

# Optimizing the Design Process, a Discussion of Design Assist and Risk Reduction

September 7, 2023



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# COGENCE Alliance

Owners + Architects + Engineers + Contractors

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# Cogence *(Latin)*

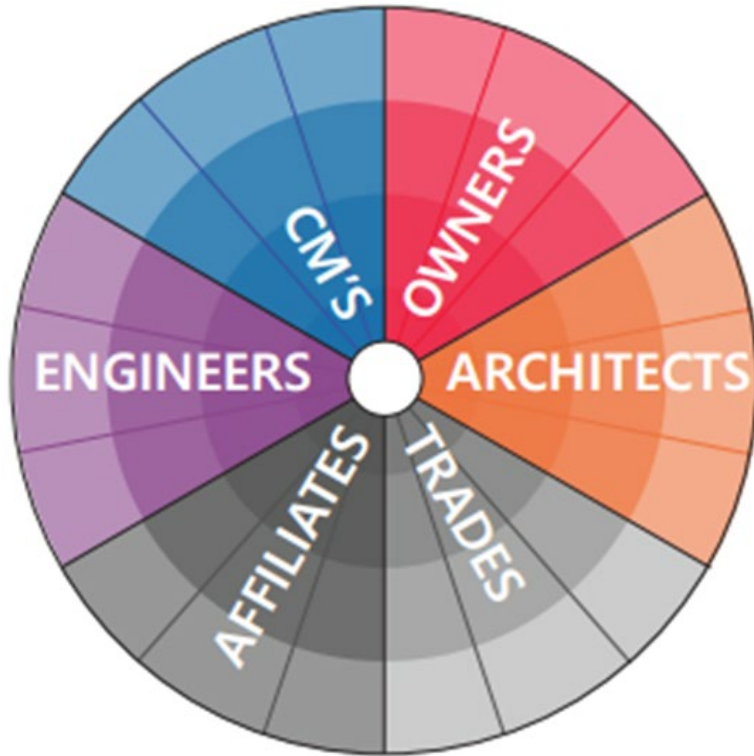
“To drive together” or “Thinking that is well organized”

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**MISSION:** Transform the design & construction industry to be more collaborative, with reduced risk & improved outcomes for all projects.

# Audience Participation

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*THE 6 DEGREES OF RISK: We all benefit when we collaboratively reduce risk.*

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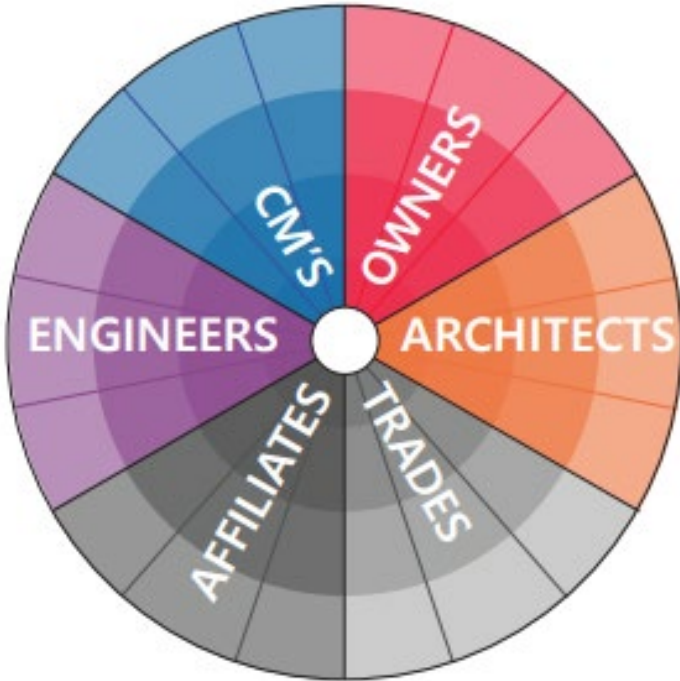




