

# Integrated Project Delivery

*THE NORTH AMERICAN EXPERIENCE*



*Howard Ashcraft  
Partner – Hanson Bridgett LLP  
Adjunct Professor – Stanford University  
Module Leader – SBS Oxford University*

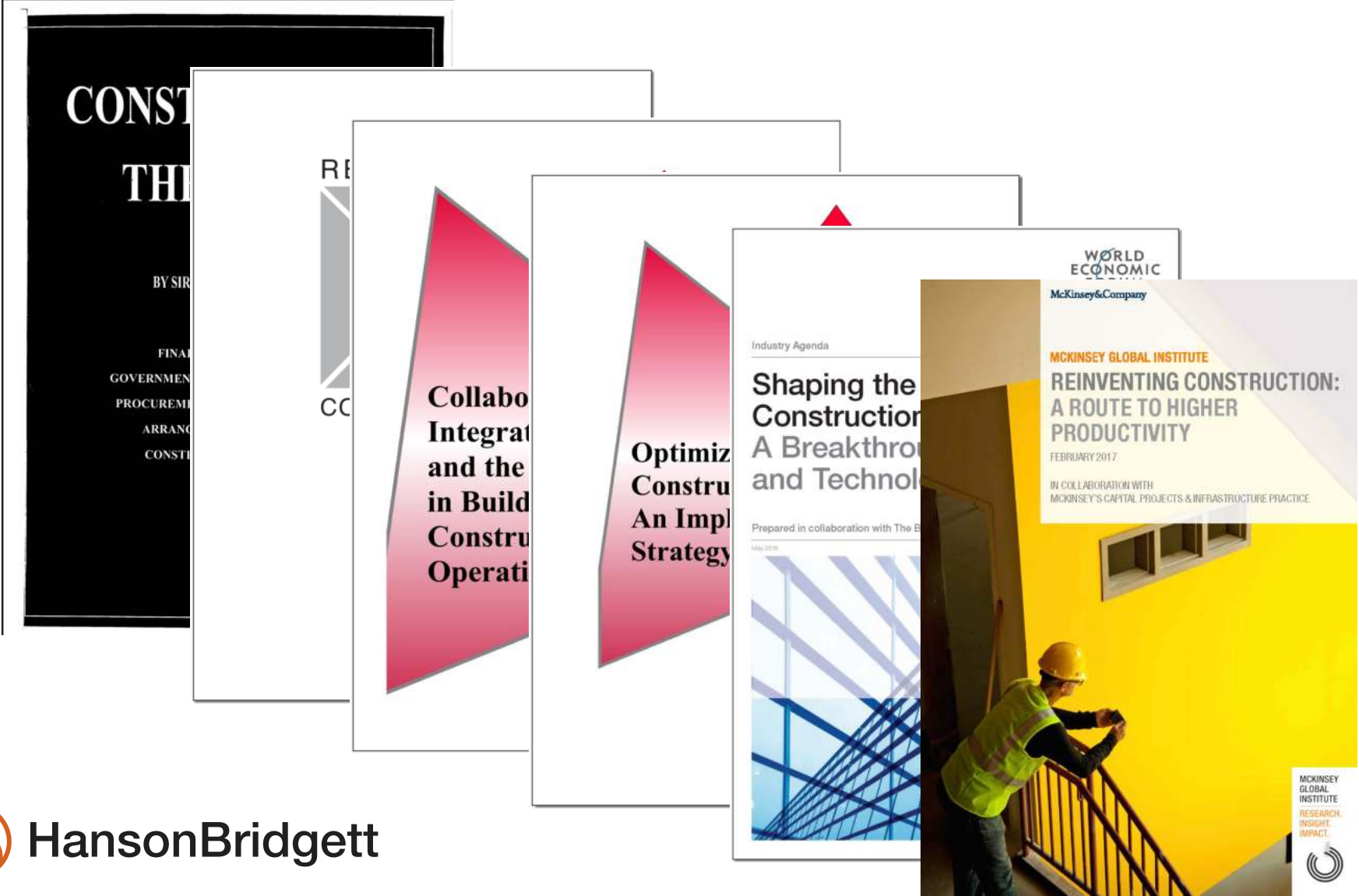
# How We Got Here

- Phase 1: Recognition (Something is Wrong)
- Phase 2: Parallel Approaches (Become Intertwined)
- Phase 3: Projects (Proof of Concept)
- Phase 4: Rethinking (Creating a Theoretical Structure)
- Phase 5: Current State (PDCA)
- Resources

# Something is Wrong

- Personal Experience
  - We weren't learning
  - "Ground Hog Day"
  - The promise of BIM
    - Deep early collaboration
    - Immersive digital interaction
    - Common data stores
    - Interoperability
- Failure was Rampant, Success was Random

# Research



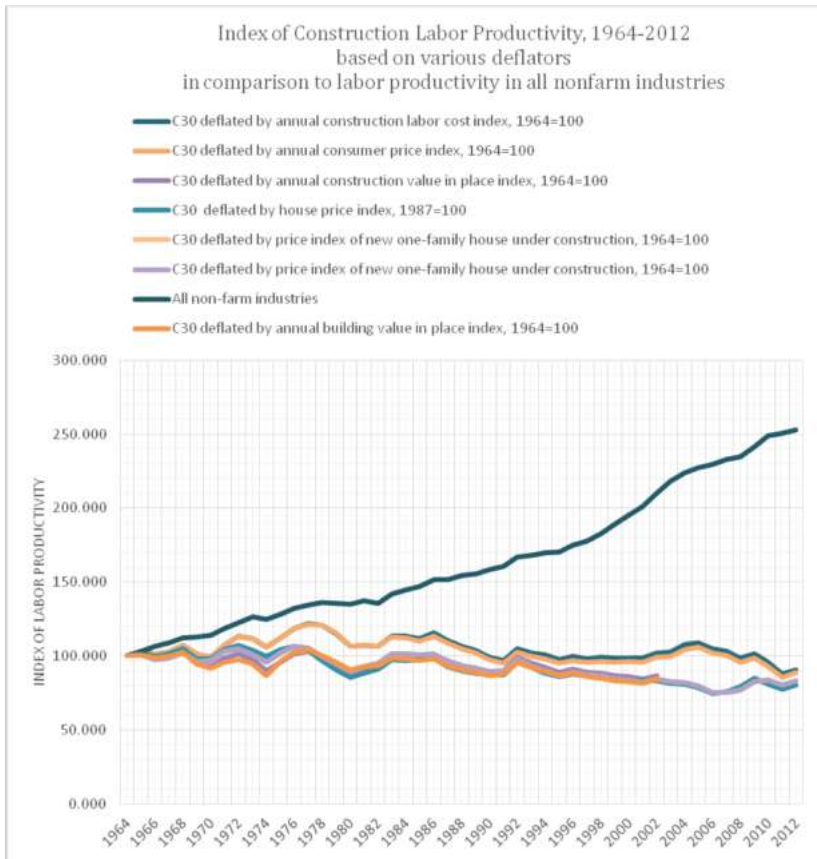
# Constructing the Team (Latham Report 1994)

The rationale behind the development of an integrated process is that the efficiency of project delivery is presently constrained by the largely separated processes through which they are generally planned, designed and constructed. **These processes reflect the fragmented structure of the industry and sustain a contractual and confrontational culture.**

# CURT WP 1003 (2006)

...[W]hat “optimized projects” using “optimized processes” should look like. At their core, such projects are implemented by **fully collaborative, fully integrated**, and thus highly productive project teams guided by principles of true collaboration, **open information sharing, owner leadership, team success tied to project success, shared risk and reward, value based decision making**, and use of **full technological capabilities and support**.

