

Why?

- Wasteful
- Inefficient
- Ineffective

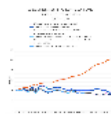
If a project had more people than our threshold on any one of these three dimensions, we classified the project as a failure. However, very few projects failed on only one dimension. — E. Mennen

50% to 78%

Industrial Mega-Projects are **Failure Prone**:

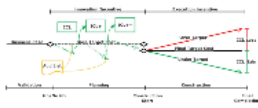
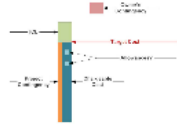
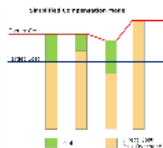
- Cost Overrun > 25%
- Cost Containment > 25%
- Schedule Slip > 25%
- Schedule Containment < 25%
- Significantly Reduced Production Year 2 and Beyond

E. Mennen: Industrial Mega-projects



Egan Report

- 30% of Construction is Rework
- 40-60% of Labor is Inefficient
- 3-6% of Costs are Absorbed By Accidents
- 10% of Material is Wasted



Key Participants

Category	Indicator	Target	Actual	Comments
Baseline	Baseline Target Value	Baseline Target Value	Baseline Target Value	Baseline Target Value
Cost	Cost Target Value	Cost Target Value	Cost Target Value	Cost Target Value
Quality	Quality Target Value	Quality Target Value	Quality Target Value	Quality Target Value
Time	Time Target Value	Time Target Value	Time Target Value	Time Target Value
Performance	Performance Target Value	Performance Target Value	Performance Target Value	Performance Target Value

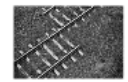
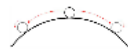
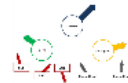
Target Cost = 25% of Projected 'Normal' Cost. Normal cost is based on historical data.

Normal Profit = 75% of Normal Profit.

Performance Index = Performance Index < 1 (Performance Index cannot exceed 1)

Target Profit = Normal Profit x (Normal Profit + Performance Index)

The existing industry is fragmented, adversarial and inefficient. Sir John Egan — Rethinking Construction



New Business Model
New Contract Model
Enabling Behaviors

Business Model

- Profit Separated from Costs
- Profit Dependent on Project Outcome
- Direct Costs without Cap
- Limited Change Orders

No Markups!



Contract Model

- Early Involvement of Key Participants
- Liability Limited Amongst R/R Participants
- Joint Project Management
- Joint Validation of Targets/Goals
- Balanced Risk/Reward

Governance



If...



Enabling Behavior

- Optimize the Whole
- Continuous Improvement
- Lean Principles
- Lean Tools
- Appropriate Technology
- Synchronization
- Communication
- Collaboration



HansonBridgett

Lean Integrated Project Delivery

Why?

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- Inefficient
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If a project lived more poorly than we threshold on any one of these five dimensions, we classified the project as a failure. However, very few projects failed on only one dimension. — Edward Mensor

50% to 78%

Industrial Mega Projects are **Failure II**

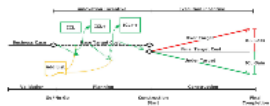
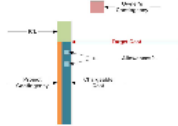
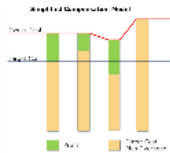
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E. Mensor Industrial Megaprojects



- 20% of Construction is Rework
- 40-60% of Labor is Inefficient
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Egan Report



Key Participants

Profit
Overhead
Variable Costs

No Markups!



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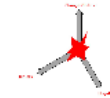
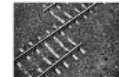
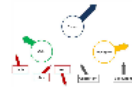
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New Business Model
New Contract Model
Enabling Behaviors



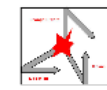
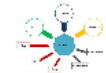
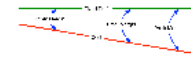
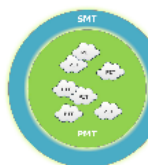
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- Direct Costs without Cap
- Limited Change Orders

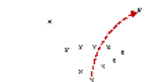


Governance

If...



Why
What
How



Integrated Project Delivery The Fundamental Framework



Enabling Behavior

- Optimize the Whole
- Continuous Improvement
- Lean Principles
- Lean Tools
- Appropriate Technology
- Synchronization
 - Communication
 - Collaboration



Performance | All Responses

Compare your experience on top 10 projects with your

experience on the performance of this project in each of the

categories below.

100% 90% 80% 70% 60% 50% 40% 30% 20% 10% 0%

100% 90% 80% 70% 60% 50% 40% 30% 20% 10% 0%

100% 90% 80% 70% 60% 50% 40% 30% 20% 10% 0%

100% 90% 80% 70% 60% 50% 40% 30% 20% 10% 0%

100% 90% 80% 70% 60% 50% 40% 30% 20% 10% 0%

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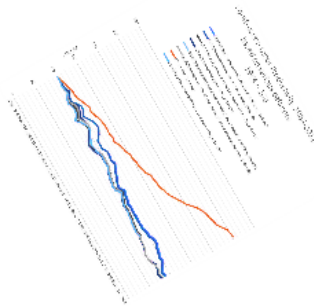


HansonBridgett

Lean Integrated Project Delivery

Egan Report

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Industrial Mega-Projects are **Failures** If:

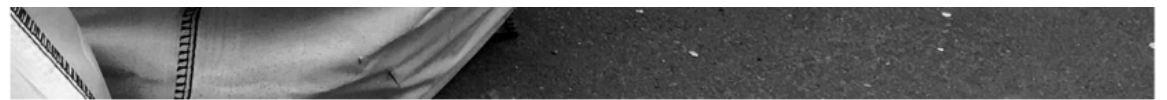
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E. Merrow Industrial Megaprojects

50% to 78%

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• Wasted
• Inefficient
• Ineffective



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- **40-60%** of Labor is Inefficient
- **3-6%** of Costs are Absorbed By Accidents
- **10%** of Material is Wasted

Egan Report

ed Compensation Model





& CO
AS

BRENDEN & CO
GJENVINNING AS

Tlf. 22 68 40 00
post@brenden.no
www.brenden.no

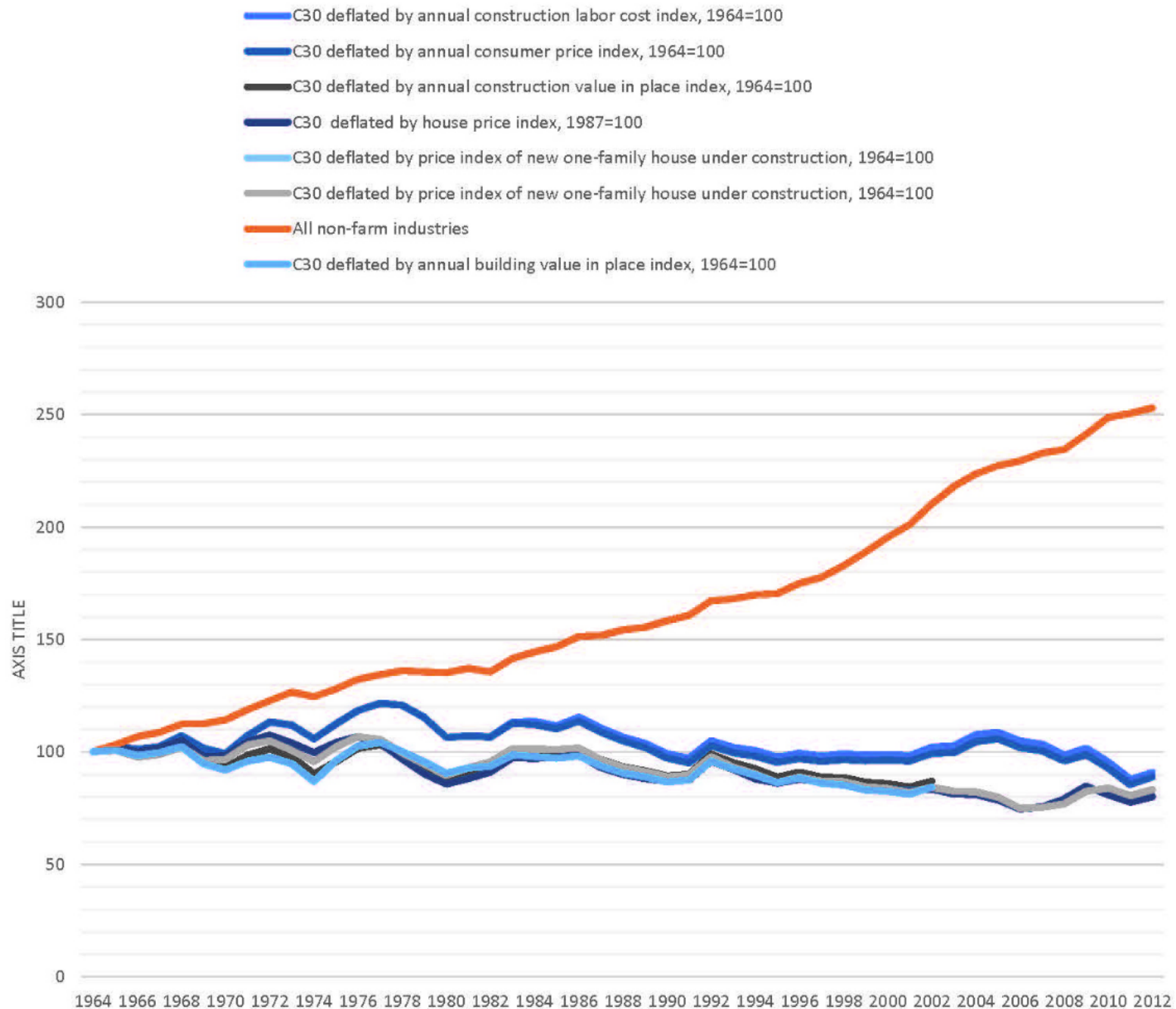
BREND
GJENVINNING

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Construction Labor Productivity, 1964-2012

based on various deflators

1964 = 100



Industrial Mega-Projects are **Failures** If:

- Cost Overruns > 25%
- Cost Competitiveness > 25%
- Schedule Slip > 25%
- Schedule Competitiveness >50%
- Significantly Reduced Production Year 2 and Beyond


