

Why Projects Excel?

The Business Case for Lean Construction

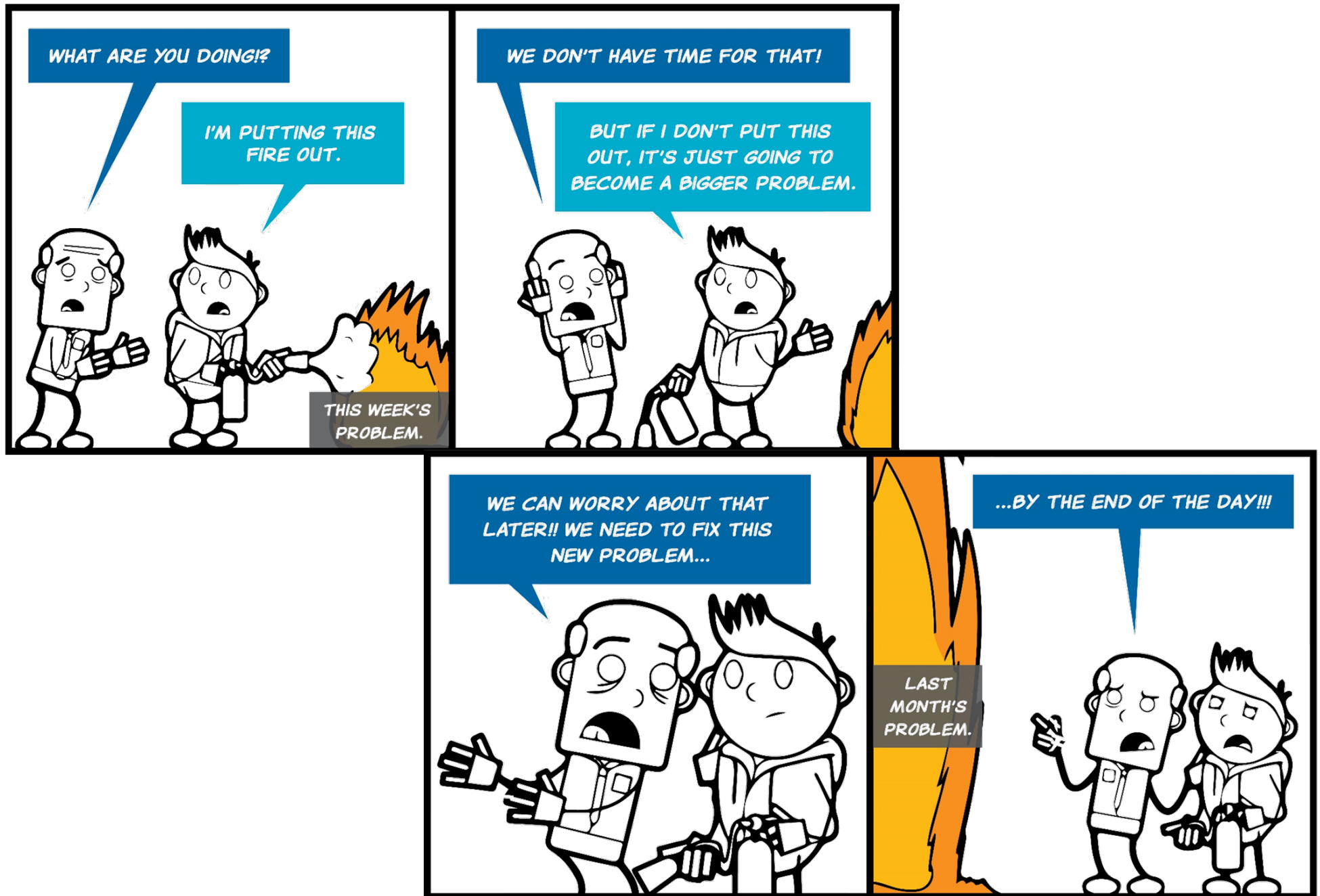


Bevan Mace, Ph.D.

National VP, Operations & Lean

Balfour Beatty

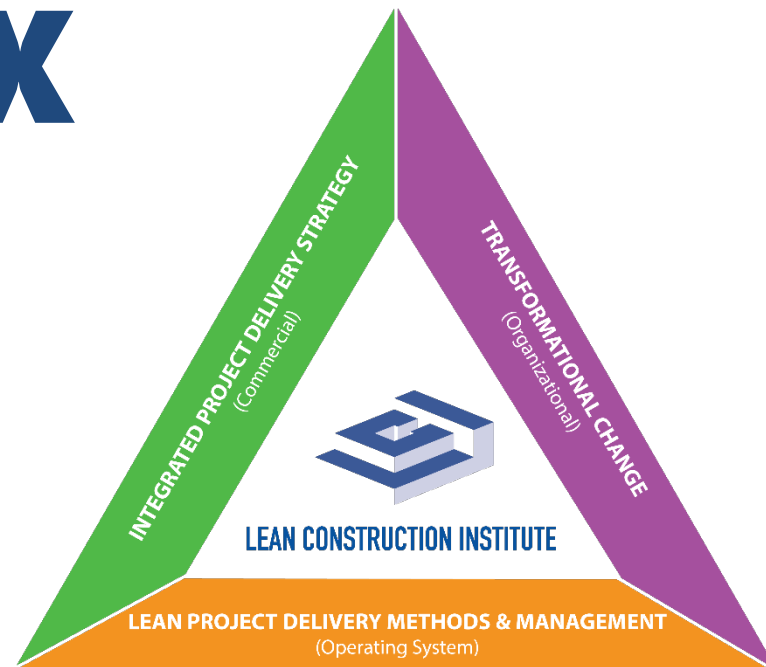
Does this sound familiar?



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The Business Case for Lean

PROJECTS with **HIGH LEAN INTENSITY**
are **MORE LIKELY** to complete
AHEAD OF SCHEDULE & UNDER BUDGET
3X **2X**

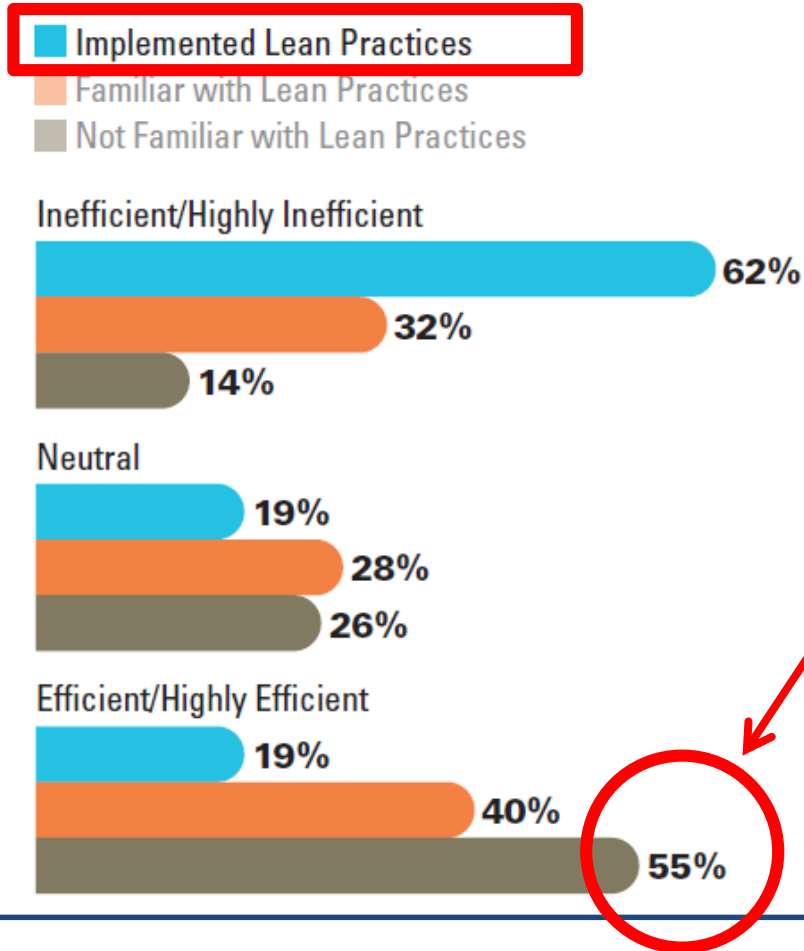
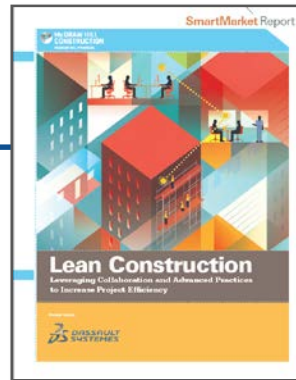