# **6 DEGREES**

## **OF DESIGN & CONSTRUCTION RISK**

# 6 Degrees of Design & Construction Risk



*THE 6 DEGREES OF RISK: We all benefit when we collaboratively reduce risk.*

1. Owners
2. Affiliates
3. CM's
4. Trades
5. Engineers
6. Architects

# Risk Roundtables

## RISKY BUSINESS

### February 2019

- Discovery
- Identified risk from each of the six industry partners' perspectives and grouped them into the 10 key risks

## RISKY TIMES

### April 2019

- Assessment
- Ranked risks from each industry's perspective to identify key areas that contribute to higher levels of risk

## RISK OR KEYS TO SUCCESS

### July 2019

- Solutions
- Partners worked together to identify habits to mitigate risk to each other and to the project as a whole



60+ Industry Professionals



# What are the Risks?

**COMMUNICATION:** Unclear, conflicting, and/or untimely delivery of information; lack of transparency; not establishing and/or observing proper channels; lack of proper documentation; hoping problems just resolve themselves.

**CONTRACTS:** Unfair, unclear, or unenforceable contract terms; inappropriate allocation of risk; not reducing material terms and/or amendments to writing.

**LEADERSHIP:** Uncertain roles/responsibilities; lack of understanding of the strategic drivers of the project; selecting the wrong team; substitution/loss of key team members; unwillingness or inability to take prompt and decisive action.

**SCHEDULE:** Compression, acceleration, and/or not properly setting up the project at inception; slippage; unrealistic goals or expectations; failure to update; not incorporating scope changes.

**BUDGET:** Failure to reconcile budget with scope/expectations; lack of alignment between costs and necessary expertise; conflicting philosophies as between first cost v. long-term operating costs; lack of transparency.

**TEAM MEMBERS:** Improperly trained or educated personnel; shortages; not retaining key personnel for duration of a project.

**CHANGES:** Re-design; untimely changes; lack of understanding of how changes impact all team members ("domino effect").

**FINANCIAL:** Pushing liability downhill and/or not sharing risk; insufficient financing; market volatility; disagreements on prediction of escalation.

**QUALITY:** Defective work; value engineering; inconsistent understanding of the level of document completeness.

**DUE DILIGENCE:** Lack of attention to vetting the project or the team; insufficient review prior to proposal or interview submission; having a commodity, rather than value-based, mindset.