E. Merrow Industrial Megaprojects

*project as a failure. However,
failed on only one dimension -*

50% to 78%

mega-Projects are **Failures** If:

erroneous > 250%



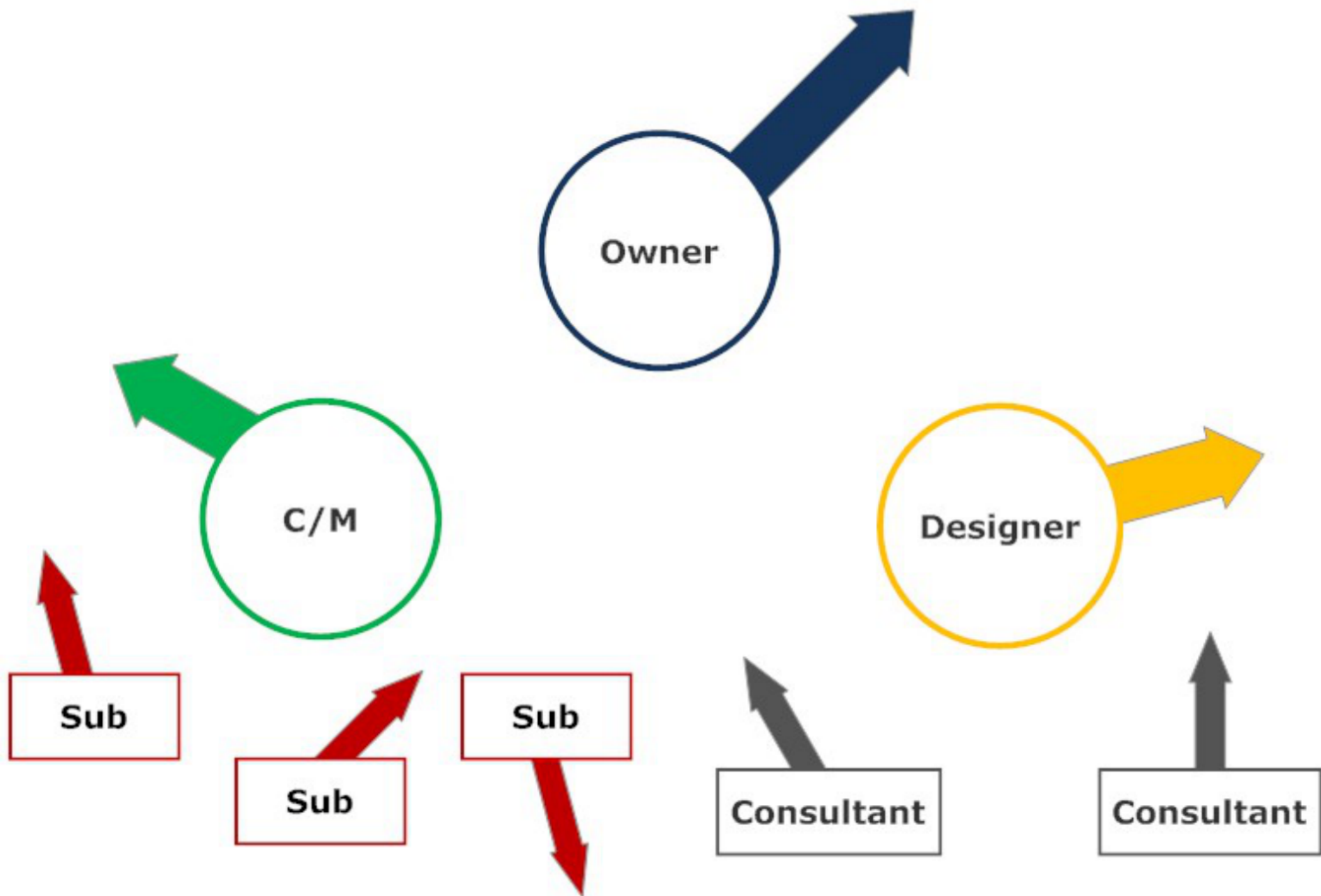
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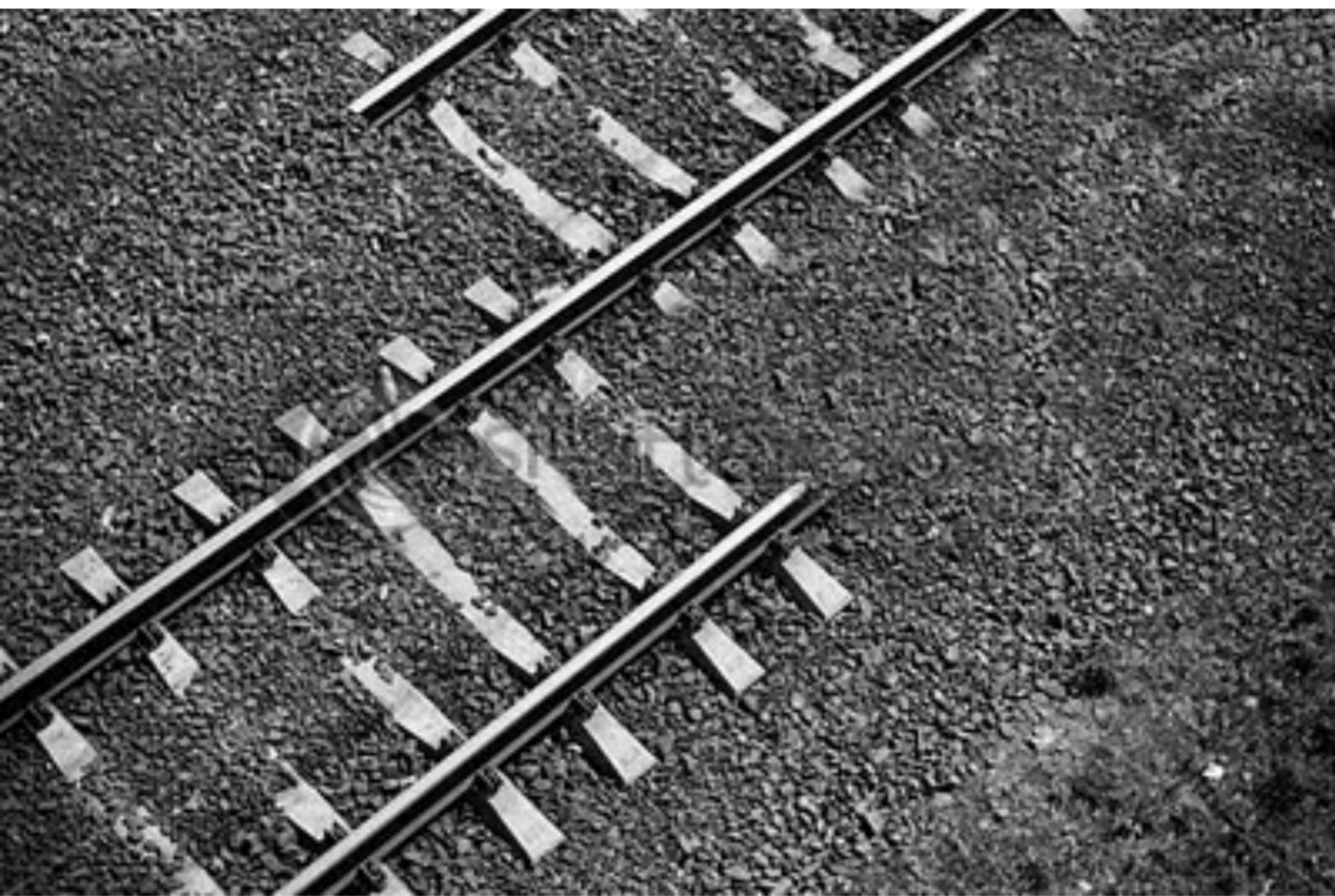
% to 78%

- **Wasteful**
- **Inefficient**
- **Ineffective**

why?



