Alternative Contracting Methods
a risky business

November 13, 2019
New York State Internal Control Association
7th Annual Integrity, Fraud, and Controls Conference

SUNY Global Center
116 E 55th St, New York, NY 10022

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ARA

Agenda

1. Introduction
2. Key Message
3. a) Parties; b) PDMs/ACMs; c) Performance
4. Decision Support Toolset
5. Owner's Role
6. Integrity, Fraud, and Controls changes?

1. Introduction

Who is Applied Research Associates, Inc.?

NATIONAL SECURITY

INFRASTRUCTURE

ENERGY & ENVIRONMENT

HEALTH SOLUTIONS

Who am I?

- Daniel D'Angelo
  - BS Civil Engineering, MBA Organizational Leadership
  - P.E., PMP, PMI-RMP, PfMP,
  - 33-years with New York State DOT
    - Design, project delivery, risk management, portfolio management
    - Innovation Deployment Manager - SHRP2, EDC
    - Deputy Chief Engineer, ARRA, Tappan Zee, LHTL/BRT
  - 3-years with ARA
    - NHI Instructor – Risk Management
    - FHWA Bridge Bundling, Project Bundling initiatives
    - FHWA Value Capture initiative
    - FHWA ACM Evaluation Toolset
    - NCHRP Projects – Constructability, cost-estimate, post-award management

2. Key Message

Different delivery methods = different methods for allocating risks among different parties

- Does my agency, or agencies you oversee, use different methods?
- Does my agency have processes, controls in place?
- Do we have the experience to execute? To provide oversight?
- Do we know what the potential fraud areas are for different methods? Are they different than traditional delivery methods?
- Is there enough history? What can we learn from others?

3. a) Parties

“Parties”

- Owner/Agency
- Engineering/Professional Service providers
- Contractor/Subcontractors
- Concessionaire/financier/developer
- Operator/Maintainer
- Oversight Agencies

3. b) PDMs/ACMs

Project Delivery Methods

Design-Bid-Build (DBB)

Indefinite Delivery Indeterminate Quantity (IDIQ)

Construction Manager/General Contractor (CM/GC)

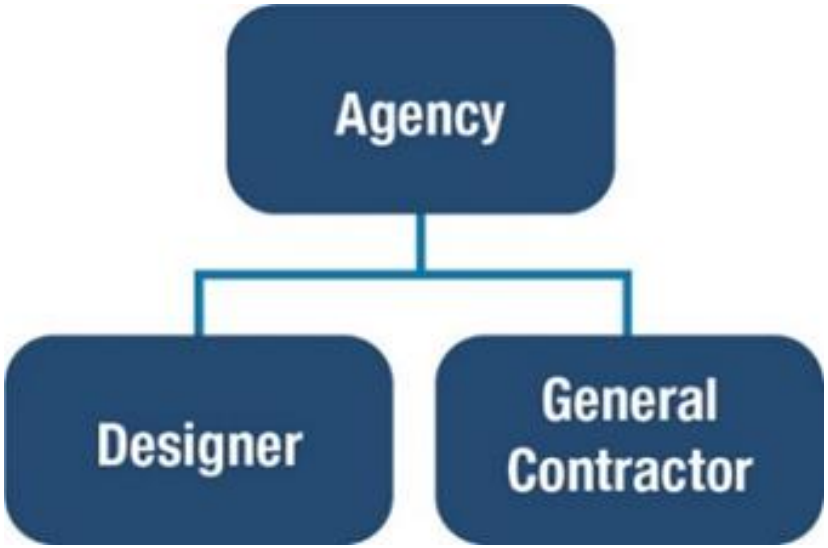
Design-Build (DB)

Progressive Design-Build (PDB)

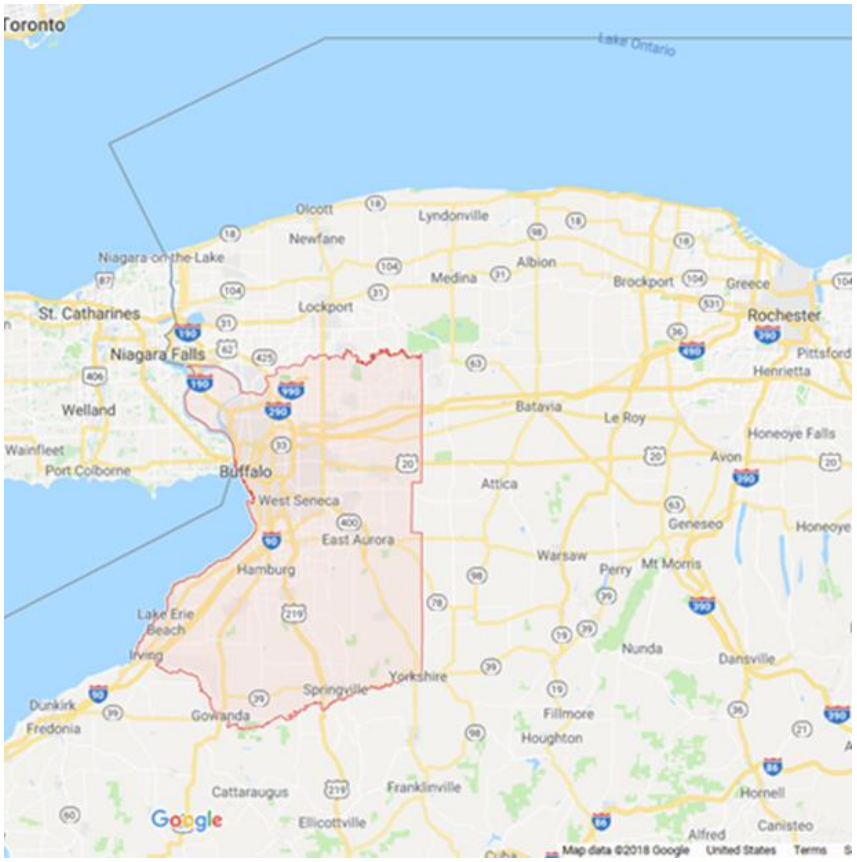
Public-Private Partnership (P3)

Alliancing

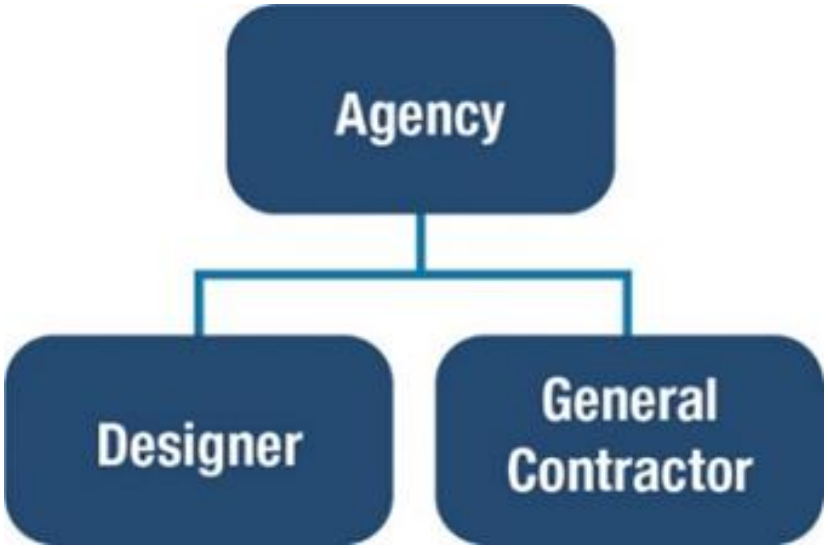
Design-Bid-Build (DBB)



DBB Example



Indefinite Delivery Indefinite Quantity (IDIQ)