# Labor Productivity



8/19/2017

The Economist

Efficiency eludes the construction industry

Least-improved

## Efficiency eludes the construction industry

American builders' productivity has plunged by half since the late 1960s



Print edition | Business

Aug 17th 2017 | BERLIN, LONDON AND MALMO

<https://www.economist.com/news/business/21726714-american-builders-productivity-has-plunged-half-late-1960s-efficiency-eludes>

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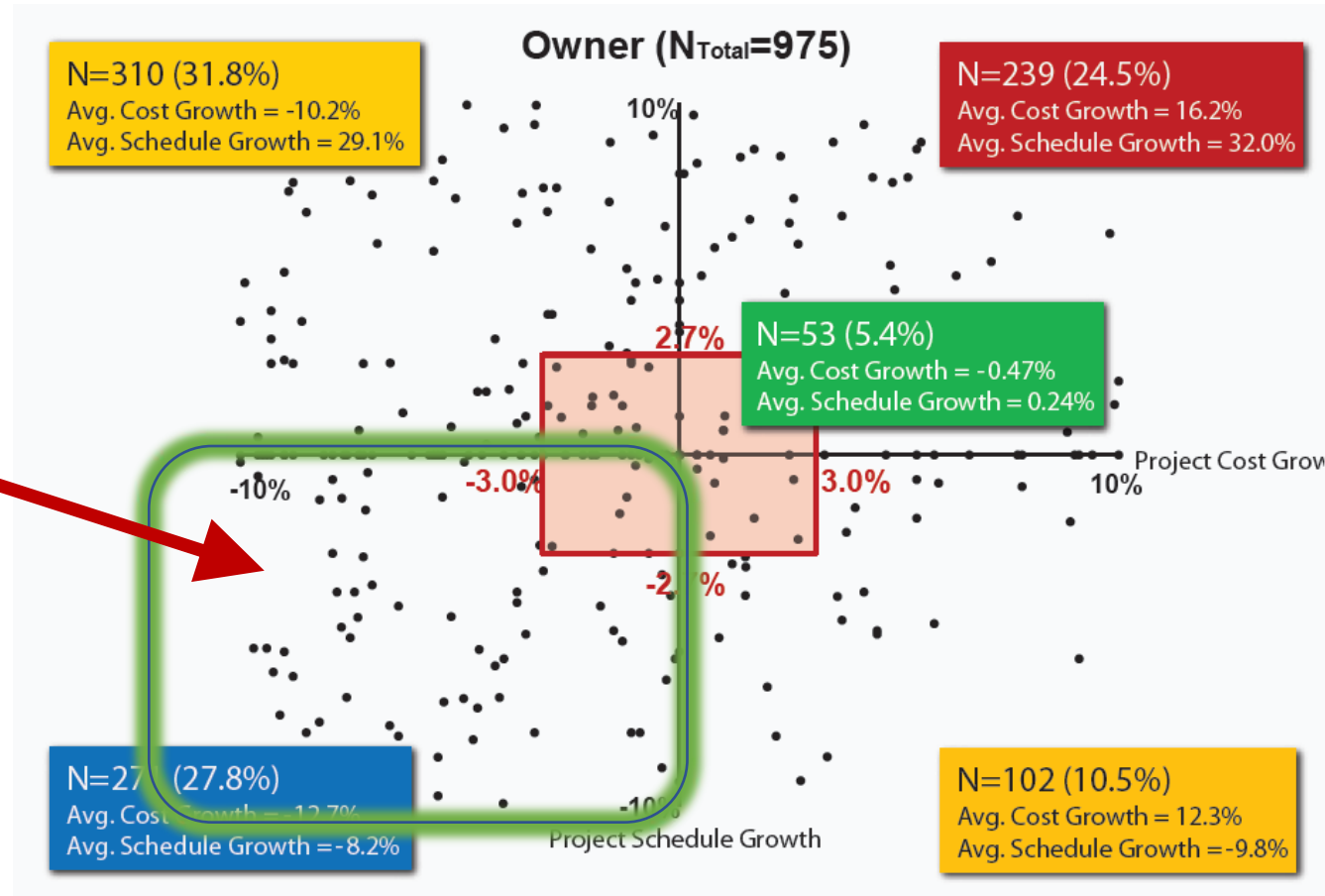
PHASE 1: RECOGNITION

# Performance Assessment Study CII 2012

975 Projects

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

Average project size \$65M





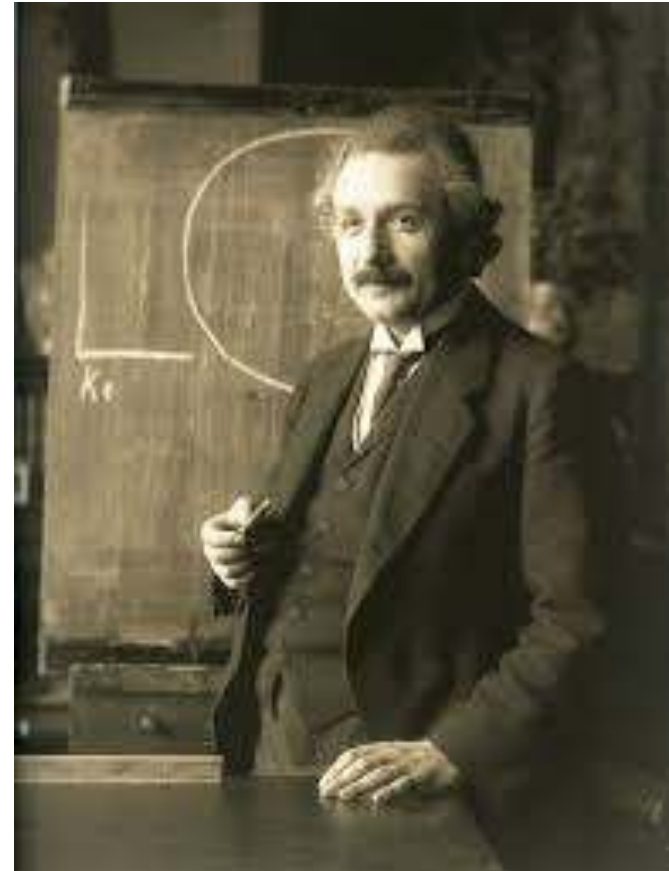
Water?



What  
Water?

We can't solve our problems with the same thinking we used when we created them.