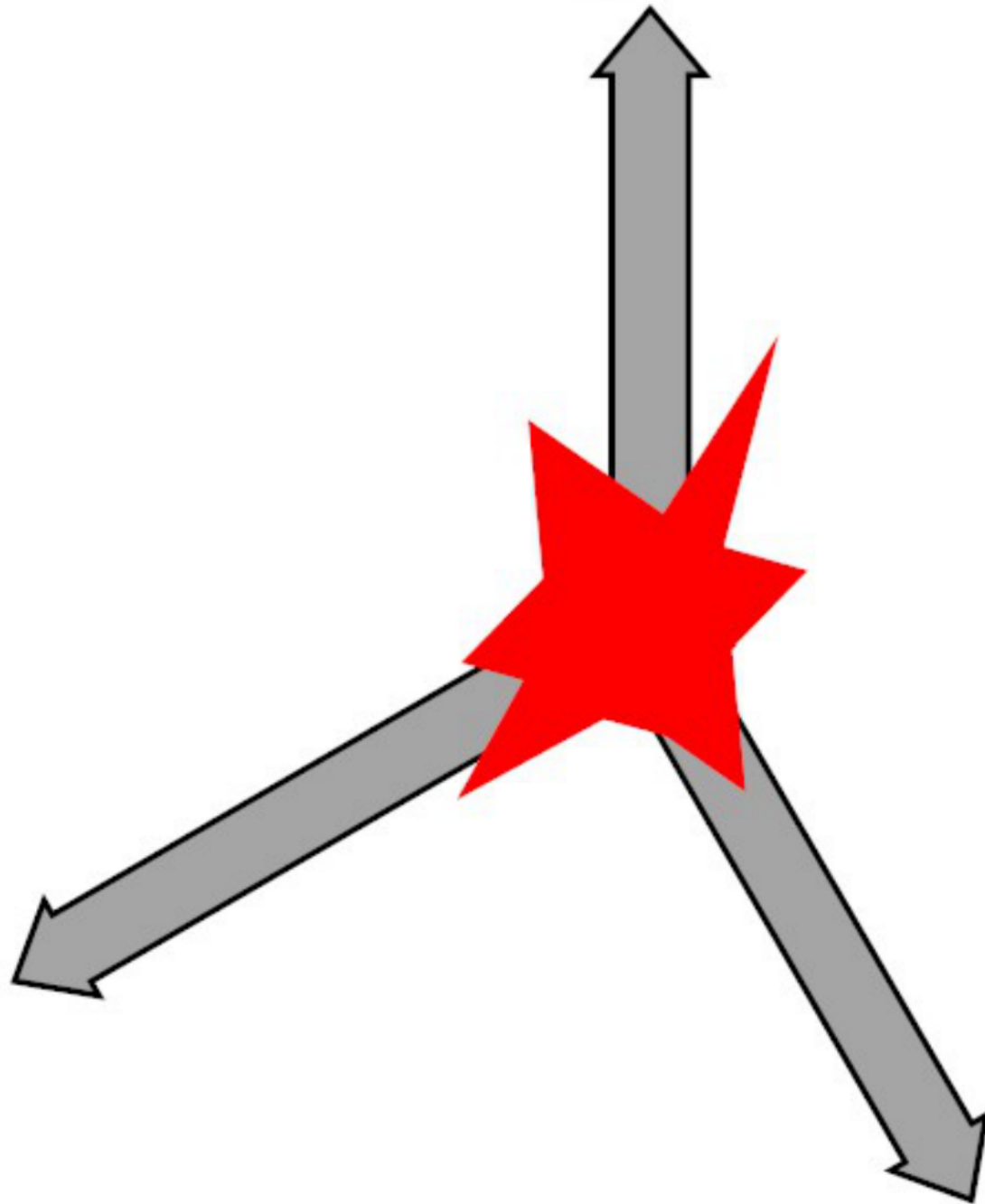




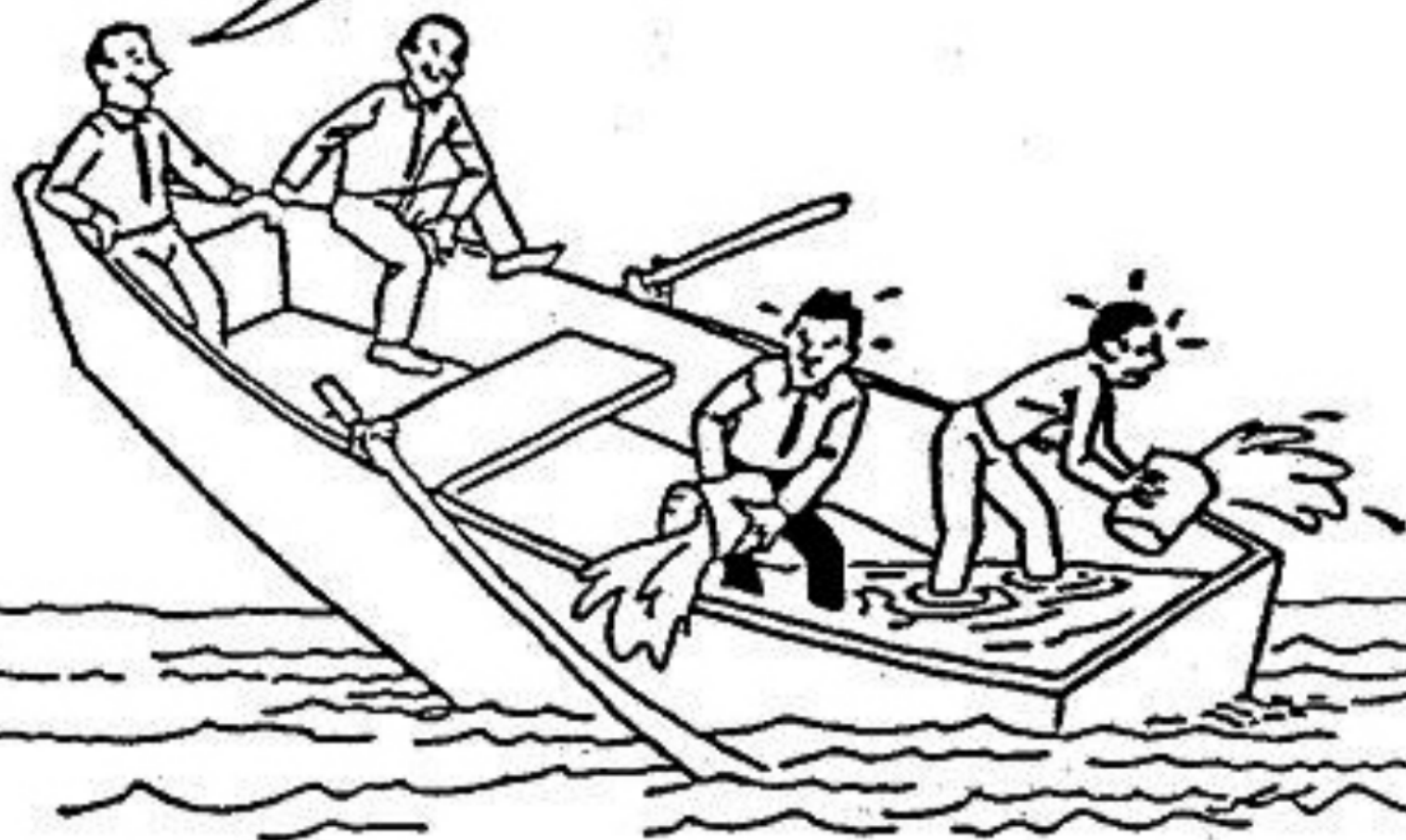
Change Orders

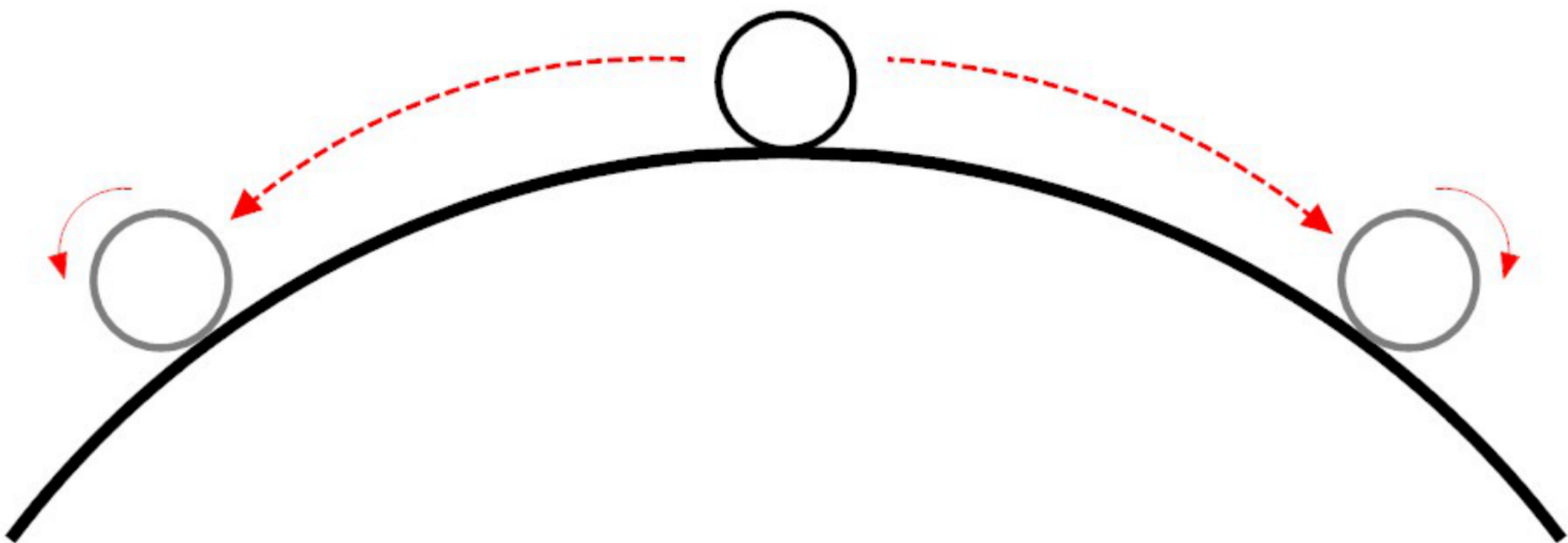
Claims

Litigation



*I'm sure glad the
hole isn't in our end...*





The existing industry is fragmented, adversarial and inefficient Sir John Egan --Rethinking Construction