# RISK RANKING

ARCHITECT

OWNERS

CM'S

TRADES

ENGINEERS

AFFILIATES

COMMUNICATION

BUDGET

TEAM MEMBERS

TEAM MEMBERS

COMMUNICATION

COMMUNICATION

BUDGET

COMMUNICATION

CONTRACTS

SCHEDULE

CHANGES

LEADERSHIP

CONTRACTS

LEADERSHIP

BUDGET

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COMMUNICATION

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DUE DILIGENCE

LEADERSHIP

QUALITY

SCHEDULE

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SCHEDULE

LEADERSHIP

CHANGES

QUALITY

CHANGES

TEAM MEMBERS

CONTRACTS

QUALITY

FINANCIAL

LEADERSHIP

TEAM MEMBERS

QUALITY

TEAM MEMBERS

FINANCIAL

QUALITY

DUE DILIGENCE

QUALITY

CHANGES

CHANGES

CHANGES

BUDGET

TEAM MEMBERS

FINANCIAL

DUE DILIGENCE

DUE DILIGENCE

DUE DILIGENCE

DUE DILIGENCE

FINANCIAL

BUDGET

FINAL RANKED  
RESULTS

COMMUNICATION

CONTRACTS

LEADERSHIP

SCHEDULE

BUDGET

TEAM MEMBERS

CHANGES

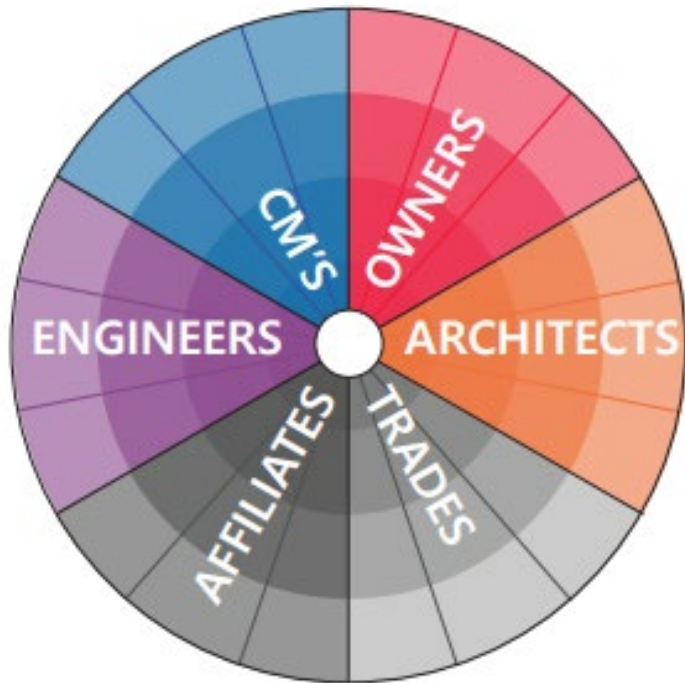
FINANCIAL

QUALITY

DUE DILIGENCE

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# 10 Greatest Risks - Aggregated



*THE 6 DEGREES OF RISK: We all benefit when we collaboratively reduce risk.*

1. Communication
2. Contracts
3. Leadership
4. Schedule
5. Budget
6. Team Members
7. Changes
8. Financial
9. Quality
10. Due Diligence



THE 6 DEGREES OF RISK: We all benefit when we collaboratively reduce risk.

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# Audience Participation

 **WHO IS FAMILIAR WITH DESIGN ASSIST?**



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# Audience Participation

 **HAVE YOU USED DESIGN ASSIST?**



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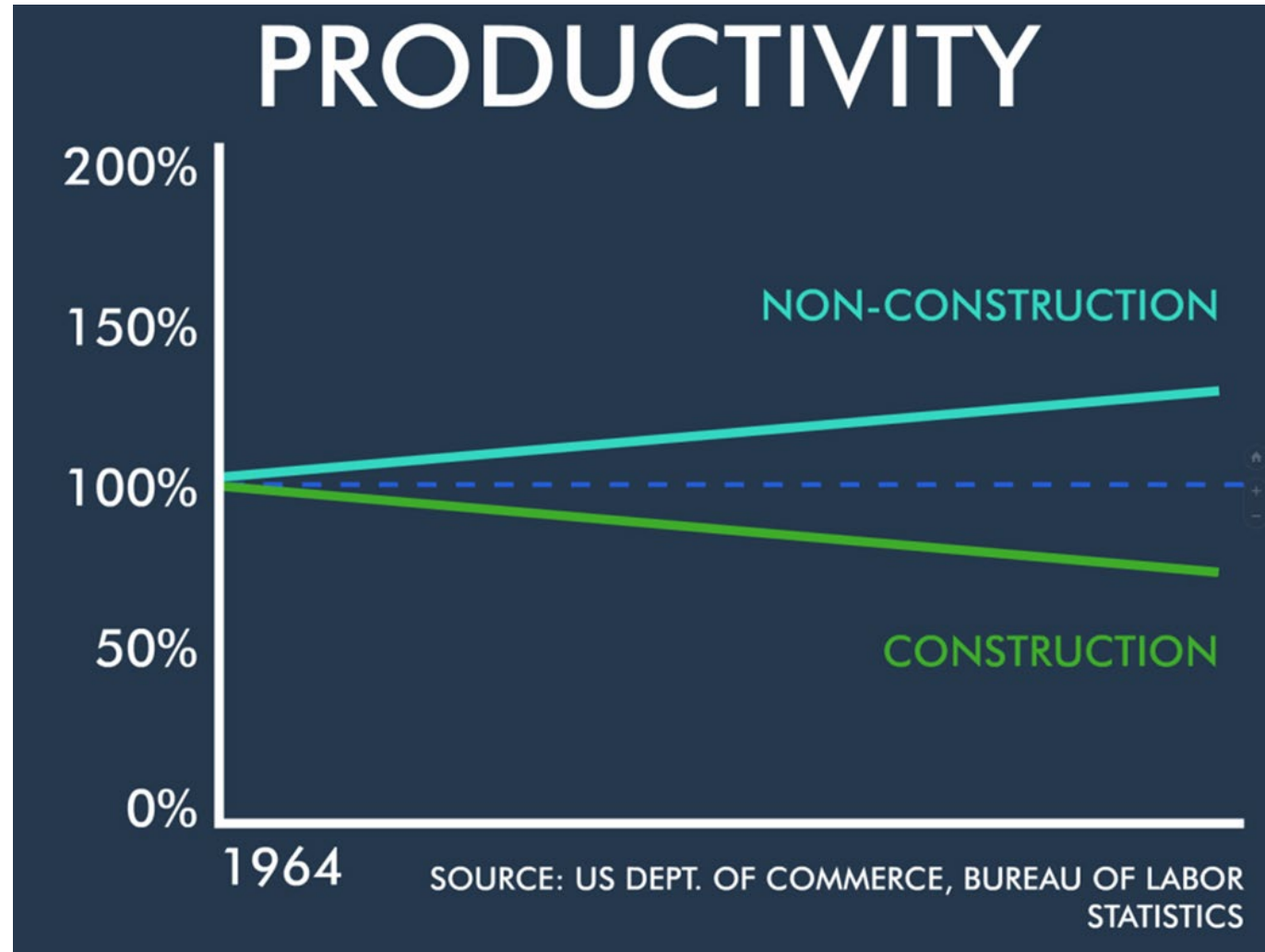
# Audience Participation

