



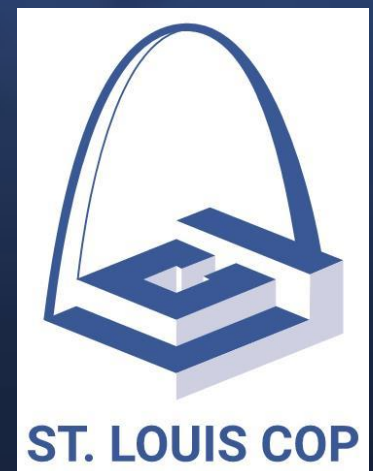
Lean Construction Institute
Immersive Education Program

Business Case for Lean Project Delivery

Webinar

Felipe Engineer-Manriquez, LCI St. Louis
Lean Community of Practice Vice-Chair

March 18, 2021

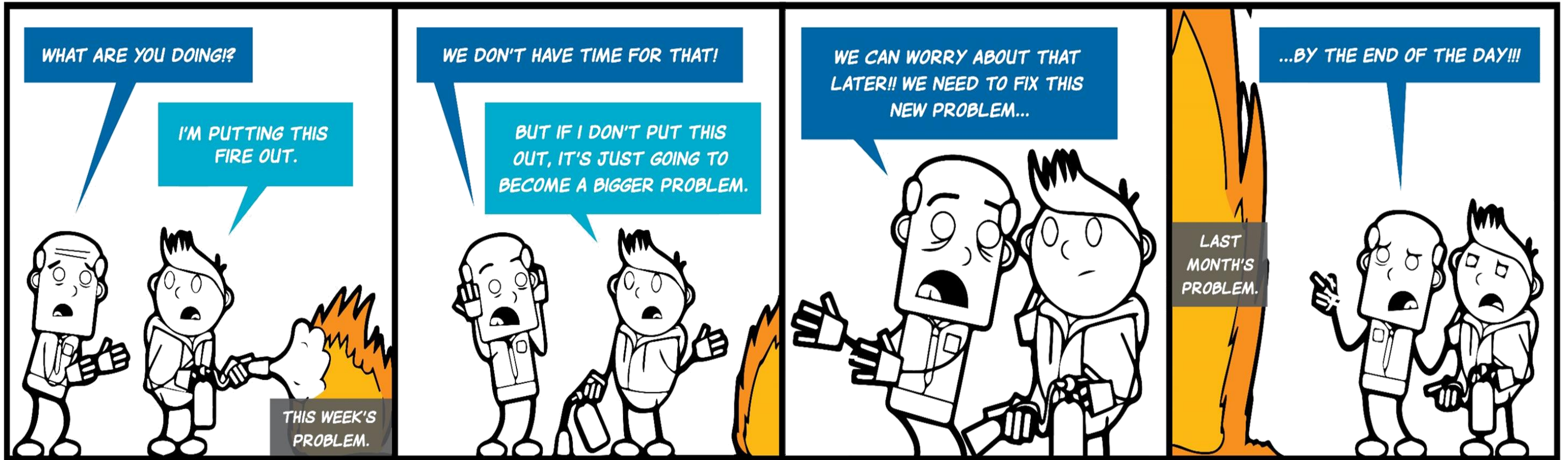


Learning Objectives

1. Understand what *owners value* in design and construction and how designers and constructors can *close the gap* between owner expectation and typical project delivery.
2. Discover Lean process innovations and tools that are flexible and *positively change project team collaboration*.
3. Understand how the adoption of Lean *impacts the architect's and engineer's roles* in the design and construction process.
4. Learn about *5 Lean and IPD myths* with empirical data supporting the reality.

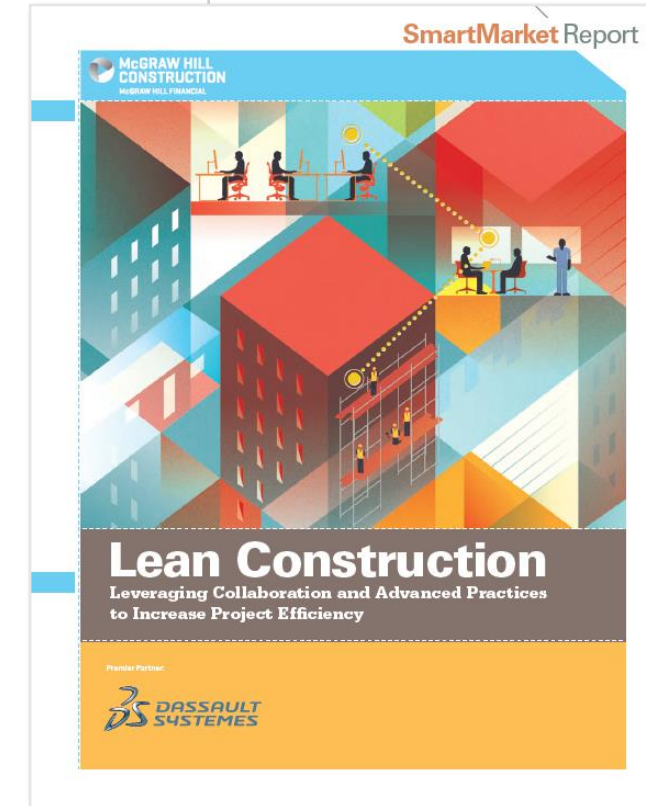
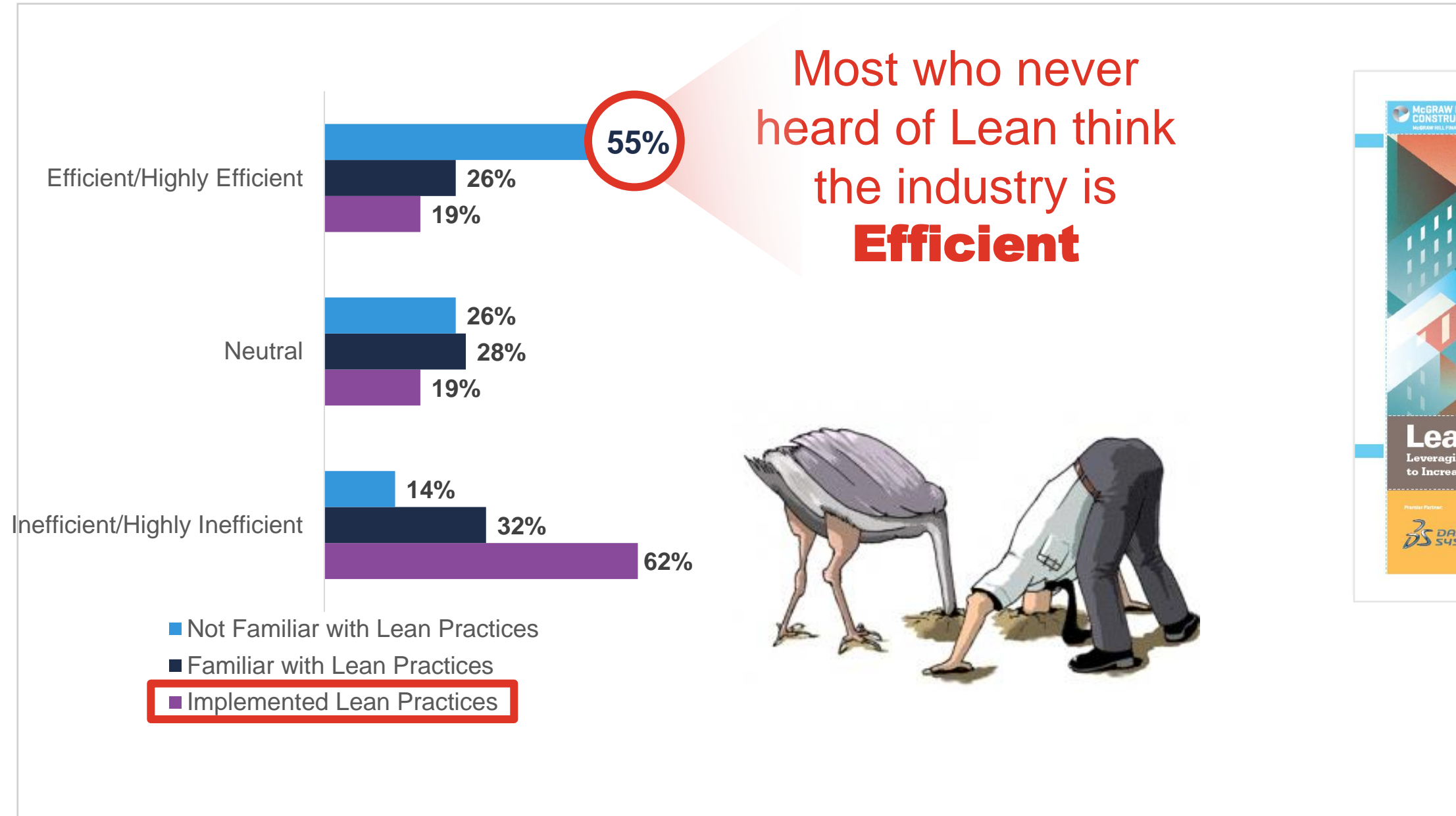


Sound Familiar ?



MODIFIED GRAPHIC SOURCED FROM WWW.PIGMENTED.COM

Industry Efficiency



What is Lean ?

Lean:

A culture of *respect and continuous improvement* aimed at creating more *value for the customer* while identifying and eliminating waste.

Lean Project Delivery System:

An *organized implementation of Lean Principles and Tools* combined to allow a team to operate in unison to create flow.



Six Tenets of Lean Construction

- 1 Respect for people
- 2 Optimize the Whole
- 3 Generate Value
- 4 Eliminate Waste
- 5 Focus on Flow
- 6 Continuous Improvement



Goals of Lean Design & Construction

- 1 Achieve reliable workflow
- 2 Maximize value to the customer
- 3 Minimize waste
- 4 Optimize the whole, not the parts
- 5 Develop a discipline of learning and continuous improvement.



Traditional Delivery Outcomes



Risk is high.



70% of projects are delivered late.



73% of projects are over budget.



Rework and waste is high.



Teamwork is unreliable.



Customers are not satisfied.

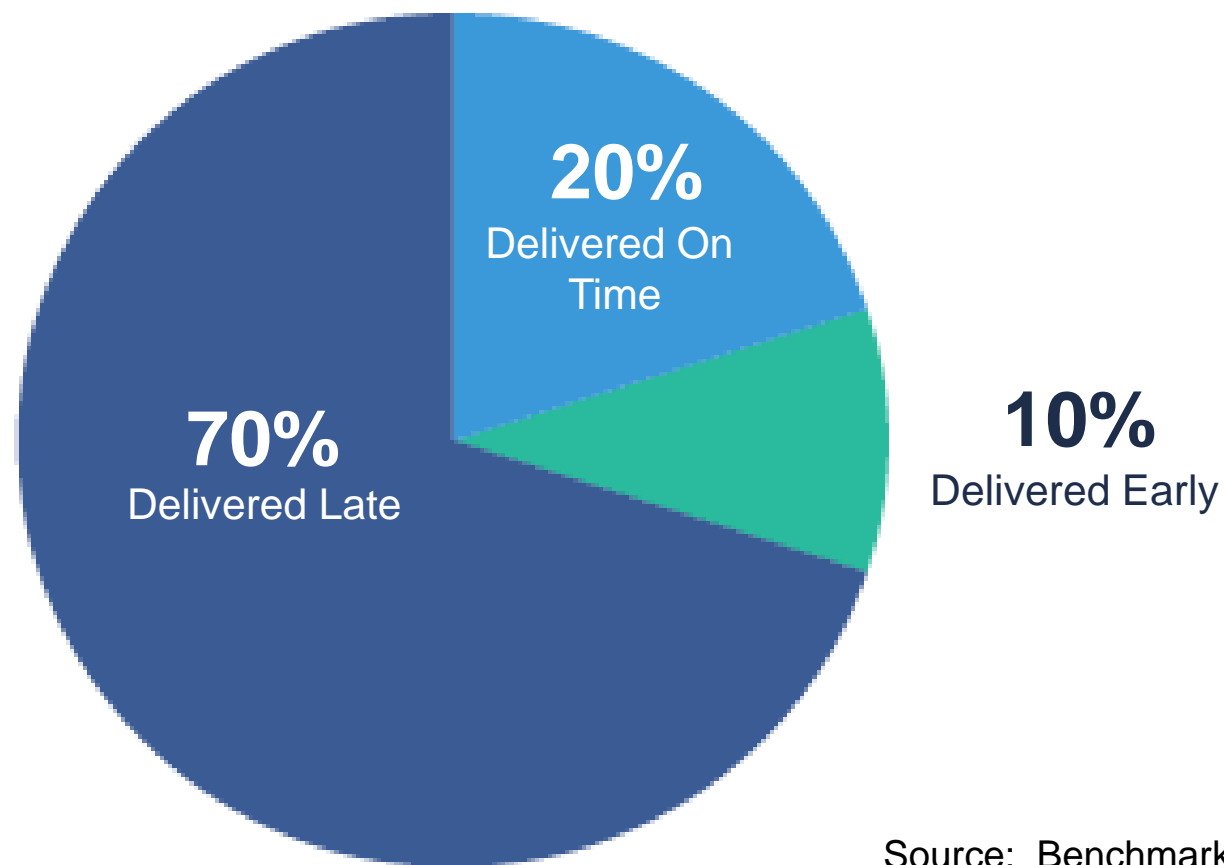


Profit margins are shrinking.

