



Concept Symposium 2018

Governing Megaprojects – Why, What and How

How Contract Strategies Impact Project Success

Owners and contractors alike will generally agree that contract strategies have significant influence on a project team's ability to effectively execute work and achieve project objectives and other criteria for success. Contractual considerations include such elements as the comprehensiveness of project planning, awareness of market, economic, and other external conditions, project complexity, contractor familiarity and capability, risk and contingency management, change management, and the organizational structures and core competencies of the contract parties. The importance of these issues cannot be overstated and research has conclusively demonstrated that project teams can significantly influence project success by organizationally committing to the definition and effective implementation of well-developed contract strategies. This presentation reports on research funded by the U.S. Construction Industry Institute and is supported by associated case studies that collectively provide a compelling argument for the need of project teams to dedicate significant focus to these proposed best practices.



W. Edward Back

Professor and Department Head Department of Civil, Construction, and Environmental Engineering, The University of Alabama, Director Center for Sustainable Infrastructure
Tuscaloosa, AL USA

The Concept Symposia on Project Governance

The Norwegian Ministry of Finance and the Concept Research Program hosts every second year a symposium on project Governance. Project governance, in brief, is concerned about investments and their outcome and long-term effects. In view of the problem at hand, the aim is to ensure that the best conceptual solution is chosen, that resources are used efficiently and anticipated effects realized. Resource persons from ministries, governmental agencies, academia, international organizations, and industry are invited. In order to facilitate professional exchange and direct communication between participants, the number of individuals is restricted. The aim is to initiate further international cooperation and research on important issues related to project governance.

<https://www.ntnu.edu/concept/concept-symposium>

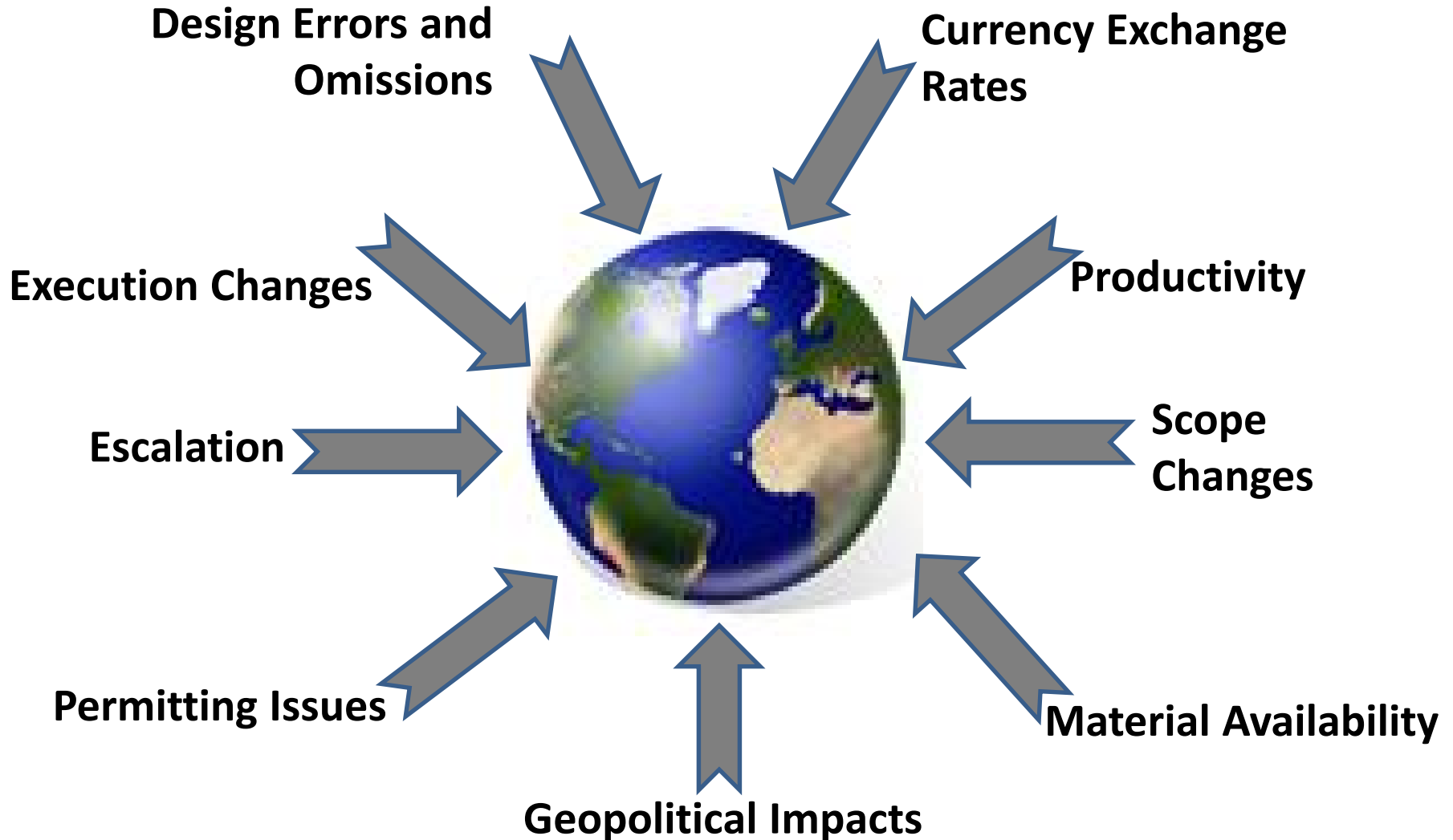


Strategies for Improving Project Performance Predictability

Dr. W. Edward Back

Concept Symposium 2018

Real World Project Uncertainties

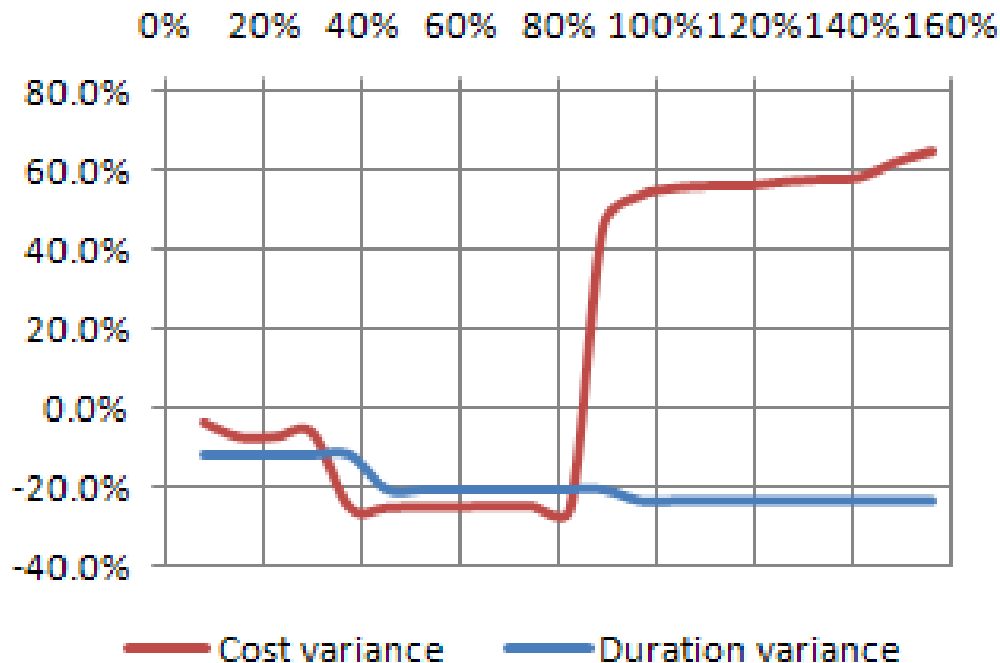


Predictability

The inability to **timely** and **accurately** **predict** project outcomes must be addressed.