Lean Construction Tenets



Industry Efficiency

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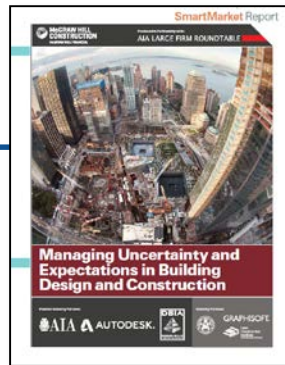


Most who never heard of Lean think the industry is Efficient



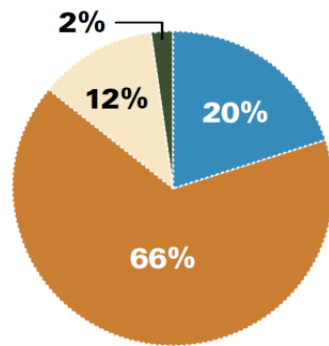
Owner Satisfaction

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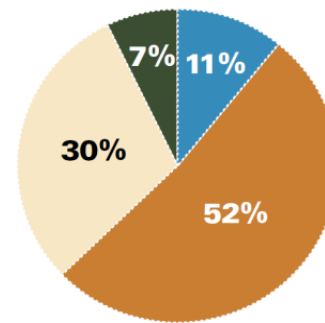
Quality

Owners



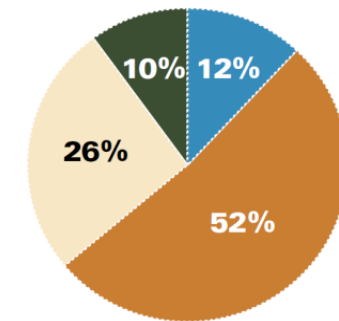
Cost

Owners



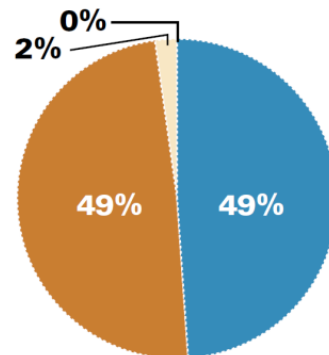
Schedule

Owners

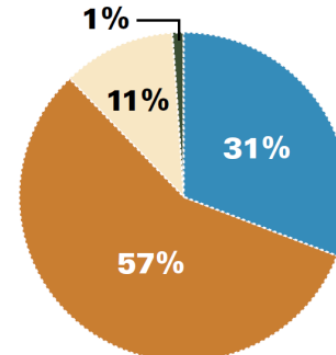


Always
Frequently
Sometimes
Infrequently/Never

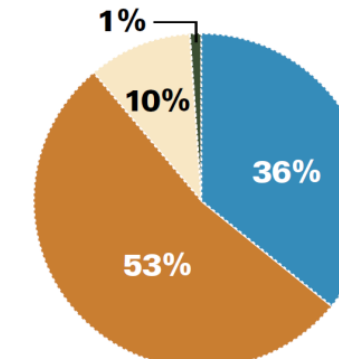
Architects and Contractors



Architects and Contractors



Architects and Contractors



Sat·is·fac·tion

Fulfillment of one's wishes, expectations, or needs, or the pleasure derived from this.

How satisfied are you with the delivery of capital projects?

- Always
- Frequently
- Sometimes
- Infrequently/ Never

Research Overview

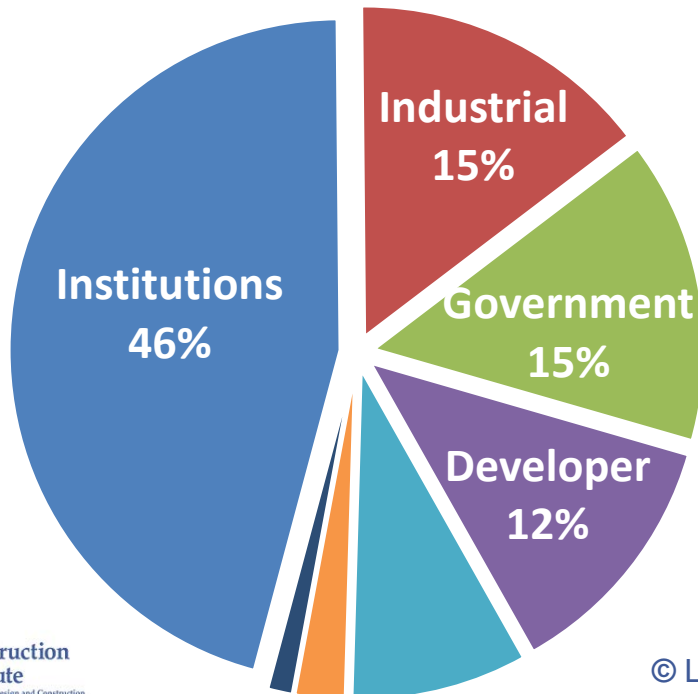
Owner Satisfaction & Project Performance

DODGE DATA & ANALYTICS

Objectives:

1. Benchmark owner satisfaction & project performance
2. What is the impact of lean?

Survey: 81 Owners/ 162 projects



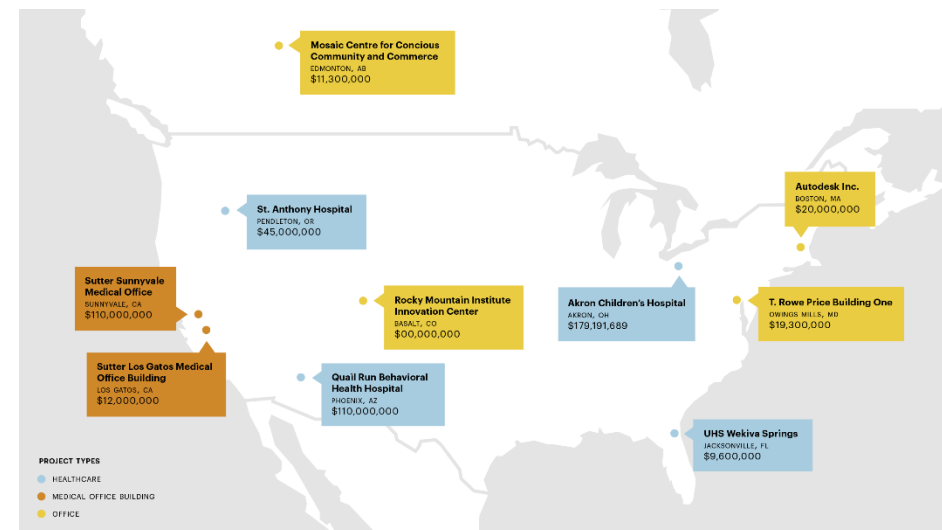
IPD & Lean Motivation & Means

UNIVERSITY OF MINNESOTA
Driven to DiscoverSM

Objective:

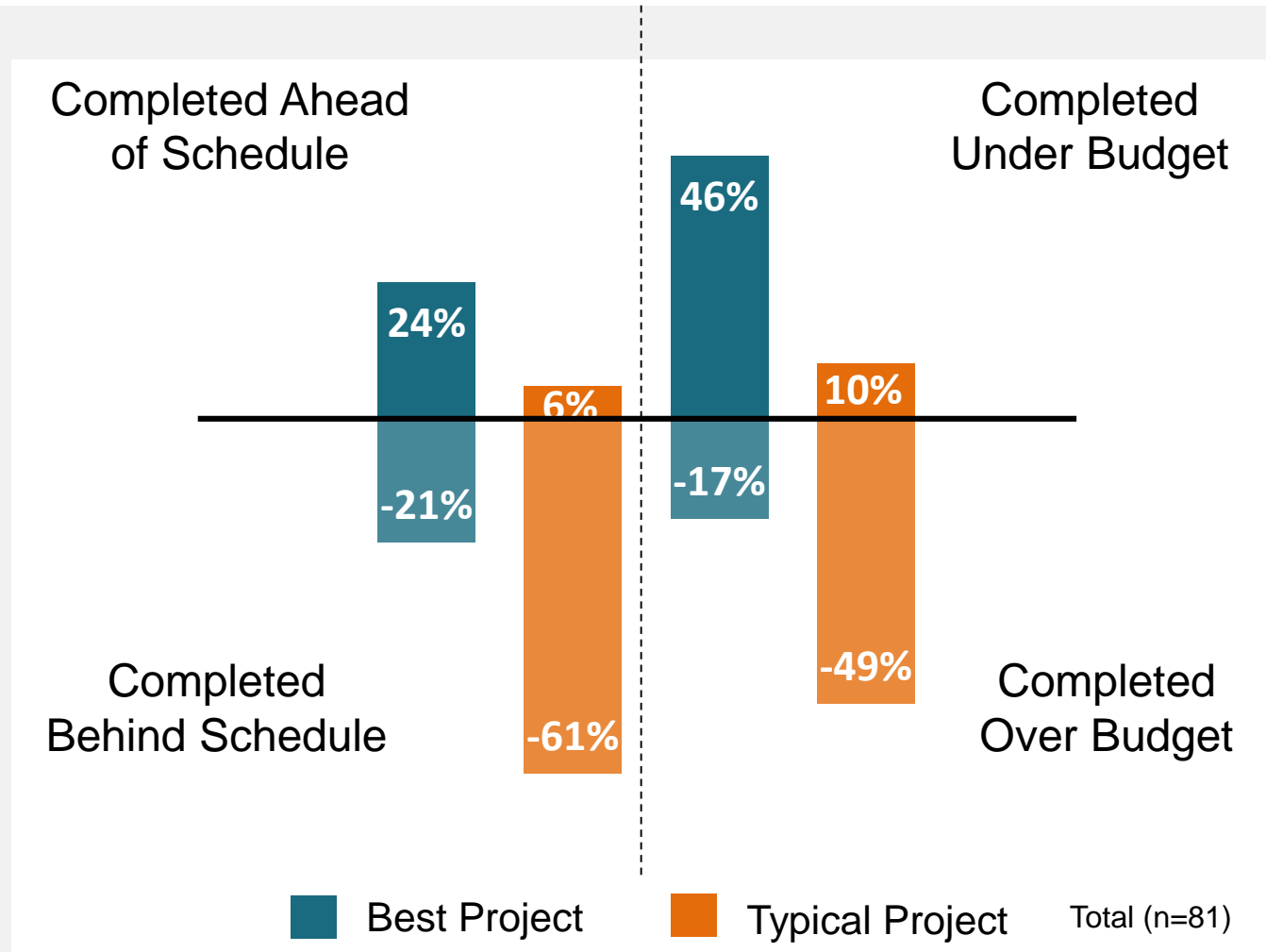
3. How and why does integrated lean succeed?

Case Study: 10 Owners/ Projects



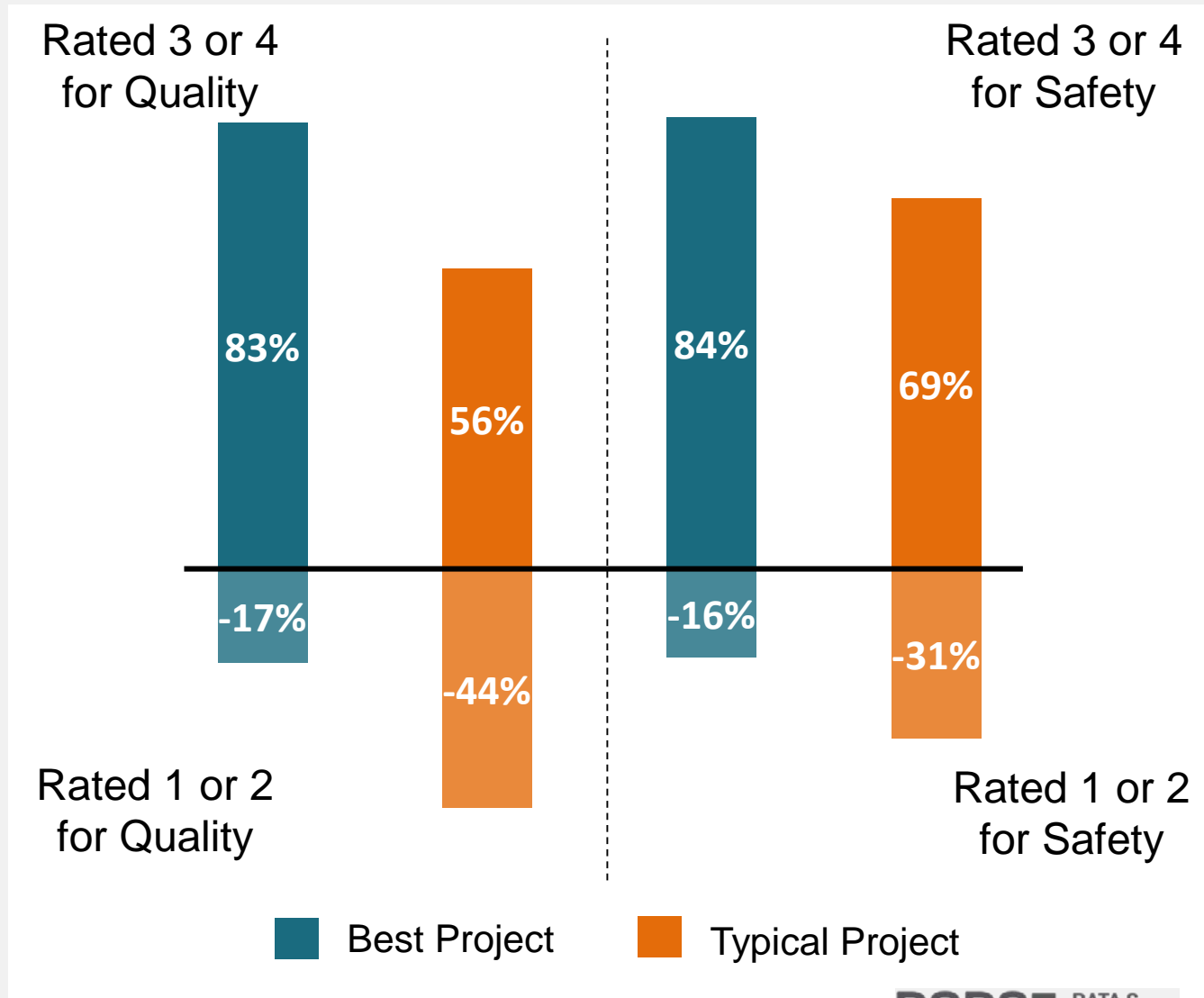
Satisfaction vs. Value

Performance from Approval of Capital Project (% of Best/ Typical Projects)