Traditional Project Outcomes

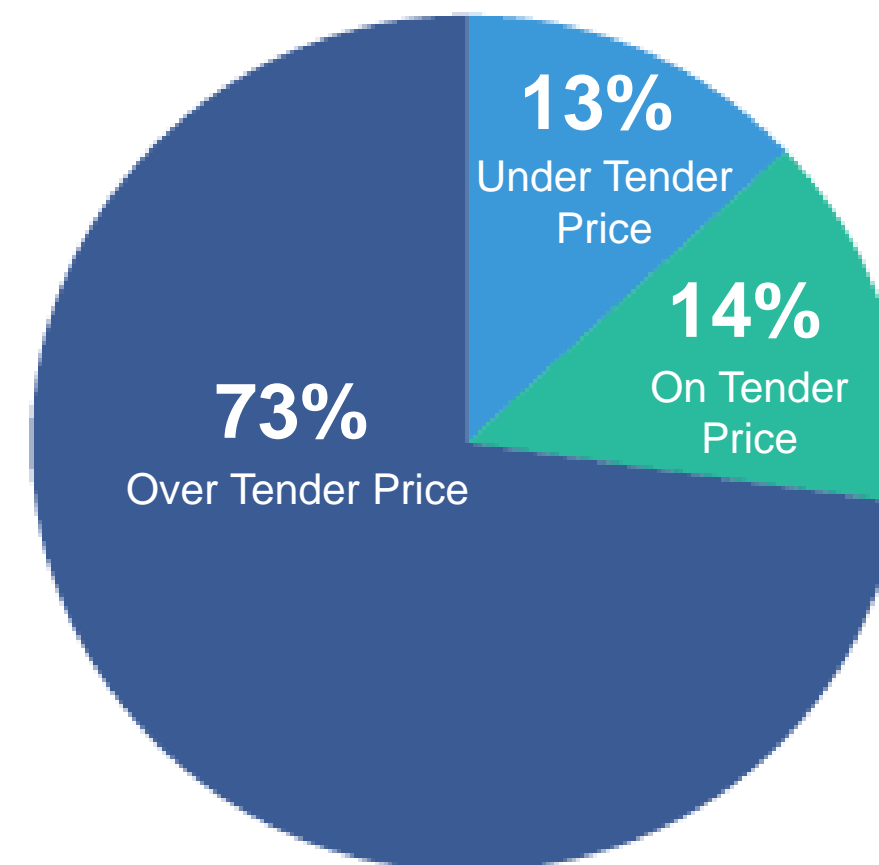
Time-

70% were delivered late










Cost-

73% were over budget



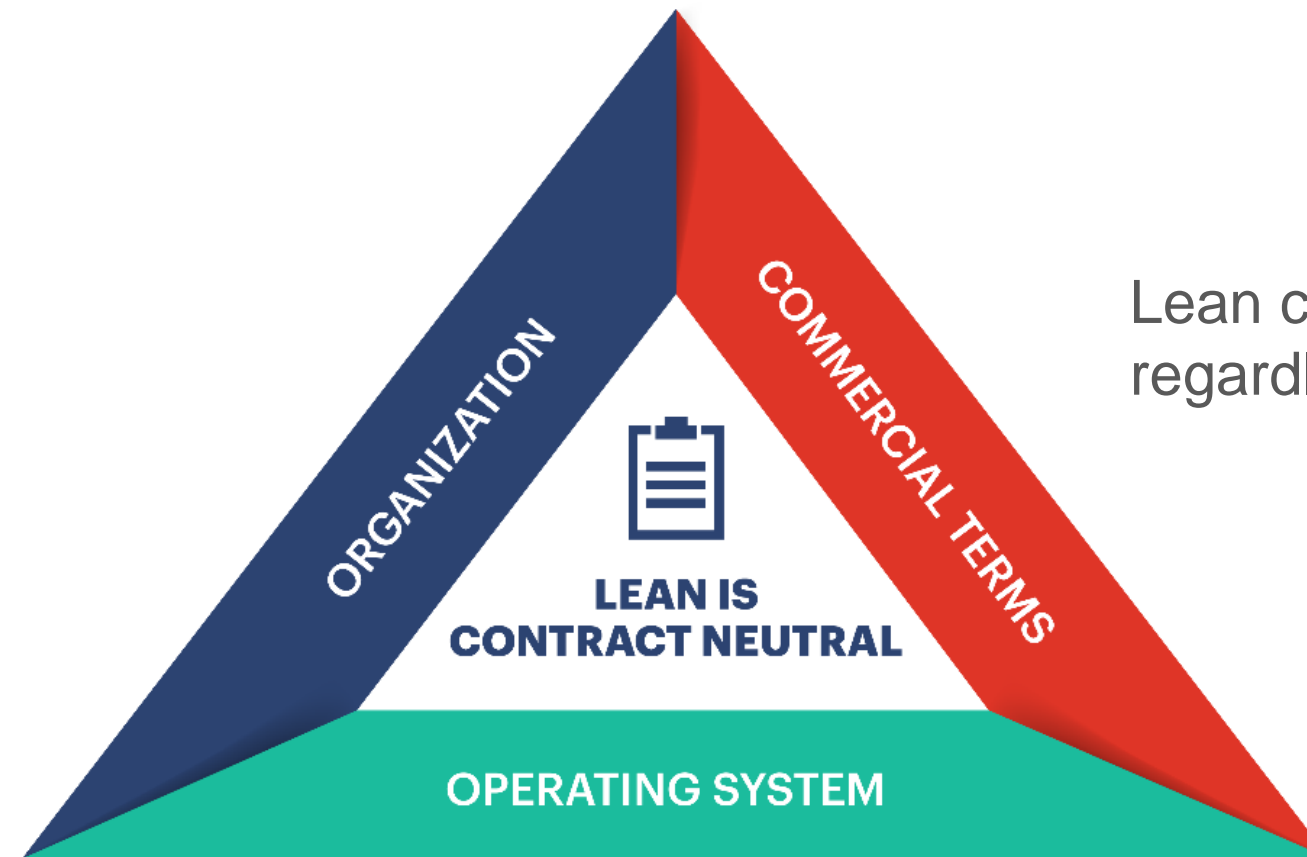
Source: Benchmarking the Government Client Stage Two Study December 1999

Lean Project Delivery Enables

-  Risk to be collaboratively managed.
-  Projects to be delivered on time.
-  Projects to be delivered within budget.
-  Minimizing waste and rework.
-  Team-wide reliability.
-  Higher customer satisfaction.
-  Fair profits for providers.

Project Elements

Lean teams organize in a structure that leads to improved outcomes.



Lean can be implemented regardless of commercial terms.

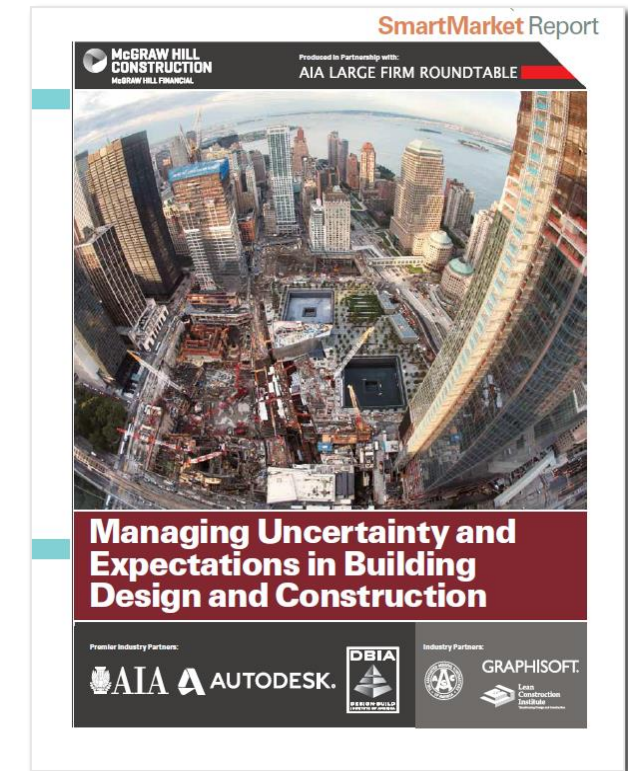
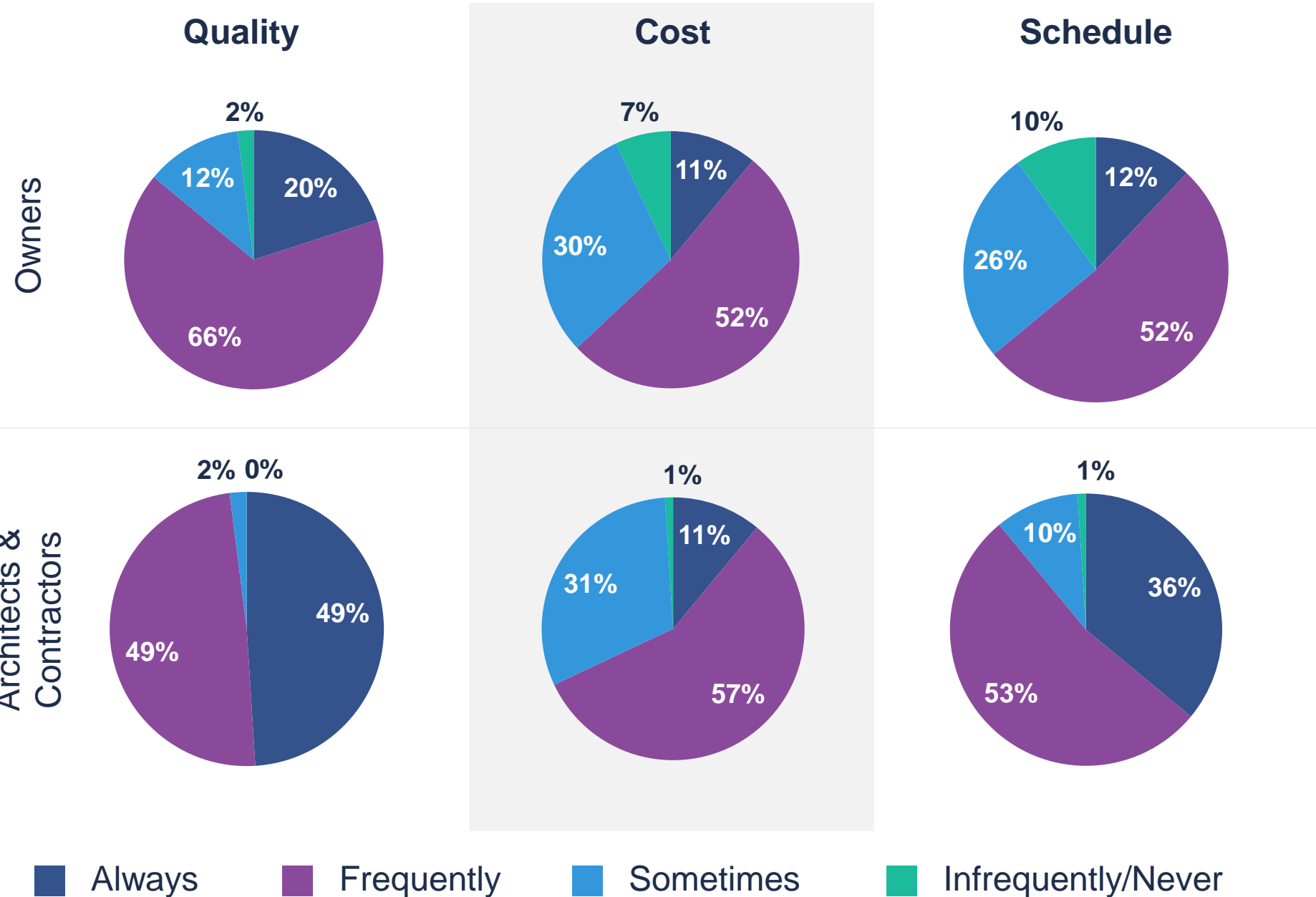
A Lean Operating System is an organized implementation of Lean Principles and Practices combined to allow the People to operate in unison to create flow.