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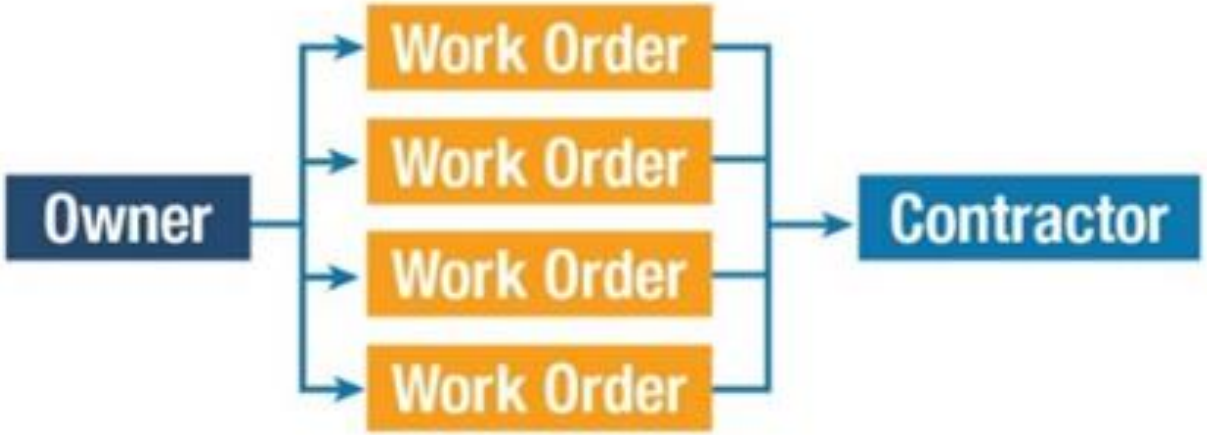
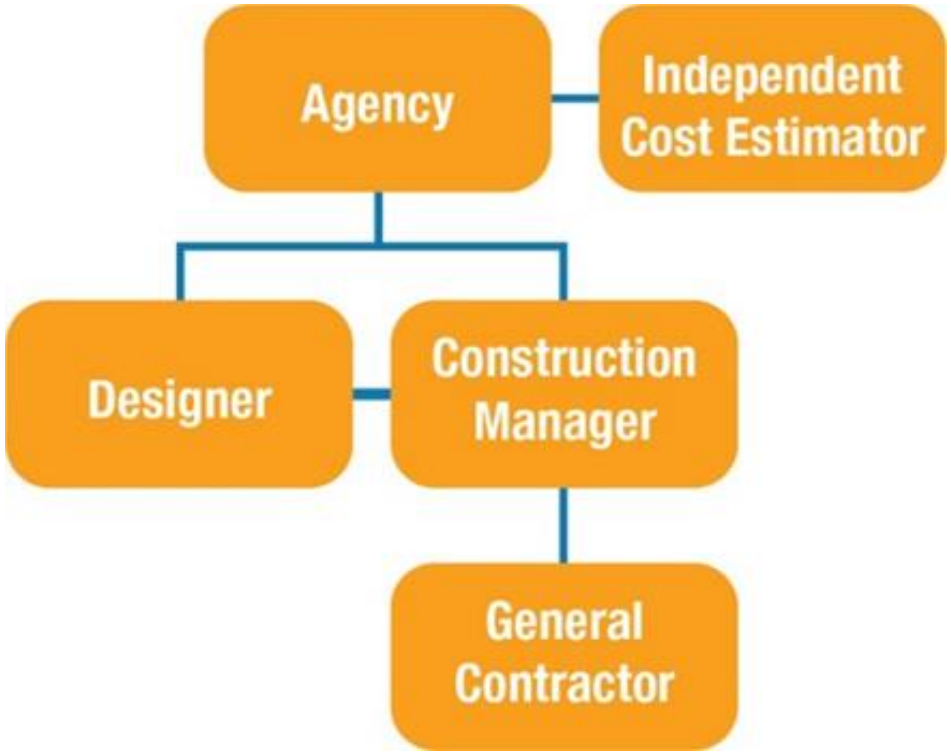


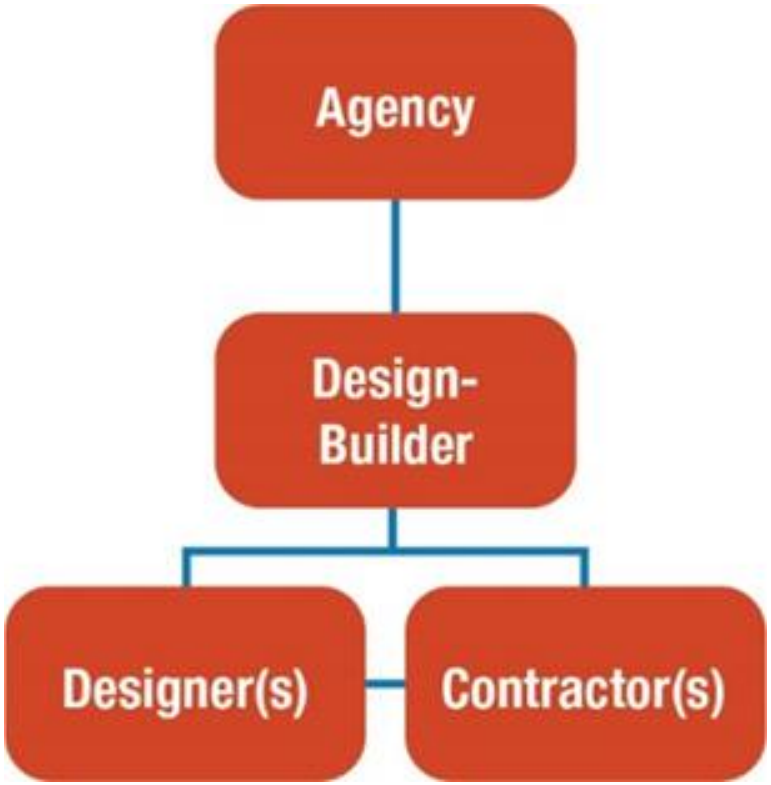
IDIQ Example

Construction Manager/General Contractor (CM/GC)