DODGE DATA & ANALYTICS

Satisfaction vs. Value

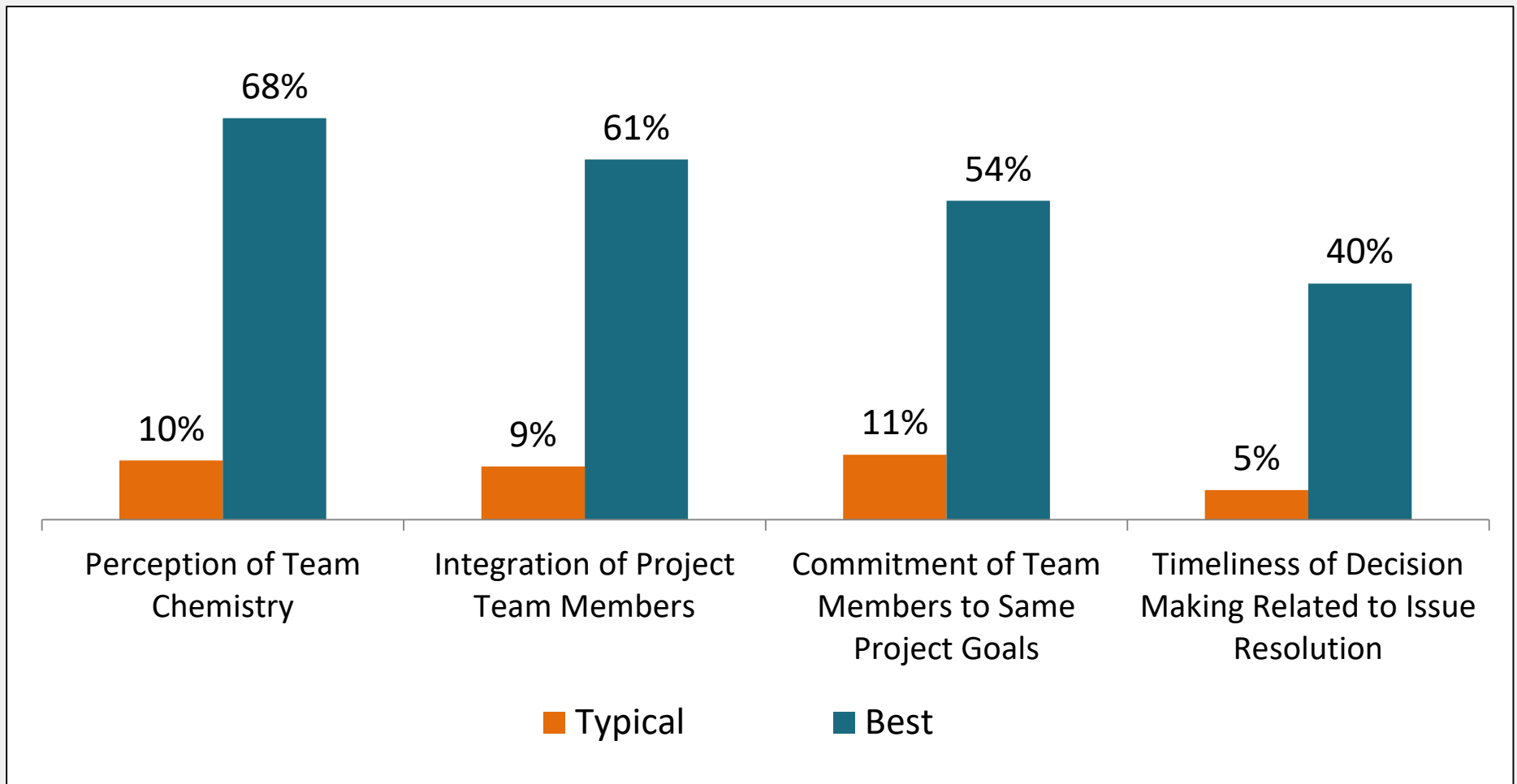


DODGE DATA & ANALYTICS

Importance of Team Cohesion

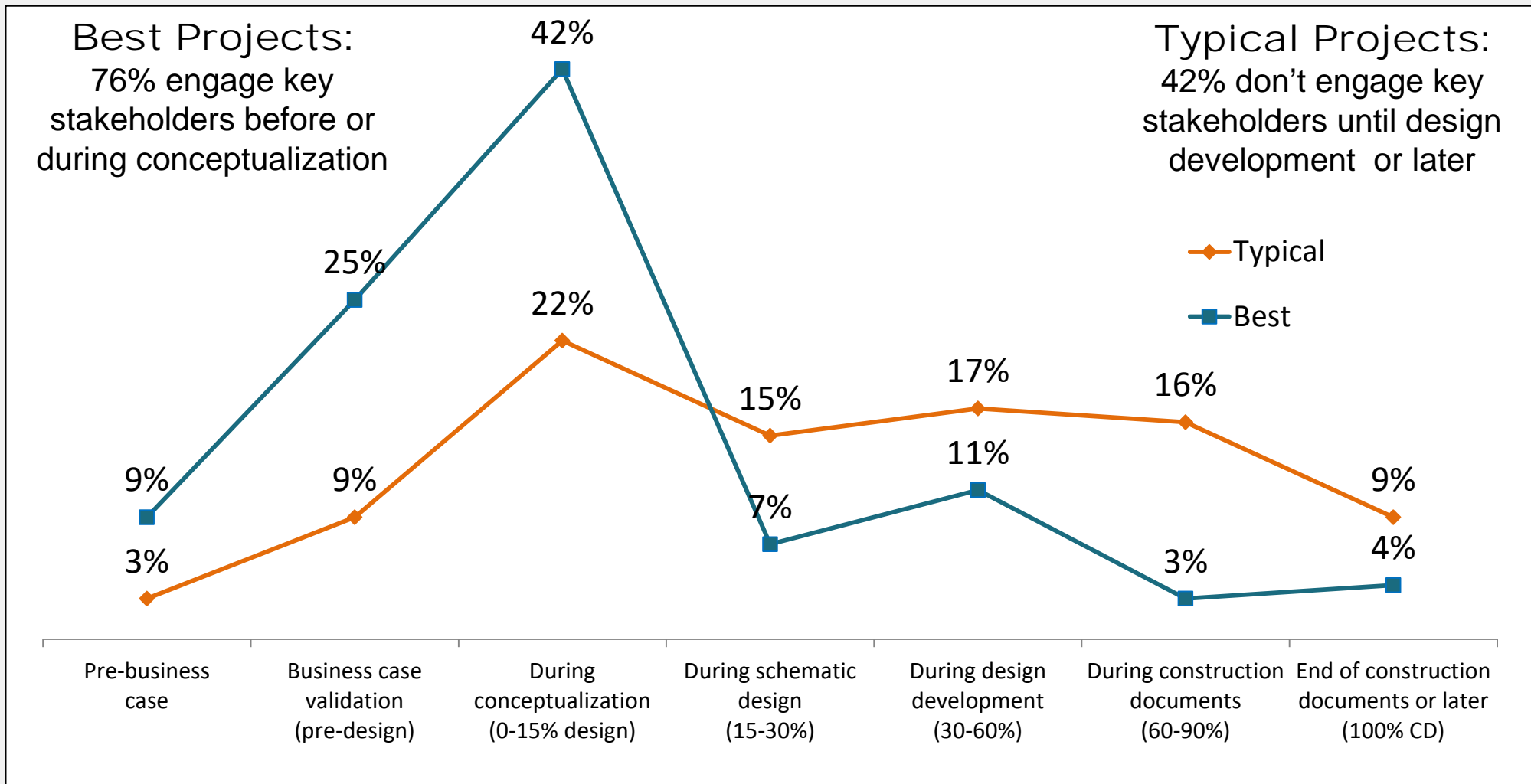


% Projects Reporting the Highest (4/4) Rating



Build the Team