● **EXPERIENCE WITH DESIGN ASSIST  
FAVORABLE OR UNFAVORABLE?**





# Productivity – We've all Seen it





# Increasing Productivity

- **AutoDesk Construction Cloud – March 3, 2021**
- **“But this is no longer the case. Over the last few years, construction has made measurable improvements in its productivity thanks to the use of better technology and data.”**
- **“To Increase Productivity, Start Improving Your Processes”**

## Productivity is Not a People Issue in Construction: It's a Process One

TIPS & TOOLS

By Grace Ellis

March 3, 2021

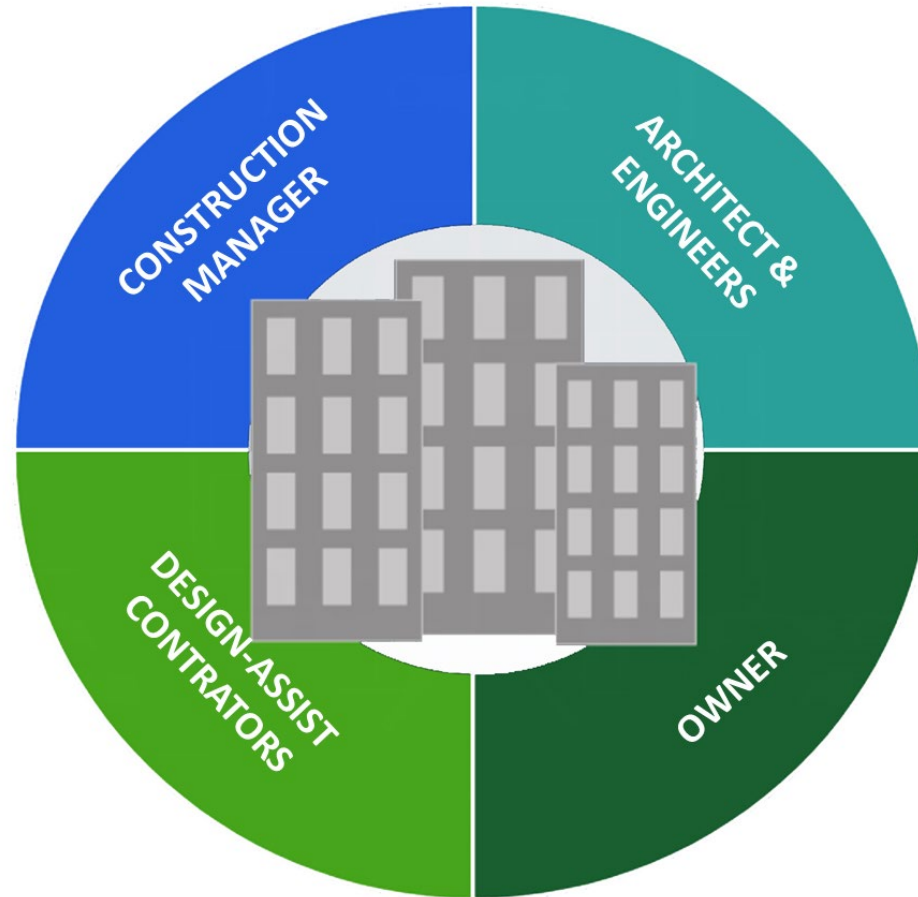
10 min read





# The Design Assist Process

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# What is Design Assist?