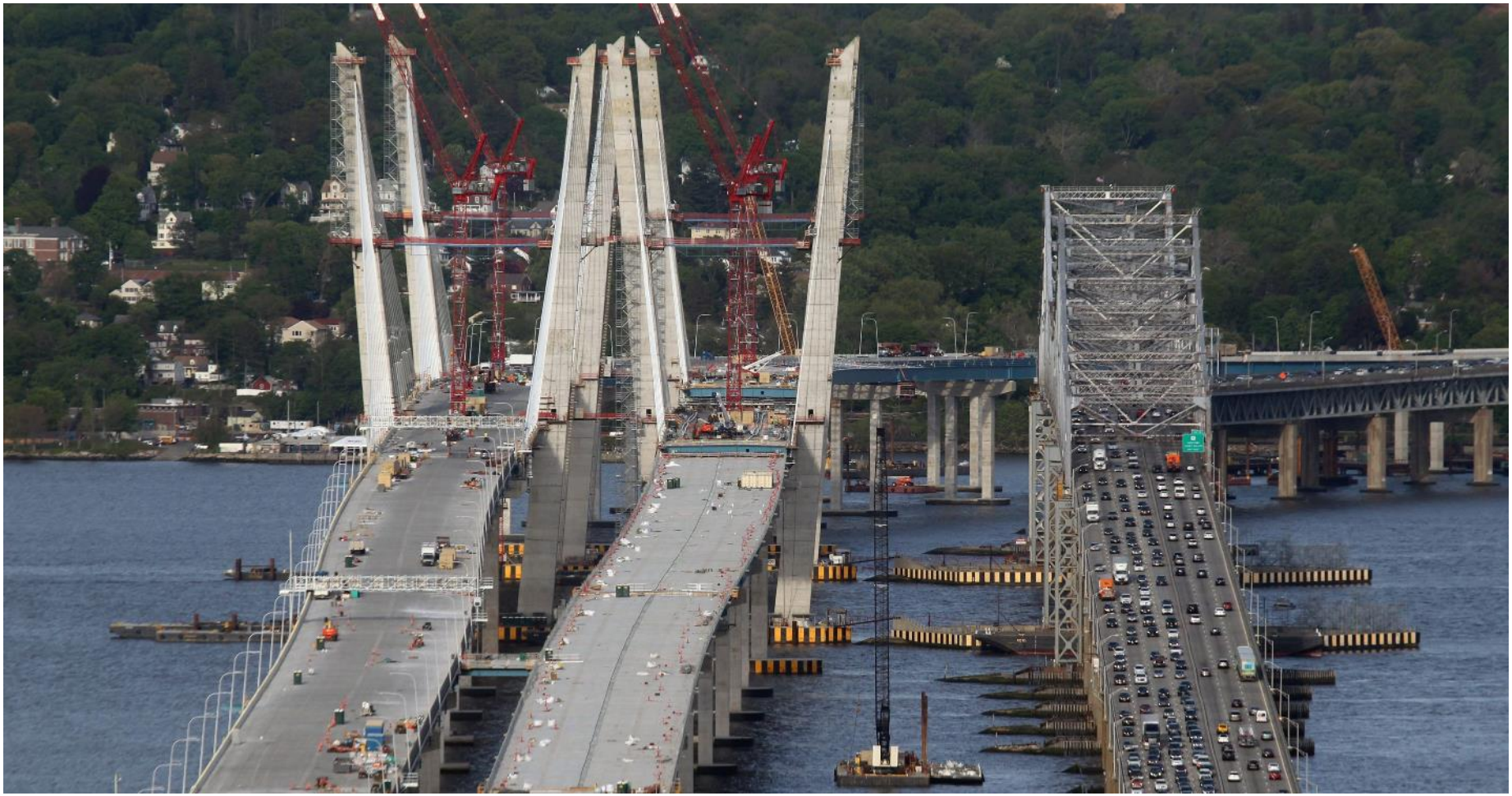


CM/GC Example

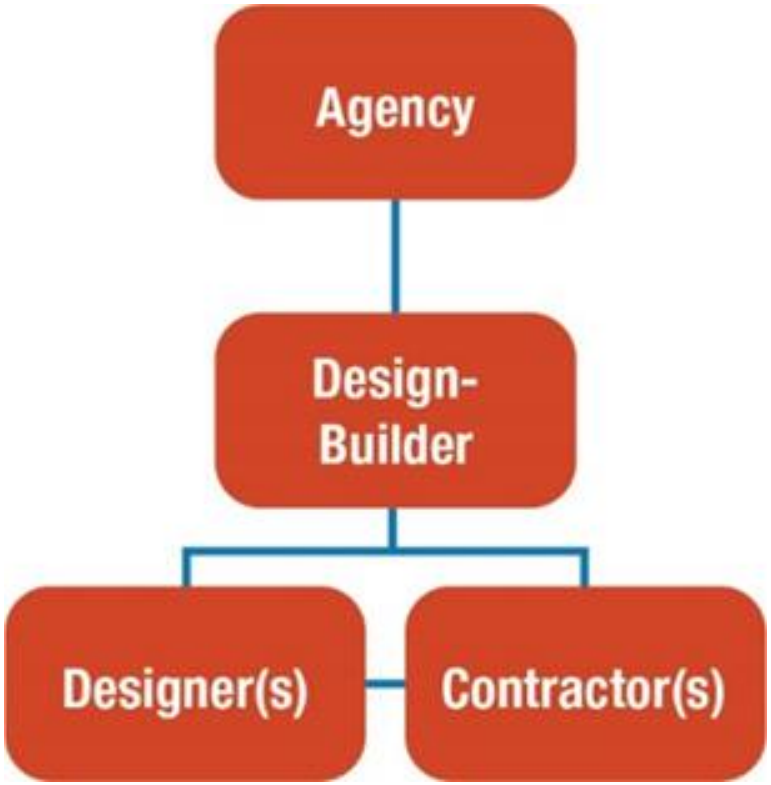
Design-Build (DB)



DB Example

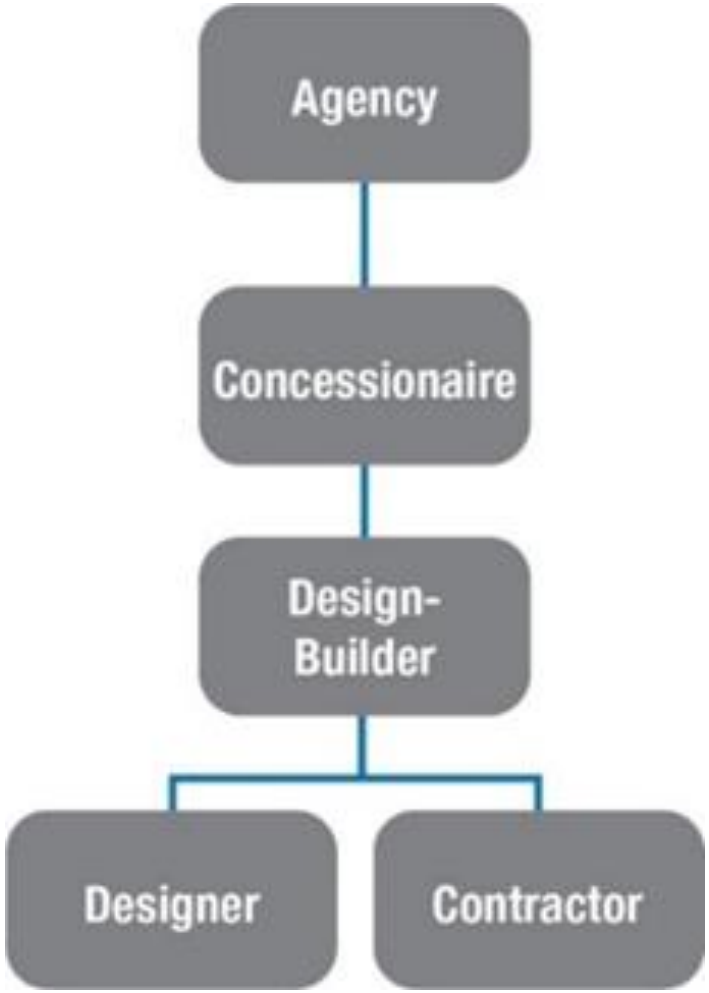


Progressive Design-Build (PDB)