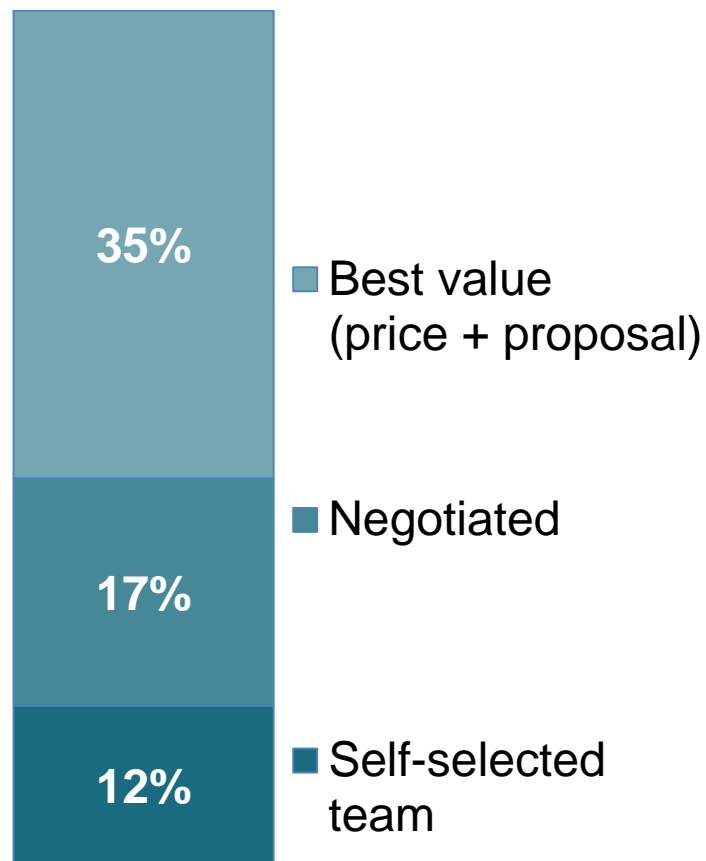
Timing of Key Stakeholder Engagement



Key Stakeholders Selection Process

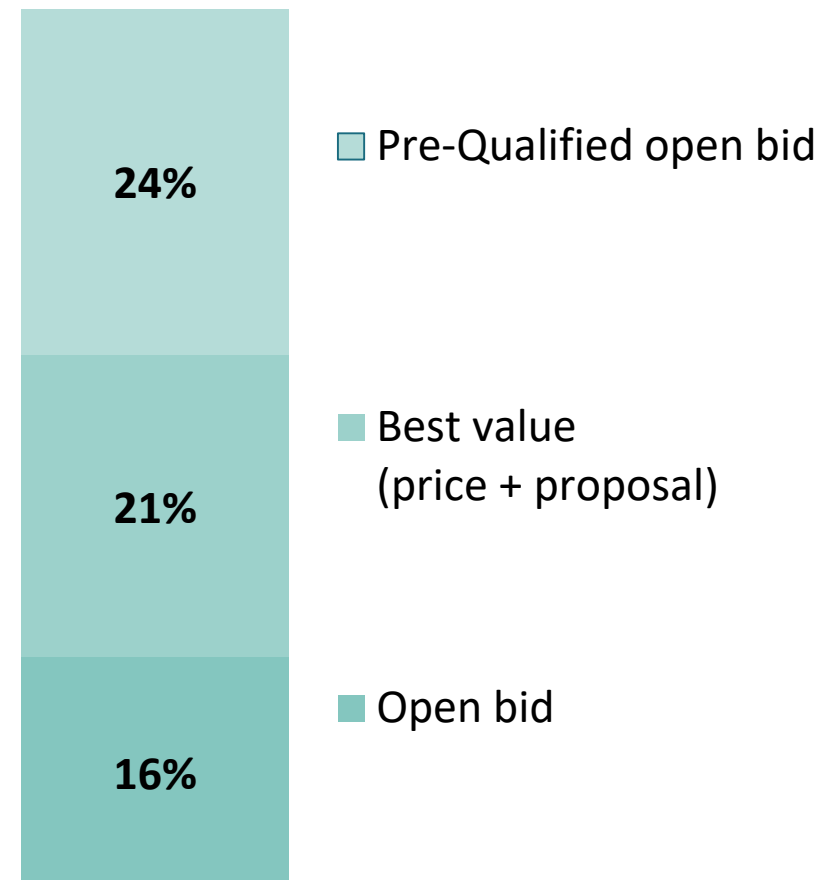
Top 3 Selection Processes:

Best Performing Project



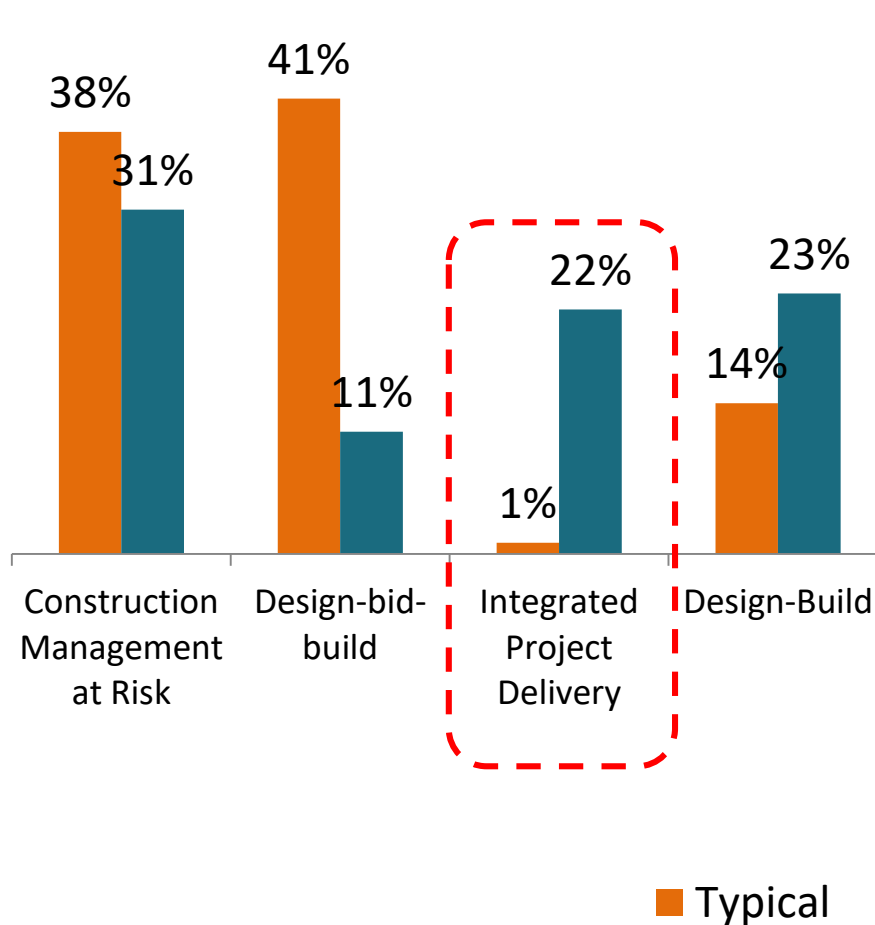
Top 3 Selection Processes:

Typical Project

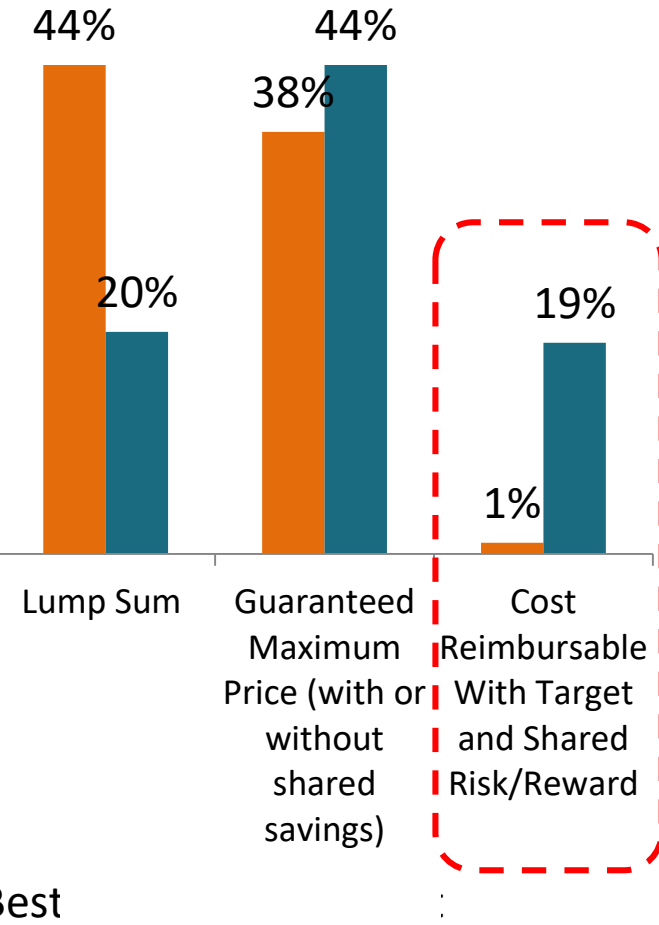


Support the Team

Top Project Delivery Methods on Typical and Best Projects
(20% or more usage on either)

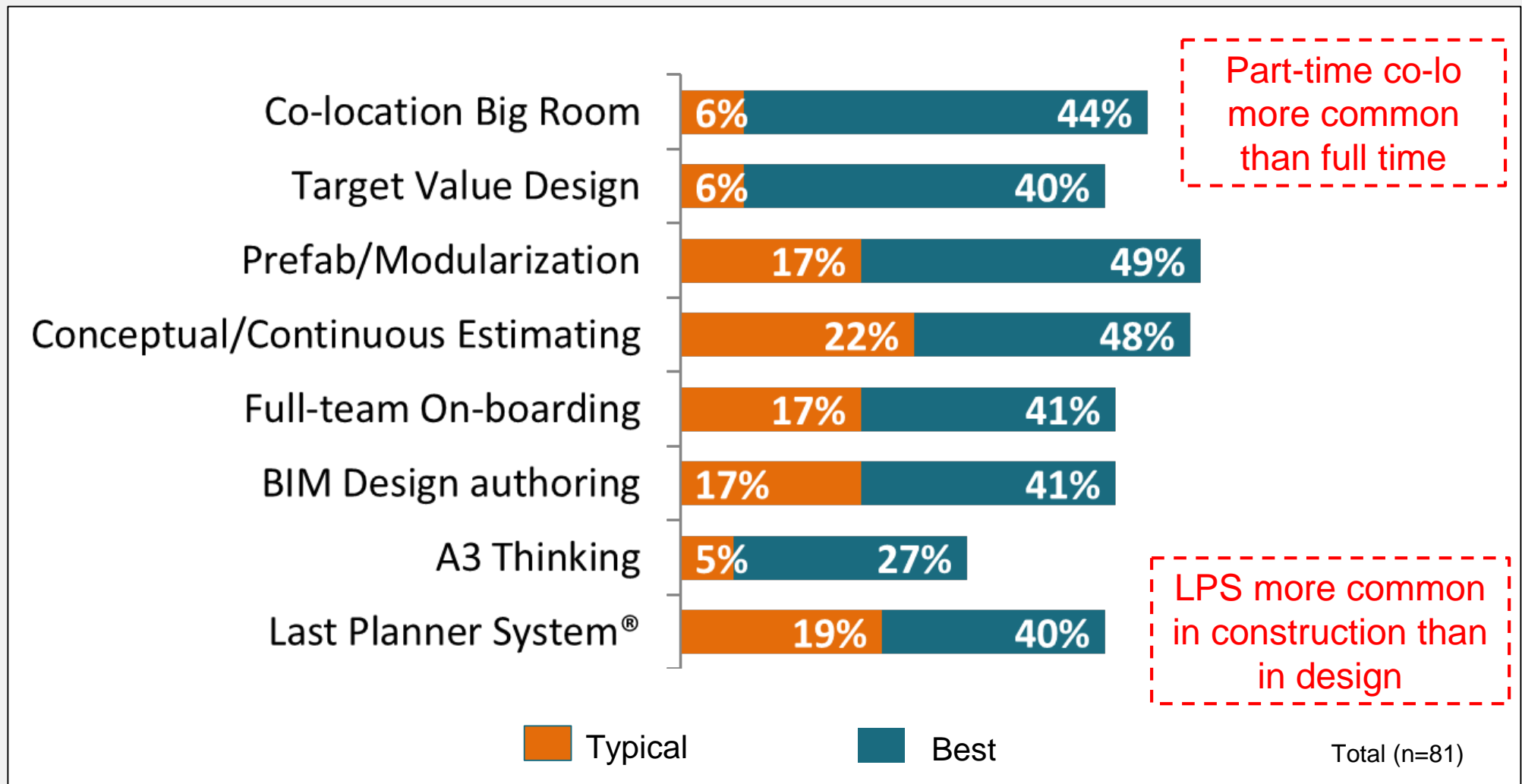


Top Contracting Types on Typical and Best Projects



Learn as a Team

Methods with Most Degree of Difference Between Usage



Lean Intensity Scoring

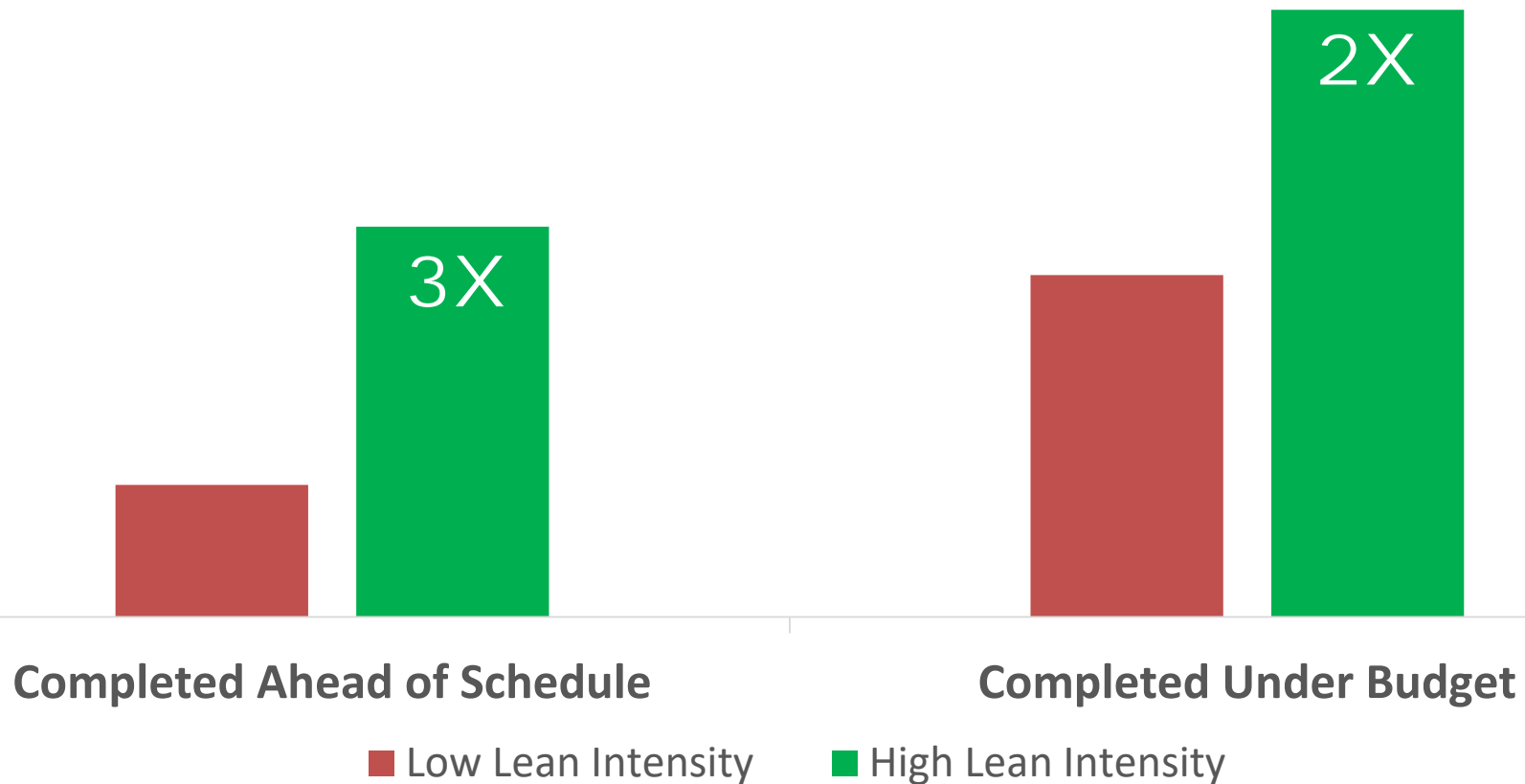
- 5 S's
- 5 Whys
- A3 Thinking
- BIM 3D Coordination
- BIM 4D & Site Logistics Planning
- BIM Design Authoring
- BIM Execution Plan
- BIM Model Based Estimating
- CBA Decision Making
- Co-Location Big Room
- Conceptual/Continuous Estimating
- CPM Scheduling
- Design to Budget
- Electronic Information Exchange
- Full-Team On-Boarding
- Kaizen
- Last Planner System
- OAC Report Out Meetings
- PDCA
- Prefab/Modularization
- Production System Modeling
- Root Cause Analysis
- Set Based Design
- Target Value Design
- Value Engineering
- Value Stream Mapping
- Visual Management