*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.*
Sir Michael Latham

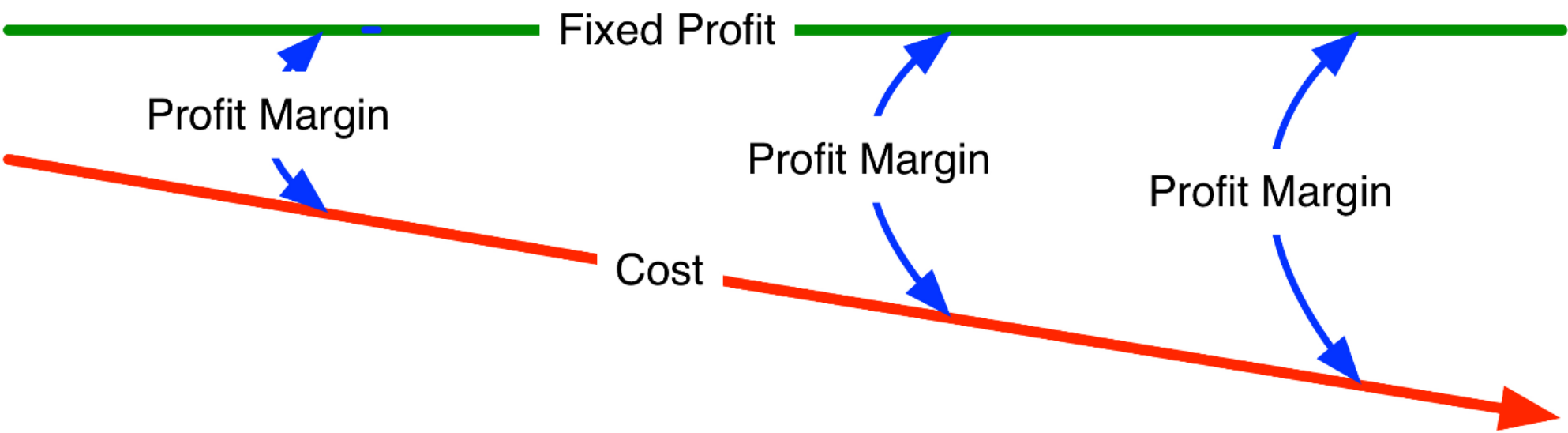


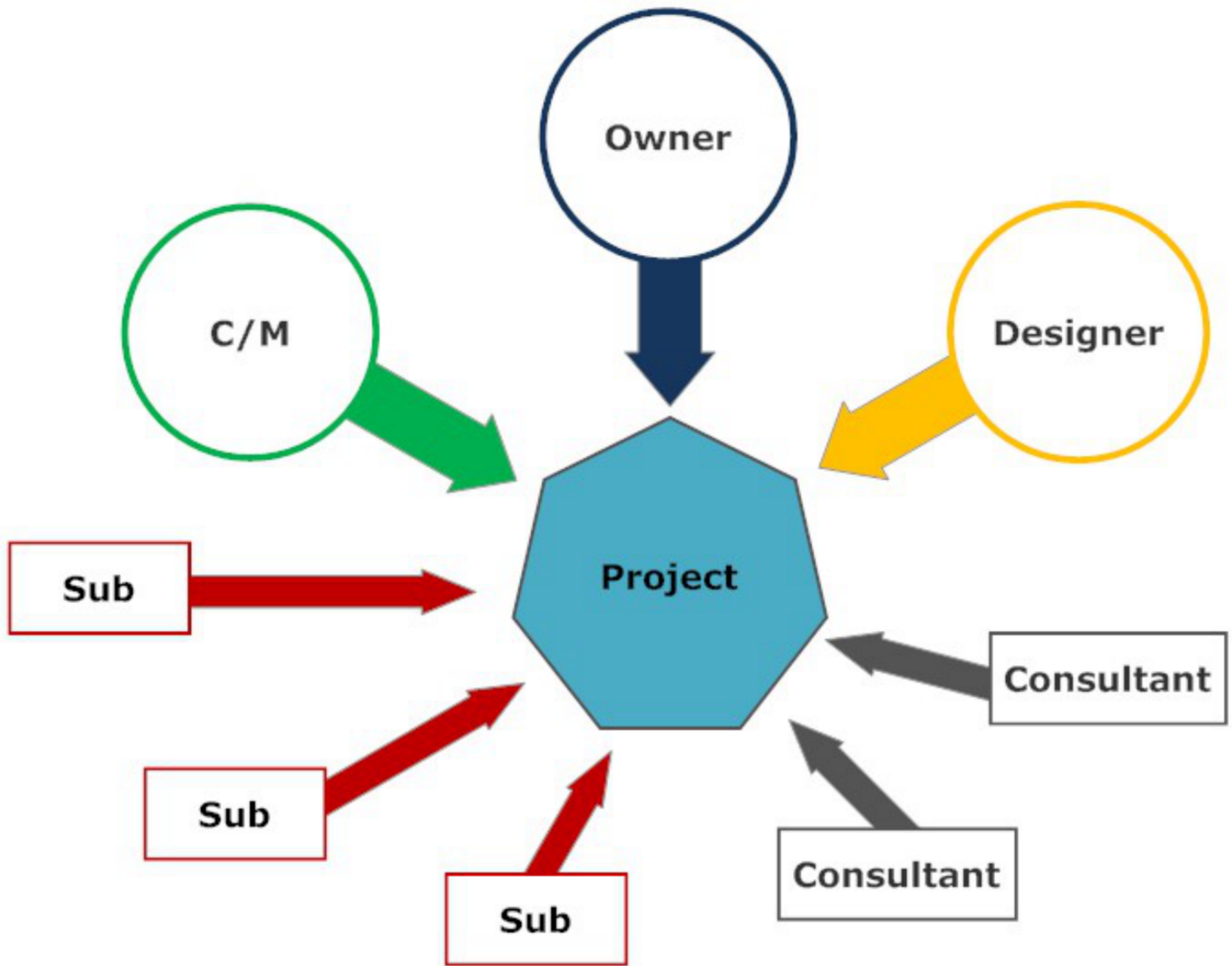
Before examining these elements of transformation, this paper describes clear hypotheses for what “optimized projects” using “optimized processes” should look like. At their core, such projects are implemented by **fully collaborative, fully integrated**, and thus highly productive project teams guided 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.

CURT WP 1003 (2006)