A. Einstein



PHASE 1: RECOGNITION

# Two Branches

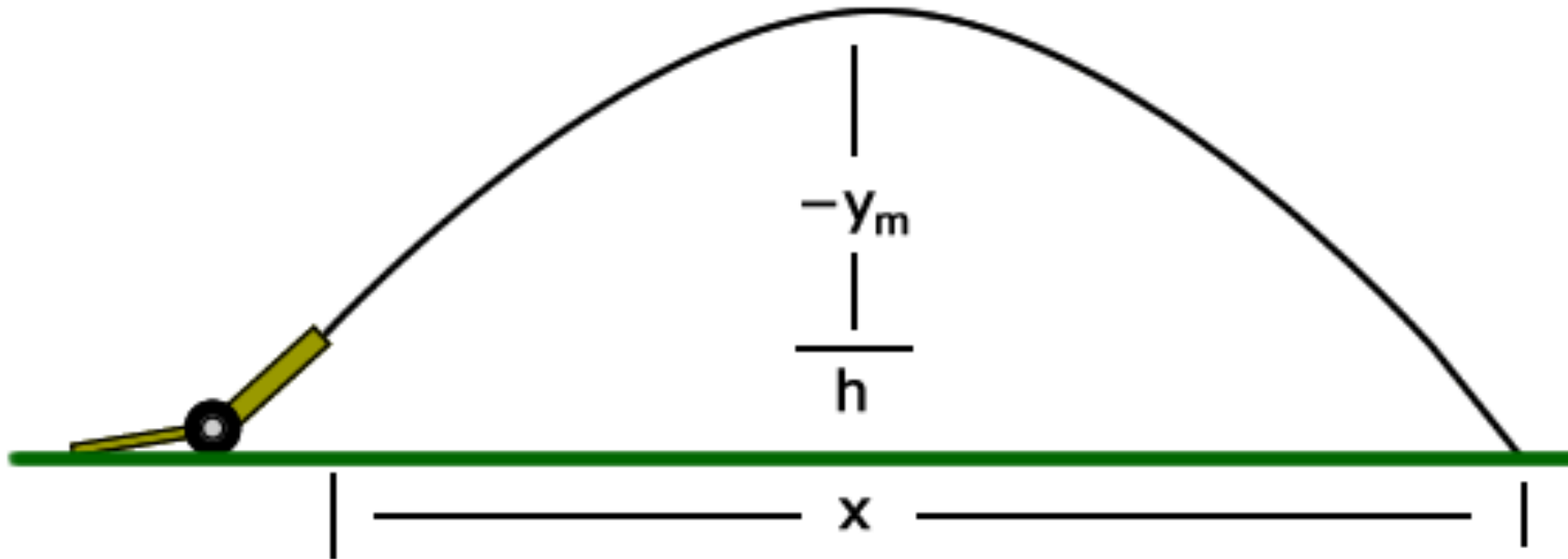
## **Lean/Sutter**

- Production Process
  - Toyota Production Management
- Language Action
- Target Value Design

## **AIA California Council**

- Project Structure
- Business Model
- Governance Model

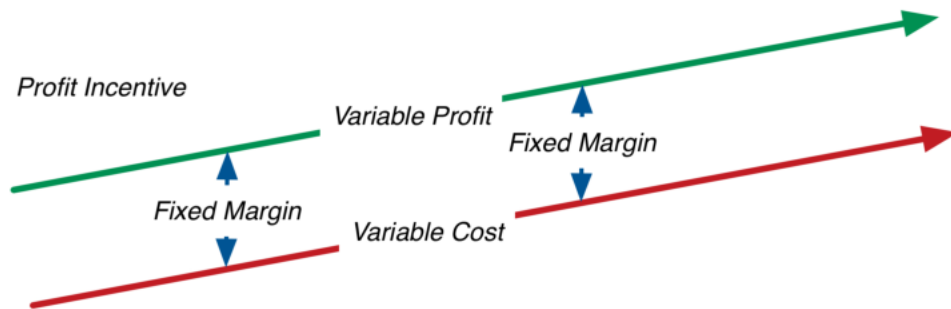
# Structure is like Gravity



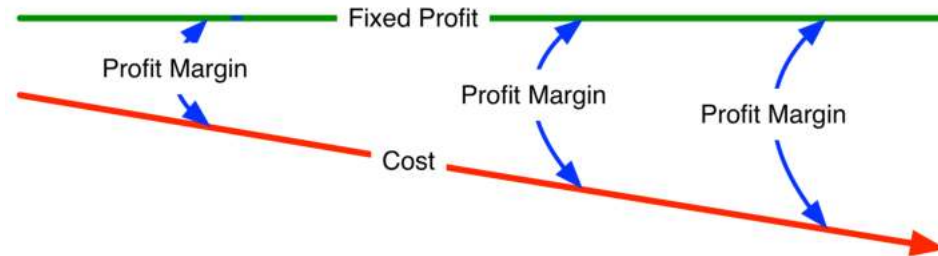
PHASE 2: PARALLEL PATHS

# Financial Structure

## Volume Incentive (Traditional)



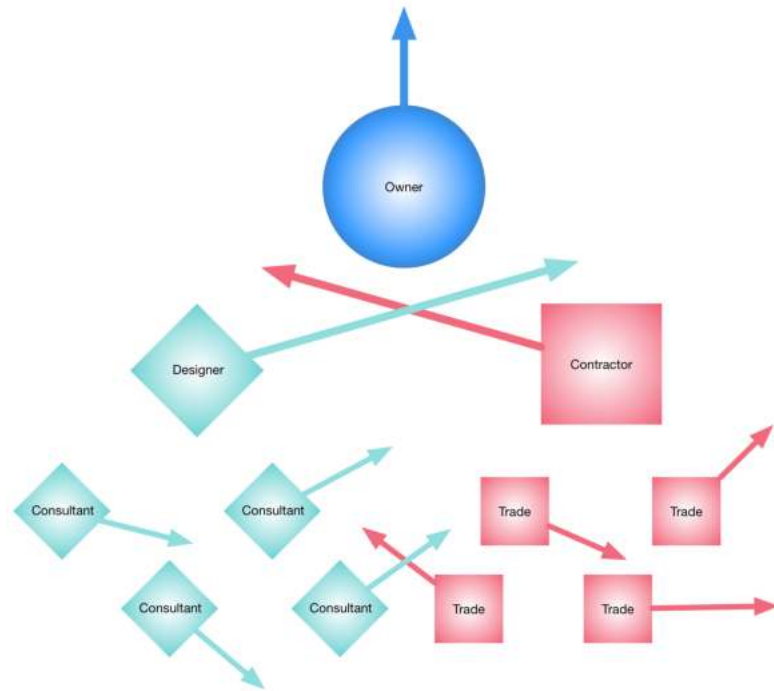
## Margin Incentive (Integrated)