Can you relate to this common story?



- Forecasting seemingly only starting after significant project completion
- Hidden / unreported negative trends and events
- Late and undesirable cost and schedule “surprises”

What can we do different?



The goal of this research was to develop **practices, recommendations, and tools** that will assist project teams to accurately and timely predict project outcomes.



Methodology

Collect
Data

- **135 Projects** with forecast and change logs

Statistical
Analysis

- Compared **Q1** to **Q4** projects
- Change Drivers

Develop
Tools

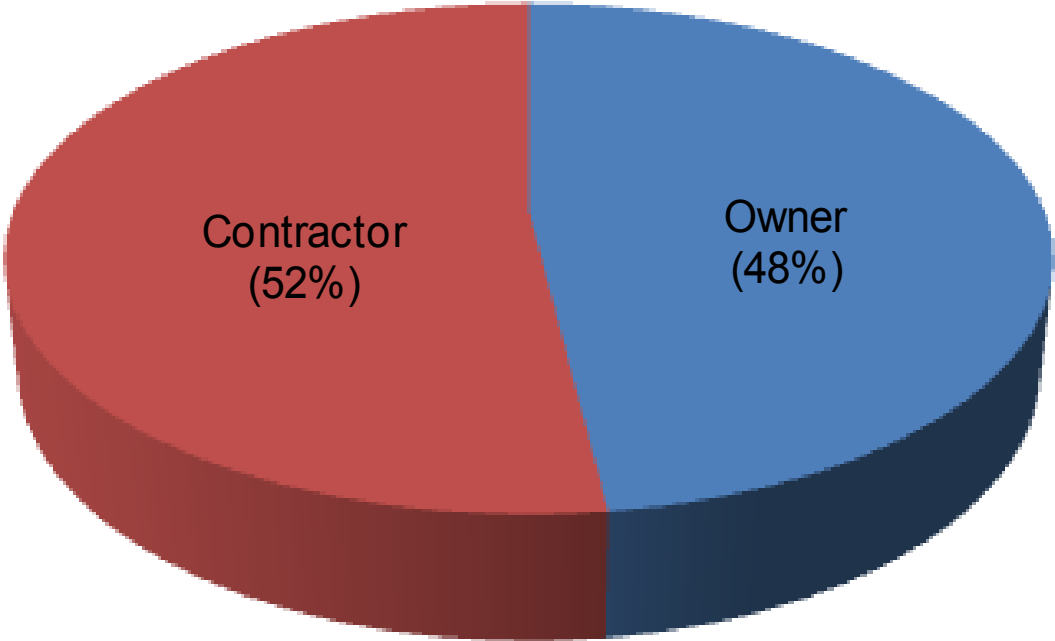
- Implementation Model
- Assessment Tools



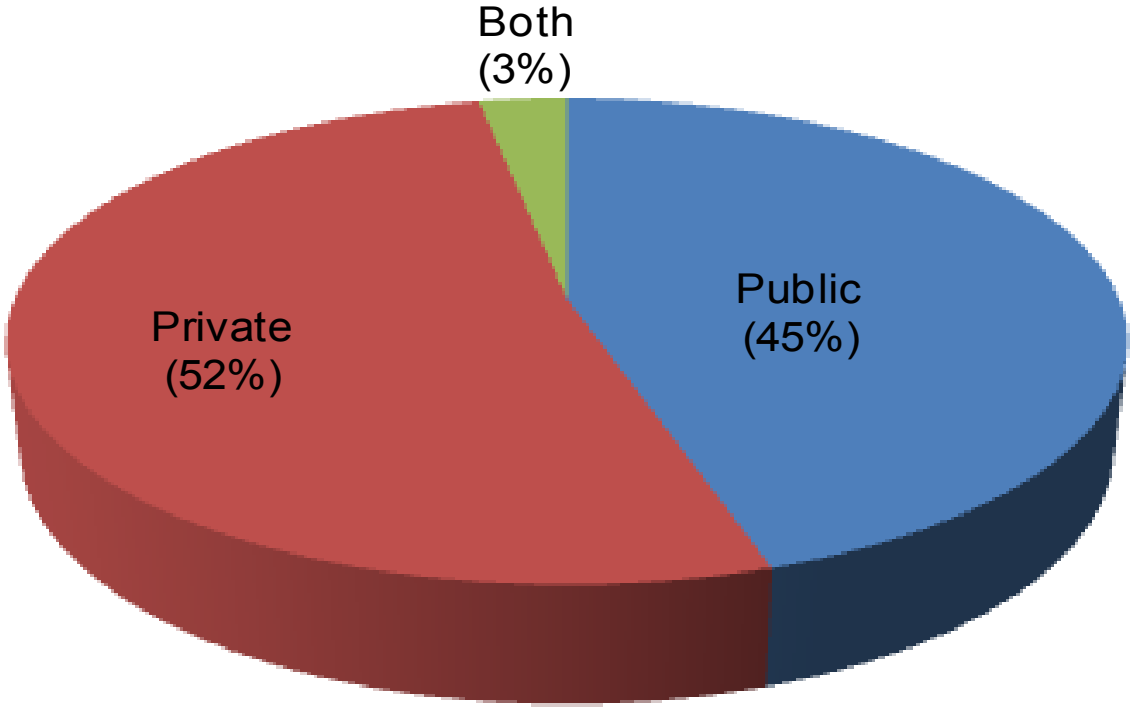
Data Collection

- **135 Project Submissions**
- Total Installed Cost over **\$28.8 billion**
- Over 90% completed in **last 5 years**
- Projects reflected both ends of the performance spectrum

