Learn to be Lean
Best Practices for your Company

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Presenter

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Procore
Agenda

+ The BIG Picture
+ Defining Waste
+ Lean Principles
+ Lean Processes
+ Tools
Why do Lean?

AEC Industry

Waste 60%

Productivity [PERCENT AGE]
The BIG Picture

Lean Processes

- Customer Focus
- Culture and People
- Workplace Organization and Standardization
- Elimination of Processes
- Continuous Improvement
## Processes and Tools

<table>
<thead>
<tr>
<th>Process</th>
<th>Tools</th>
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</thead>
<tbody>
<tr>
<td>Collaborative Delivery Method</td>
<td>BIM</td>
</tr>
<tr>
<td>Last Planner</td>
<td>Mobile</td>
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<tr>
<td>5S</td>
<td>Lean Tools - VSM, A3, WWP, etc.</td>
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<tr>
<td>PDCA</td>
<td>Project Management Software</td>
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</table>
What is Waste?

- Effort
- Inventory
- Movement
- Overproduction
- Processing
- Rework of Errors
- Waiting
- Under-utilized Talent

WASTE
Inefficiency Scanner

Underutilized Talent
Effort
Processing
Waiting
Inventory
Rework
Movement
Overproduction
Underutilized Talent
Lean Principles

+ **Customer Focus**—Defined by the customer and in the customer’s language.

+ **Culture and People**—In order to truly be lean, you must change the culture and the project team must be committed.

+ **Workplace Organization and Standardization**—Increase worker efficiency by providing an organized, clean, and standardized area to work within.

+ **Elimination of Processes**—Analyze your current processes and take out what is unnecessary.

+ **Continuous Improvement**—Don’t rest on your laurels, always look to keep improving a process or find a better tool.
Lean Processes - Collaborative Project Delivery

Project Delivery

+ Traditional
+ Design Build
+ Design Assist
+ Integrated Project Delivery

Silos

Owner

GC

Sub

Arch

Collaborative Delivery
Last Planner System

Master Planning
- Master Strategy
- Master Schedule
- Critical Milestones

Pull Planning
- Collaboratively Built
- Based on Handoff Between Trades
- Team Buy-in

Make Ready Planning
- 6 Week Look-ahead
- Constraint Log

Weekly Work Planning
- Weekly Work Plans
- Individuals Making Commitments
- Tracking Percent Planned Complete

Learning and Improving Planning
- Daily Huddles
- Analyzing PPC and Making Adjustments

Increasing Detail
5S Plan

Sort
+ Co-locate your items
+ Only stage that you need
+ Remove surplus

Standardize
+ Cleaning schedules
+ Consistency on every floor
+ Communicate to entire team

Sustain
+ Ensure adherence to plan
+ Always improve on your plan and enforce it

Straighten
+ Every company, equipment, and material has a location
+ Communicate locations to entire team

Shine-Sweep
+ Every company, equipment, and material has a location
+ Communicate locations to entire team
PDCA Cycle: Continuous Improvement

1. Plan
Identify the problem in the process and develop an action plan to solve it.

2. Do
Execute the action plan. Measure the results.

3. Check
Analyze the results compared to how the process was being done originally.

4. Adjust
Modify and make improvements. If problem still exists create new plan.
Lean Tools

+ VSM / A3
+ BIM
+ Mobile Technology
+ Project Management Software
Value stream mapping (VSM) is a lean manufacturing or lean enterprise technique used to document, analyze, and improve the flow of information or materials required to produce a product or service for a customer.
Currently

Create RFI in GC software system.

Take the exported PDF and email it to Design Team.

Design Team inputs RFI into their software system.

Takes PDF of response and emails it to GC. They update their system with response.

GC updates their software system with DT response and then distributes to subcontractor.

10 min

3 min

10 min

10 min

10 min

= 43 Minutes Total
Ideally

Create RFI in project management system Design Team gets notified.

10 min

Design Team responds to Outlook email and response is updated in project management system.

10 min

= 20 Minutes Total
One-page report that tells a story of where we are now, where we want to go, and how we want to get there. The term A3 refers to the European paper size (approximately 11x17) that is recommended that this report be produced on.
Section 1 - Problem Statement: (What is the problem? What is the process?)
Reduce the processing time of an RFI, remove the double entry for both the GC and the architect.

Section 2 - Background: (What is the process?)
Currently the GC and the architect both use separate systems to produce and receive RFI's which requires double entry for both parties and makes the whole process take twice as long as it needs to be for every RFI on the project.

Section 3 - Current Condition: (What is happening now? Really? Use a process diagram helps - Collaborate with others)
Currently GC do...

- Create RFI in GC software system
- Take the requested PDF and email it to Design Team
- Design team inputs RFI into their software system
- Takes PDF of response and emails it to GC they update their system with response
- GC updates their software system with the RFI response and then distributes to Subcontractors

Total Process time: 43 Minutes

Section 4 - Problem Analysis/Root Cause: (attack problem areas, ask the 5 Whys - see a Fishbone Diagram)
The current process involves 5 steps, 3 of which can be improved or removed to require less time.
1. Why are the architect and the GC using different software?
2. How can we avoid the duplication of efforts to update two systems with the same info?
3. Can we stop using the step of creating extra PDF's just to get the information out?
4. Can we make it easy for the architect to respond to an RFI without having to log into yet another system?

Section 5 - Target Condition: (Determine future state - when we are successful, our process looks like this? Indicators)
Using Procore GC can...

- Create RFI in Procore Design Team gets notified
- 10 Min
- Design Team responds to outlook email and response is updated in Procore
- 10 Min

Total Process time: 20 Minutes

Section 6 - Proposal - Countermeasure: (Adjustments things we do so we reach target condition)
By using Procore a GC can reduce their RFI steps from 5 to 2 and save half the time it takes to execute an RFI administratively.

Section 7 - Implementation Plan: (Specific actions plan through implementation)

<table>
<thead>
<tr>
<th>What</th>
<th>Who</th>
<th>Priority</th>
<th>Outcome - Comments</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GC</td>
<td>9.225</td>
<td>Everyone is improved</td>
<td>Complete</td>
</tr>
<tr>
<td>2</td>
<td>Procore</td>
<td>0.222</td>
<td>Management gave the go ahead</td>
<td>Complete</td>
</tr>
<tr>
<td>3</td>
<td>GC</td>
<td>0.222</td>
<td>Cost in field during foundation phase</td>
<td>Complete</td>
</tr>
</tbody>
</table>

Section 8 - Follow-up - Next Improvement Cycle: (Plan, Do, Study, Adjust - PDCA)
Not only does Procore improve our RFI process but it also improves our Submittal and drawing management. There are many ways this software can increase the efficiency of our engineers and superintendents while on the job. Plus the mobile app enables all field personnel to have access to all documentation and current drawings while out on the field.
Conclusion

+ Why do lean?
+ What is waste?
+ Lean construction is a mindset
+ Process vs. Tools
Q + A
Thank you!

Contact Us

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