Sat·is·fac·tion ???

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



Owner Satisfaction



1. Poll Question

How satisfied are you with the delivery of capital projects?

- a) Very like a Rolling Stone
- b) Somewhat satisfied– sometimes a rocky road
- c) Somewhat dissatisfied – hit the guardrails
- d) Very dissatisfied – drive off the cliff

Research Overview Two Studies

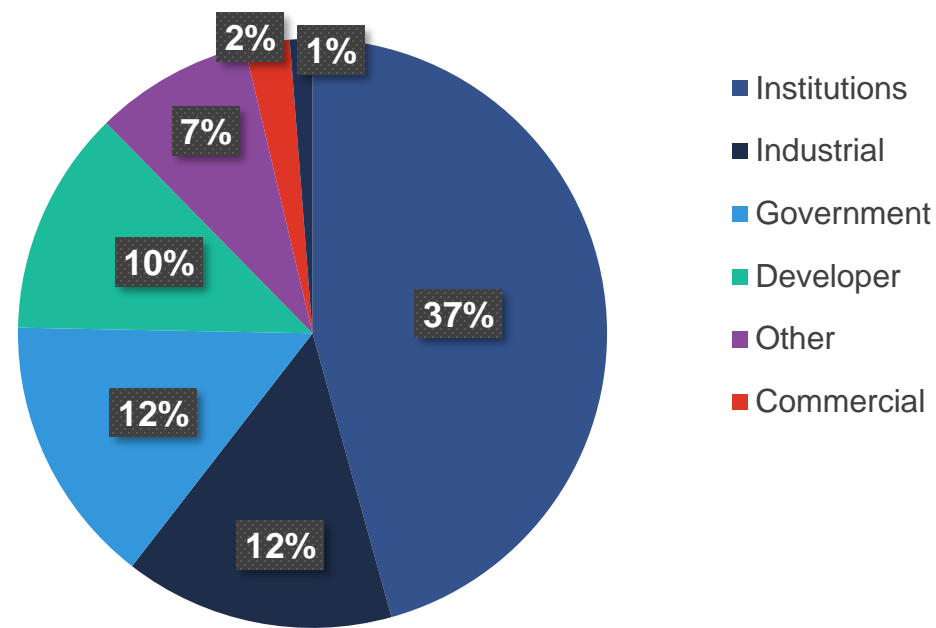
Owner Satisfaction & Project Performance

Objectives:

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

Survey:

81 Owners
162 projects



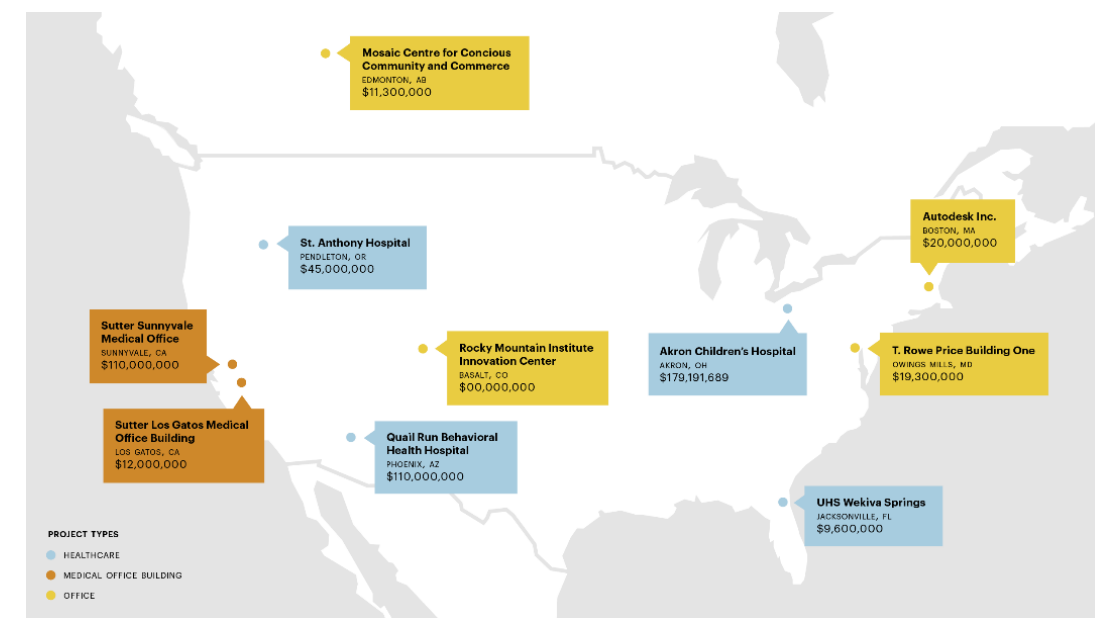
IPD & Lean Motivation & Means

Objectives:

1. How and why does integrated Lean succeed?

Case Study:

10 Owners / Projects



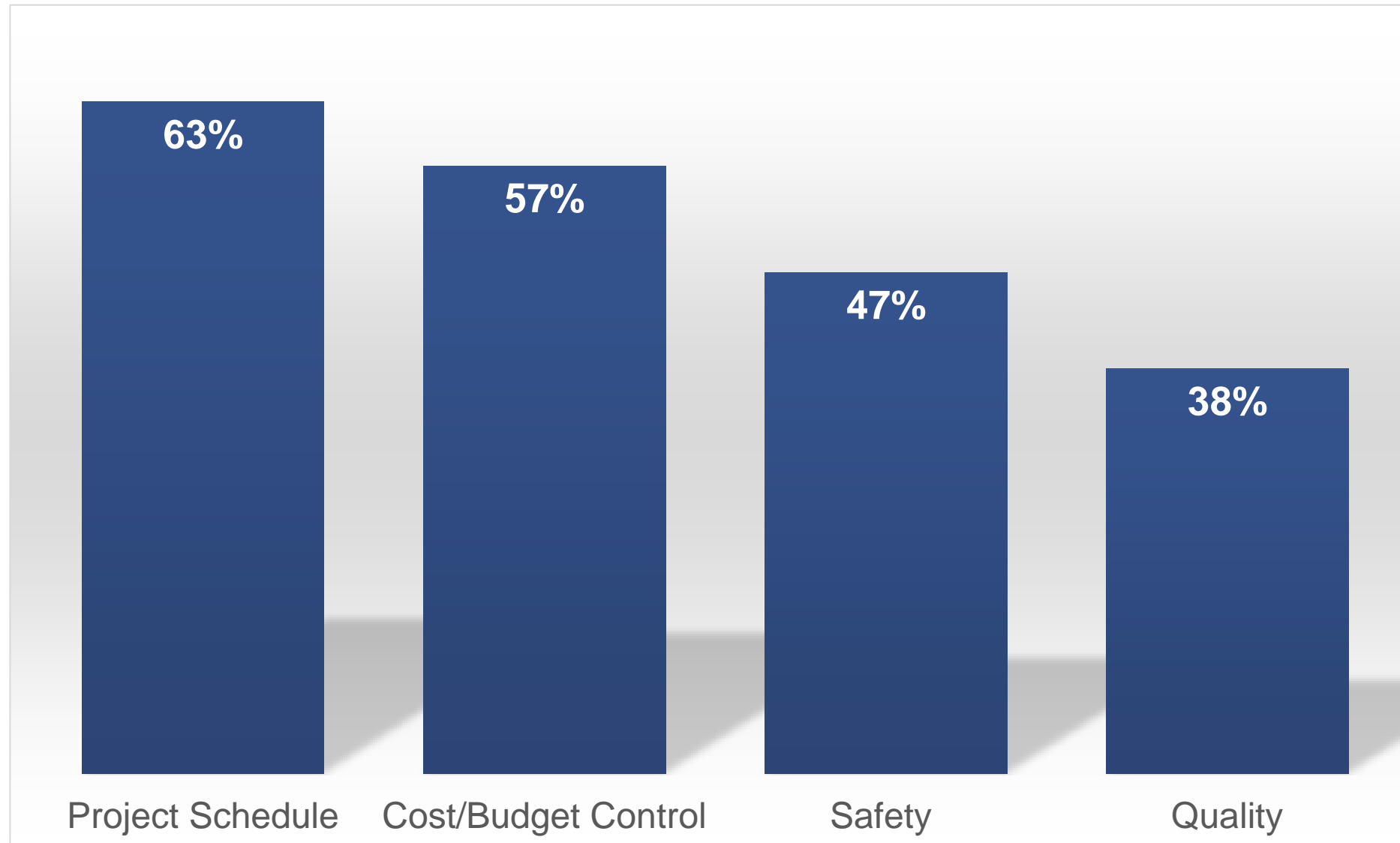
Lean Construction Institute Owner Satisfaction Study



Prepared by:
Dodge Data & Analytics
July 2016

- Owner Definition of Value
- Performance Comparison Between Typical and Best Performing Project:
 - Schedule Performance
 - Cost/Budget Performance
 - Quality Performance
 - Safety Performance
- Factors That Influence Performance
 - Team Dynamics
 - Project Delivery, Contracts
 - Operating Methods
 - Single Factor that Most Contributes to a Best Performing Project
- High Intensity Vs. Low Intensity of Users of Operating Methods

Owner Definition of Value



- Owners identified **schedule** as their top priority when asked an open-ended question about how they define value related to project performance.
- This chart shows all the **value metrics** that appeared in more than one third of the responses.

2. Poll Question

How often do your projects meet or exceed these key owner values?