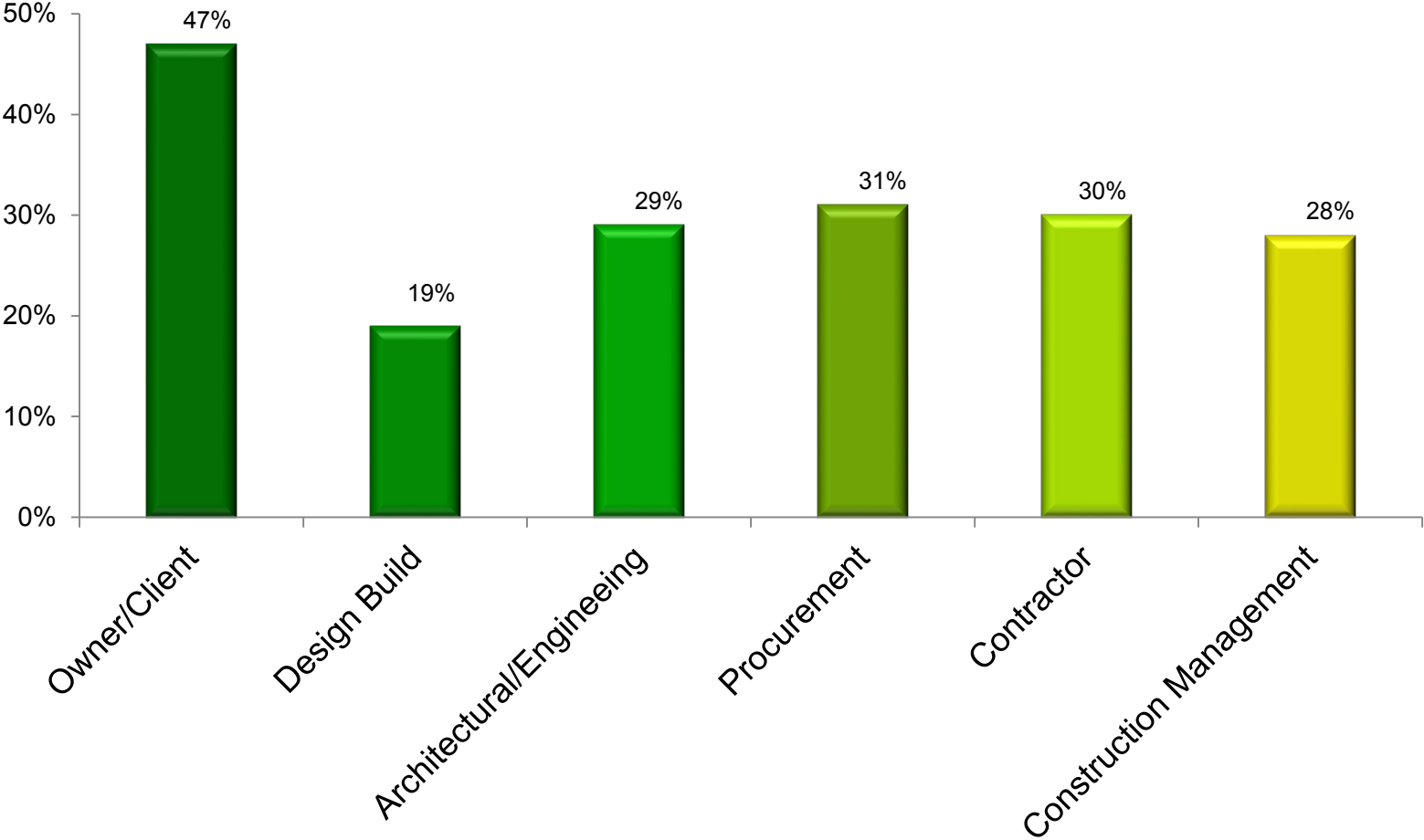
Proportion of Owner and Contractor Projects