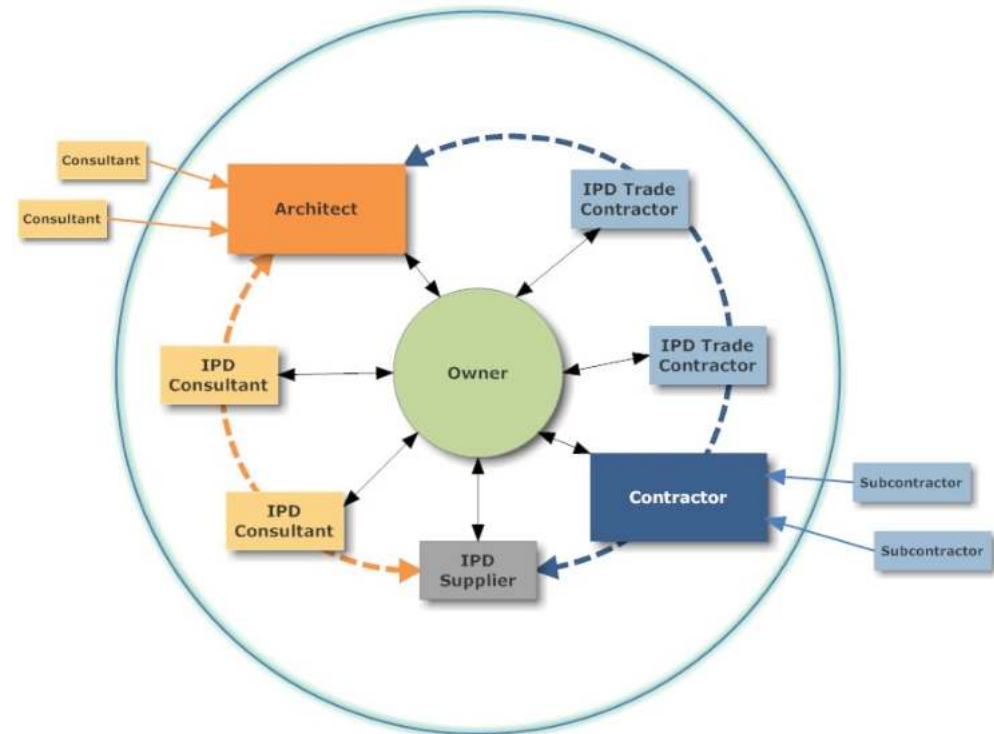
PHASE 2: PARALLEL PATHS

# Alignment

## Individual Optimization



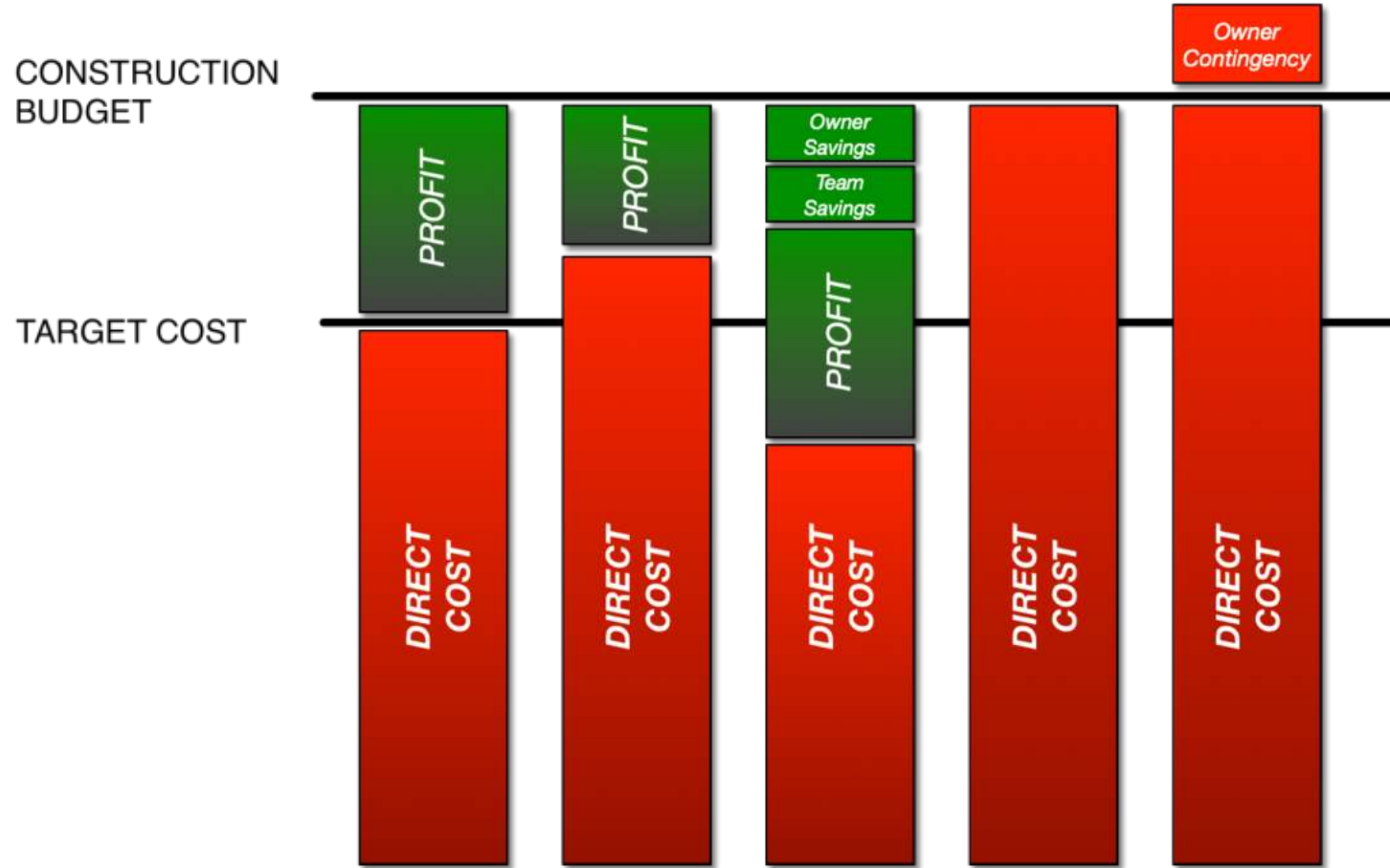
## Project Optimization



Risk Reward Group

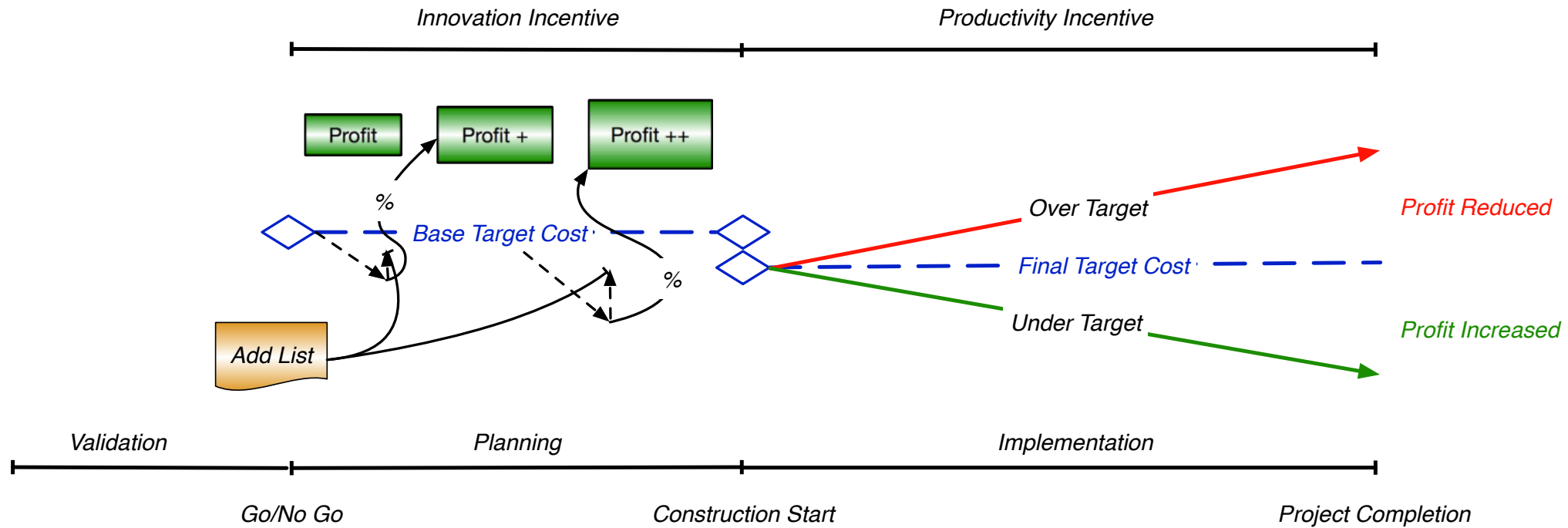
PHASE 2: PARALLEL PATHS

# Business Model – Simple Form



PHASE 2: PARALLEL PATHS

# Value/Cost Risk Reward Model

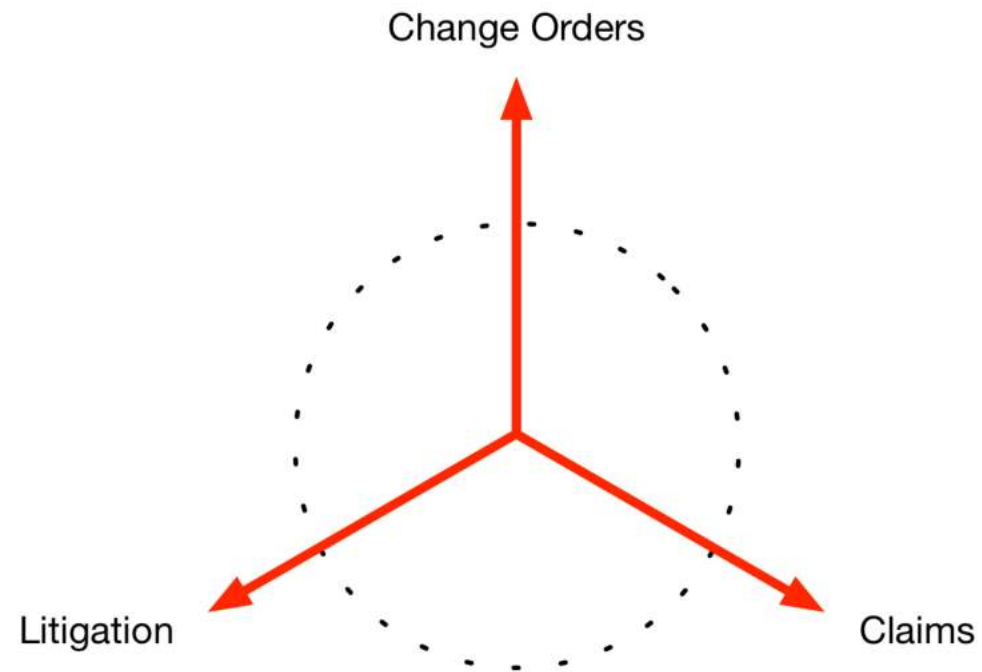


PHASE 2: PARALLEL PATHS

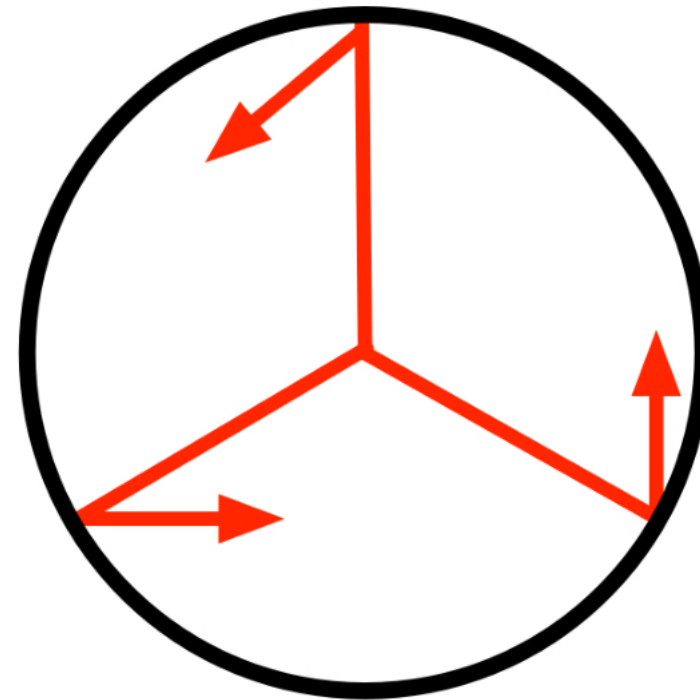


# Problem Resolution

## Avoid and Transfer



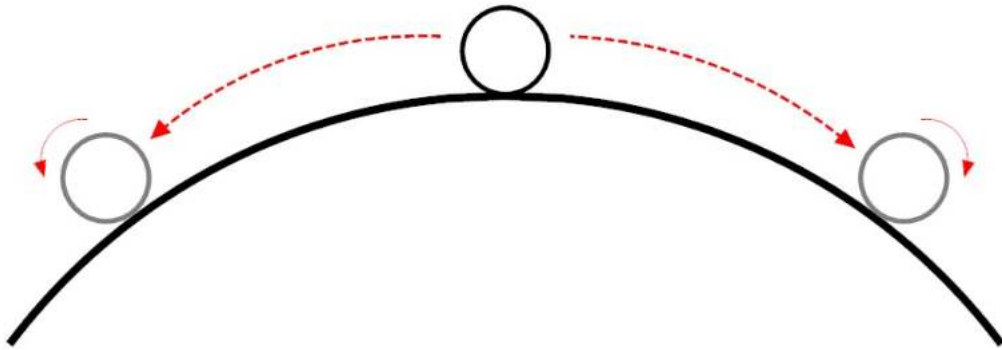
## Solve



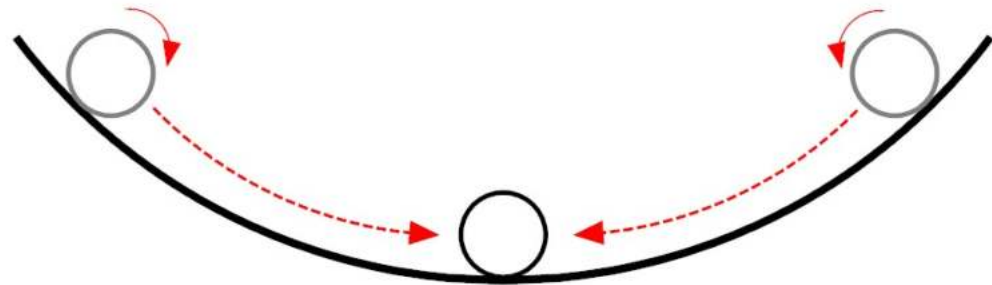
PHASE 2: PARALLEL PATHS