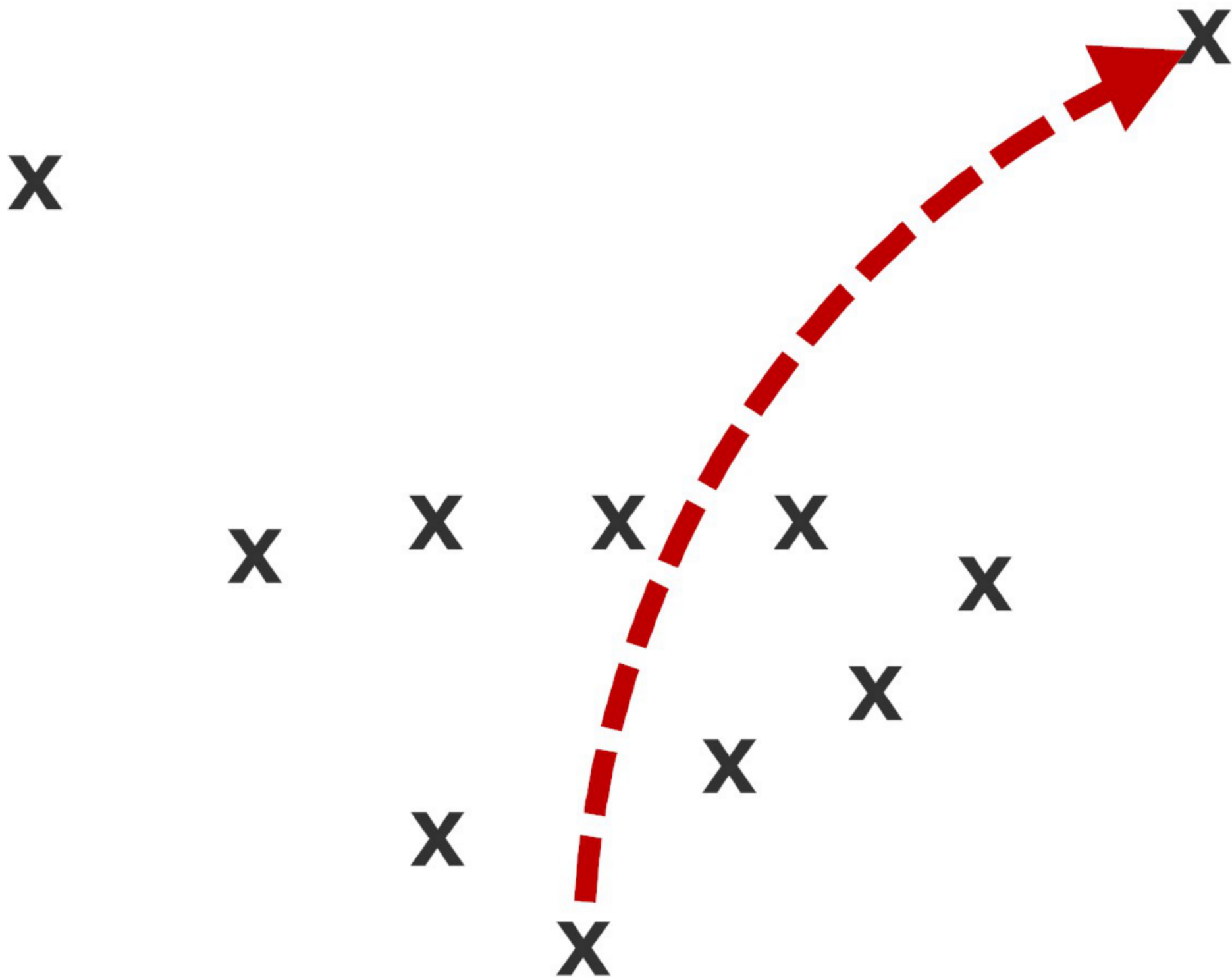




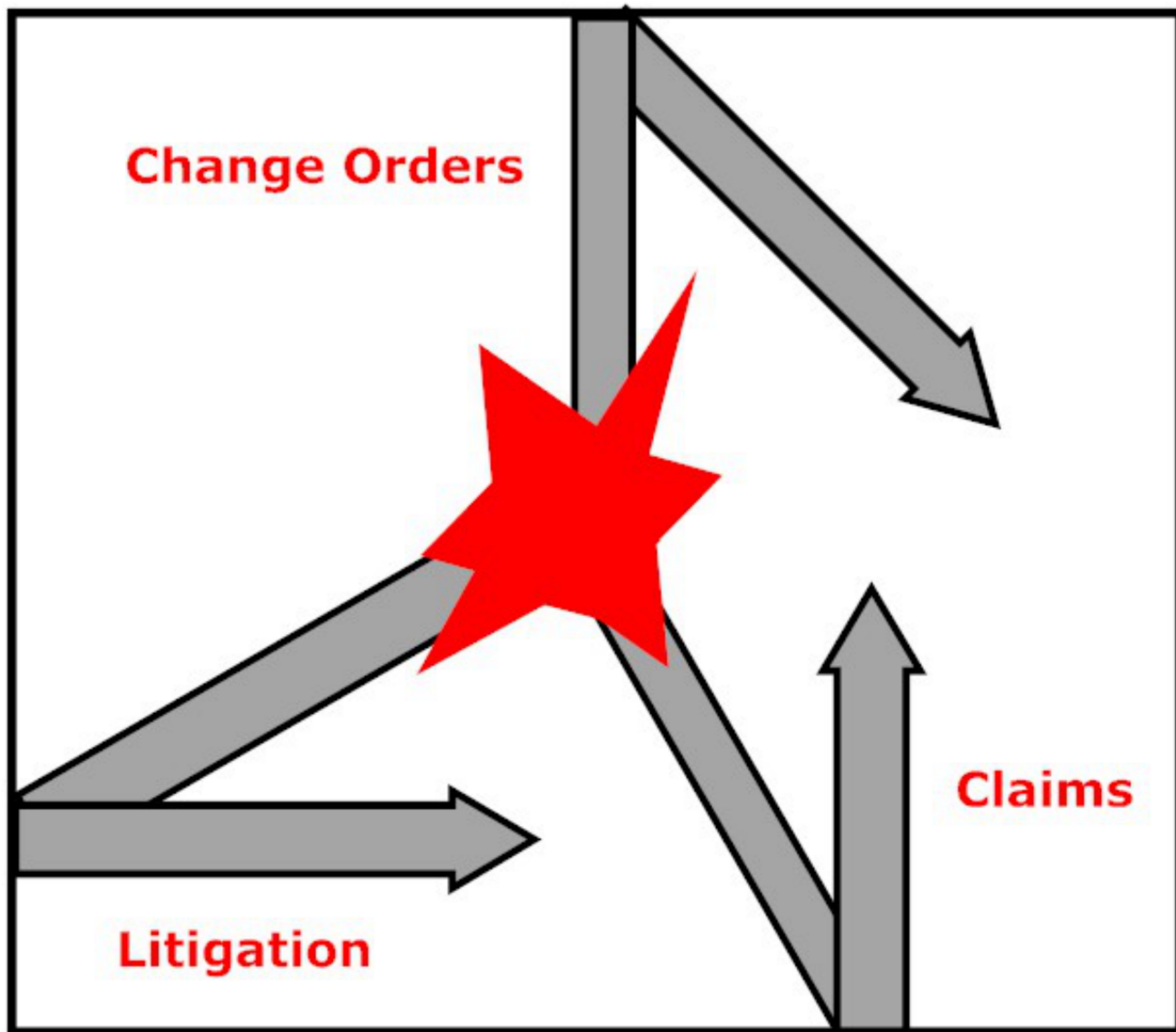
Why

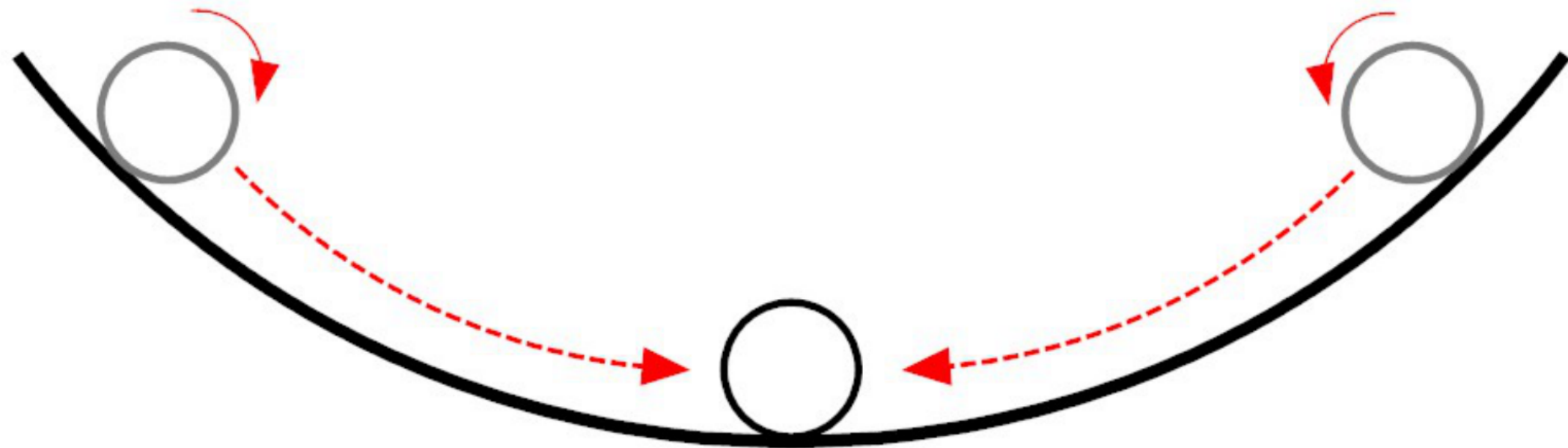
What

How

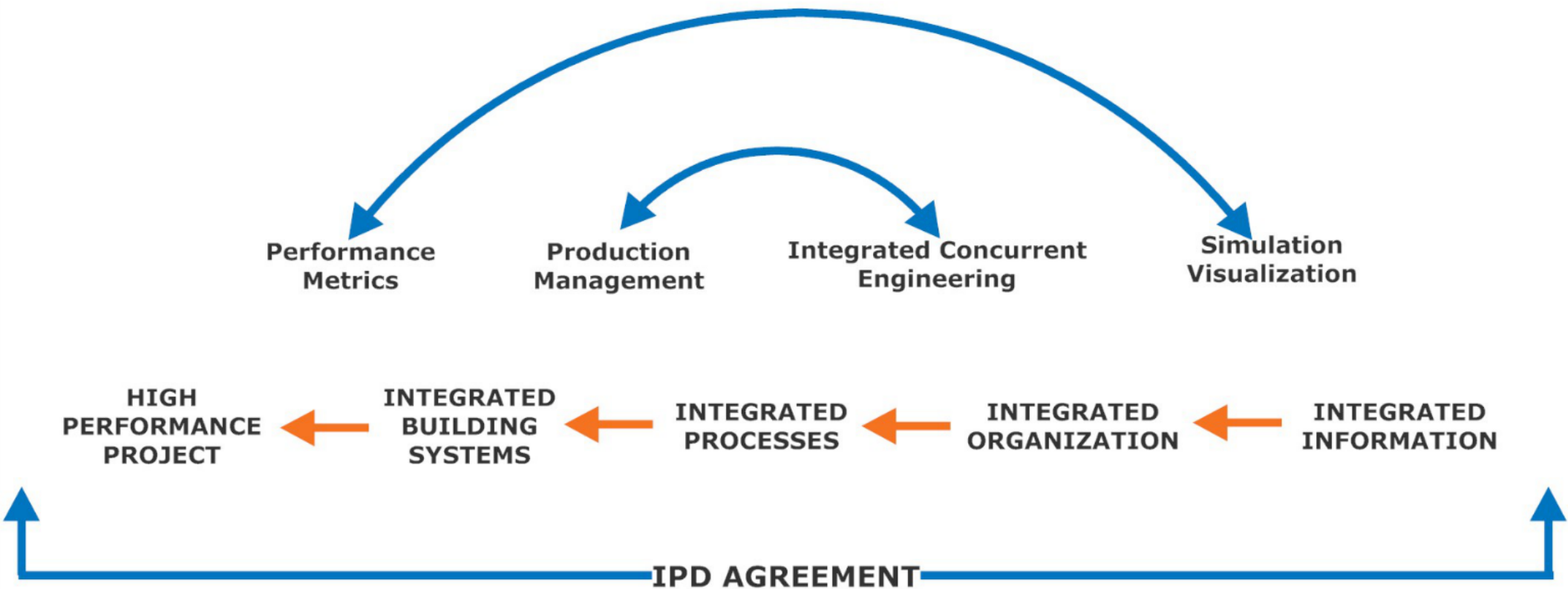


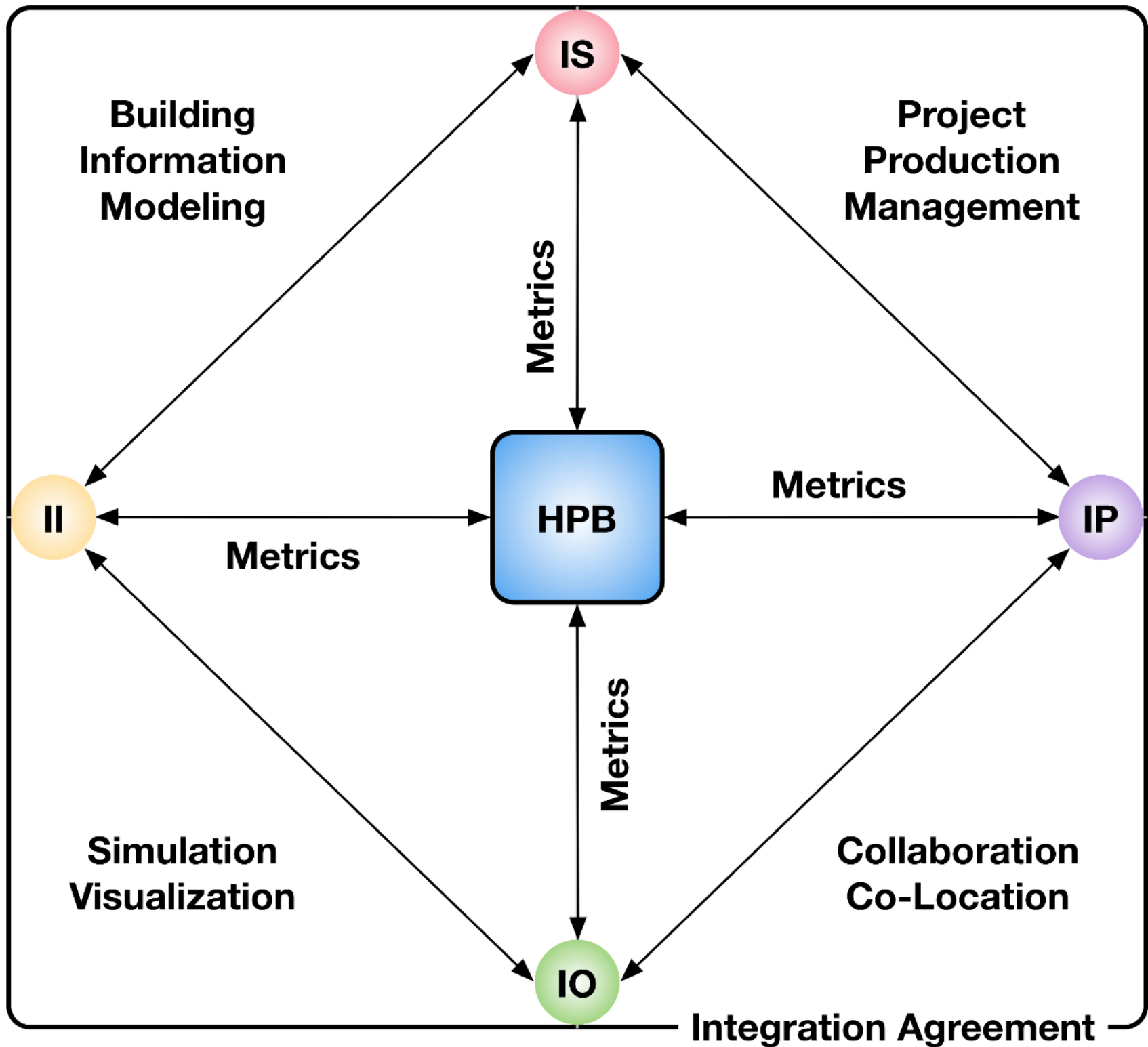






Integrated Project Delivery The Fundamental Framework







New Business Model

New Contract Model

Enabling Behaviors

Technology

Sustainability



Lean

Efficiency



Business Model

- *Profit Separated from Costs*
- *Profit Dependent on Project Outcome*
- *Direct Costs without Cap*
- *Limited Change Orders*

Profit

Overhead

Variable Costs

No Markups!