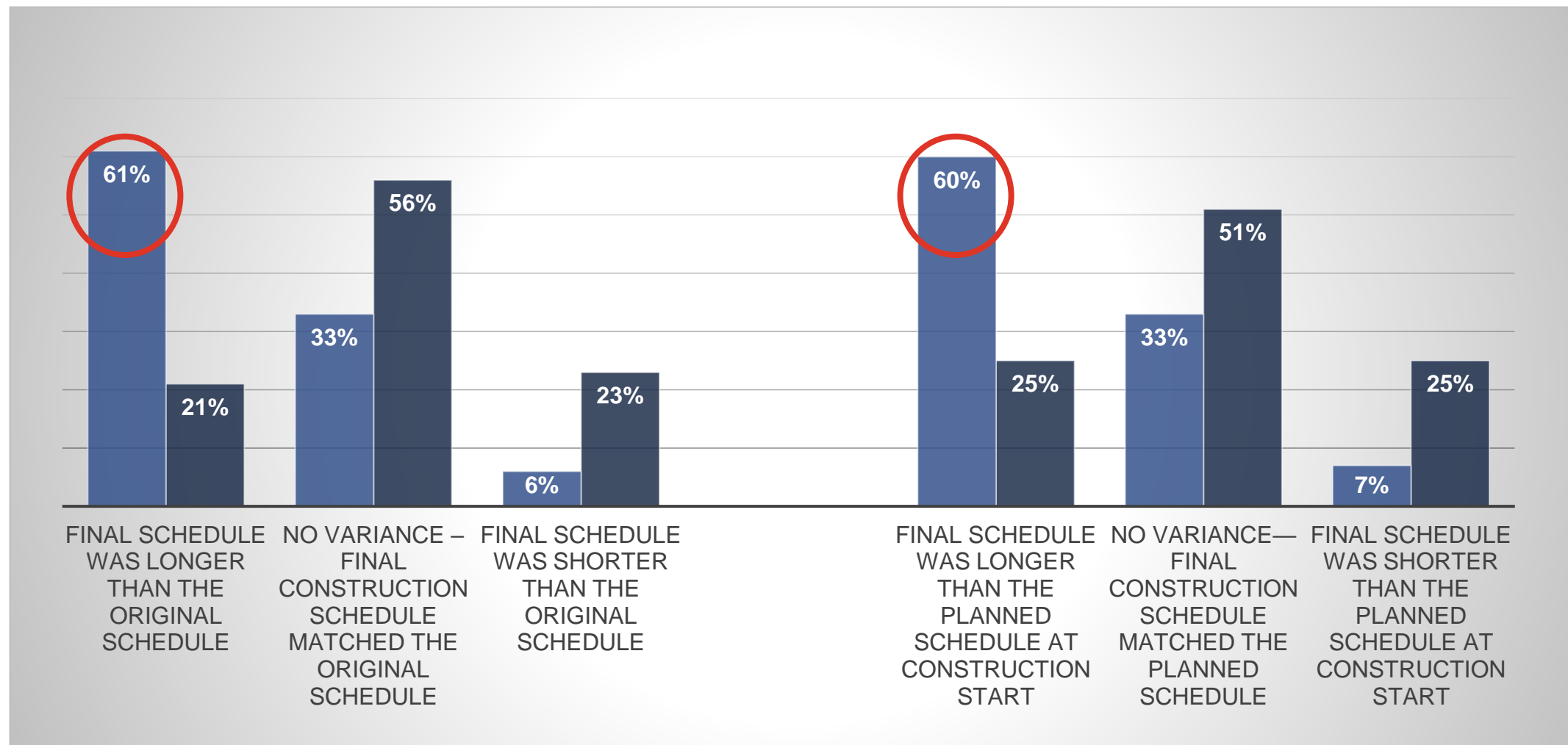
- a) Well, duh - We are GOOD!
- b) Mostly - We try hard.
- c) Once in a blue moon.

Performance Comparison Between Typical and Best Performing Project

Schedule Performance

Original Project Schedule vs. Final Schedule

Schedule at the Start of Construction vs. Final Schedule



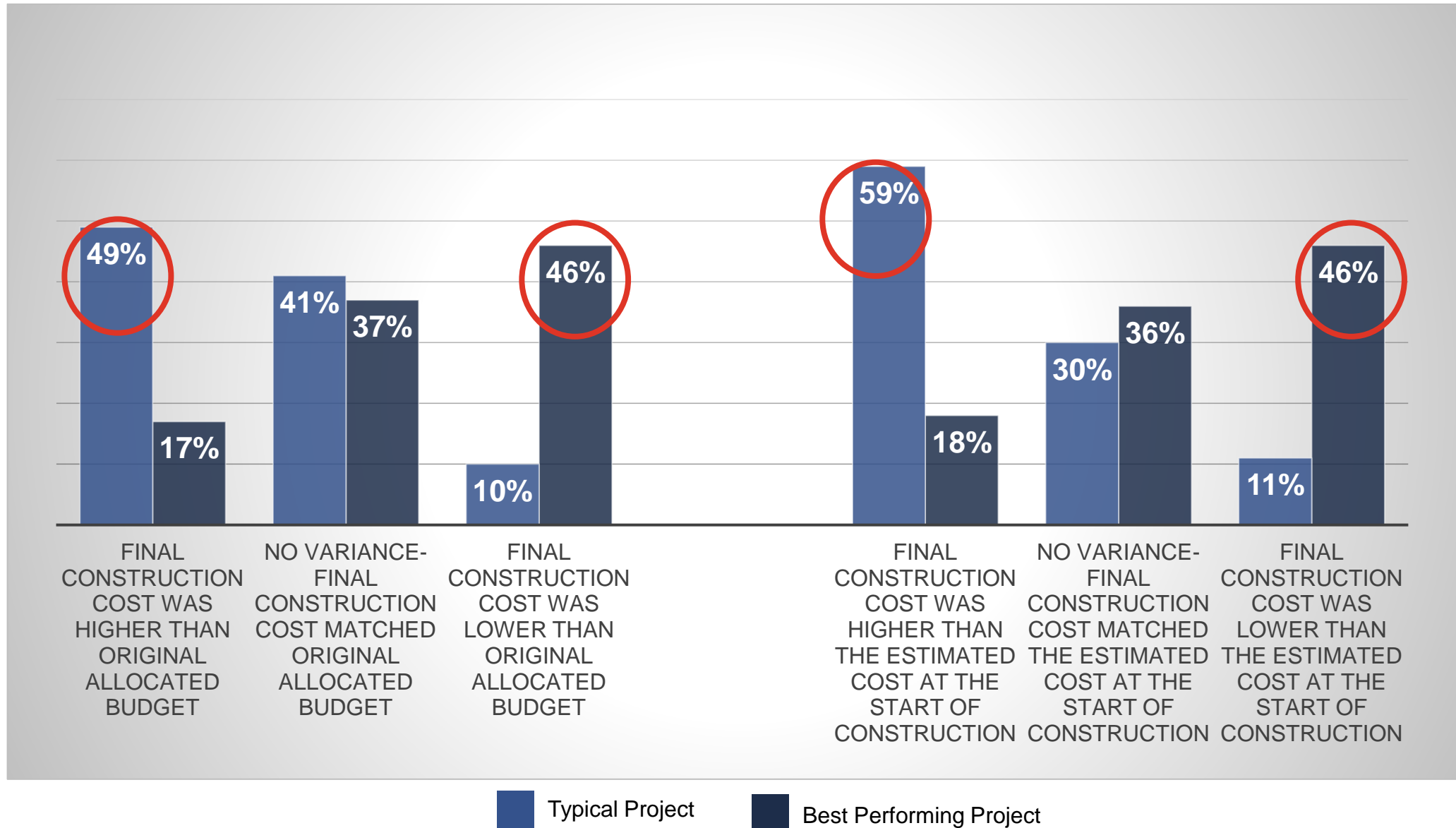
- On a Typical Project, the schedule tends to fall behind the original projected dates (ranging anywhere from 1% to 25% of the schedule).
- Best Performing Projects tend to either finish on-schedule or ahead of schedule (if finishing ahead of schedule, the variance is 10% or less of the schedule).

Typical Project
 Best Performing Project

Budget Performance

Original Allocated Budget vs. Final Cost

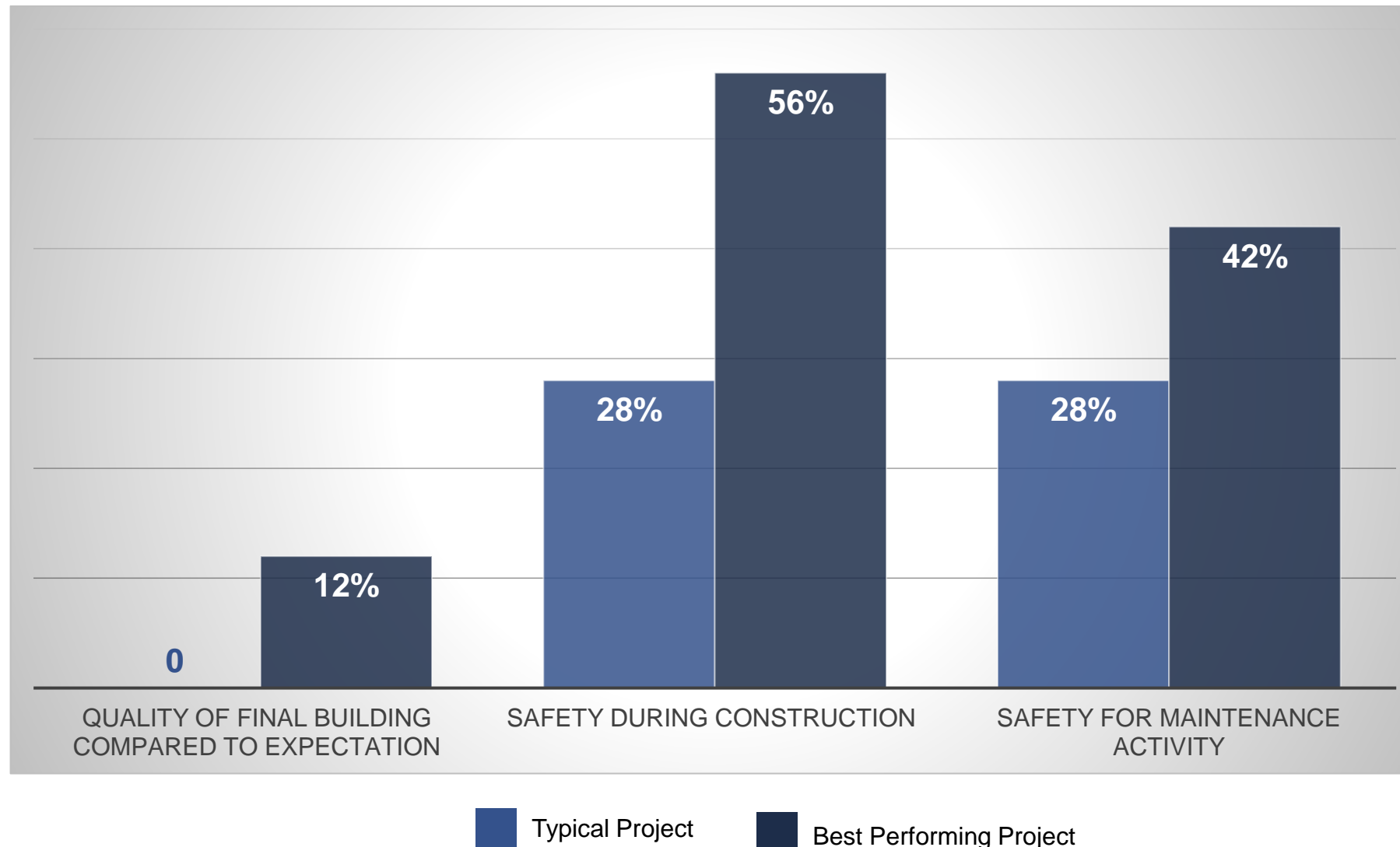
Cost at the Start of Construction vs. Final Cost



- On a Typical Project, the final cost tends to be higher (by 6% or less) than the Original Allocated Budget as well as the Estimated Costs at the Start of Construction.
- For a Best Performing Project, the final construction cost is more likely to be lower (by less than 3%) than the Original Allocated Budget as well as the Estimated Costs at the Start of Construction.