# Self-Adjusting

**Traditional Project Delivery**

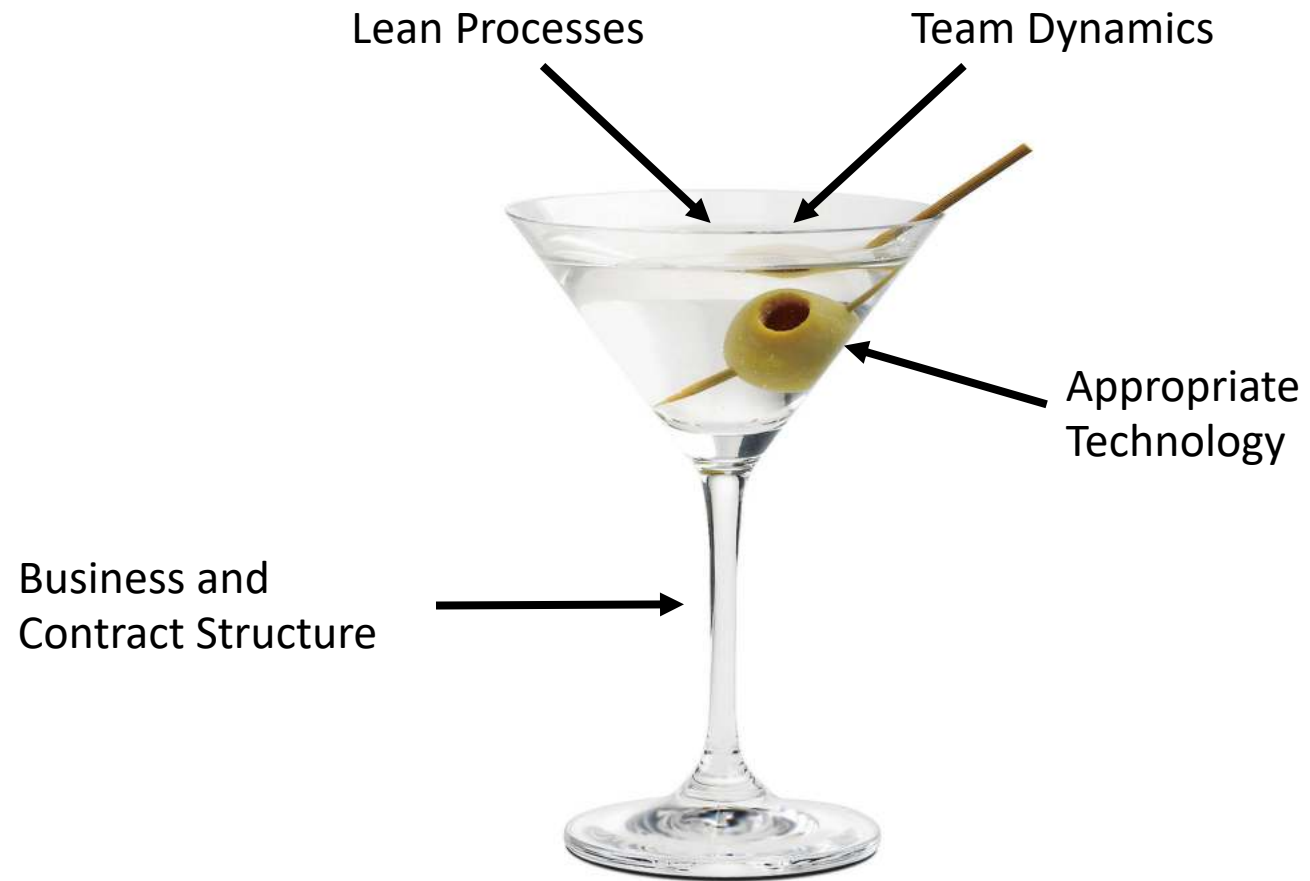


**Integrated Project Delivery**



PHASE 2: PARALLEL PATHS

# IPD is a Cocktail...



PHASE 2: PARALLEL PATHHS

# Case Example - Sutter Health Program

- 20 IFOA projects completed
  - Funded at \$1.49 billion USD
  - Delivered at \$1.45 billion USD
  - On or under schedule
- Recent Major Projects
  - CPMC Van Ness
  - \$1.49 Billion USD
  - \$195 Under Budget
  - On Schedule
- CPMC Mission Bernal
  - Early
  - On budget



**Alta Bates Summit Medical Center**  
Oakland, CA



**Eden Medical Center**  
Castro Valley, CA



**CPMC Van Ness Campus**  
San Francisco, CA