Owner's
Contingency

ICL



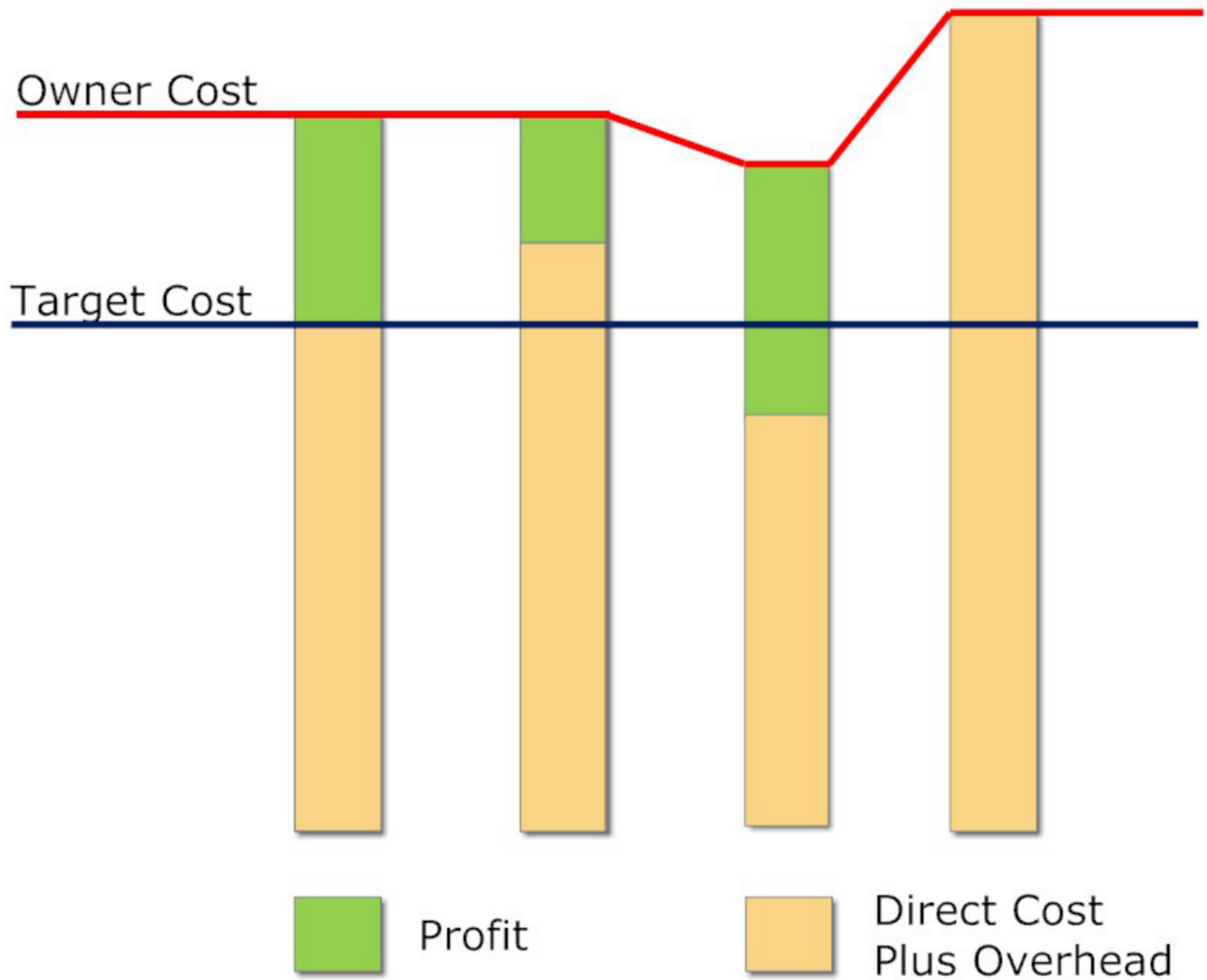
Target Cost

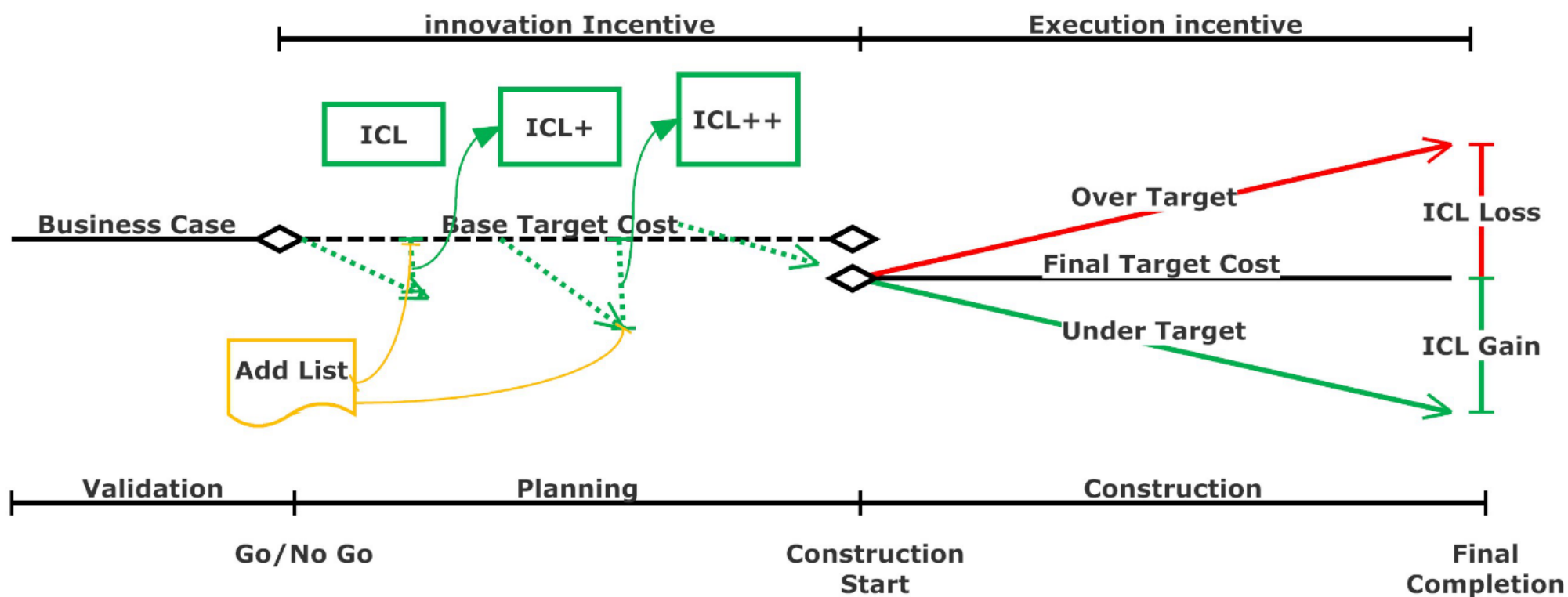
Allowances?

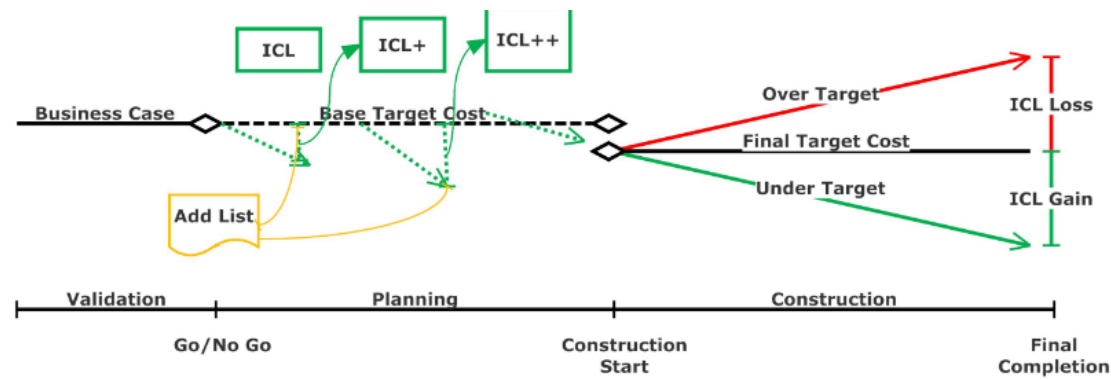
Project
Contingency

Chargeable
Cost

Simplified Compensation Model







Category	Baseline		Good		Exceptional	
Schedule	Meets Target Schedule	(10)/wk if late	Early by 1 month or more	7/week	Early by 2 months or more	10/week
Cost	Meets Target Cost	(5)/1% Above Target	5% Below Target	15	10% Below Target	25
Quality	Meets DEG	0	Better Than DEG	5	Much Better than DEG	10
Brand	Consistent with Existing	0	Reinforces Brand	5	Strong Brand Statement	10
Pod Innovation	No Reduction in Delivery Time	0	3 Week Reduction	10	6 Week Reduction	20

Target Cost = X% of Projected "Normal" Cost. Normal cost is based on historical data.

*Nominal Profit = 75% * Normal Profit*

$$\frac{\text{Performance Points} - 50}{50} = \text{Performance Index} \leq 1 \quad (\text{Performance Index cannot exceed } 1)$$

*Team Profit = Nominal Profit + (Normal Profit * Performance Index)*

Meets Target Cost	(5)/1% Above Target	5% Below Target	15	10% Below Target
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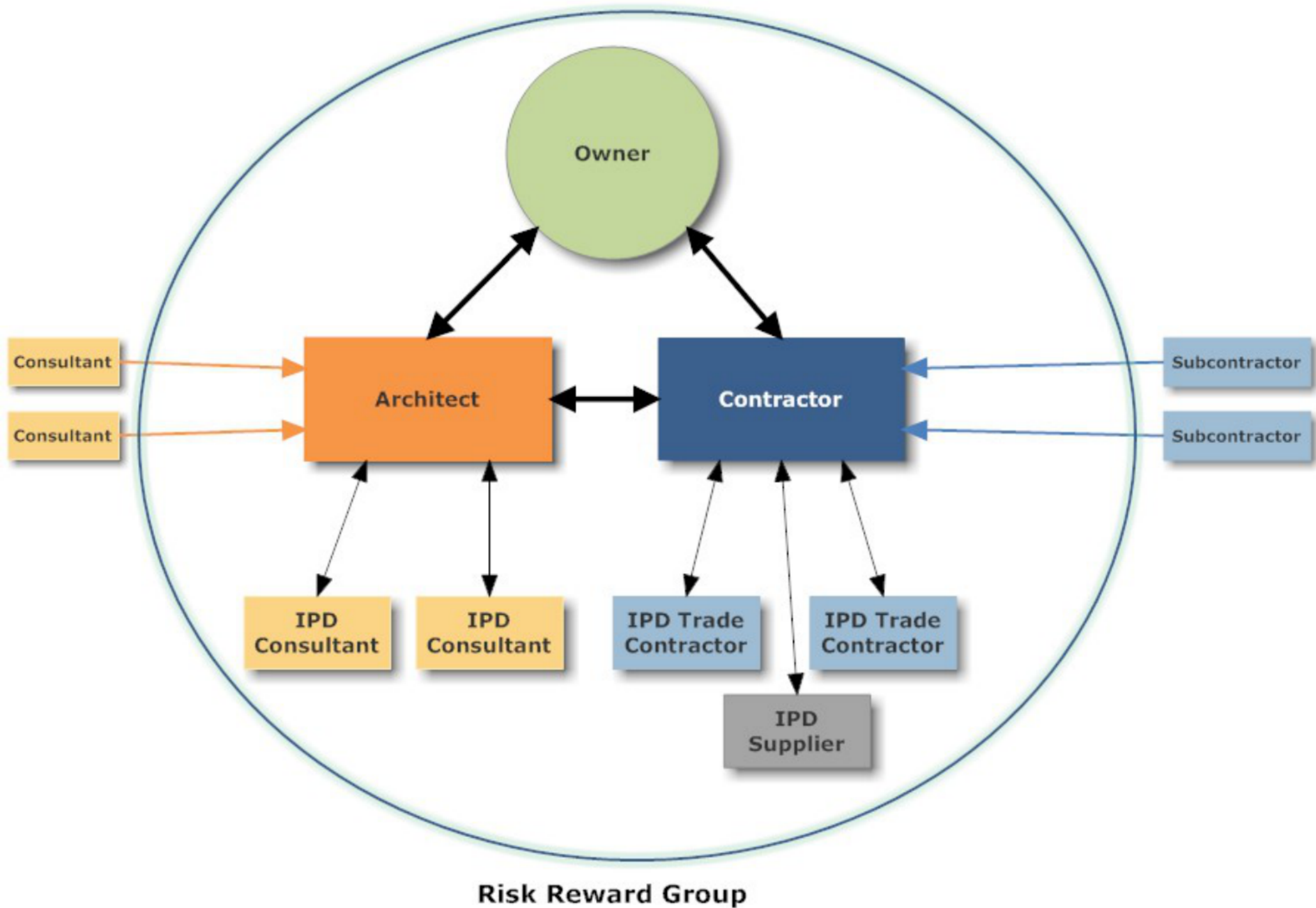