**Eliminated
Methods Deemed
Standard
Industry Practice**

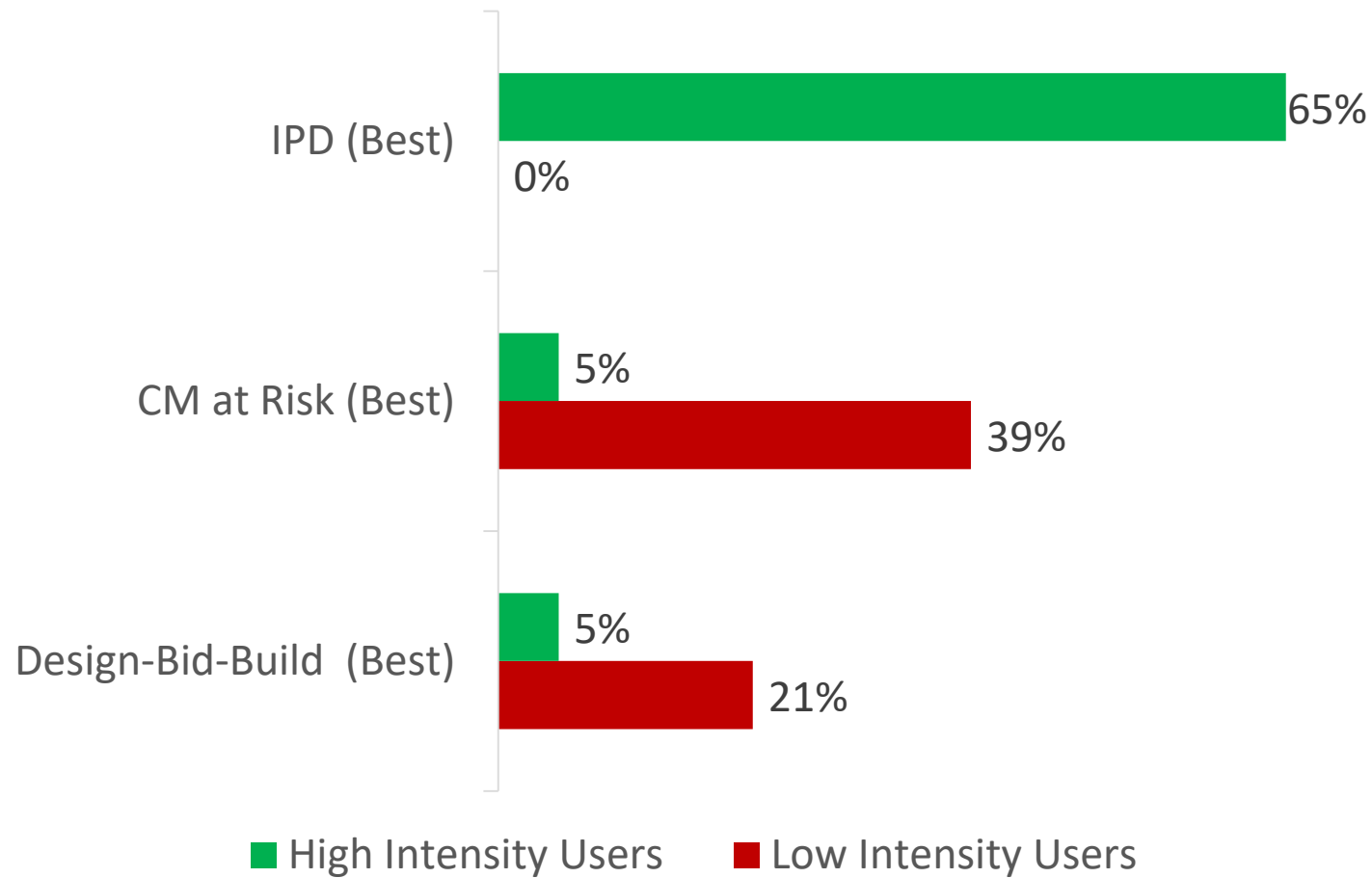
**Greater Weight
Given to Methods
Deemed
Particularly
Valuable**

Succeed as a Team

**Correlation of lean intensity to outcomes
(% likelihood on best projects)**



IPD & Lean



How and Why:

IPD creates **need** to collaborate

Lean provides the **means**

All projects in the study* were highly successful:
Regardless of project type, scope, geographic location, previous experience with IPD or Lean.

IPD establishes out the terms for collaboration:
financial incentives, baseline costs plus overhead, metrics of success

Lean tools and processes facilitate collaboration:
creates alignment around cost, schedule and other goals

*projects self-selected to respond to our request for participation and may not be representative of all IPD projects. However teams were candid about the challenges they faced and their lessons learned

Common Project Myths...

1. Delivery matters less than choosing the right people – behaviors can't be dictated by a contract
2. IPD contracts are too complicated, Lean tools are too rigid
3. IPD only works on large complex healthcare projects – Teams new to IPD and lean are at a disadvantage
4. Owners aren't getting best value – or – Owners are getting value but the team is not making profit
5. IPD and IPD-lite are essentially the same; financial incentives and release of liability are no big deal

Lean Usage & Proficiency

		Validation	Co-Location	Lean Tools and Processes						BIM	
				Lean Team Formation		Goals	Workplace and Meeting	Cost and Decision	Project Management		
				Team Formation	Team Development						
	Akron	●	●	●	●	●	●	●	●	●	
	Autodesk		●	○	○	○	●	●	○	●	
	Mosaic	●	●	●	●	●	●	●	●	●	
	Quail Run		○	●	●	●	●	●	●	●	
	Rocky Mountain	●	●	●	●	●	●	●	●	●	
	St. Anthony	●	●	●	●	●	●	●	●	○	
	Sutter Los Gatos		●	●	●	●	●	●	●	●	
	Sutter Sunnyvale	●	○	●	○	●	●	●	●	●	
	T. Rowe Price		●	●	●	●	●	●	●	○	
	Wekiva Springs	●	●	●	●	●	●	●	●	●	