Quality and Safety Performance

Percentage Reporting the Highest Quality and Safety Ratings

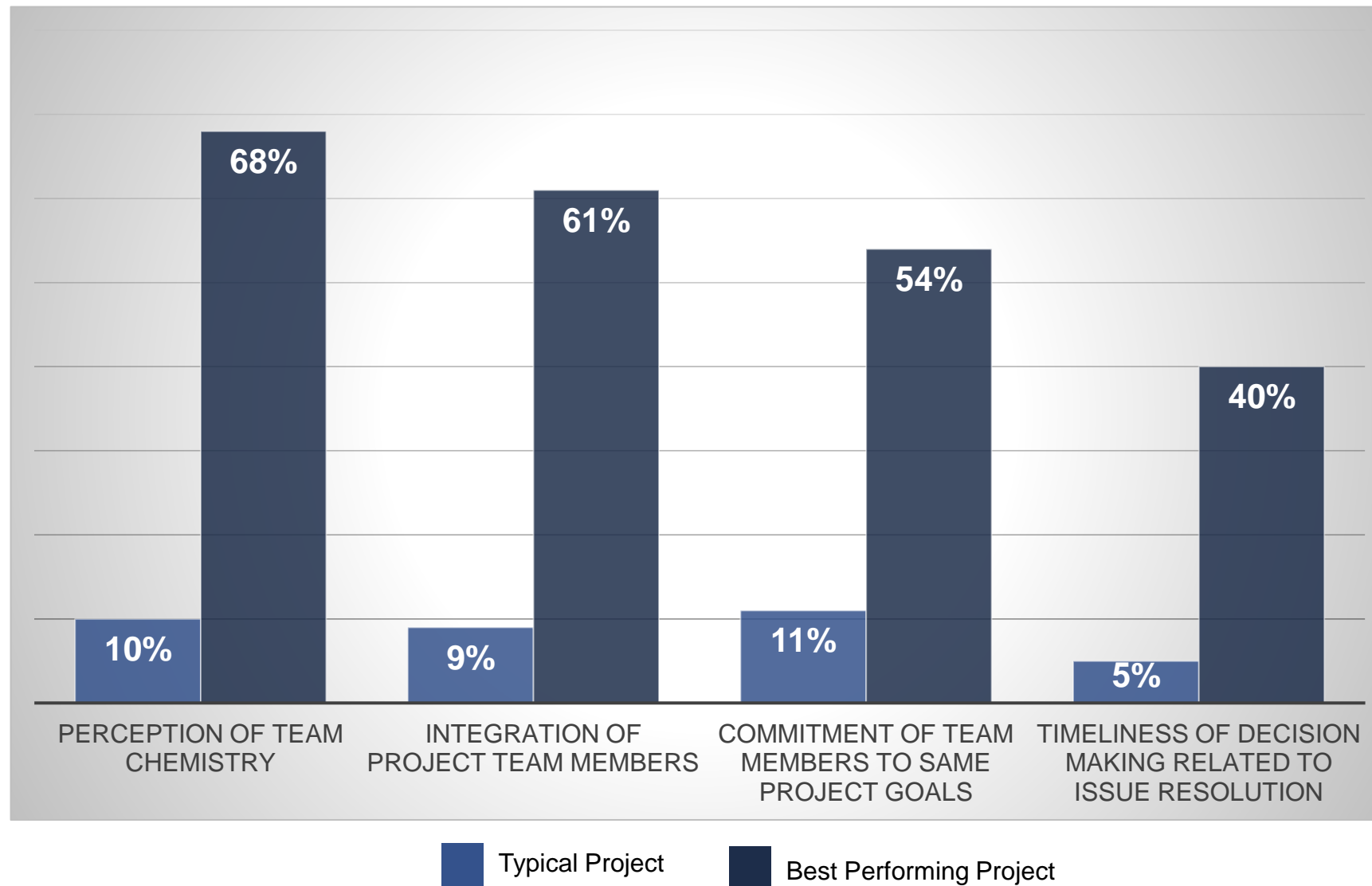


- The quality vs. expectation was higher in the Best Performing Projects
- Safety (no fatalities or lost time incidents) was better on Best Performing Projects
- Safety for maintenance activities (requiring hoists/lifts) was better on Best Performing Projects

Factors That Influence Performance

Team Dynamics

Percentage Reporting the Highest (4/4) Team Dynamics Ratings



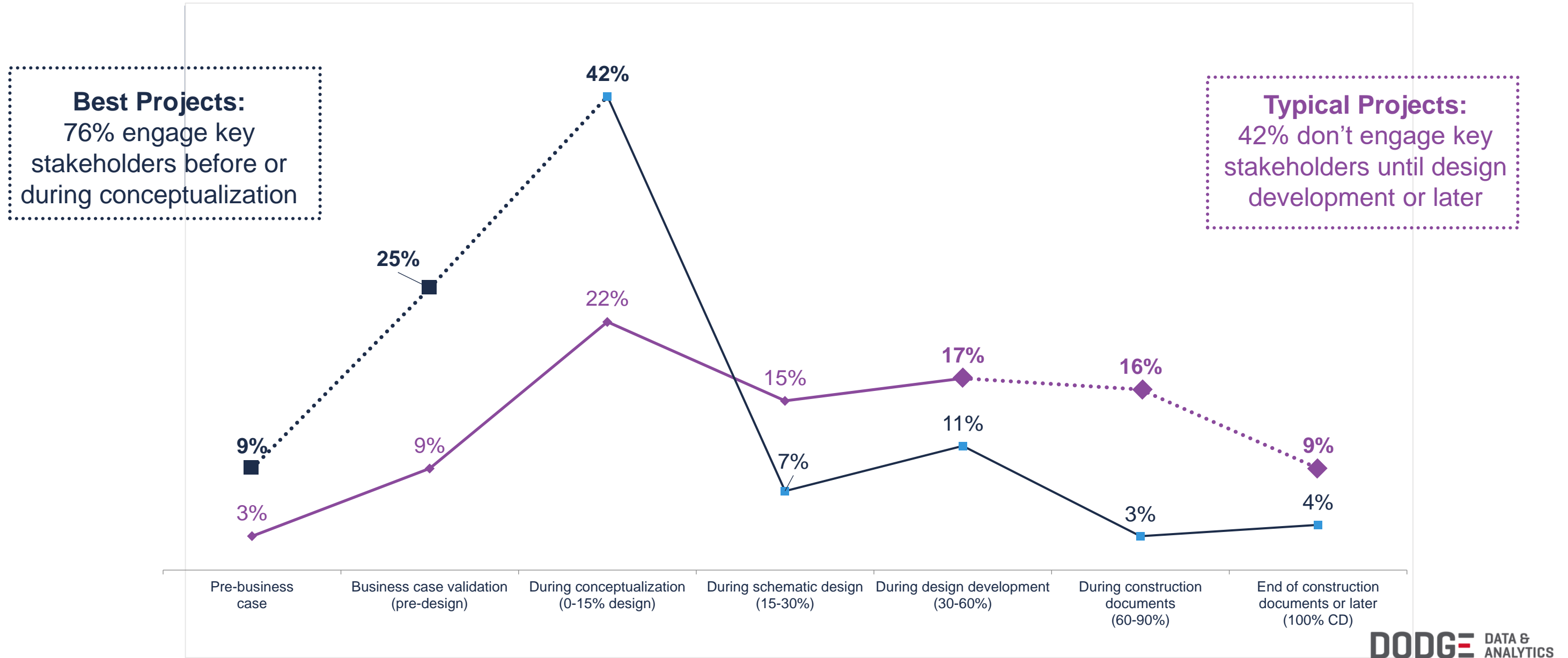
- Team chemistry is excellent for a majority of Best Performing Projects and good for a majority of Typical Projects.
- Key stakeholders often acted or worked cohesively to optimize the whole on a Best Performing Project, and sometimes acted or often acted to optimize the whole on a Typical Project.
- Team members have complete commitment or an overall commitment to project goals on nearly all of the Best Performing Projects, and mostly overall commitment or a minimal commitment to project goals on a Typical Project.
- Best Performing Projects are frequently or always on time. Typical Projects are occasionally or frequently on time.

3. Poll Question

Do you pay attention to team chemistry on your projects?

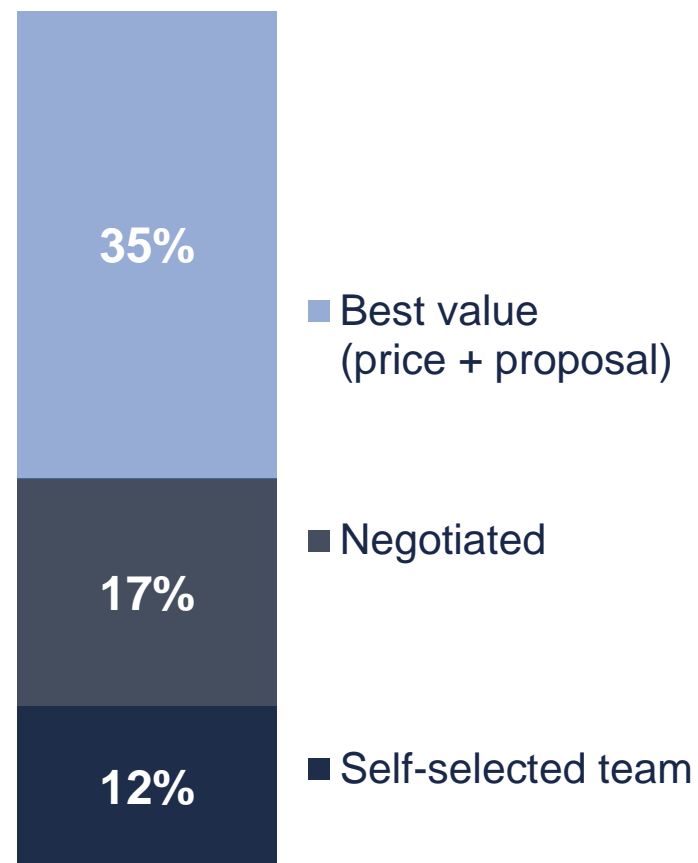
- a) We have a PhD in Chemistry!
- b) We blow things up once in a while!
- c) What's chemistry?