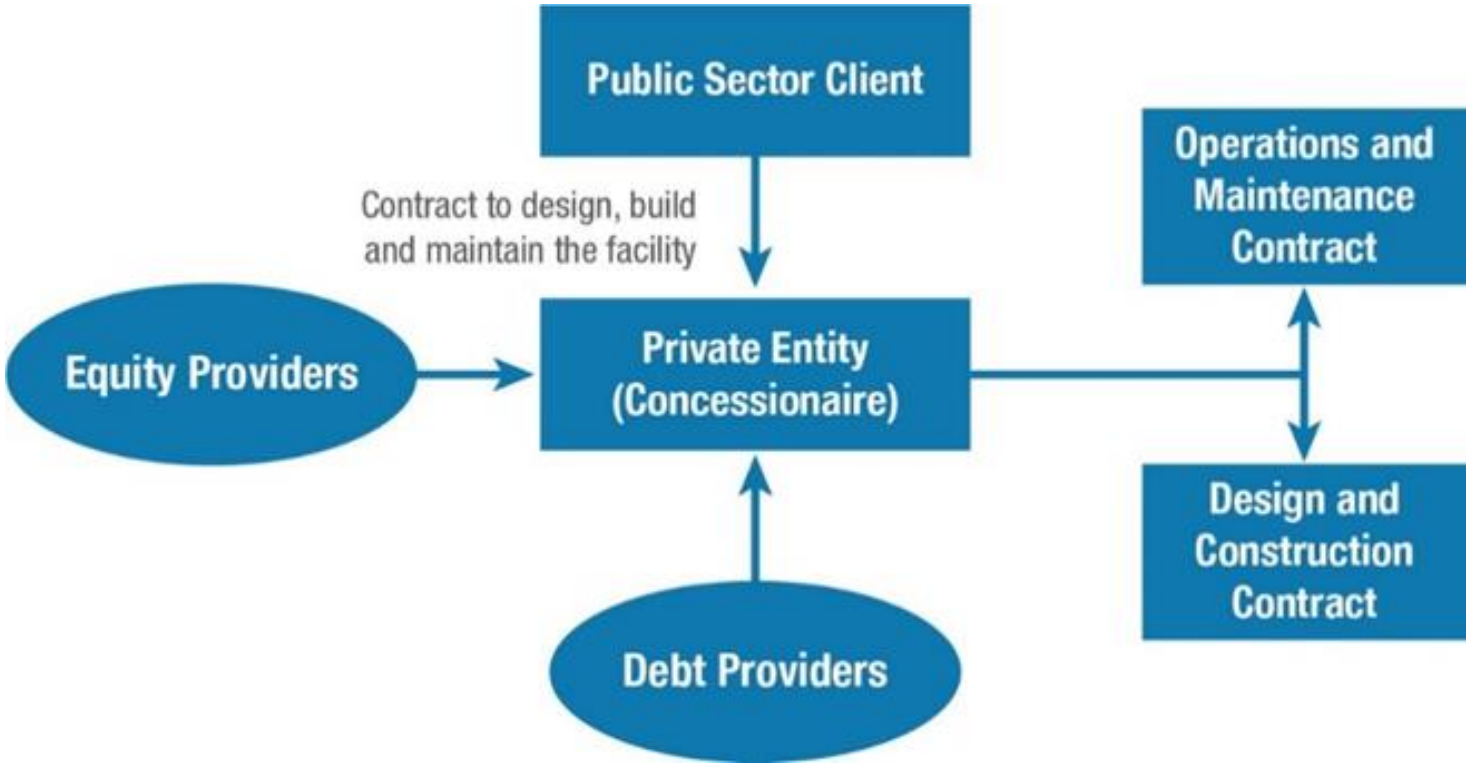


PDB Example

Public Private Partnership (P3)



Public Private Partnership (P3)



P3 Example

Alternative Technical Concepts (ATC)

Procurement Methods

- Low bid (LB)
- Best-Value (BV)
- Qualifications Based Selection (QBS)

3. c) Performance

Average contract durations

Average Duration under Various Contract Methods for Projects between $10 Million and $50 Million

Contract Method	Mean Cost $	Mean Project Duration (Days)	Mean Agency Design Duration (Days)	Mean Construction Duration (Days)[1]
D-B-B (n=34)	$21,188,585	2,130	1,139	818
CM/GC (n=10)	$23,912,981	662	281	349
D-B/BV (n=10)	$18,604,503	1,420	638	639

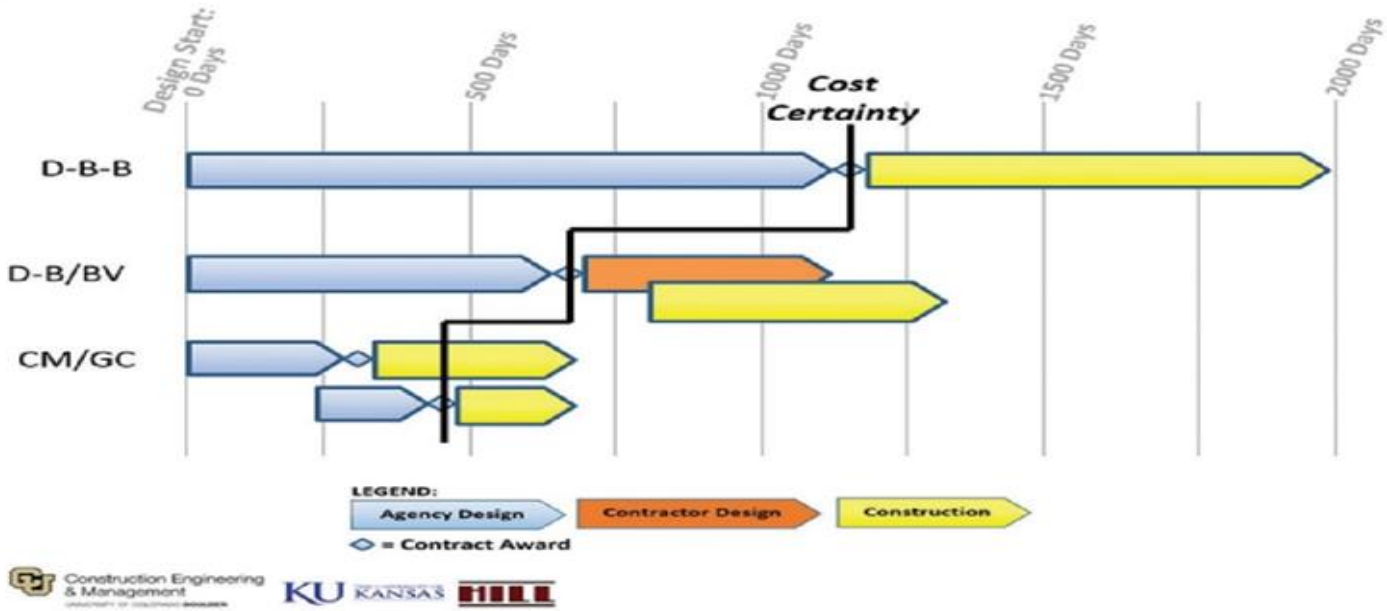
The CM/GC contracting method increases the speed of project delivery over other methods such as D-B-B and design-build/best value (D-B/BV). This graph compares the durations of projects with similar initial costs (as shown in the column for mean cost) and does not indicate the final price of the projects. The subscripts for each contract method indicate the number of projects used to gather the data.

1. Construction duration for design-bid/best- value projects includes design-builder design and construction (D-B contract duration).

Source: FHWA TechBrief HRT-17-100

Timing of award for ACMs

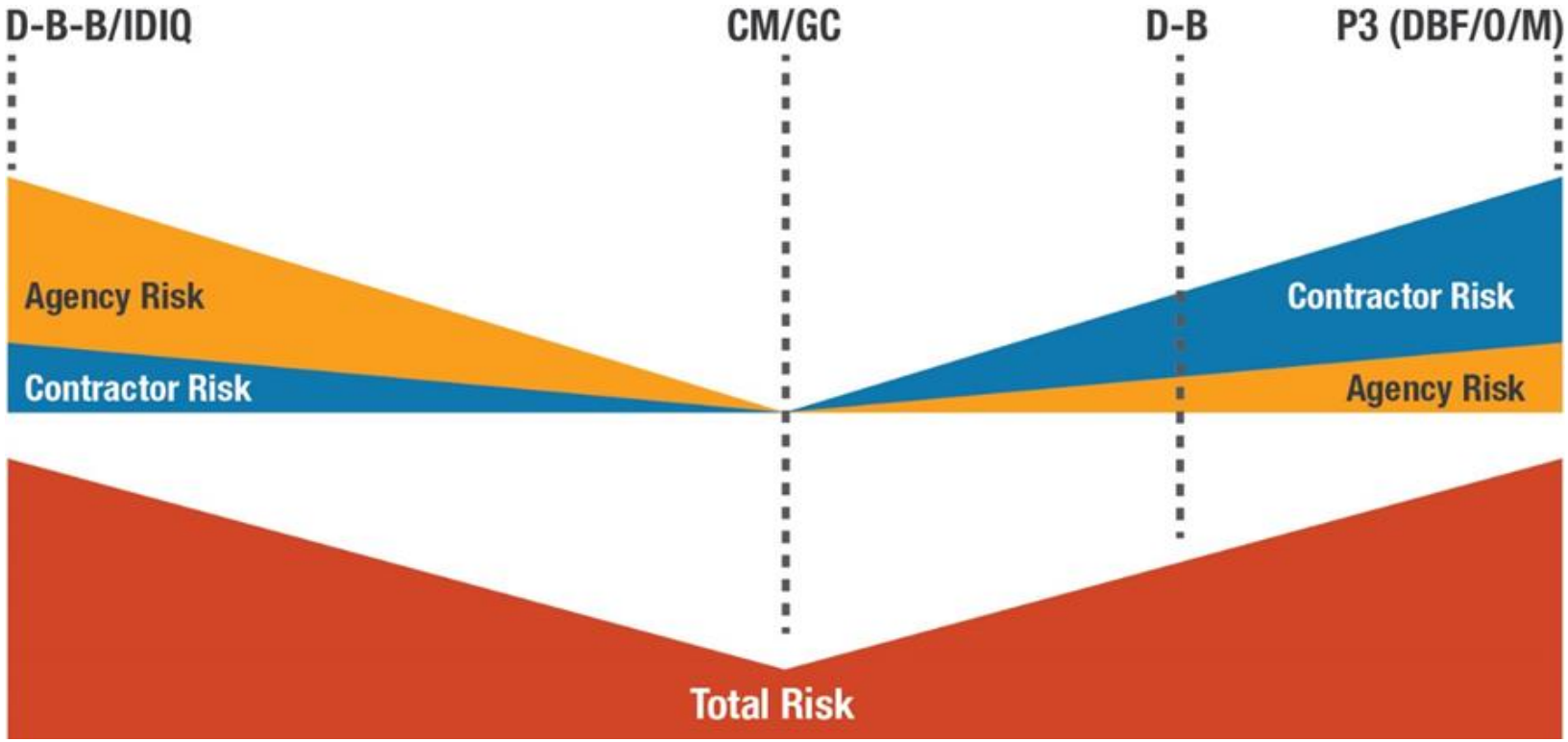
Timing of Award under Various Contract Methods for Projects between $10 Million and $50 Million