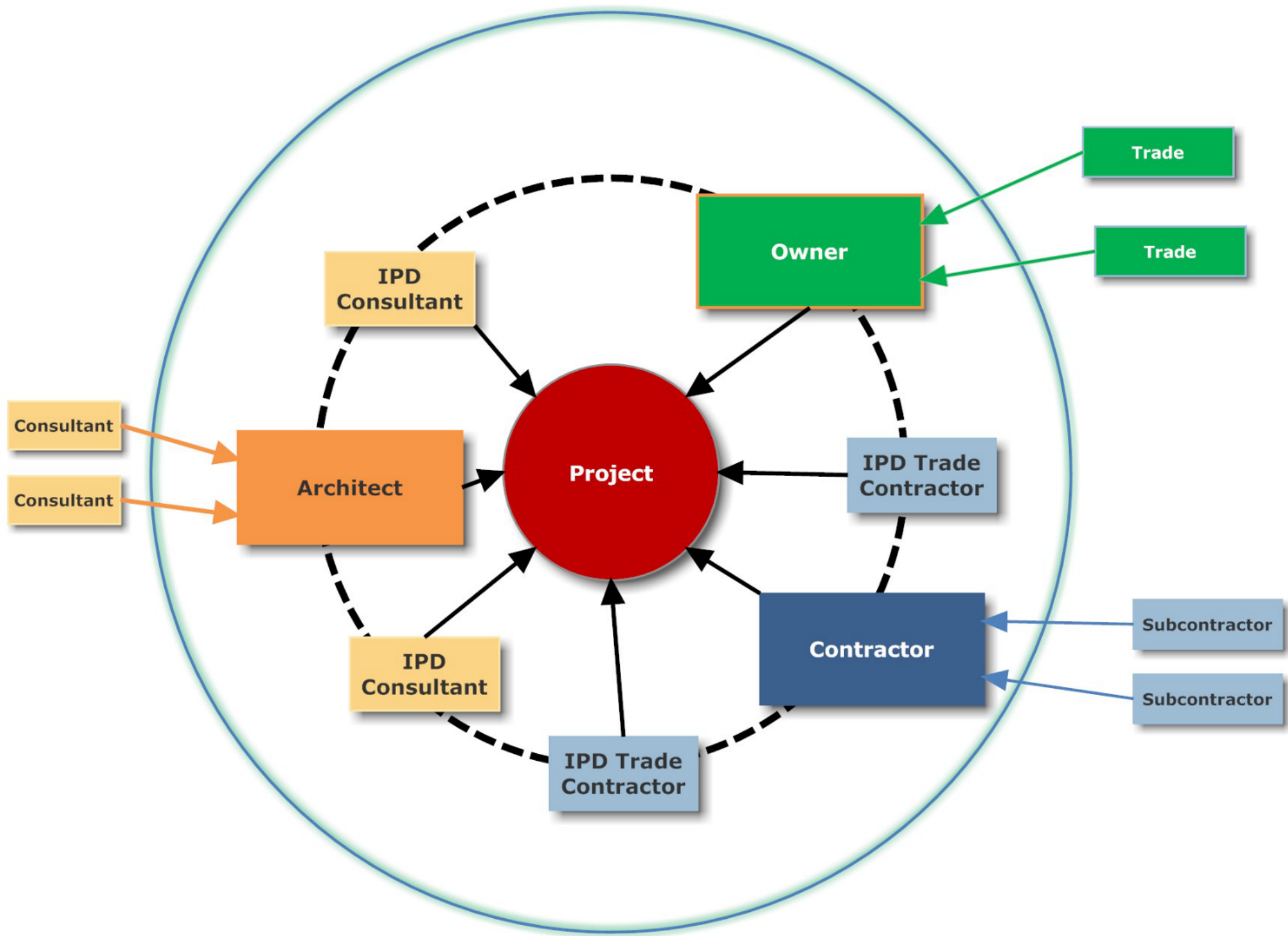
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- *Early Involvement of Key Participants*
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- *Balanced Risk/Reward*