Timing of Key Stakeholder Engagement

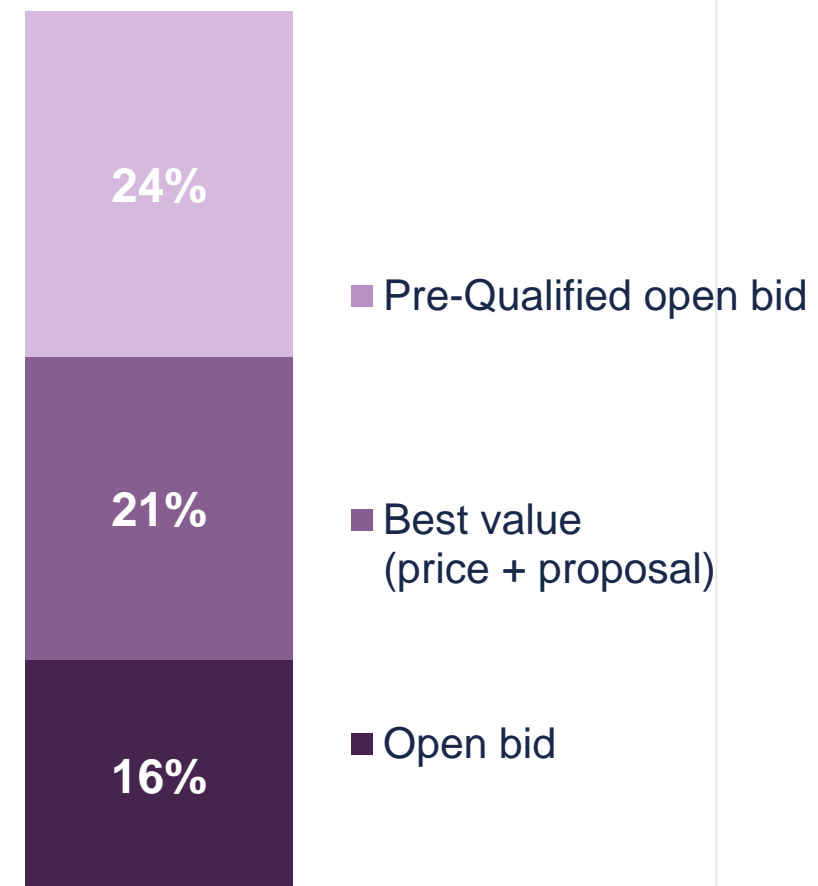


Key Stakeholders Selection Process

Top 3 Selection Processes:
Best Performing Project



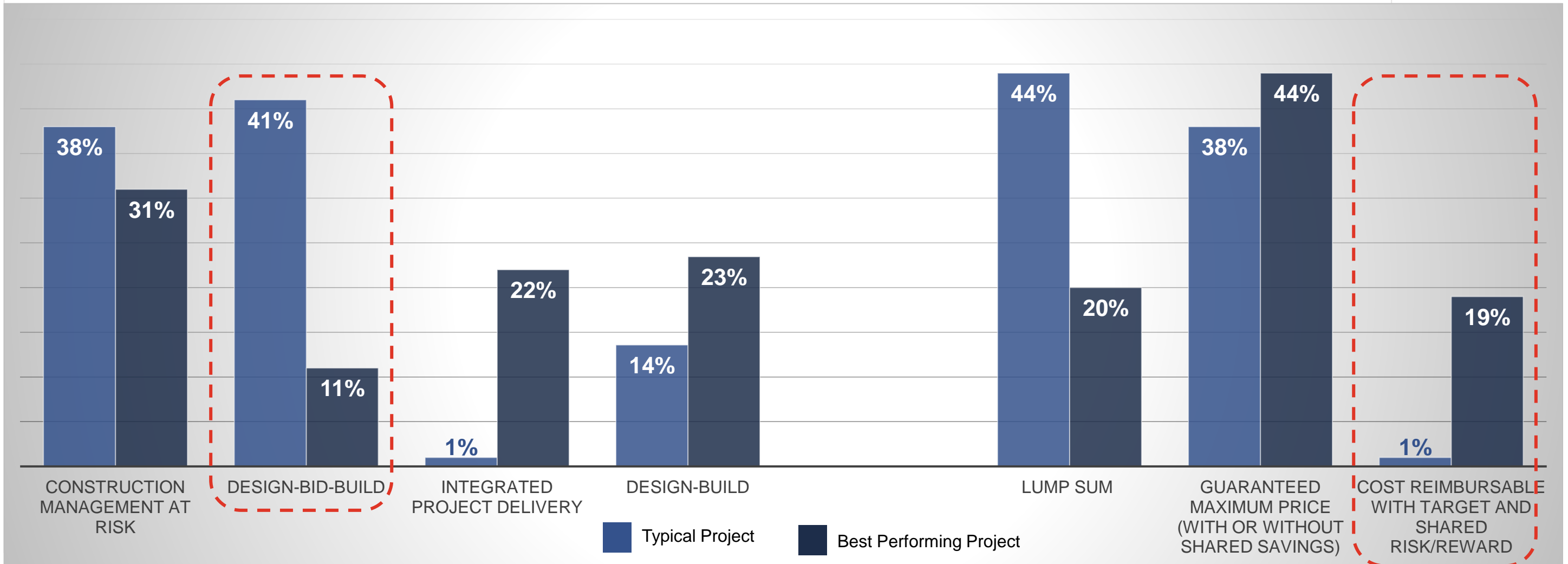
Top 3 Selection Processes:
Typical Project



Project Delivery Methods, Contracts

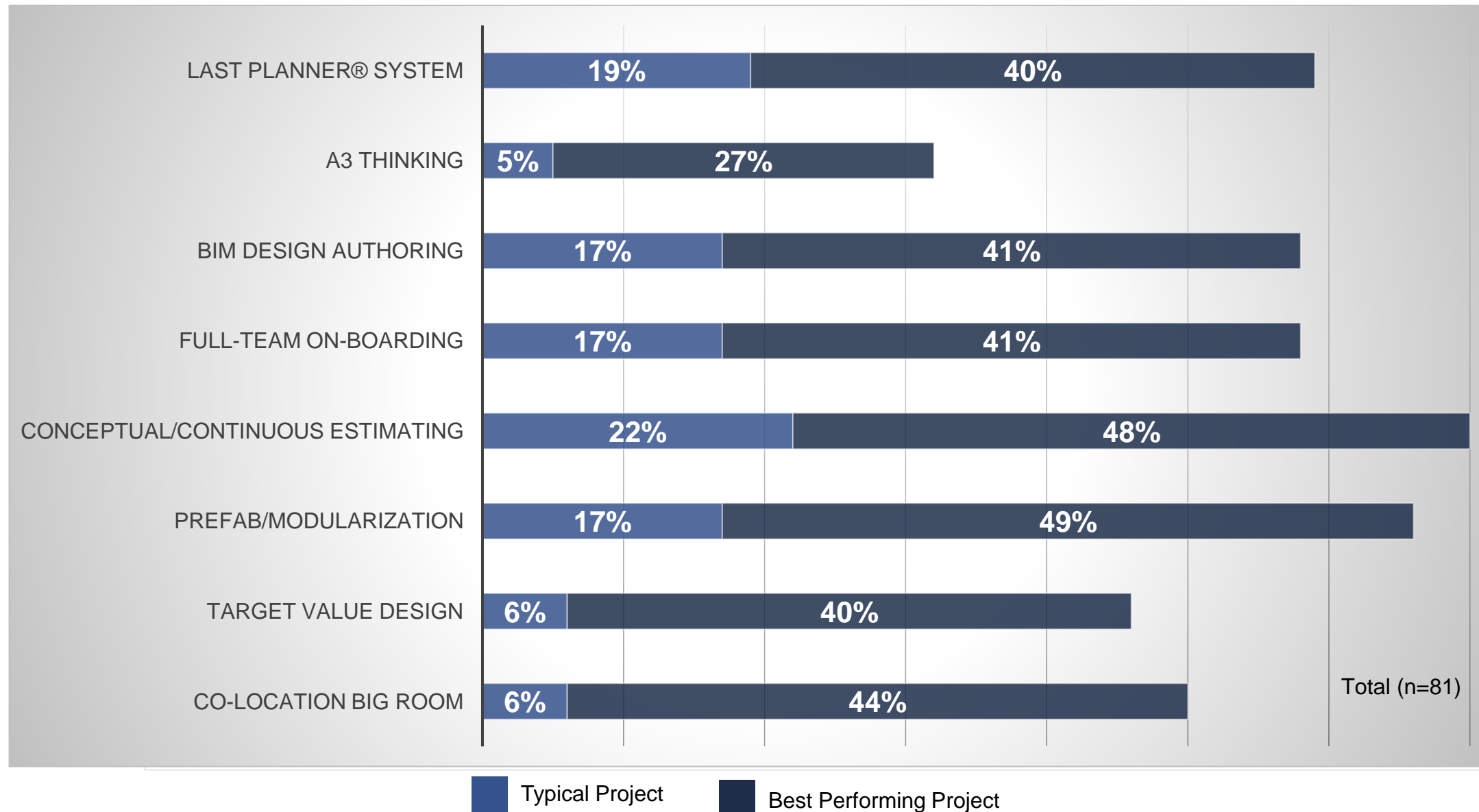
Top Project Delivery Methods on Typical and Best Projects
(20% or more usage on either)

Top Contracting Types of Typical and Best Projects



Methods

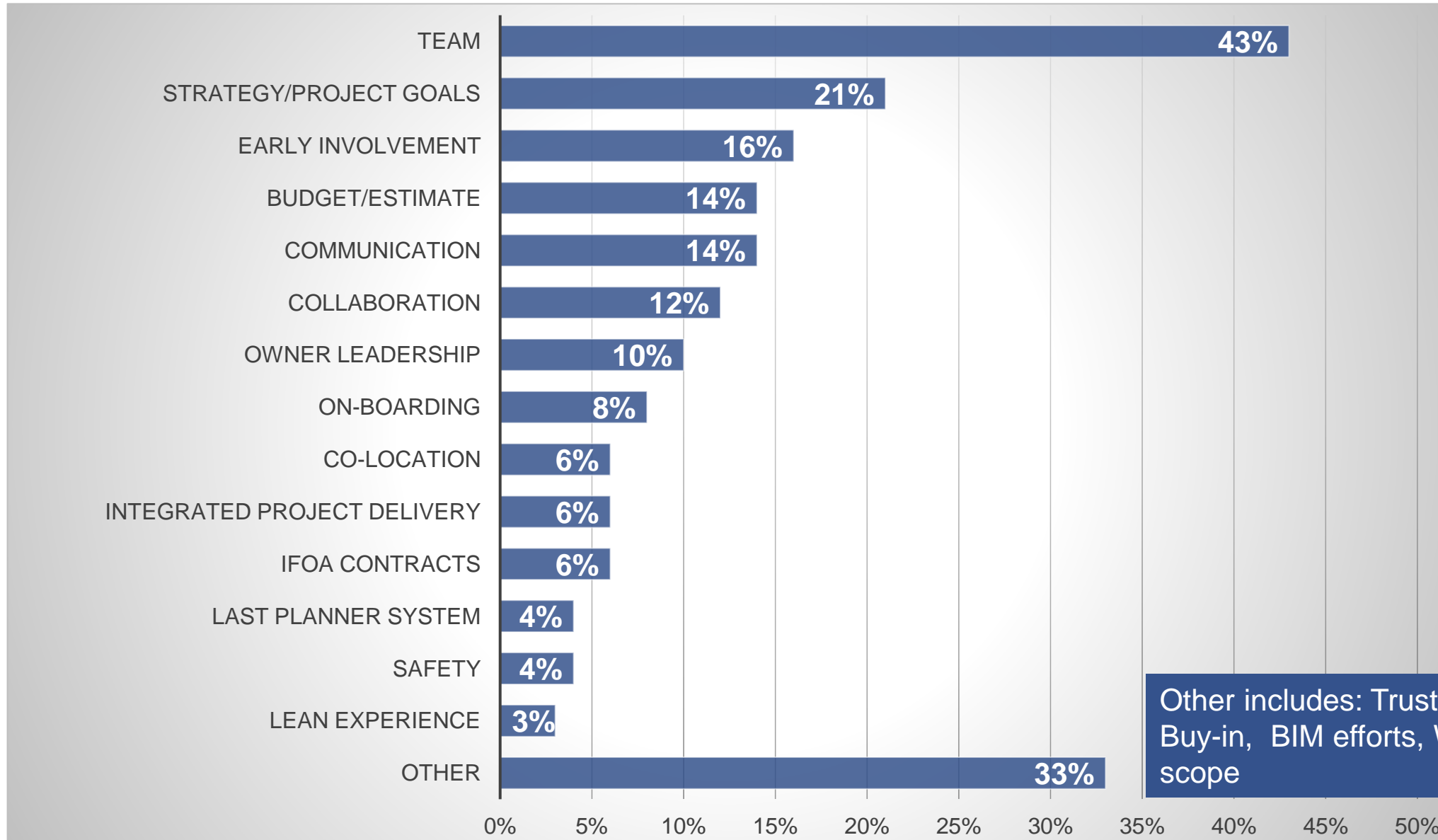
Methods with Most Degree of Difference Between Usage



- Last Planner System® more common in construction than in design.
- Part-time co-location more common than full time.