ACMs like design-build/best value (D-B/BV) and CM/GC enable transportation planners to determine the cost certainty faster than the traditional D-B-B method. Cost certainty is the point at which the contractor provides a firm price for the project to the agency. For CM/GC, cost certainty is known after the cost for the last construction package has been agreed on. The figure shows two packages for illustrative purposes.

Source: FHWA TechBrief HRT-17-100

Risk allocation by project delivery method



Source: FHWA Bridge Bundling Guidebook

Project Delivery Methods – goal types

	D-B-B	IDIQ	CM/GC	D-B	P3
Program Goals	• Agency retains design risks • Traditional delivery • Maintain control of final product	• Quick response for unknown needs • Improve asset management	• Risk allocation to party best to handle • Contractor innovation • Projects with complex components	• Transfer risks to contractor • Increase capacity of agency • Contractor Innovation	• Transfer risk to concessionaire • Operations, long-term maintenance • Contractor Innovation

Project Delivery Methods – project characteristics

	D-B-B	IDIQ	CM/GC	D-B	P3
Project Characteristics	• Simple designs • Third-party Issues resolved before advertisement.	• Preservations • Preventative maintenance • Replacements • Predictable but not yet determined work.	• Projects w/ complexities. • Significant third-party involvement • "Out of the box" thinking required	• Time savings • Innovation • Limited third-party involvement (ROW, Environmental, Utilities, Railroads, etc.).	• time savings • Innovation • Limited third-party involvement (ROW, Utilities, Environmental, Railroads, etc.). • Variety of work types.

Project Delivery Methods – procurement methods

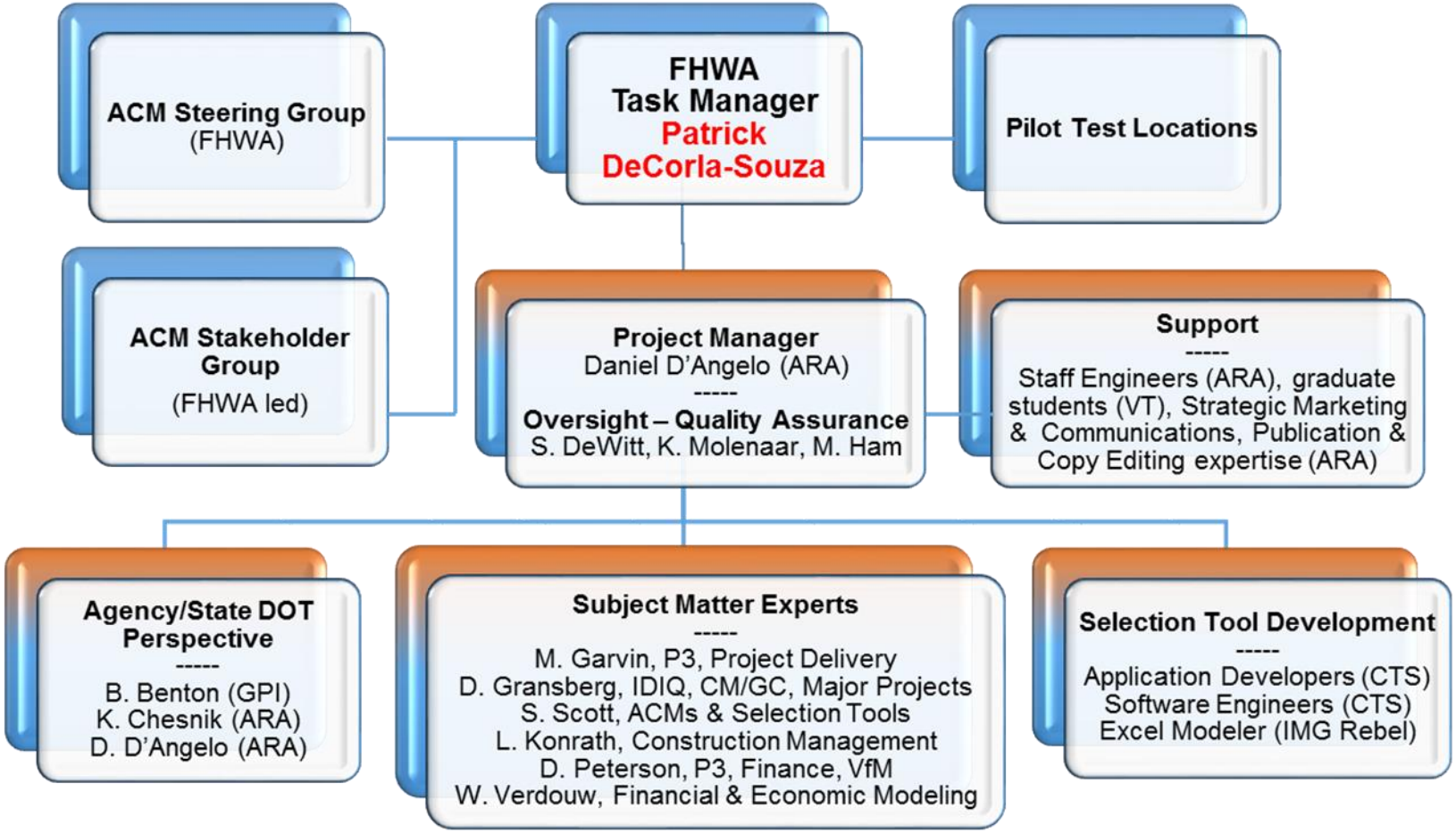
	D-B-B	IDIQ	CM/GC	D-B	P3
Procurement Methods	• Low Bid • Best Value	• Low Bid	• QBS • GMP	• Best Value • QBS • Low Bid	• Best Value • QBS

4. Decision Support Toolset

Project Objective

"To develop a suite of linked analytical tools that **incorporates and integrates the best of the tools** and processes already developed by FHWA, State DOTs and others, while **filling the gaps** wherever they exist and enhancing their capabilities."

Project Organization



Scope of Work

1. Report on State DOTs+ evaluation methodologies ✓
2. Select locations for case studies ✓
3. Prepare case studies ✓
4. Draft ACM evaluation toolset ✓
5. Workshop ✓
6. Revised ACM evaluation toolset ✓
7. Pilot Test/reports (up to six) ✓
8. Final ACM evaluation toolset (November 27, 2019)

Evaluation Methodologies

Key Findings:
DOTs choose ACMs for 3 primary reasons -

1. Accelerate schedule
2. Reduce risk through enhanced schedule and cost certainty
3. Address complexity through collaboration

Performance Measurements of selected ACMs very limited.

Selection rely significantly on user judgments.