COLLABORATION



REVIEW DRAWINGS



REVIEW PHASING & CONSTRUCTABILITY



MAJOR EQUIPMENT EARLY ACQUISITION



VERIFY EXISTING CONDITIONS



BIM COORDINATION



REAL TIME COST ESTIMATING



VALUE ADDED RECOMMENDATIONS



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# Risk

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RISK



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# DA Reduces Risk for Design Team

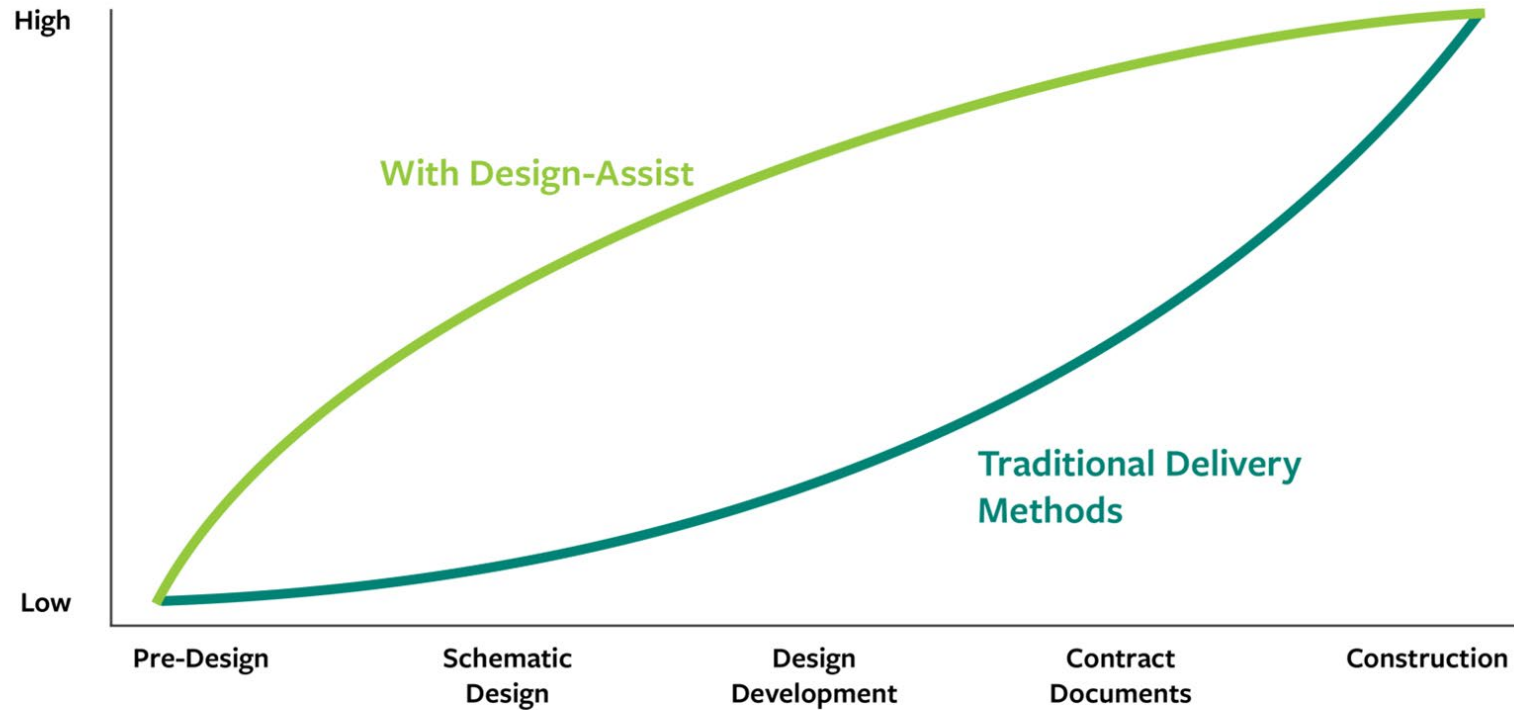
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- Budget / Schedule / Design do not Align
- Communication / Lack of Understanding Expectations
- Errors and Omissions
- Contractor Performance
- Field Conditions
- Constructability / Phasing
- VE Rework