**CPMC Mission Bernal Campus**  
San Francisco, CA

# Theory from Experience

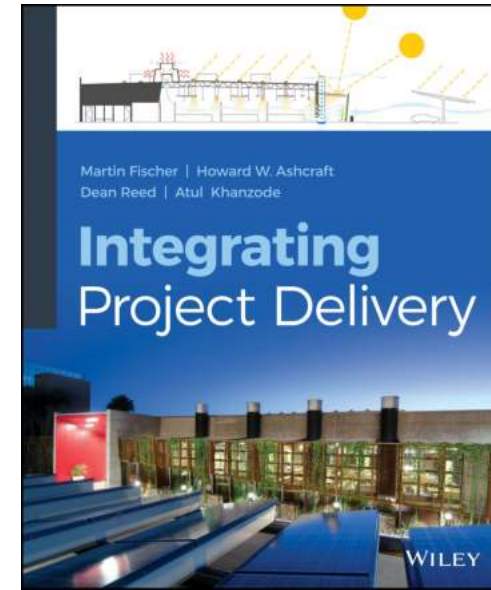
- Simple Framework
- Team Dynamics
- Relational Contract Theory

# Team Dynamics

- Psychological Safety
- Team Decision Making
  - Biases
  - Dysfunctions
  - Processes
- Communication
  - Language Action
  - Clarity
  - Reliability

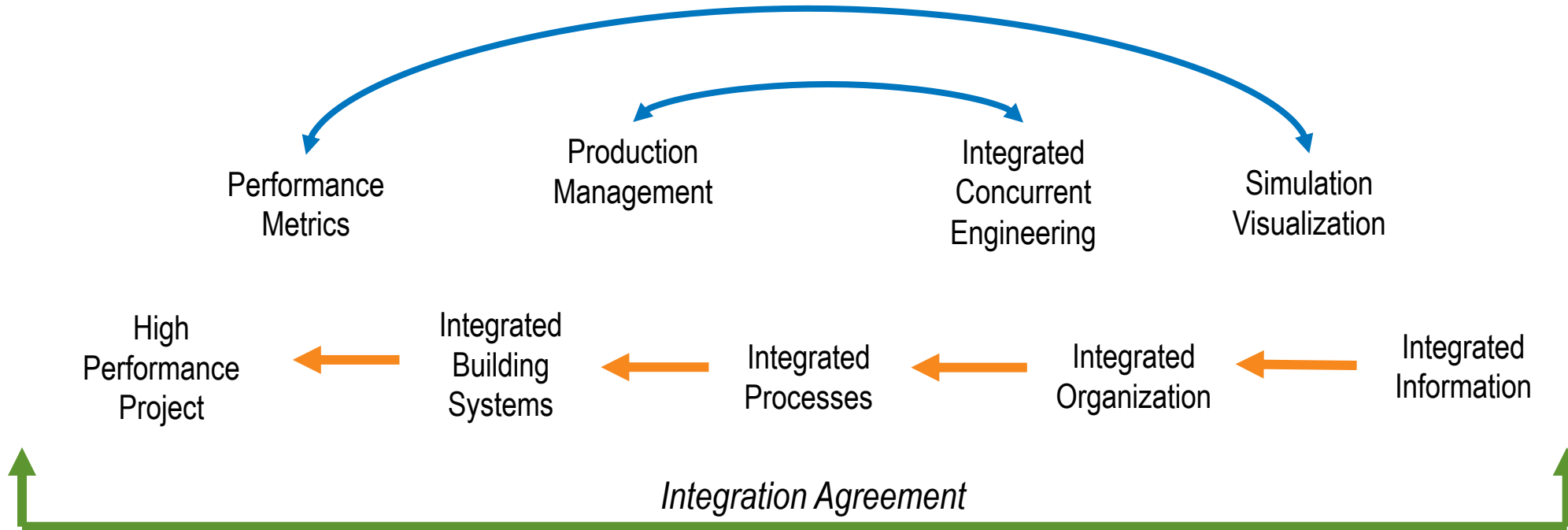
# High Performance Project

- Buildable
  - Can be efficiently constructed within budget
- Usable
  - Meets the needs of sponsors and stakeholders
- Operable
  - Can be easily maintained and operated
- Sustainable
  - Spares Resources, Preserves Environment