Federal Highway Administration
Office of Innovative Program Delivery

Tools and Technical Assistance for Evaluation of Alternative Contracting Methods

ACM Evaluation Methodologies in the United States
[and Select International Practices]

Summary Report

October 24, 2018

Case Studies Selection Criteria

1. Mature ACM programs
2. More than one ACM
3. Institutionalized (manuals, guidebooks, policy documents)
4. Availability of performance data

Federal Highway Administration
Office of Innovative Program Delivery

Tools and Technical Assistance for Evaluation of Alternative Contracting Methods

ACM Evaluation Methodologies in the United States
[and Select International Practices]

Task 3 Report to Select Case Study States

October 17, 2018

Case Studies

- California DOT
- Florida DOT
- Michigan DOT
- Texas DOT
- Utah DOT
- Virginia DOT
- Washington DOT
- Australia
- Transit VfM – Purple Line

Federal Highway Administration
Office of Innovative Program Delivery

Tools and Technical Assistance for Evaluation of Alternative Contracting Methods

Case Studies on Alternative Contracting Method Evaluation by Select State Departments of Transportation in the United States and an International Agency

REVISED DRAFT Summary Report

March 13, 2019

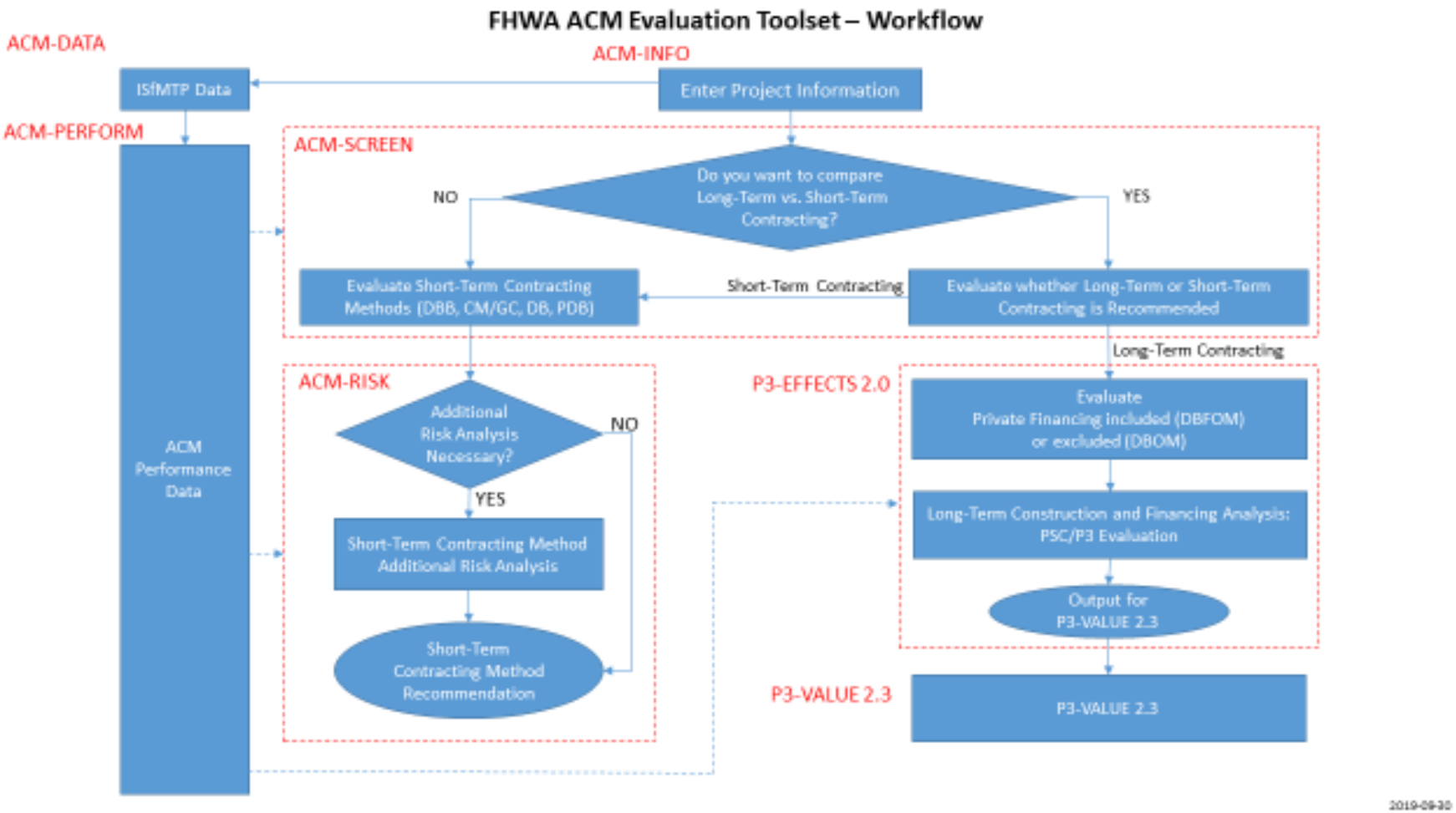
Case Study Key Findings

- What we did not find was most important!
- No performance measures, limited data
- No state DOT using quantitative tools
- No uniform evaluation method amongst the state DOTs
- No direct ACM comparator vs P3 comparison
- Prefer simpler, flexible tools that show ranking
- Most do not evaluate the full range of ACMs
- Evolving policies on evaluation methods and documenting decisions – early in process decision is preferred
- Interest in a database of performance data

ACM evaluation tools considered/used -

- CDOT's Project Delivery Selection Matrix (PDSM)
- Caltrans' Alternative Procurement Guide
- TCRP Report 131: A Guidebook for the Evaluation of Project Delivery Methods
- Value for Money (VfM) Analysis
- P3-SCREEN, P3-EFFECTS, and P3-VALUE 2.2
- SHRP2 R10 – Project Management Strategies
- SHRP2 R09 – Risk Management for Complex Projects

Workflow

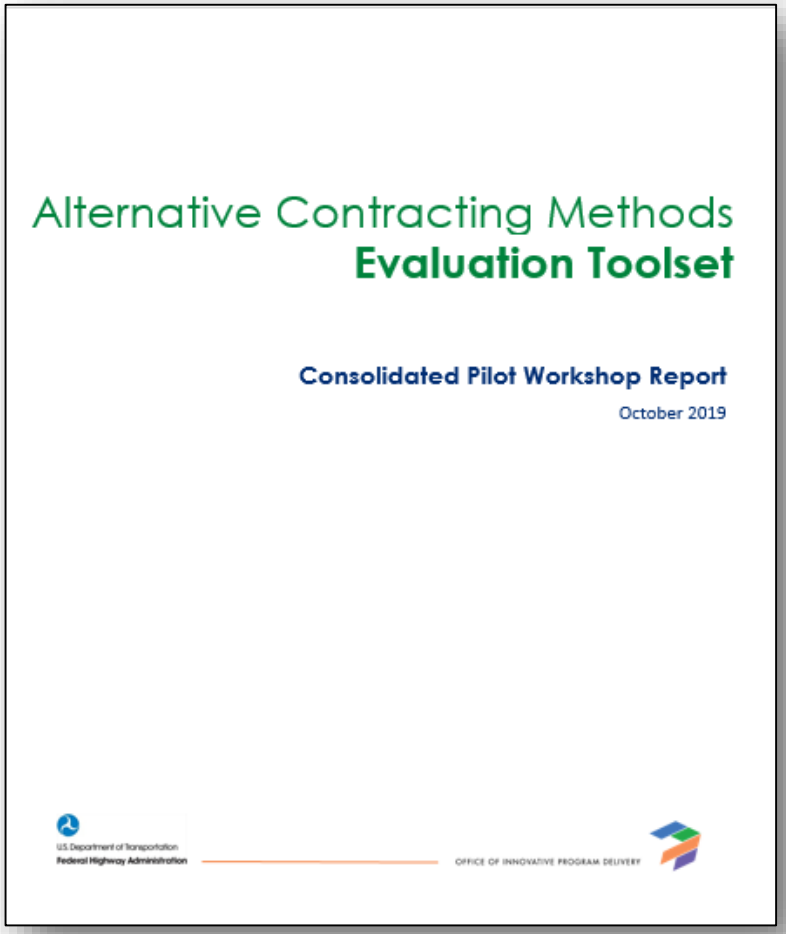


ACM Pilot Workshops –

- California DOT (pilot pilot) – 8/09/19
- Georgia DOT - 10/25/19
- Michigan DOT – 10/03/19
- South Carolina DOT- 10/08/19
- Texas DOT – 10/01/19
- Utah DOT – 10/15/19
- Virginia DOT – 10/07/19