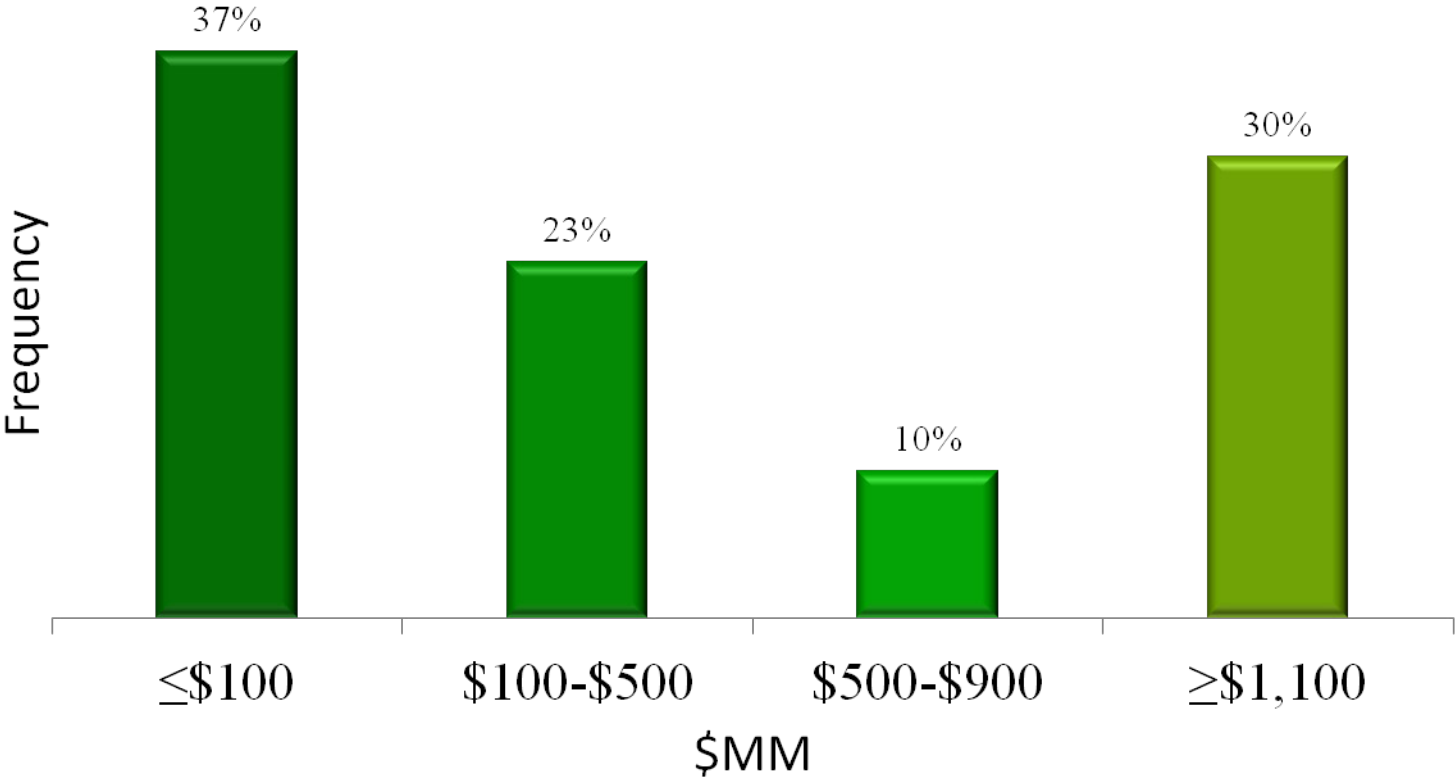
Sector Affiliation



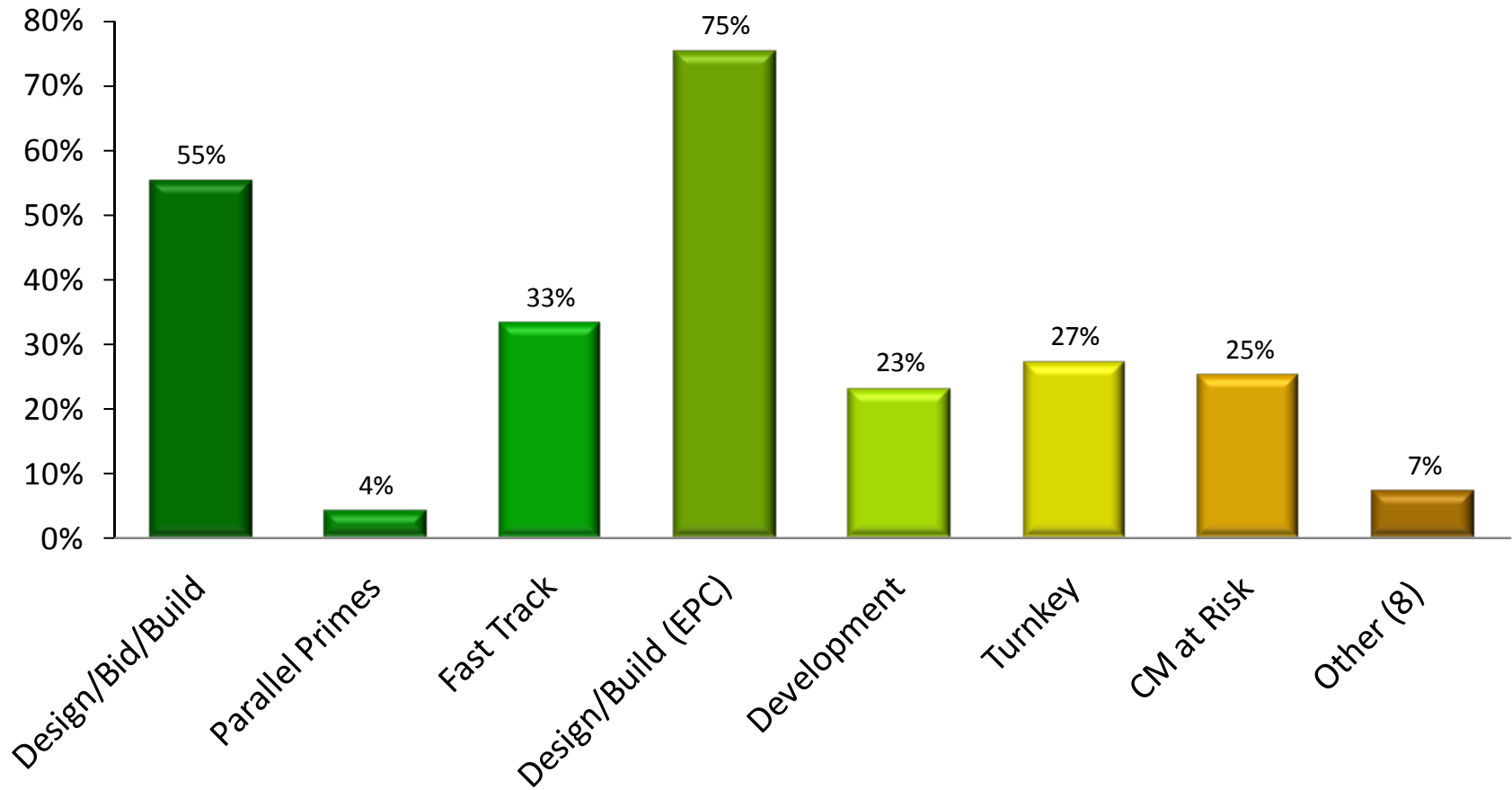
Respondent Organizations by Role / Function



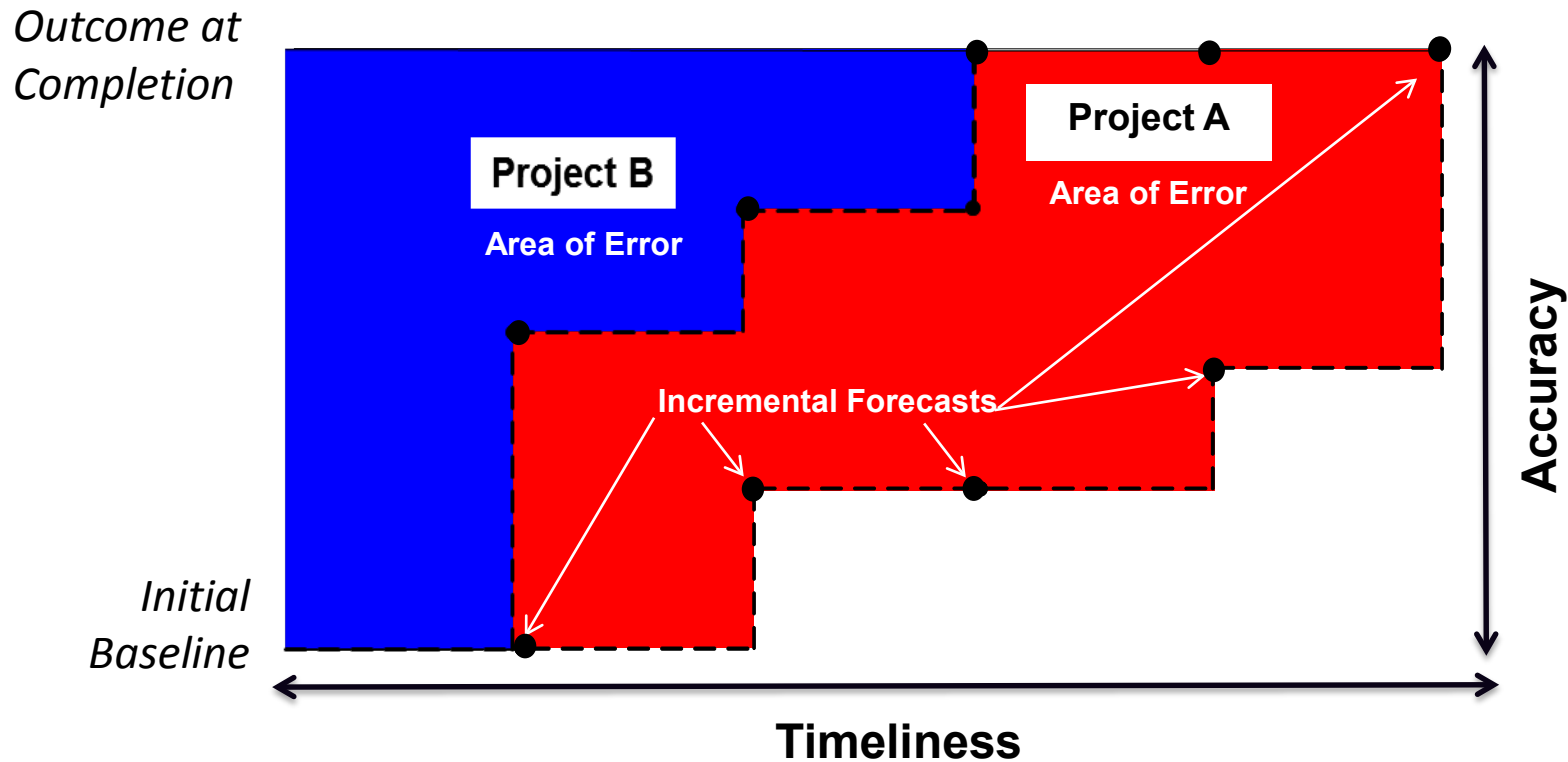
Total Installed Cost (\$MM)