50%+ of team experienced in IPD/Lean

0% of team experienced in IPD/Lean

● Done well, used often, helpful to the team

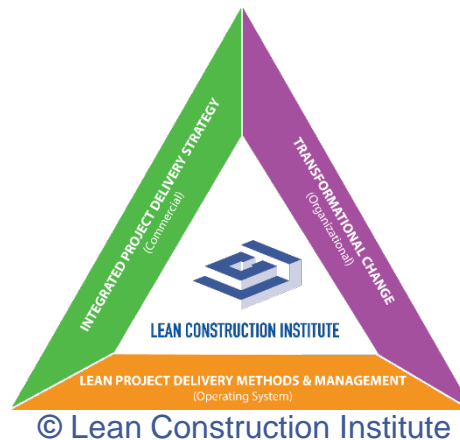
● Done but only somewhat helpful or mixed comments about effectiveness

○ Did it but not seen as particularly effective by most of the team

● Did not have it

Tactical Takeaways for Projects

1. **Set targets:** Define owner's business case & goals at c-suite
2. **Build the team:** Contract (using best value) key stakeholders prior to/ during concept design to validate targets & unify the team
3. **Learn as a team:** Provide training and coaching for the team to increase adoption of Lean methods
4. **Support the team:** Contracts should support (not thwart) a good team culture and adoption of Lean methods



Summary

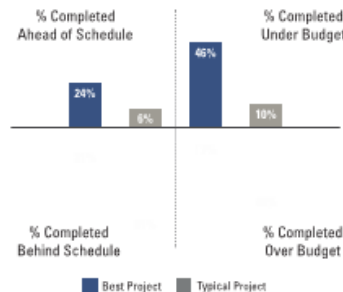
THE BUSINESS CASE FOR LEAN CONSTRUCTION...THERE IS A BETTER WAY!

How do you increase speed to market and/ or improve the return on investment of your capital projects? The Lean Construction Institute sponsored two separate research studies, conducted by Dodge Data & Analytics and the University of Minnesota, to explore how and why projects excel. **Empirical evidence now shows that projects with high Lean intensity are three times more likely to complete ahead of schedule and two times more likely to complete under budget.**

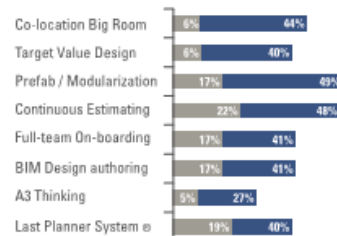


HOW DID PROJECTS PERFORM?

Dodge benchmarked 162 projects identified by owners as best or typical vs. schedule and budget performance (what owners cited as most valuable to them). The sample represents projects using various delivery methods and contract types across the United States for owners completing more than five capital projects over three years.

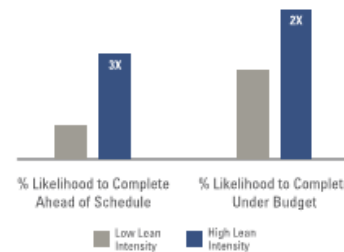


Dodge also inquired about the use of 27 project management methods on each project. The research found the following methods with the biggest gap between use on best and typical projects.



WHY DID PROJECTS EXCEL?

Of the best projects Dodge found a **statistically significant correlation** between high Lean intensity projects and likelihood to complete ahead of schedule or under budget. Lean intensity refers to the extent a project used the management methods studied, particularly those that are recognized as the most effective.



MYTHS ABOUT LEAN

The University of Minnesota "busted" some industry myths through ten in-depth case studies in partnership with the Integrated Project Delivery Alliance. Regardless of project type, regulations or Lean/IPD experience the research found that teams are leveraging Lean and IPD to foster and cultivate "project first" behaviors to deliver "A team results" with every team!

TOP MYTHS BUSTED

1. Delivery matters less than choosing the right people – behaviors can't be dictated by a contract
2. IPD contracts are too complicated, Lean tools are too rigid
3. IPD only works on large, complex healthcare projects – Teams new to IPD and Lean are at a disadvantage
4. Owners aren't getting best value – or – Owners are getting value but the team is not making profit
5. IPD and IPD-lite are essentially the same; financial incentives and release of liability are no big deal

SO HOW DO I START?

Based on the research follow these four key steps:

1. **Set Targets:** Define owner's business case and goals.
2. **Build the Team:** Use a best value selection process to contract key stakeholders prior to or during concept design to validate targets and unify the team.
3. **Learn as a Team:** Provide training and ongoing coaching for the team to increase adoption of Lean methods.
4. **Support the Team:** Contracts should support (not thwart) a collaborative team culture and adoption of Lean methods.

WHAT DOES THIS MEAN FOR ME?

While the research is focused on the project business case; the benefits extend to the individuals and businesses of both owners and service providers for the project including:

- Reduced costs and improved profitability
- Increased employee engagement
- Better work/life balance

HOW DO I LEARN MORE?

For more information about the research, connect with the Lean community in your area and to advance your own Lean journey, please visit:

WWW.LEANCONSTRUCTION.ORG/LEARNING



November 17, 2016

Case Study Report

Click to Enter

MOTIVATION AND MEANS: How and Why IPD and Lean Lead to Success

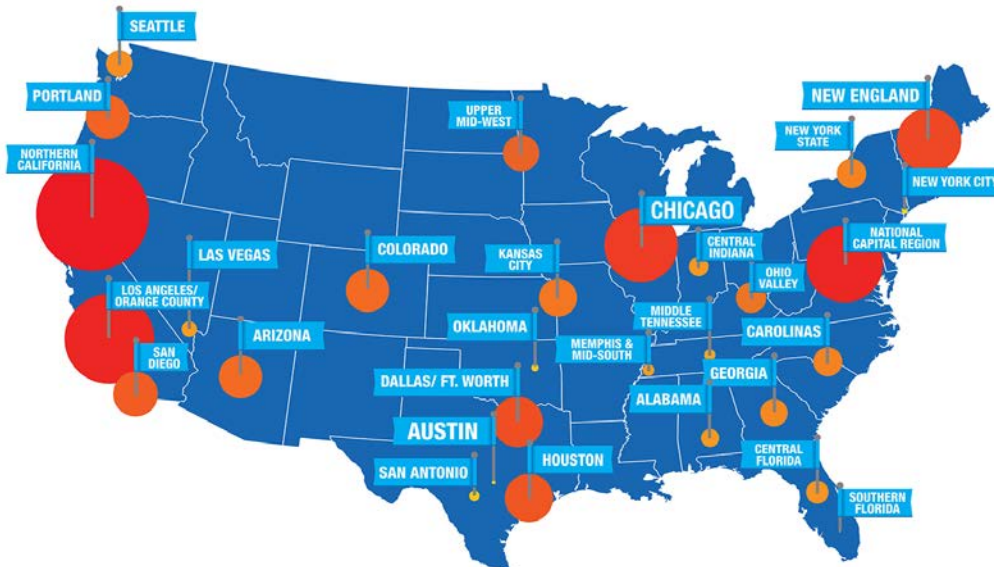
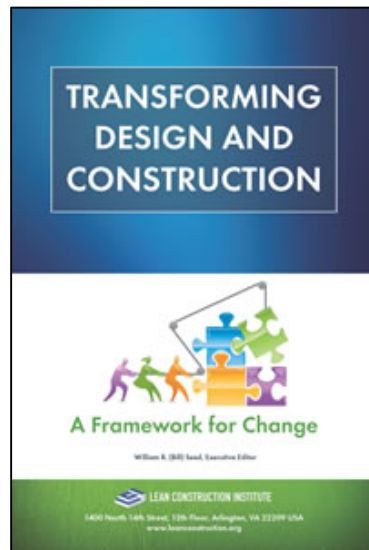
Research Report
November, 2016

University of Minnesota in collaboration with University of Washington, University of British Columbia, Scan Consulting
Sponsored by Integrated Project Delivery Alliance (IPDA) & Lean Construction Institute (LCI)



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