ACM Pilot Workshop Feedback –

- Very positive
- Improvement suggestions & enhancements
- Use as is!
- Extremely valuable task, need for toolset clear


Alternative Contracting Methods
Evaluation Toolset

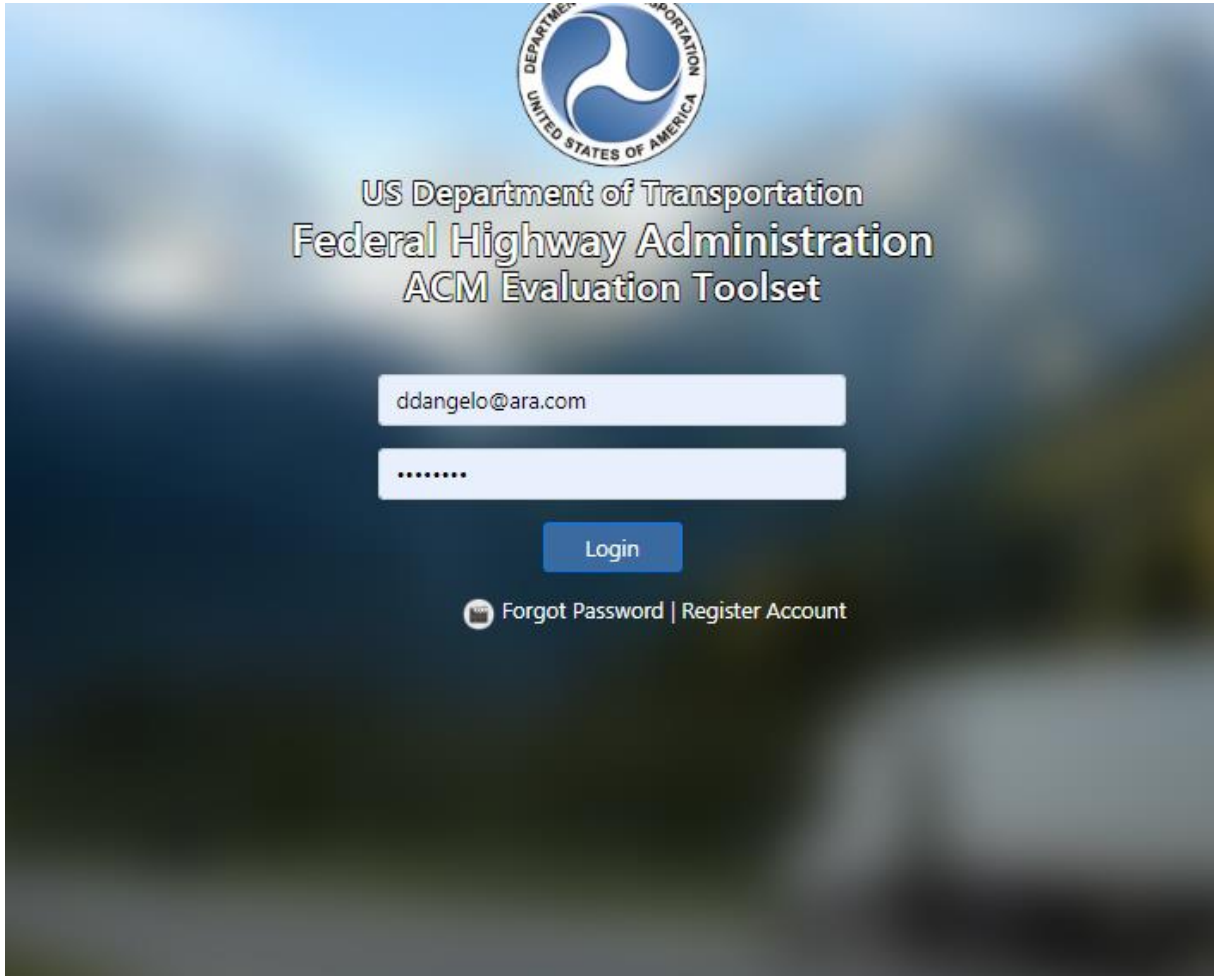
Consolidated Pilot Workshop Report

October 2019

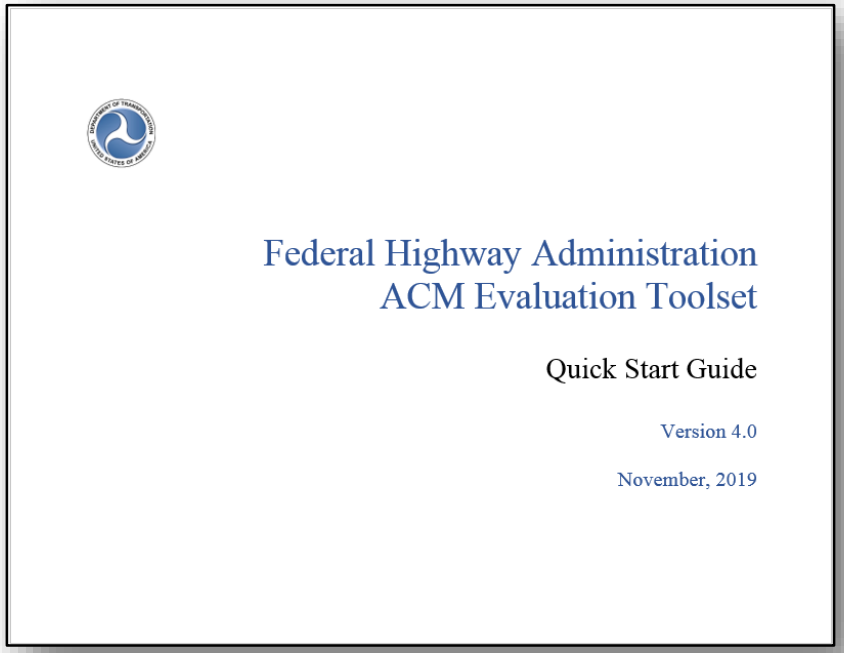
U.S. Department of Transportation
Federal Highway Administration