Project Delivery Type



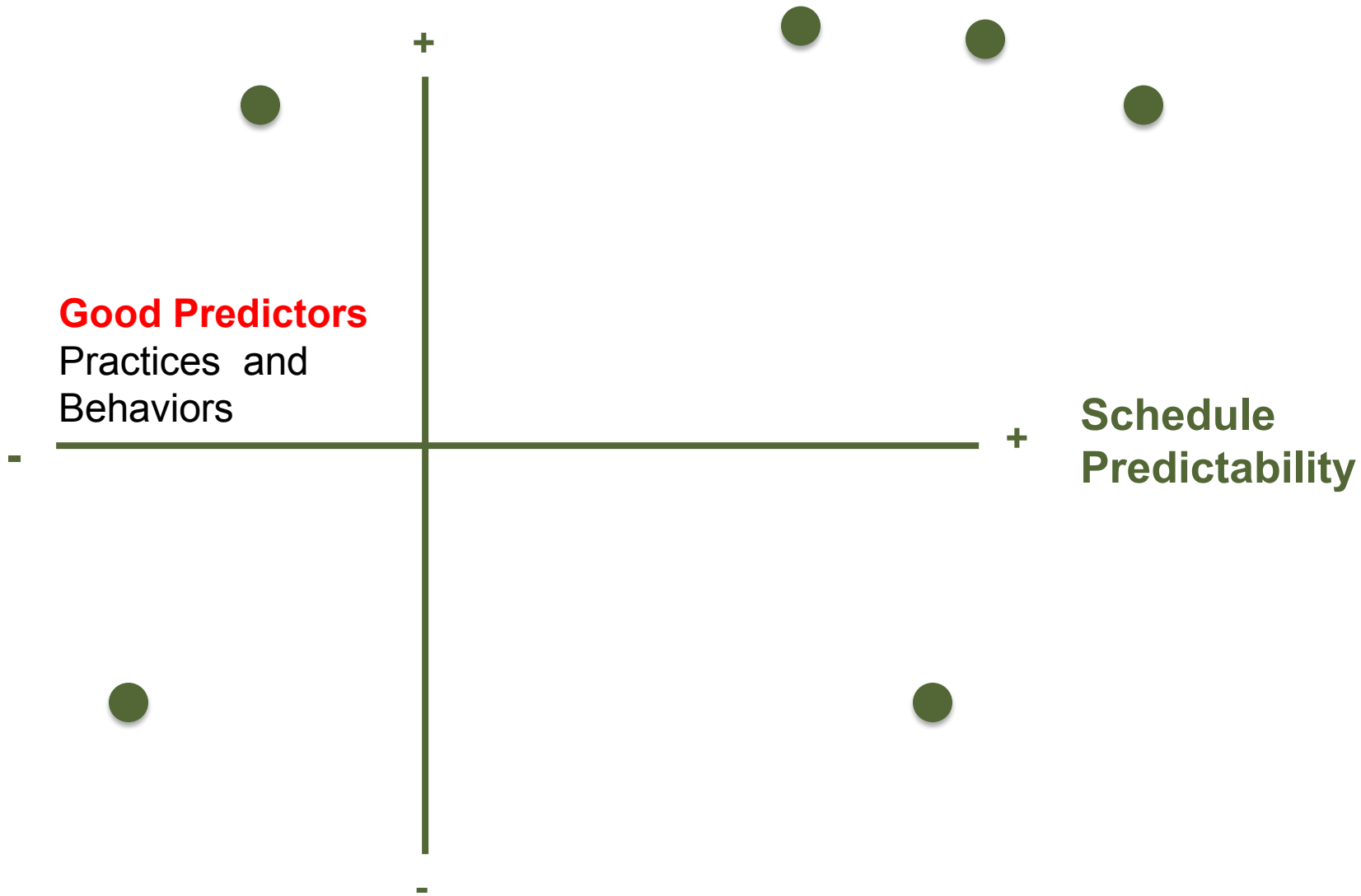
Project Predictability – New Approach

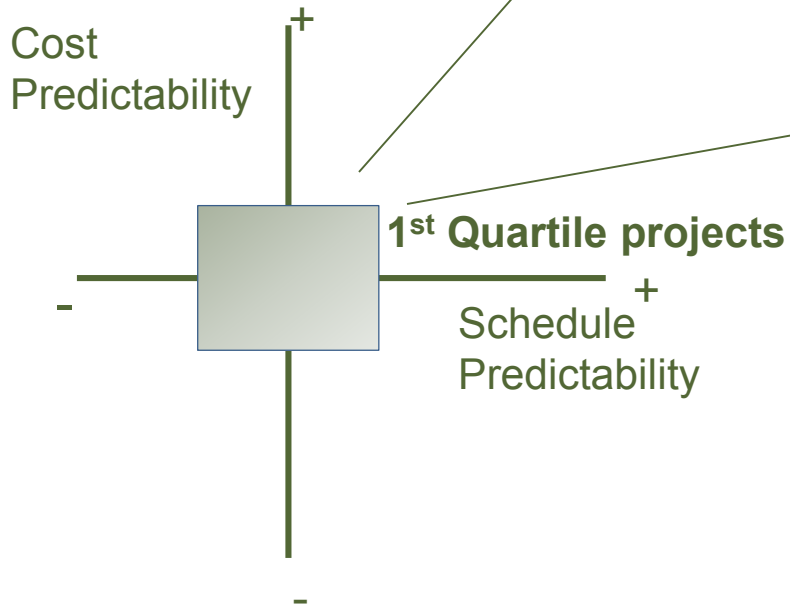


Project B is a better predictor than Project A.