PHASE 4: RETHINKING

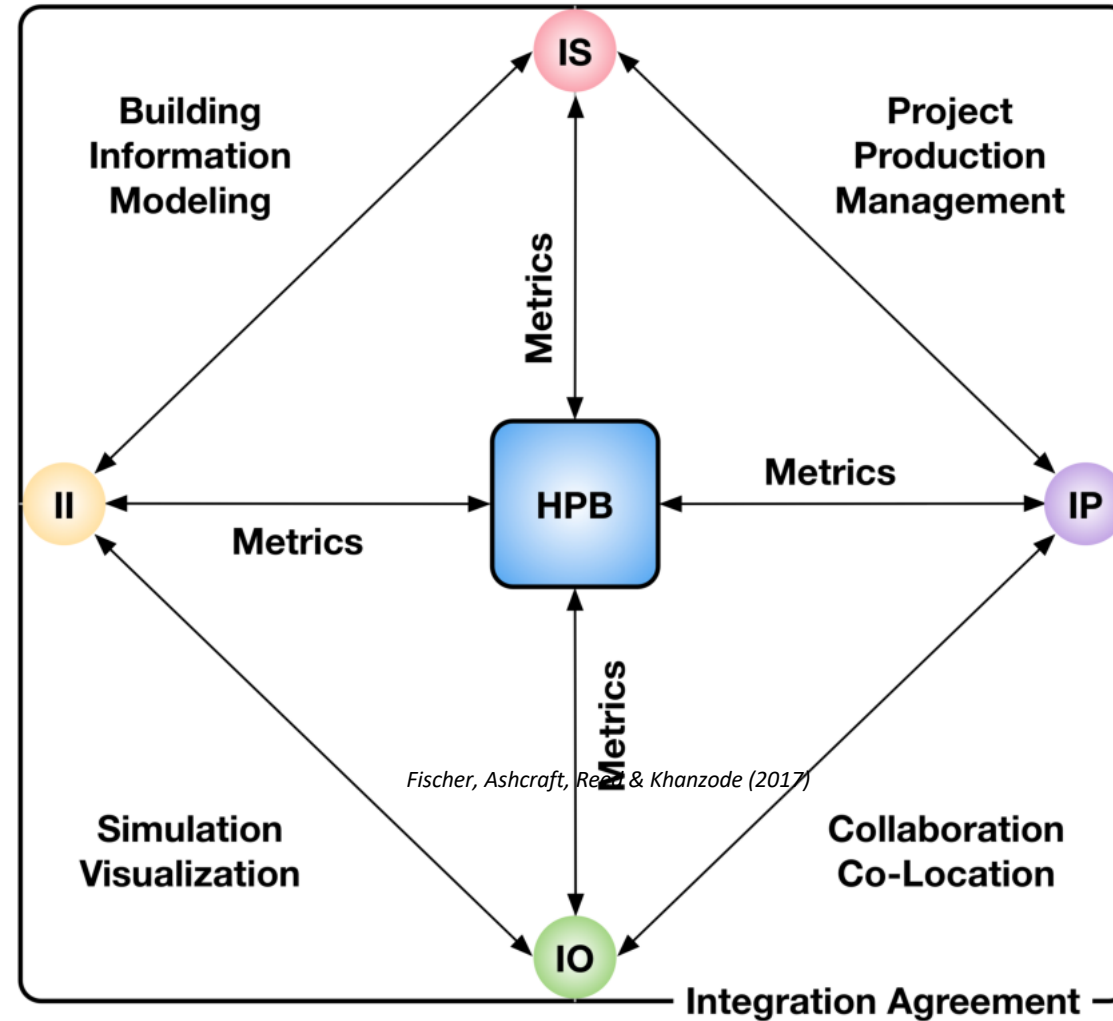
# A Simple Framework



Fischer, Ashcraft, Reed & Khanzode 2017

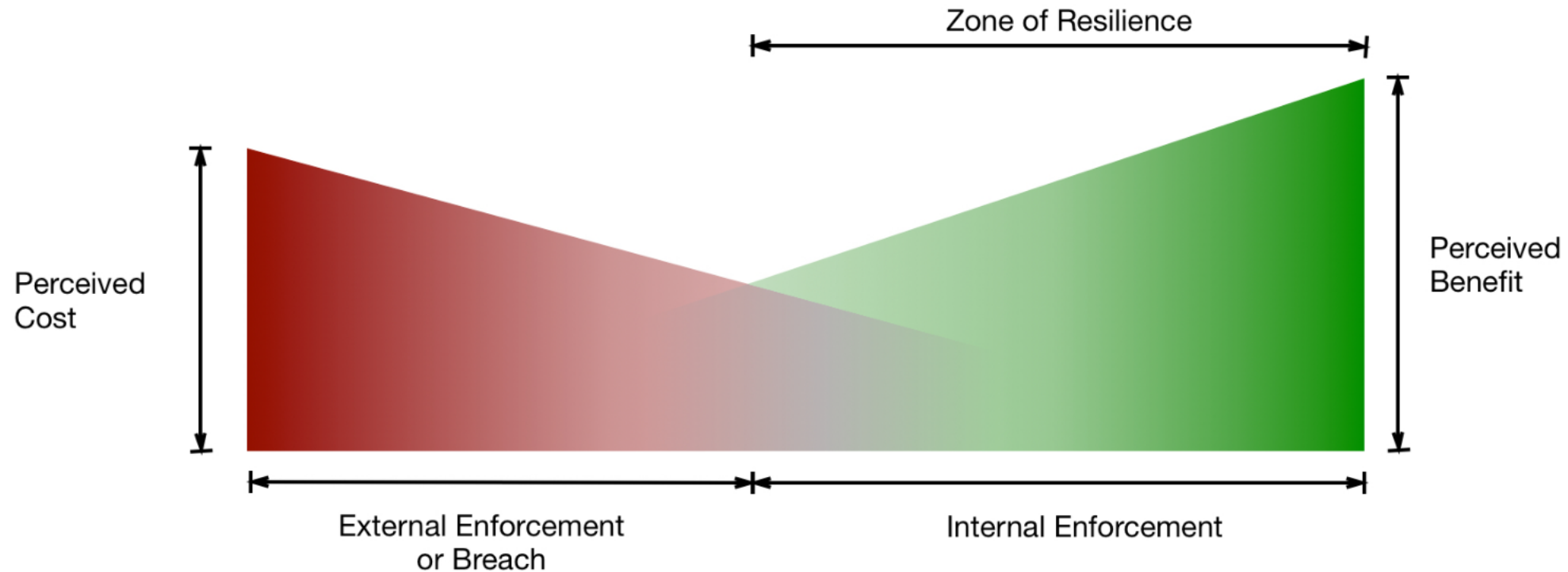


# Simple Framework in Practice



PHASE 4: RETHINKING

# Relational Forces in Agreements



PHASE 4: RETHINKING

# Traditional and Relational...and some implications.

Attribute	Traditional	Relational
Enforcement of Promises	External Adjudication	Internal Adjustment
Definition of Success	Compliance	Satisfaction
Project Organization	Segregated/Sequential	Integrated/Concurrent
Decision Authority	Hierarchical	Distributed
Contract Provisions	Prescriptive	Enabling
Communication System	Channeled	Networked
Risk Allocation	Assigned	Shared
Accountability	Audit	Transparency

# Total Number of Projects?

- Recent Estimate – 500
- Personal Experience -160
- Litigation
  - None Known
- Failures?
  - Some, but unusual.

# Public/Private

- USA
  - Mostly Private
  - Upcoming Public
- Canada
  - Public
  - Hybrid
  - Private