Single Factor

Single Factor That Most Contributes to a “Best Performing” Project

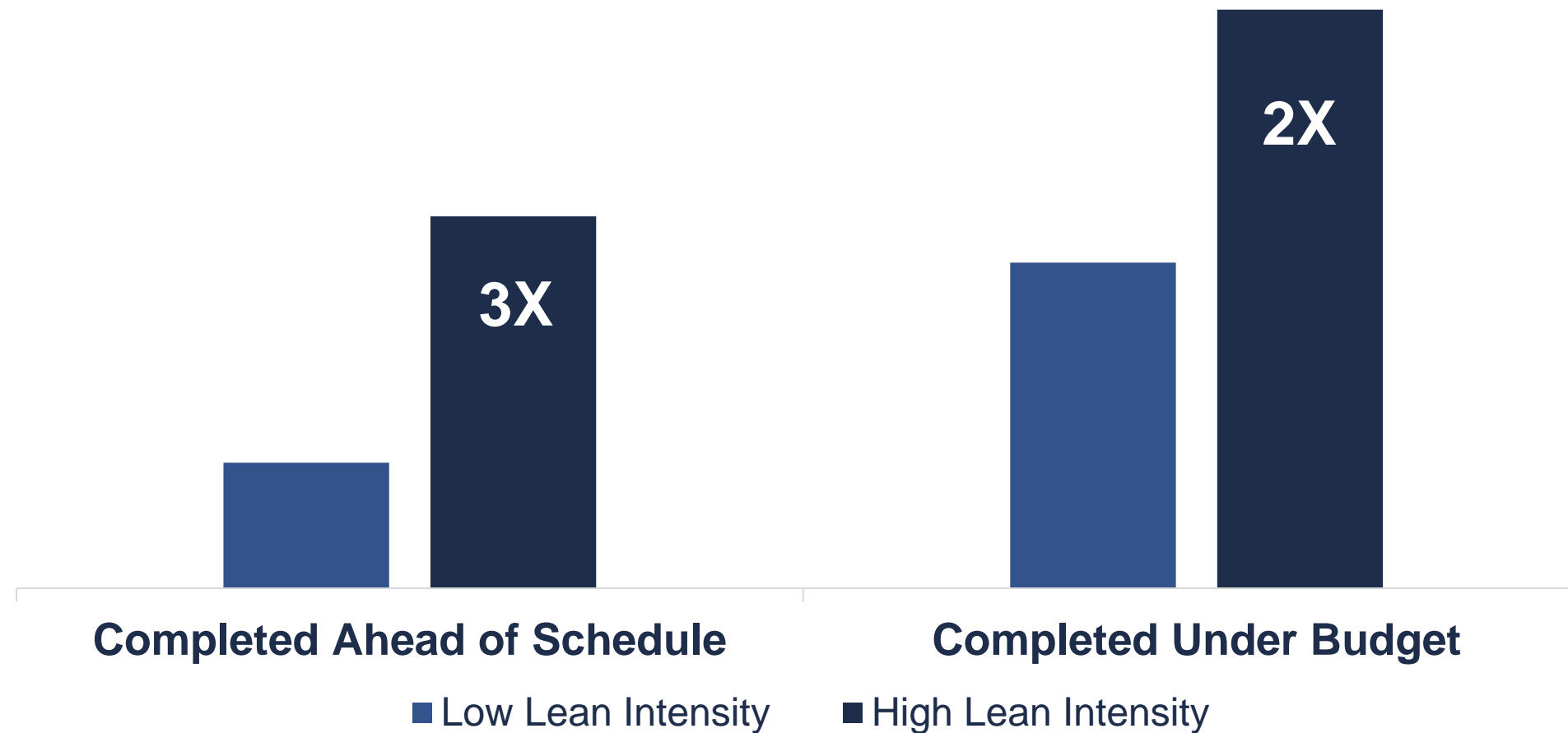


Other includes: Trust, Skill set and Buy-in, BIM efforts, Well defined scope

- Half of the respondents consider Teamwork/ Project Team as a most important factor that made their Best Performing Project better. No other factor garnered more than 17% concurrence.

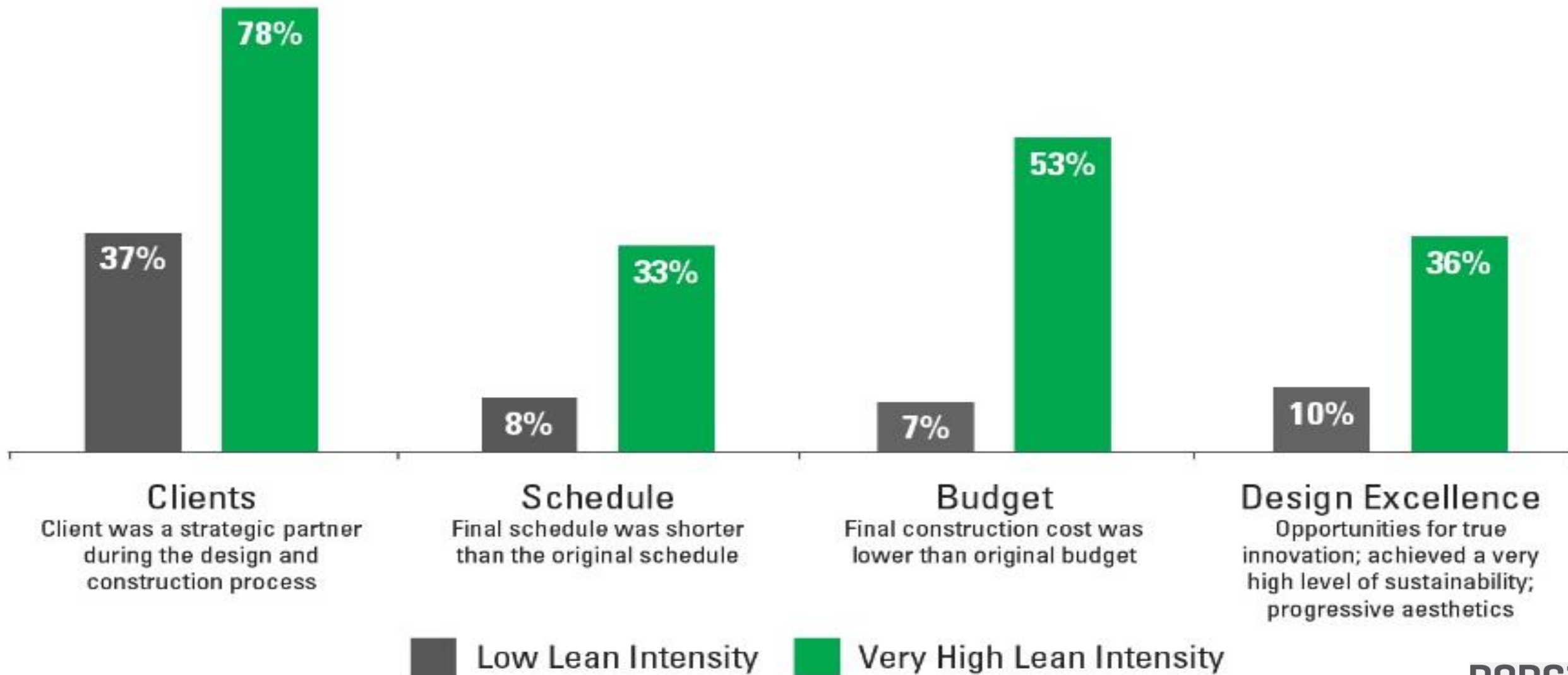
High Intensity Vs. Low Intensity

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



Correlation of Lean in Design

% of Best Projects Achieving Outcome



IPD & Lean Motivation & Means



- IPDA creates need to collaborate



- Lean provides the means

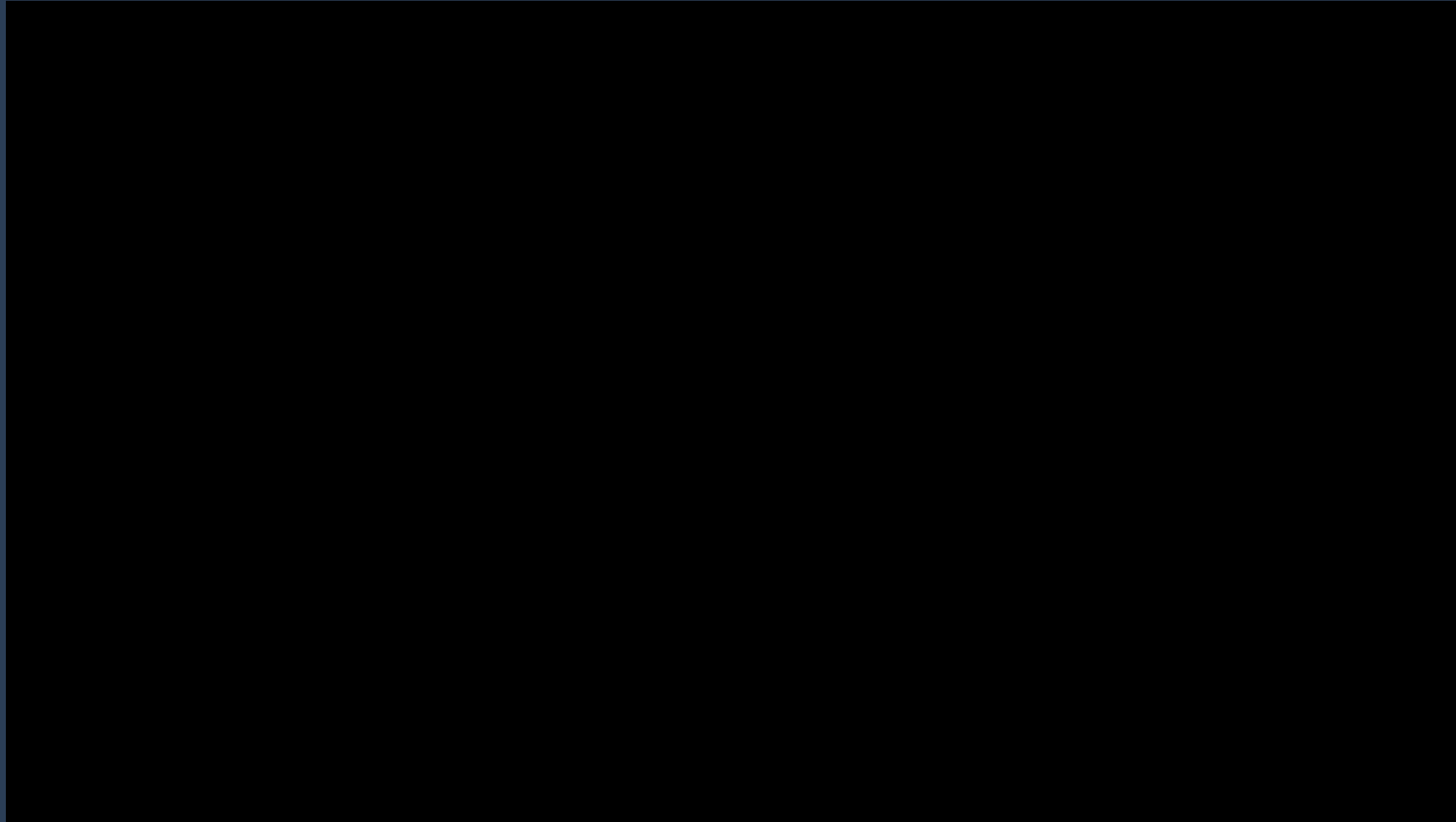


Common Project Myths

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

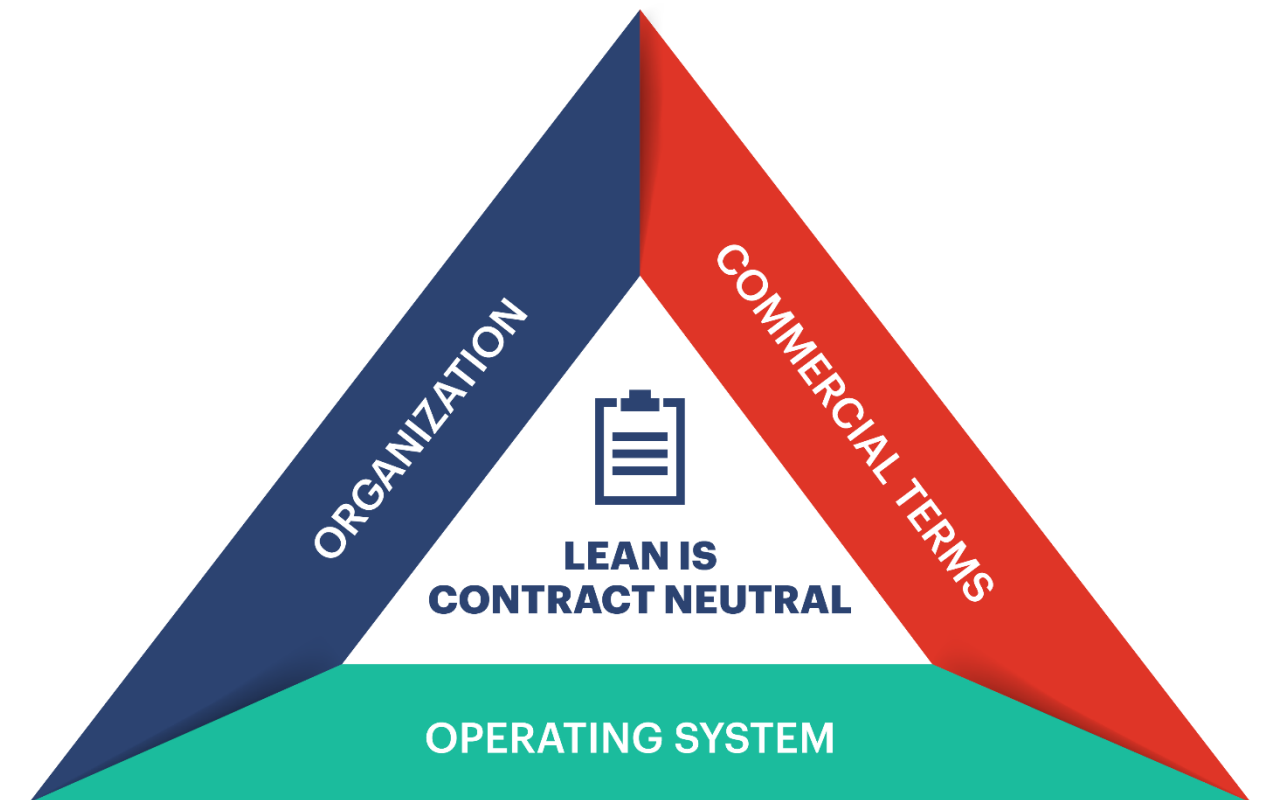
BUSTED

5 IPD & Lean Myths - Cheng



Tactical Takeaways for Projects

1. **SET TARGETS:** Define owner's business case & goals at the 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



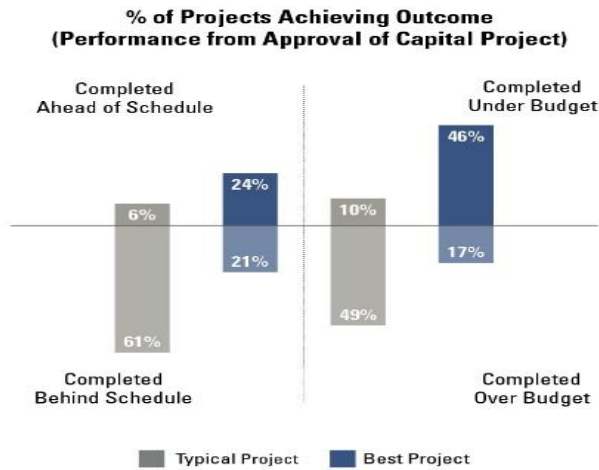
THE BUSINESS CASE FOR LEAN CONSTRUCTION...THERE IS A BETTER WAY!