**Cost
Predictability**

Poor Predictors
Practices and
Behaviors





Human Behaviors



Project Characteristics



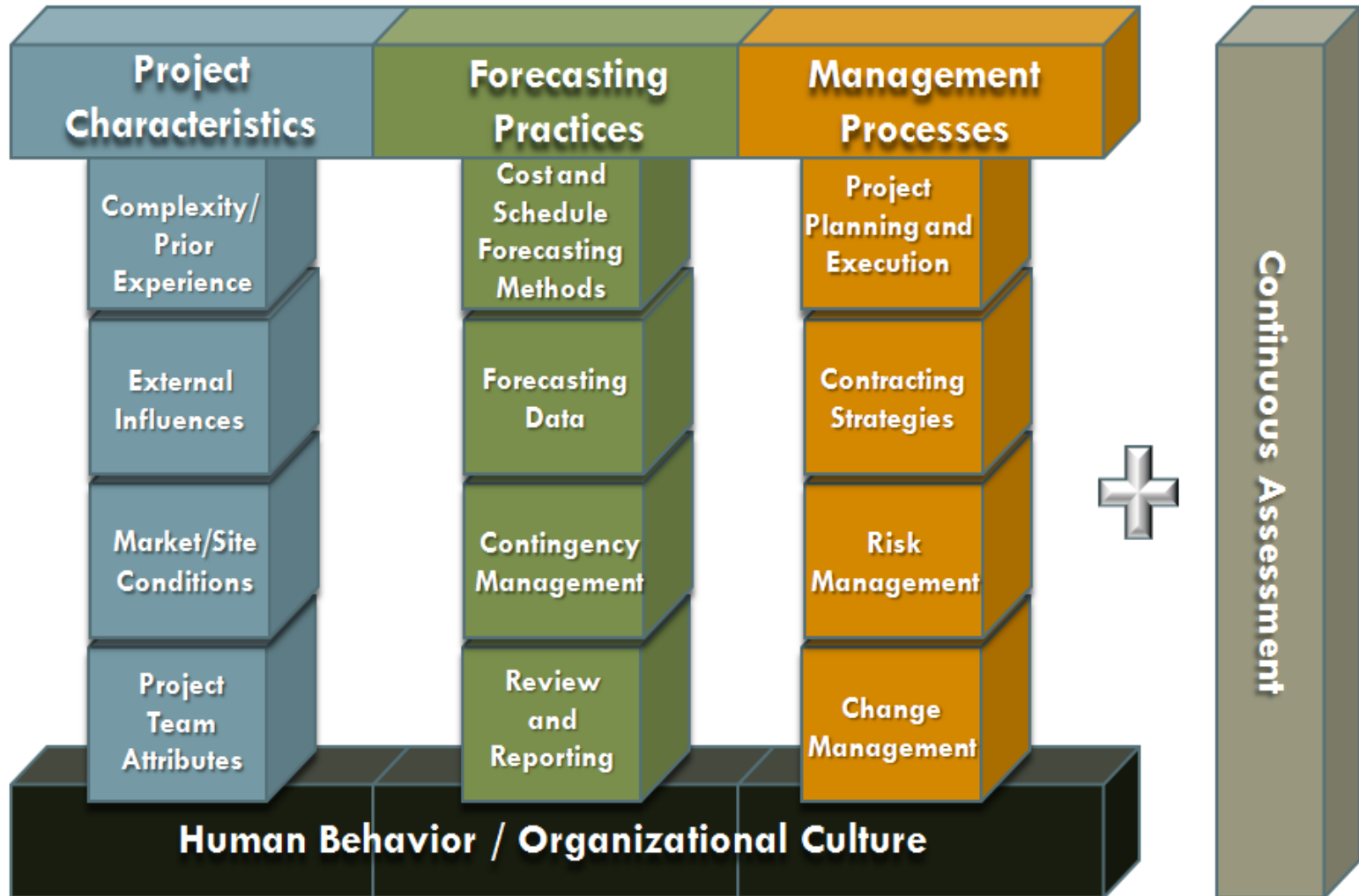
Forecasting Practices



Management Processes



Four-Casting Model

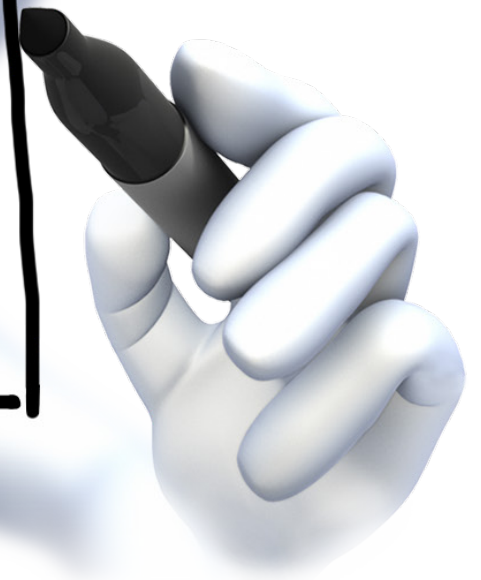


Significant Findings

- **Execution differences** between **1st Quartile** projects (high predictability) and **4th Quartile** projects (poor predictability).
- **Over 40 distinct factors of influence** were identified, many of which were highly correlated with high predictability.
- **Identified the change reasons that most influence** (high impact) on predictability, examined both frequency and severity.
- **Identified perspective differences** between owner and contractor organizations.

Human Behaviors and Organizational Culture

have the greatest influence
on predictability.



Key Insights

- Project Teams cannot eliminate surprises, but teams can mitigate the effect of such surprises with early recognition.
- Early predictability has significant influence on project value.

Key Insights

- External project factors, either in quantity or magnitude, can be managed with the right people, processes, and behaviors.
- Predictability performance should be benchmarked.

Strategies

- What attributes are required of Project Leadership?
- How do you manage expectations vs. constraints?
- How do we manage external impacts (e.g. politics)?

Research Deliverables

1

Statistical Analysis

- Statistically correlated findings
- Proposed Practices
- Insights from high performing teams

2

Change Drivers

- Drivers impacting cost
- Drivers impacting schedule
- Frequency and severity ratings

3

Implementation Guidance

- Proposed Practices
- De-railers and mitigation tactics
- Assessment tools

Implementation and Assessment Tools

1. Implementation

Resources for improving your project execution practices

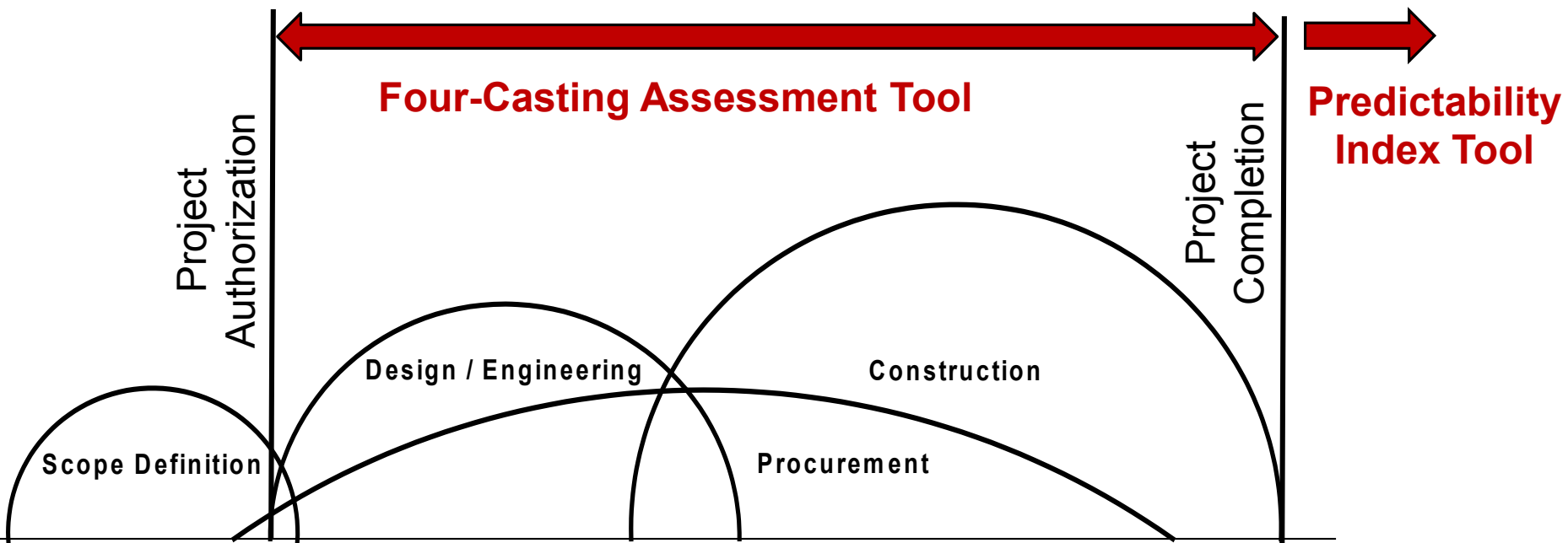
2. **Four – Casting** tool for improved predictability of project outcomes

3. **Predictability Index** tool for benchmarking predictability performance



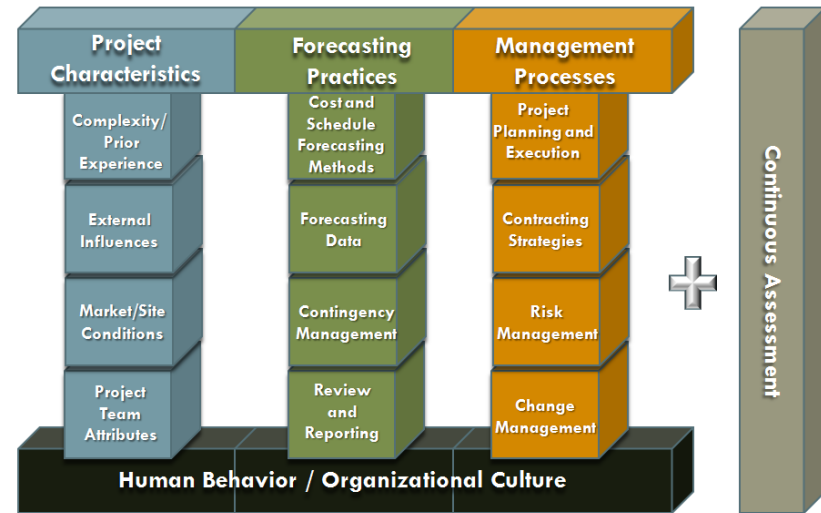
When to Use...