OFFICE OF INNOVATIVE PROGRAM DELIVERY

Toolset

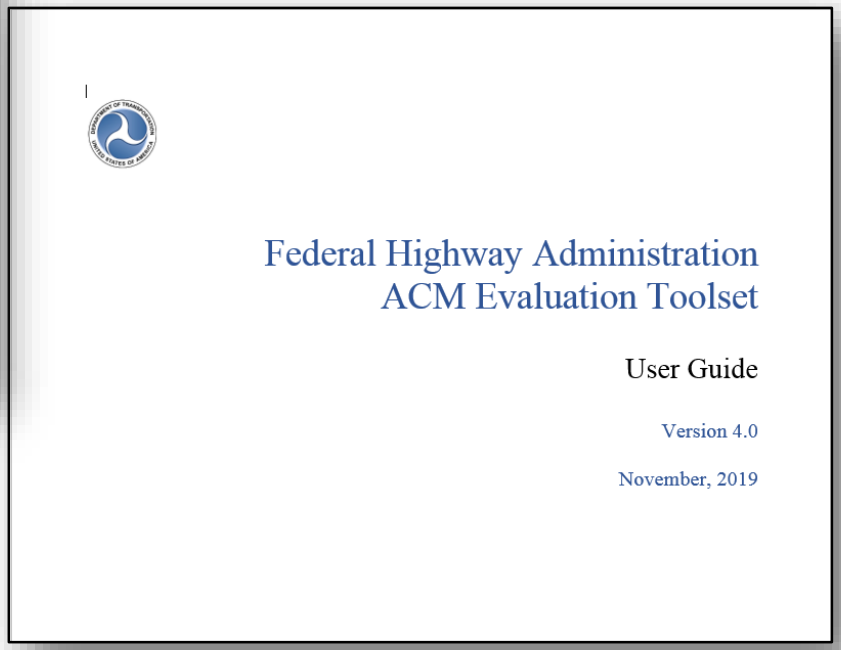


Toolset Supporting Documentation



Quick Start Guide

User Guide



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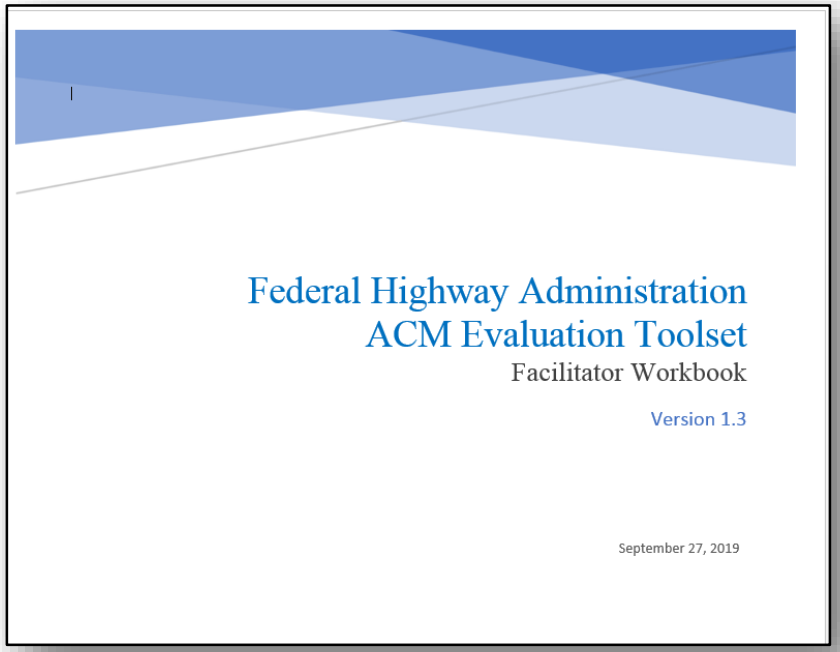
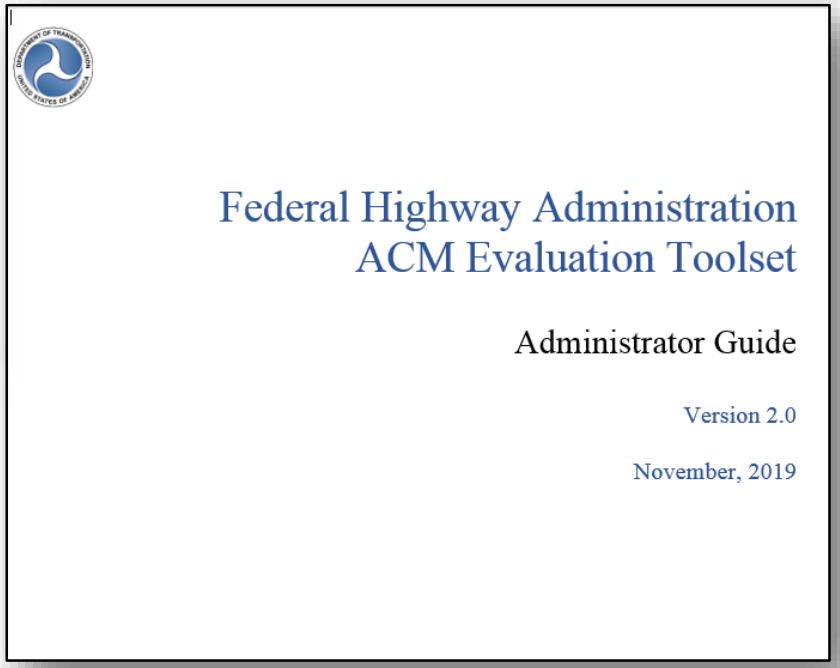


Facilitator Workbook

Administrator Guide



ACM Evaluation Toolset

- Administrative features
- Project Input (ACM-INFO)
- Short-term vs. Long-term evaluation (ACM-SCREEN)
- Short-term evaluation (ACM-Risk)
- Long-term evaluation (P3-EFFECTS 2.0, P3-VALUE 2.3)
- Output/Report features

ACM-Risk

US Department of Transportation
Federal Highway Administration

elcome, Dan D'Angelo
Logout
Reports FAQs About

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Forward	Alt+Right Arrow
Reload	Ctrl+R
Save as...	Ctrl+S
Print...	Ctrl+P
Cast...	
Translate to English	
Adobe Acrobat	
View page source	Ctrl+U
Inspect	Ctrl+Shift+I

Test 02
Project Delivery Risk Allocation
Risk Allocation Assessment Matrix

(Click to see General Risk Categories/High Level Risks)

Risk Description	Qualitative Risk Assessment: Probability of Occurrence	Severity of Impact	Risk Rating
Delay in review of environmental documentation	P <= 5%	Negligible Sched	1
Third-party delays during construction	5% <= P < 20%	Minor Delay and/	4
Railroad involvement	20% <= P < 60%	Major Delay and/	9
Acquisition ROW problems	20% <= P < 60%	Catastrophic Del:	12
Community relations	P >= 60%	Negligible Sched	4
Pressure to delivery project on an accelerated schedule	P <= 5%	Minor Delay and/	2
Construction QC/QA issues	5% <= P < 20%	Major Delay and/	6
reputation	20% <= P < 60%	Catastrophic Del:	12

+ Add Risk Decision Matrix

Notes/Comments

ACM-Risk

US Department of Transportation
Federal Highway Administration

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Logout

Administration Home Reports FAQs About

Test 02-Copied

Project Delivery Risk Allocation

Risk Allocation Decision Matrix

Select the ACM methods for Risk Allocation
☑ DBB ☑ CMGC ☑ DB ☑ PDB

Risk Description	Risk Rating	Ability to Mitigate through Delivery Method: DBB	CMGC	DB	PDB
Delay in review of environmental documentation	6	Advantageous t	Advantageous t	Costly to Manag	Reasonable to l
Third-party delays during construction	12	Reasonable to l	Advantageous t	Reasonable to l	Costly to Manag
Railroad involvement	16	Advantageous t	Advantageous t	Potentially a Fa	Costly to Manag
Acquisition ROW problems	6	Advantageous t	Advantageous t	Costly to Manag	Reasonable to l
Community relations	1	Advantageous t	Advantageous t	Costly to Manag	Reasonable to l
Pressure to delivery project on an accelerated schedule	12	Potentially a Fa	Advantageous t	Advantageous t	Reasonable to l
Construction QC/QA issues	9	Costly to Manag	Advantageous t	Reasonable to l	Reasonable to l
reputation	12	Advantageous t	Advantageous t	Costly to Manag	Reasonable to l
Unforeseen delays due to utility owner and third-party	6	Costly to Manag	Advantageous t	Costly to Manag	Costly to Manag

Assessment Matrix

Risk Allocation Rating(Lower Number = Higher Risk)	DBB	CMGC	DB	PDB
	242	320	189	206

Notes/Comments

5. Owner’s Role

QA: Control and Acceptance

A construction QA program consists of the following core elements:

- Agency acceptance.
- Independent assurance.
- Dispute resolution.
- Personal qualification.
- Laboratory accreditation/ qualification.

Image source: FHWA

Quality Assurance Options

PROJECT DELIVERY METHOD	AGENCY OVERSIGHT & ACCEPTANCE OPTIONS	QUALITY CONTROL OPTIONS
D-B-B & IDIQ	• By agency in-house staff. • By agency representative (outsourced to consultant).	• Contractor QC staff are independent of construction staff.
CM/GC	• By agency in-house staff. • By agency representative (outsourced to consultant).	• Same as D-B-B.
D-B & P3	• By agency in-house staff. • By agency representative (outsourced to consultant).	• D-B QC staff are independent of construction staff. • Design-builder employs an independent testing firm. • Agency responsible for verification testing.

6. Integrity, Fraud, and Controls changes?

Different delivery methods = different methods for allocating risks among different parties

- Does my agency, or agencies you oversee, use different methods?
- Does my agency have processes, controls in place?
- Do we have the experience to execute? To provide oversight?
- Do we know what the potential fraud areas are for different methods? Are they different than traditional delivery methods?
- Is there enough history? What can we learn from others?

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