requirements

6. Review Actuals vs. Projections every Week/Month – and have each team member explain the variances – are they on/over/under budget, are they on/behind/ahead of schedule?
Basic Cost to Complete Strategy

1. Each superintendent provides their weekly anticipated crew size and mix for the project
2. Each trade project manager agrees that crew profile aligns with their budget
3. Each week the superintendent reports any overruns in crew size / mix for the prior week
4. Root causes are identified and counter-measures agreed and implemented
5. Repeat 1 – 4
Sophisticated Cost to Complete Strategy

1. Agree a common geography for the building – it can vary by major phase
2. Agree to move to location based planning (LBP)
3. Whole team on-boarded on to LastPlanner & vPlanner
4. Production tracking module of vPlanner activated
5. Team agrees to sequence of construction
6. Team allocates estimate across that sequence of construction (hours, costs or both)
7. Both are entered into vPlanner
8. Actuals are reported as work is completed
9. vPlanner automatically provides a variance report – drives reaction, learning, improvement
10. Have a plan for managing the “go back” work
The Importance of Culture
Drivers of Culture

**Strategic Behavioral Drivers**

- **Accountability**
  - Make and keep commitments
  - Challenge others to do similarly

- **Transparency**
  - Be honest & open
  - Use a highly visual workplace
  - ‘Go to the Work’

- **Single Sources of Truth**
  - Use one work plan
  - Use one ‘BIM model’
  - Use one cost projection report

- **Continuous Learning/Improvement**
  - Swarm issues to fix them AND learn and improve the process
  - Use 5 Why’s / Root Cause analysis
  - Quickly acknowledge and fix/improve failing process

- **Whole Project Mentality**
  - Make decisions in the interests of the project as a whole
  - Align behavior with overall project success
  - Focus on improving project performance against team goals

**Interpersonal Environmental Drivers**

- **Safe Spaces**
  - Team members see each other as individuals not categories
  - Respect is freely given and received
  - Help is freely given and received
  - People can & do say what’s on their mind
  - People critique and challenge one another
  - Passion and emotion is welcome
  - Breakdowns in the safety of the space are quickly acknowledged and corrected
Sutter’s Project Culture: Daily Engagement
Culture: Weekly Performance Analytics
Culture: Weekly Risk & Opportunity Review
Questions?

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