- **Four-Casting Tool** for *Continuous* assessment during execution
- **Predictability Index (PI) Tool** at project completion



Four-Casting Assessment Tool

Assessment of severity or negative impact of **85** elements on predictability



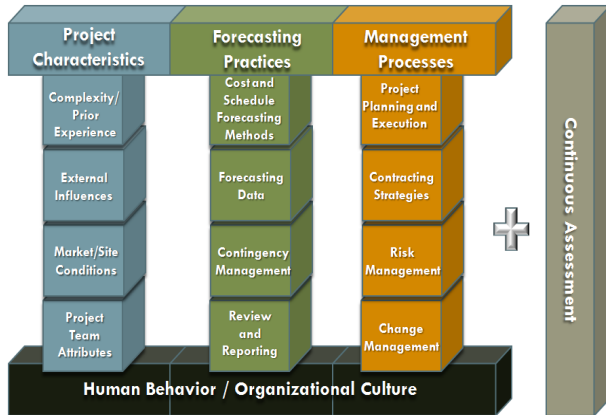
18. Volatility of foreign exchange currencies

NONE	SLIGHT	SOMEWHAT	MODERATE	SIGNIFICANT	NOT APPLICABLE
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. Escalation, inflation, and/or price volatility of materials and equipment

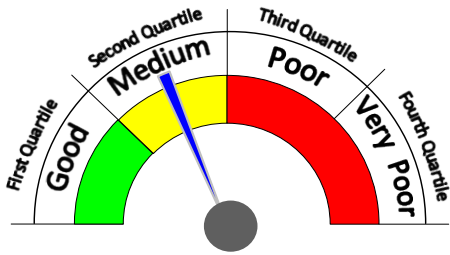
NONE	SLIGHT	SOMEWHAT	MODERATE	SIGNIFICANT	NOT APPLICABLE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Practices of Influence

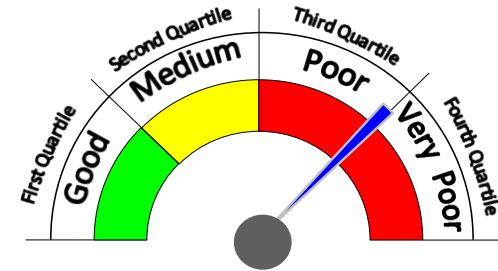


Category	Subcategory	Practices	
Human Behavior and Organizational Culture		<ul style="list-style-type: none"> a. Stressed but Aligned Reporting Environment b. Incentivized Project Functions c. Balanced Customer Influence on Forecasting d. Contractor vs. Owner Predictability e. Early Trend Identification and Response f. Accountability g. Transparency and Trust h. Scrutiny and Involvement i. Project Team's Perception of Forecasting 	
	Project Characteristics	Complexity and Prior Experience	<ul style="list-style-type: none"> a. Unfamiliar Geographic Project Locations b. Legal and Permitting Issues c. Project Complexity d. Project Duration e. New or Unfamiliar Technologies f. Project Scale
		External Influences	<ul style="list-style-type: none"> a. Third Party Finance b. Candidness with Key Stakeholders c. Influence of Claims d. Influence of Project Driver
		Market, Economic and Site Conditions	<ul style="list-style-type: none"> a. Market Volatility, Escalation, and Location Influences
Forecasting Practices	Project Team Attributes	<ul style="list-style-type: none"> a. Forecasting Team Experience and Skills b. Alignment c. Transparency and Trust d. Leadership 	
	Cost and Schedule Forecasting Methods	<ul style="list-style-type: none"> a. Forecasting Method b. Forecasting Assessment and Reliability c. Functional Responsibility for Forecasting d. Reporting Frequency vs. Continuous Forecasting 	
	Forecasting Data	<ul style="list-style-type: none"> a. Completeness of Input Data and Information b. Functional Responsibility for Providing Data and Information 	
	Contingency Management	<ul style="list-style-type: none"> a. Risk Registry Review and Update b. Contingency Reconciliation 	
Management Processes	Review and Reporting	<ul style="list-style-type: none"> a. Functional Role b. Forecasting Team Experience and Skills c. Timely Reporting of Deviations d. Centralization of Project Control Function 	
	Project Planning and Execution	<ul style="list-style-type: none"> a. Project Management and Controls Information Integration b. Effective Start-up and Commissioning Practices c. Alignment d. Effective Front End Planning Practices e. Centralization of Project Management Function 	
	Contracting Strategies	<ul style="list-style-type: none"> a. Contractual Incentives b. Third Party Finance c. Project Delivery Method 	
	Risk Management	<ul style="list-style-type: none"> a. Effective Risk Management Practices 	
	Change Management	<ul style="list-style-type: none"> a. Effective Change Management Practices b. Influence of Requests for Information (RFIs) 	