Key Participants







Governance

**Senior
Management
Team**

**Project Vision
Providing Resources
Mentoring
Dispute Resolution
Change Order Execution**

**Project
Management
Team**

**Setting Goals
Choosing Investments
Risk Analysis
Training/Mentoring
Create and Manage PITs**

PIT

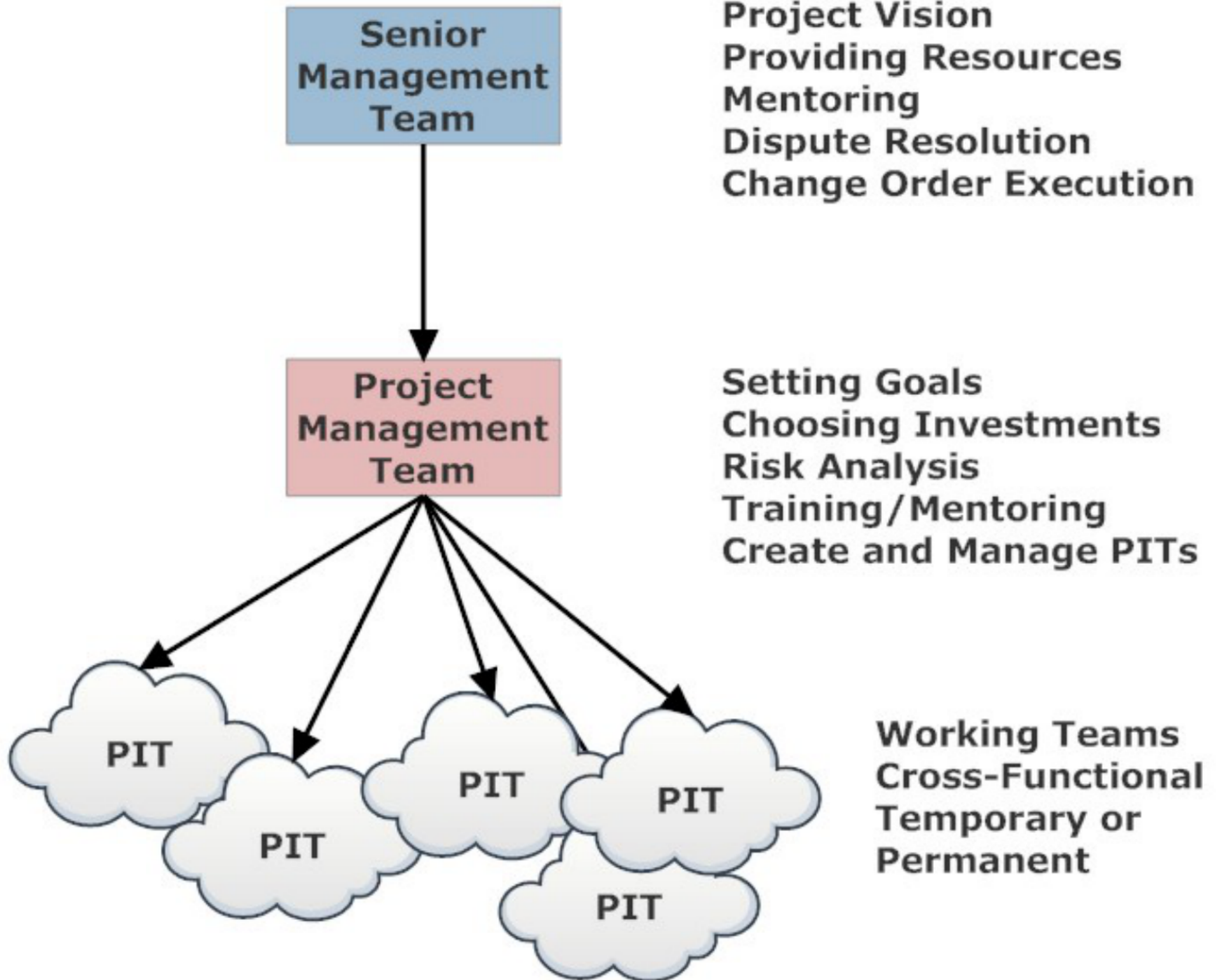
PIT

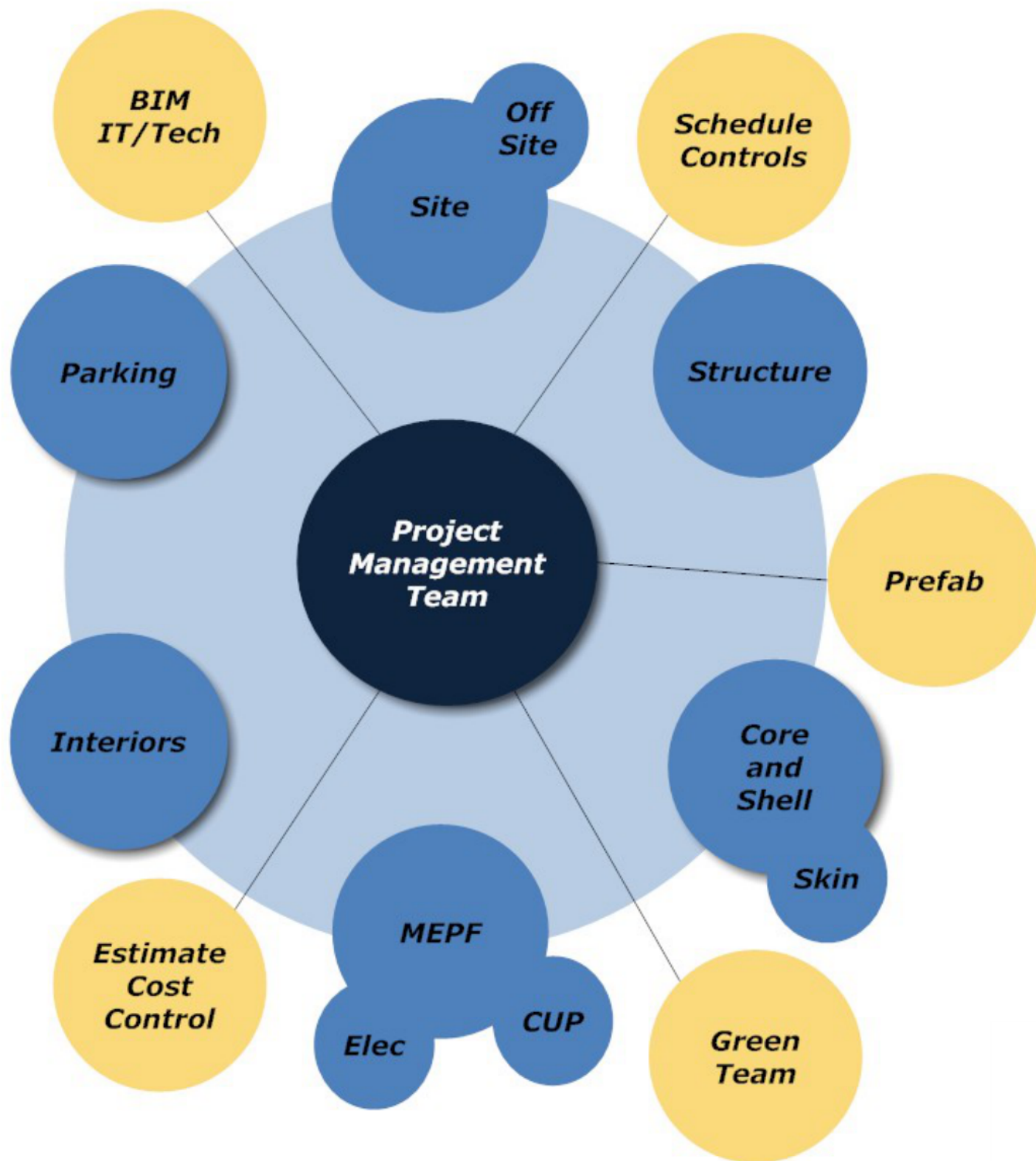
PIT

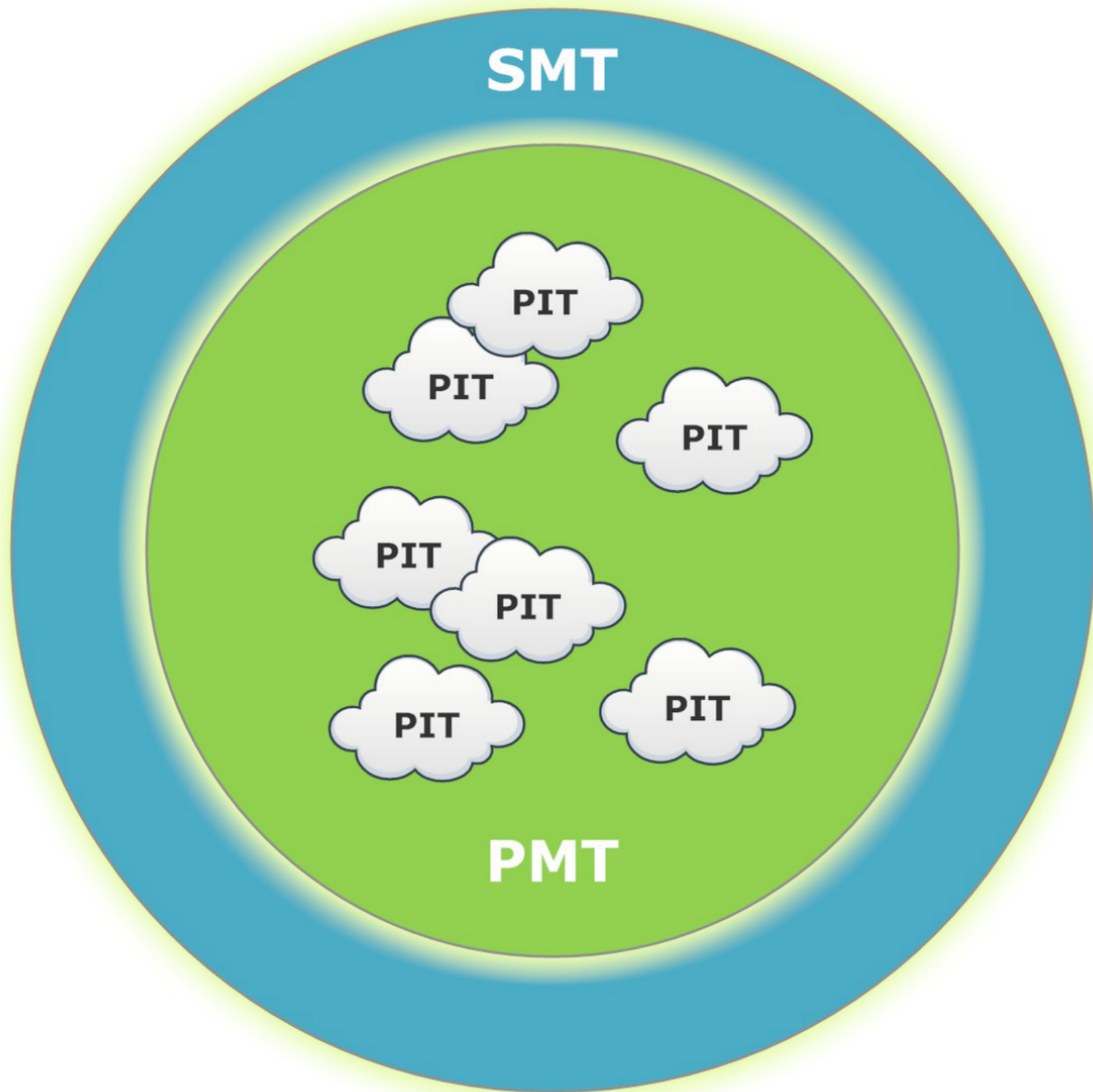
PIT

PIT

**Working Teams
Cross-Functional
Temporary or
Permanent**







lf



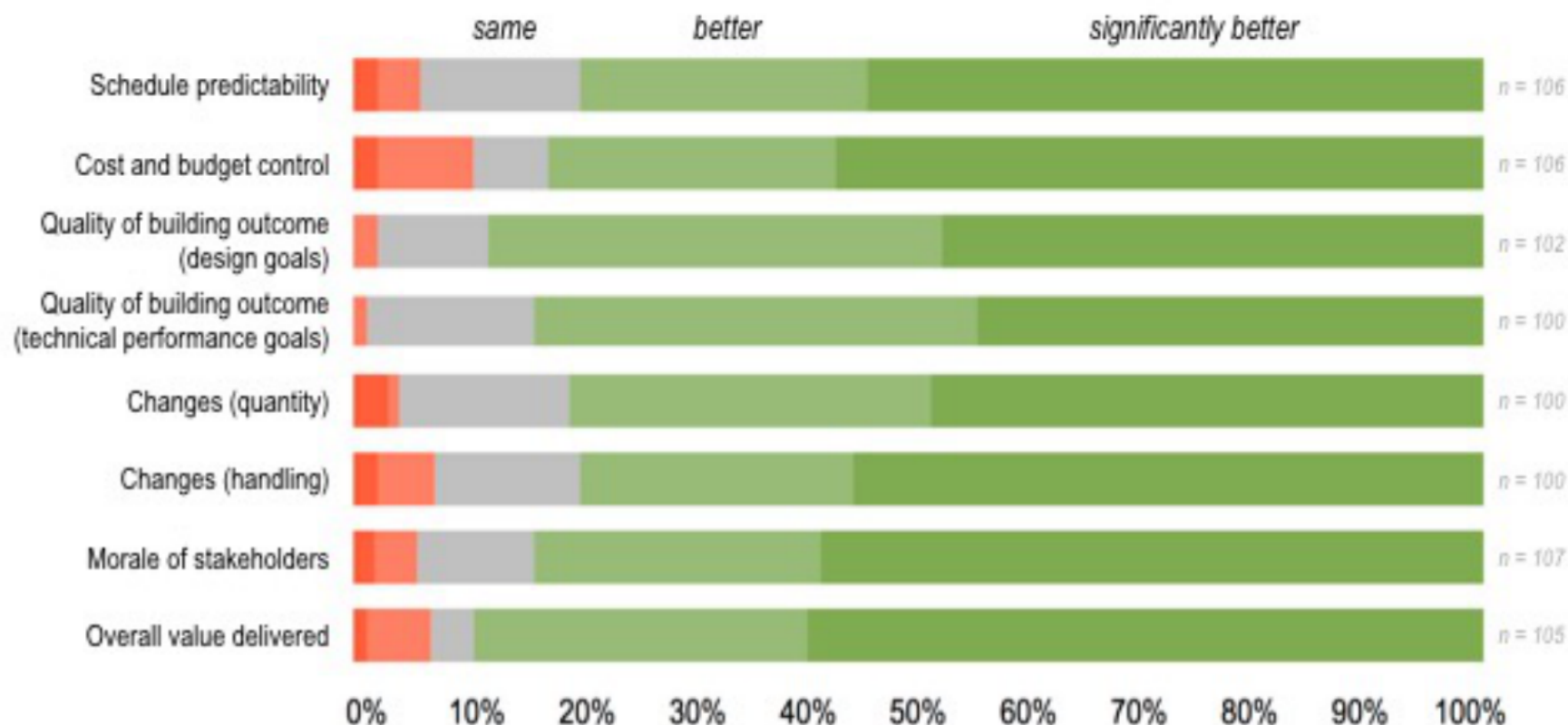


Enabling Behavior

- *Optimize the Whole*
- *Continuous Improvement*
- *Lean Principles*
- *Lean Tools*
- *Appropriate Technology*
- *Synchronization*
 - *Communication*
 - *Collaboration*

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.





INTEGRATED PROJECT DELIVERY:
**AN UPDATED
WORKING DEFINITION**

VERSION 3 UPDATED 7/15/14



HansonBridgett

Lean Integrated Project Delivery

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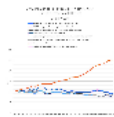
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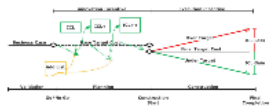
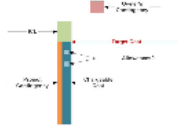
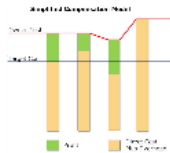
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Egan Report



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Profit
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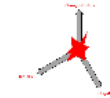
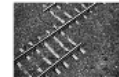
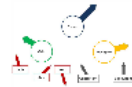
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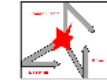
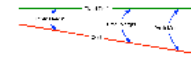
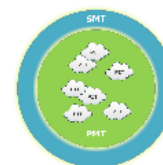
New Business Model
New Contract Model
Enabling Behaviors

Business Model

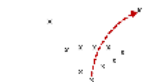
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Governance

If...



Why
What
How



Integrated Project Delivery The Fundamental Framework



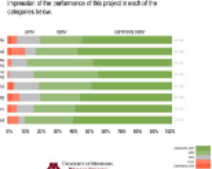
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- Appropriate Technology
- Synchronization
 - Communication
 - Collaboration



Performance | All Responses

Compare your experience on top 10 projects with your experience on the performance of this project in each of the categories below.



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