# Project Types

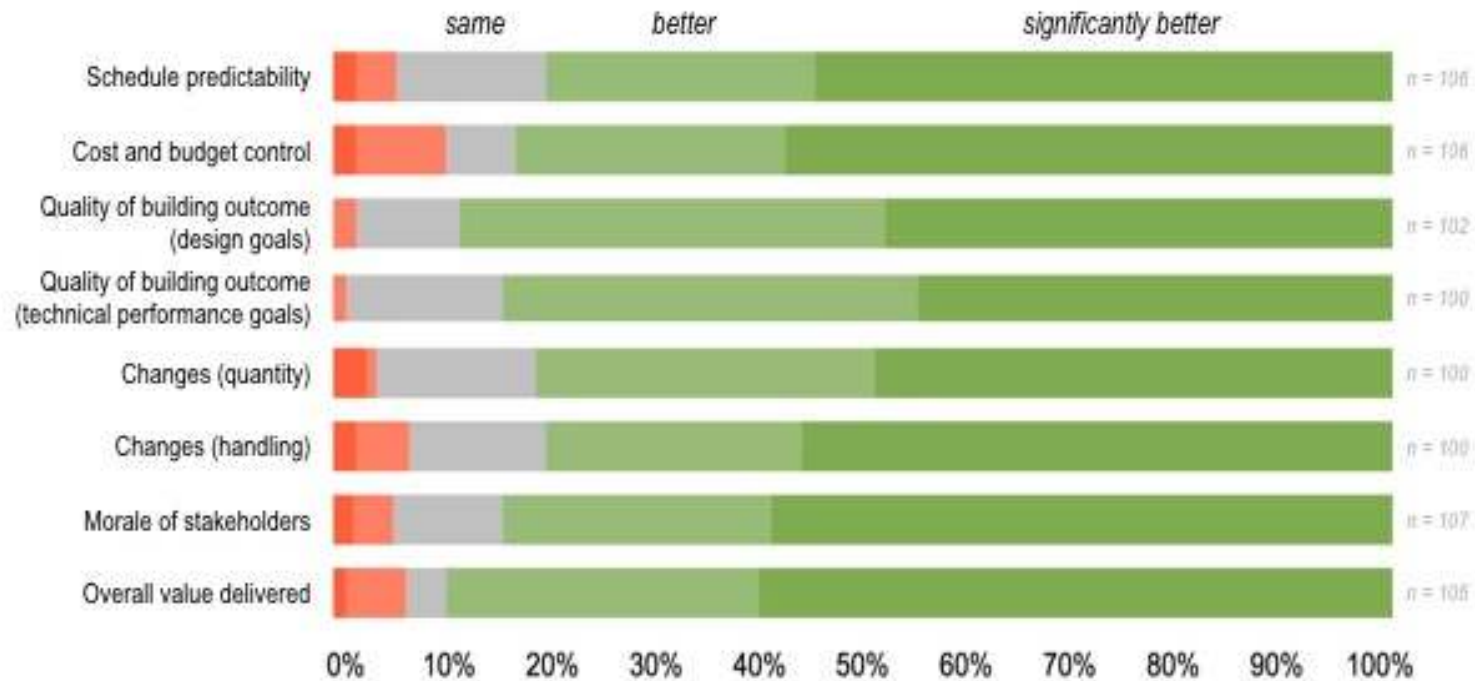
- Healthcare
- Universities
- Laboratories
- Manufacturing
- Commercial
- Non-critical Nuclear
- Biopharmaceutical
- Software
- K-12 Educational
- Net Zero Energy
- Mixed Use
- Hospitality
- Amusement Parks
- Semiconductor Mfg.
- First Responder
- Financial Services

Integrated teams involved all tiers of the project organization, from designers to specialty contractor trades, in high-quality interactions. These interactions were collaborative in nature and included design charrettes, goal setting and multidisciplinary BIM uses. **The owner's project delivery strategy had a significant impact on team integration.** Strategies that involved construction managers and specialty contractor trades before schematic design achieved higher levels of integration and were more equipped to control project schedule growth. Cohesive teams reported higher chemistry, goal commitment and timeliness of communication. **Project delivery strategies that required cost transparency with open book contracts generally resulted in a more cohesive teams and a lower average project cost growth. Additionally, the owner's perception of turnover experience and building system quality was consistently rated higher for cohesive teams.**

*Examining the Role of Integration in Building Construction Projects  
Molenaar, Messner, et al., CII, Pankow Foundation, Penn State (2014)*

# Performance | All Responses

Compared to your experience on non-IPD projects, rate your impression of the performance of this project in each of the categories below.

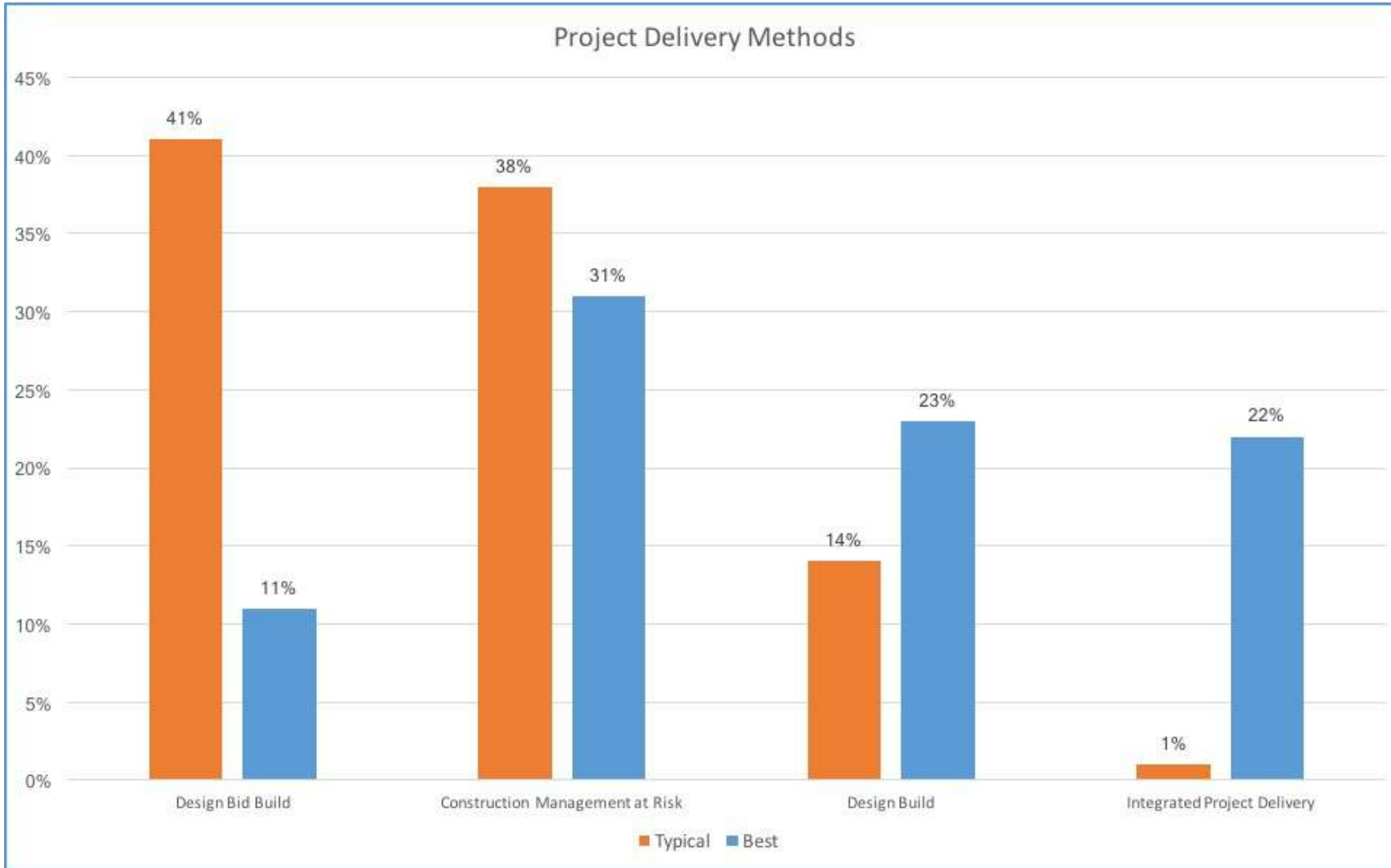


IPD: Performance, Expectations and Future Use  
Cheng, et al., IPDA/U. Minn. (2015)





# PHASE 5: CURRENT STATE



Owner Satisfaction Survey  
LCI/Dodge Data & Analytics (2016)

# Selected Resources

- *Integrated Project Delivery: An Updated Working Definition* (AIACC 2014)
- *Integrating Project Delivery*, Fischer, et al., (Wiley 2017)
- *Integrated Project Delivery: An Action Guide for Leaders* (Pankow, CIDCI, IPDA 2018)
- *Construction Law Handbook*, 3<sup>rd</sup> Ed., Chapter 11, *Ashcraft Integrated Project Delivery*, (Wolters Kluwer 2018)
- *Collaborative Construction Procurement and Improved Value*, Mosey, et al., (Wiley-Blackwell 2019)
- *Lean Construction Institute* ([www.leanconstruction.org](http://www.leanconstruction.org))