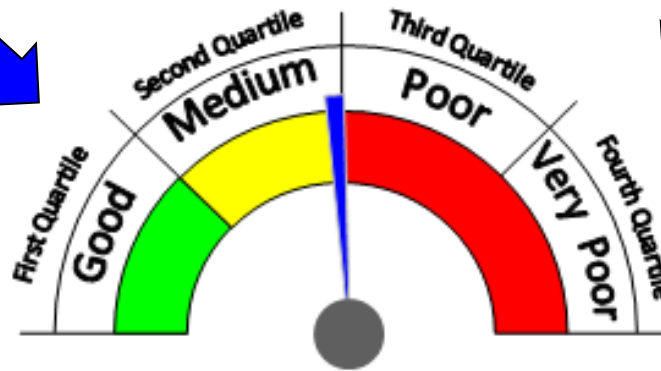
Four-Casting Assessment Tool Results



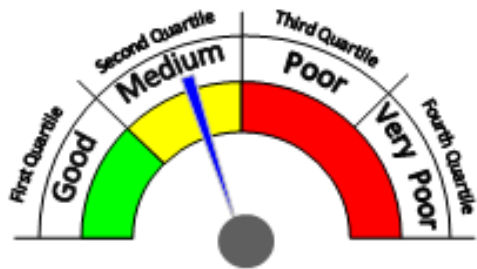
Human Behavior/ Organizational Culture



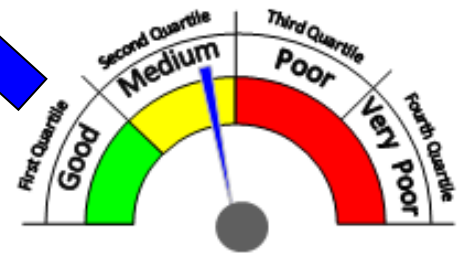
Project Characteristics



Predictability Assessment



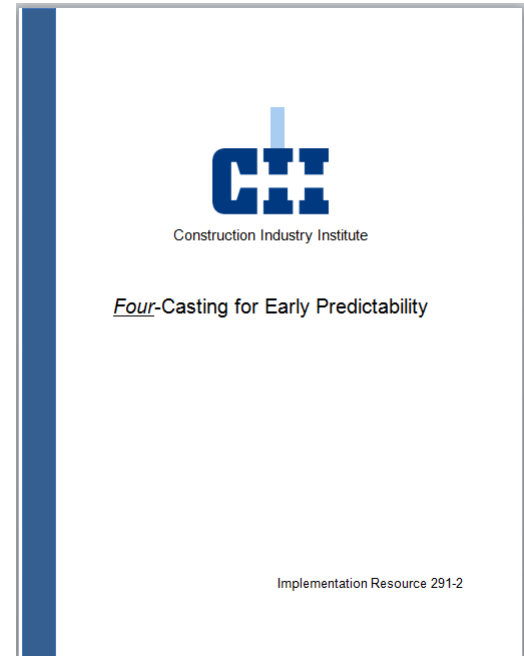
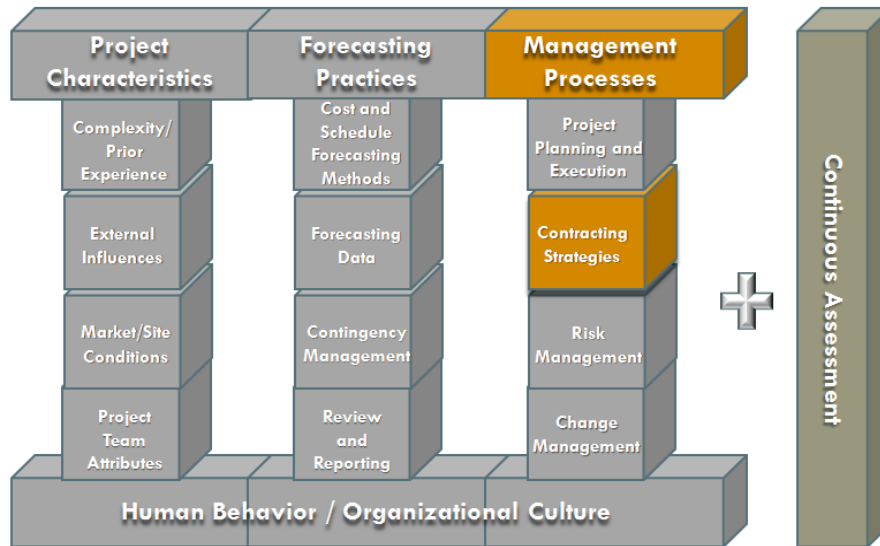
Forecasting Practices



Management Processes



Using the Model



Every sub-category in the Four-Casting model provides

Key Take Away

Insights from Research

De-railers

Mitigation Actions

Best Practices

- Aligned Reporting Environment
- Incentivized Project Functions
- Balanced Customer Influence on Forecasting
- Early Trend Identification and Response
- Transparency and Trust
- Project Complexity
- Unfamiliar Technology
- Project Scale
- Market Volatility

Best Practices

- Forecasting Team Experience and Skills
- Leadership
- Forecasting Methods
- Formal and Continuous Risk Management
- Timely Reporting of Project Deviations
- Effective Front End Planning
- Project Delivery Strategies aligned with Contract
- Effective Change Management
- Contingency Management

Best Practices

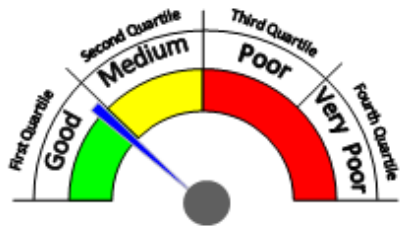
- How much of the success is due to **process?**
- How much of the success is due to critical decisions and **judgment?**
- What are the keys to **consistent performance?**

Barriers

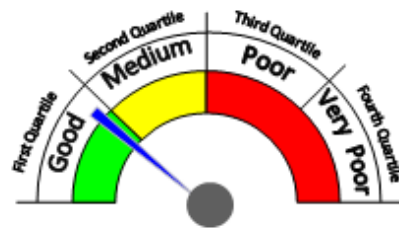
- Lack of Information Integration
- Lack of a standard data exchange protocol
- Delayed data acquisition
- Resistance to change
- Lack of innovation
- Inadequate project team experience.

Testimonial – Overoptimism vs. Externally Facilitated Assessment

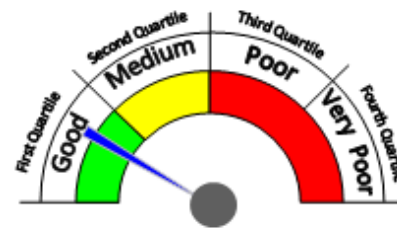
- **Before** – Internal assessment by project team



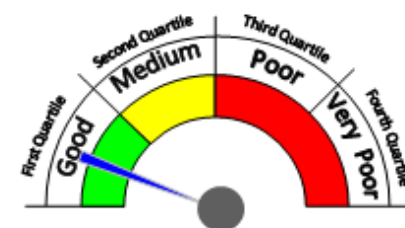
Human Behavior/Organizational



Project Characteristics

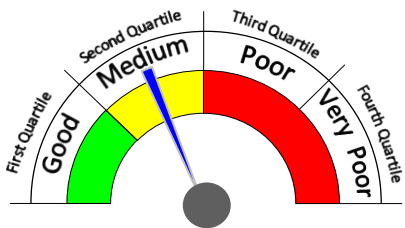


Forecasting Practices

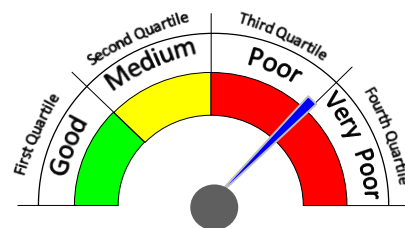


Management Processes

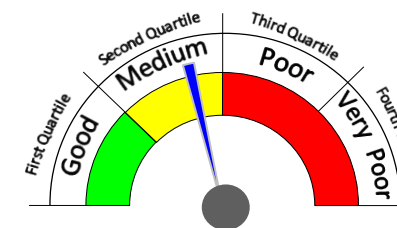
- **After** – Externally facilitated assessment



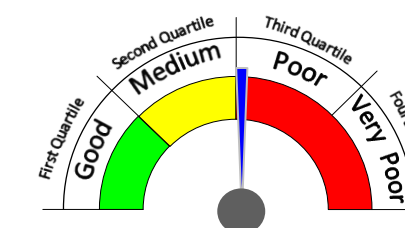
Human Behavior/ Organizational Culture



Project Characteristics



Forecasting Practices



Management Processes

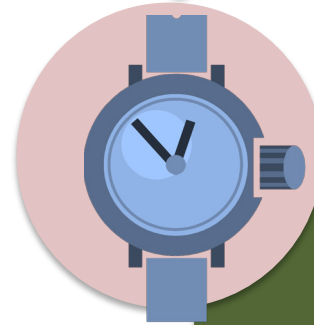
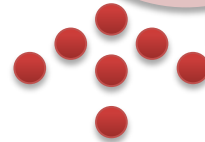
Testimonial - Predictability Index Applications

- Benchmark metric within and across other CII companies
- Predictability assessment at project level
- Predictability assessment at organization level
- Evaluate qualification of project teams, business units, and contractors
- Incentivize project team performance

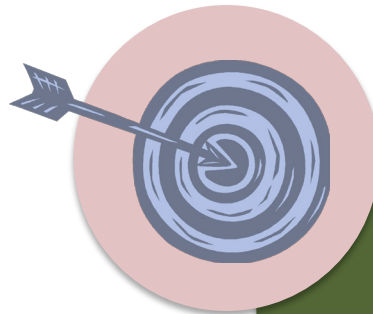




Value



Timeliness



Accuracy



Recommendations

- Apply the Implementation Model
- Utilize the **Four-Casting** model and assessment tools
- Benchmark **Predictability**



Be an early and accurate Predictor!





Strategies for Improving Project Performance Predictability

Dr. W. Edward Back

Thank you

Concept Symposium 2018