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 more likely to complete ahead of schedule and under budget.**

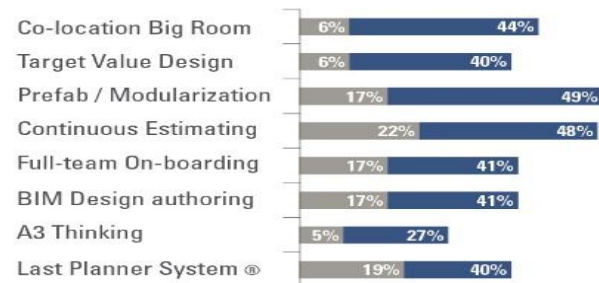


HOW DID PROJECTS PERFORM?

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.

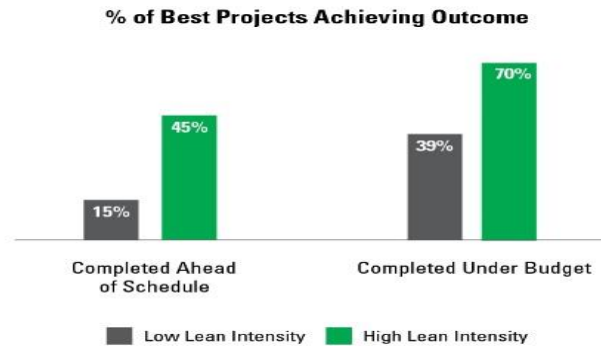


Dodge also inquired about the use of 27 project management methods on each project. The research found the following methods with the biggest gap between use on best and typical projects.



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:

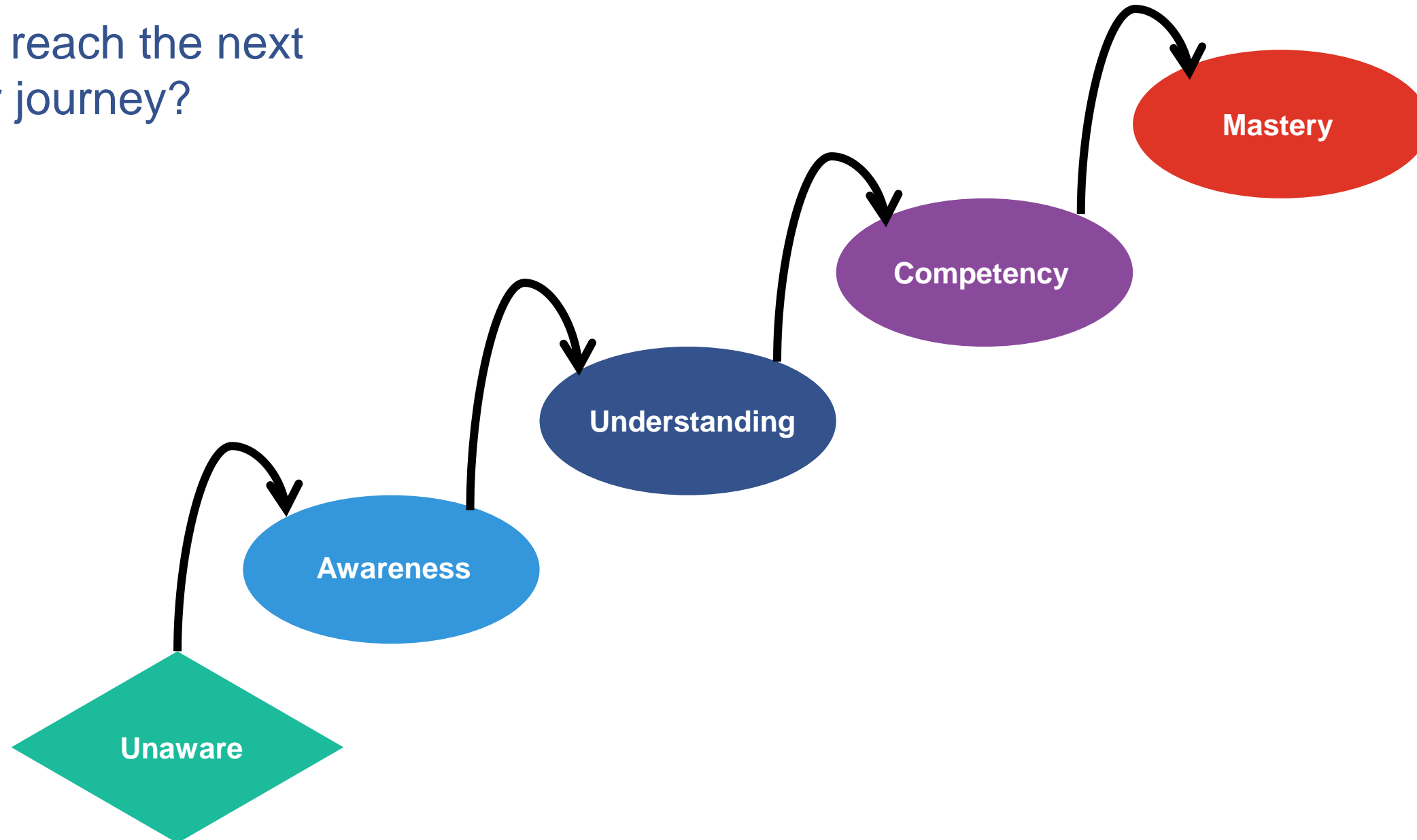
WWW.LEANCONSTRUCTION.ORG/LEARNING



June 18, 2018

Lean Journey to Mastery

How will you reach the next level on your journey?



More on Learning

Books:



Events:

- Local Community of Practice
- Congress (October)
- Design Forum (May)

eLearning:

Learn on your own time without taking time off project work.

Start learning now:

www.LeanConstruction.org

eLearning Courses

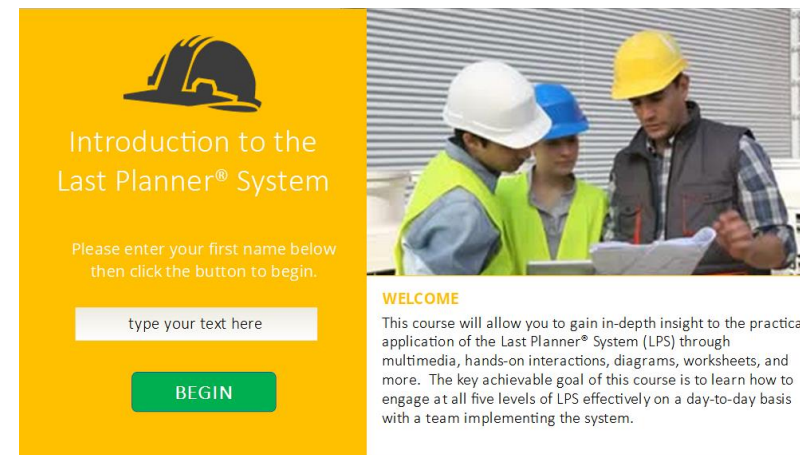
- Introduction to the Last Planner System®
- Introduction to Lean Project Delivery
- Lean in the Design Phase
- Effective Big Room
- Target Value Delivery
- Last Planner System® in Design



INTRODUCTION TO LEAN PROJECT DELIVERY

The key achievable goal of this course is to prepare and enable team members with a foundational understanding of Lean approaches for daily use within a project environment.

1 LPD OVERVIEW	2 CONNECTING PEOPLE	3 CONNECTING PRINCIPLES	4 CONNECTING PRACTICES
LESSON 1: Foundations of LPD LESSON 2: Lean Project Delivery System LESSON 3: Eight Wastes	LESSON 1: High Performing Team Behavior LESSON 2: Project Promise LESSON 3: Conditions of Satisfaction (CoS)	LESSON 1: Big Room LESSON 2: Problem Solving LESSON 3: Last Planner® System	LESSON 1: Integrated Project Delivery LESSON 2: LPD in Action LESSON 3: Target Value Delivery



Introduction to the Last Planner® System

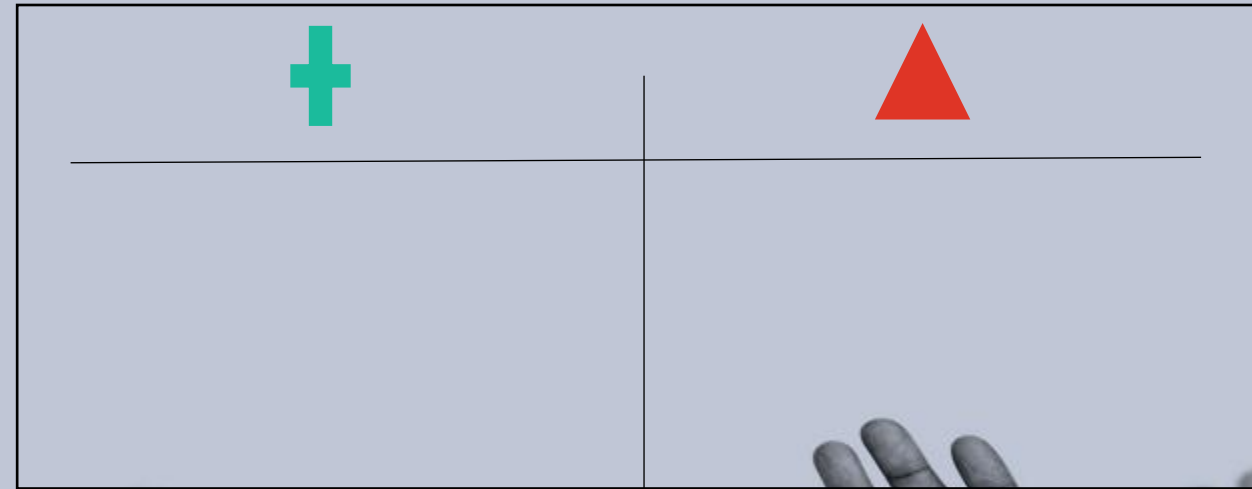
Please enter your first name below then click the button to begin.

BEGIN

WELCOME

This course will allow you to gain in-depth insight to the practical application of the Last Planner® System (LPS) through multimedia, hands-on interactions, diagrams, worksheets, and more. The key achievable goal of this course is to learn how to engage at all five levels of LPS effectively on a day-to-day basis with a team implementing the system.

Questions & Plus/Delta



LCI Contact Information

Membership: Ilene Goldberg

iGoldberg@leanconstruction.org

eLearning:

eLearningdiscounts@leanconstruction.org

LCI Website:

www.leanconstruction.org