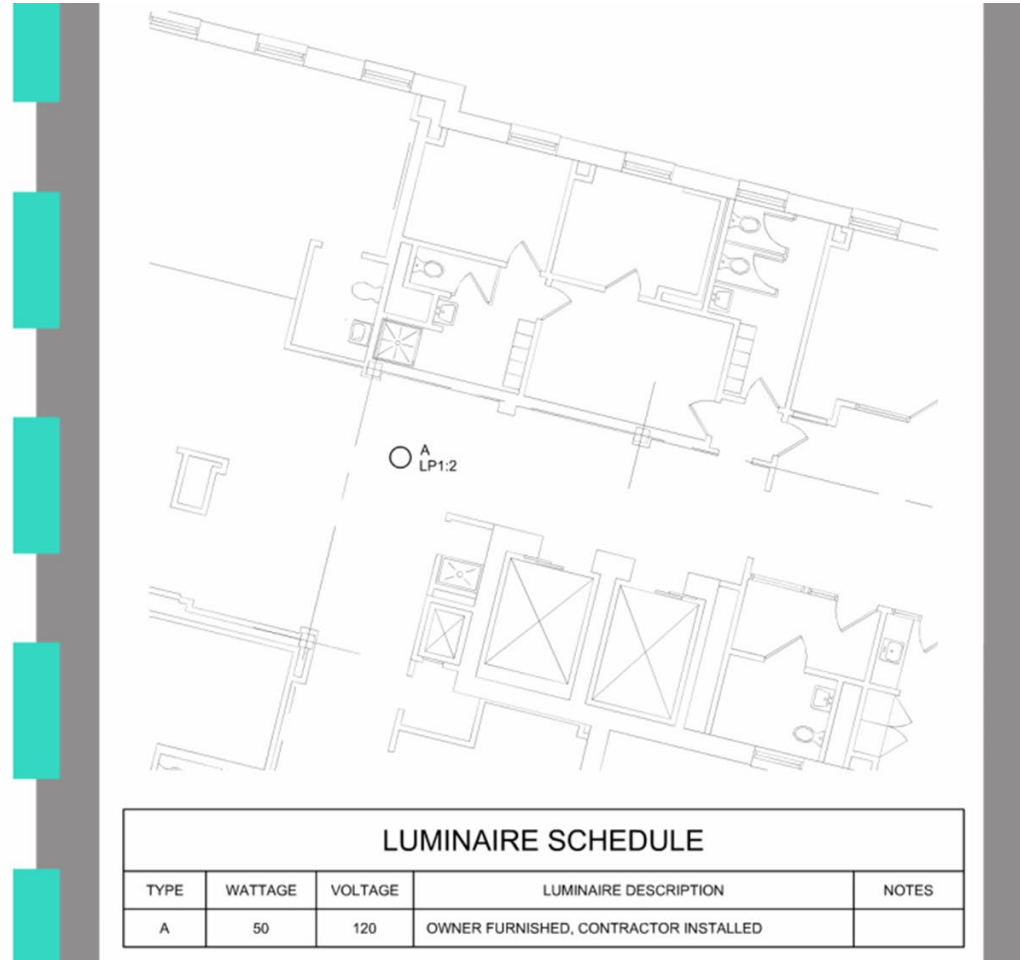
# Design Assist Knowledge

Team Members'  
Project Knowledge





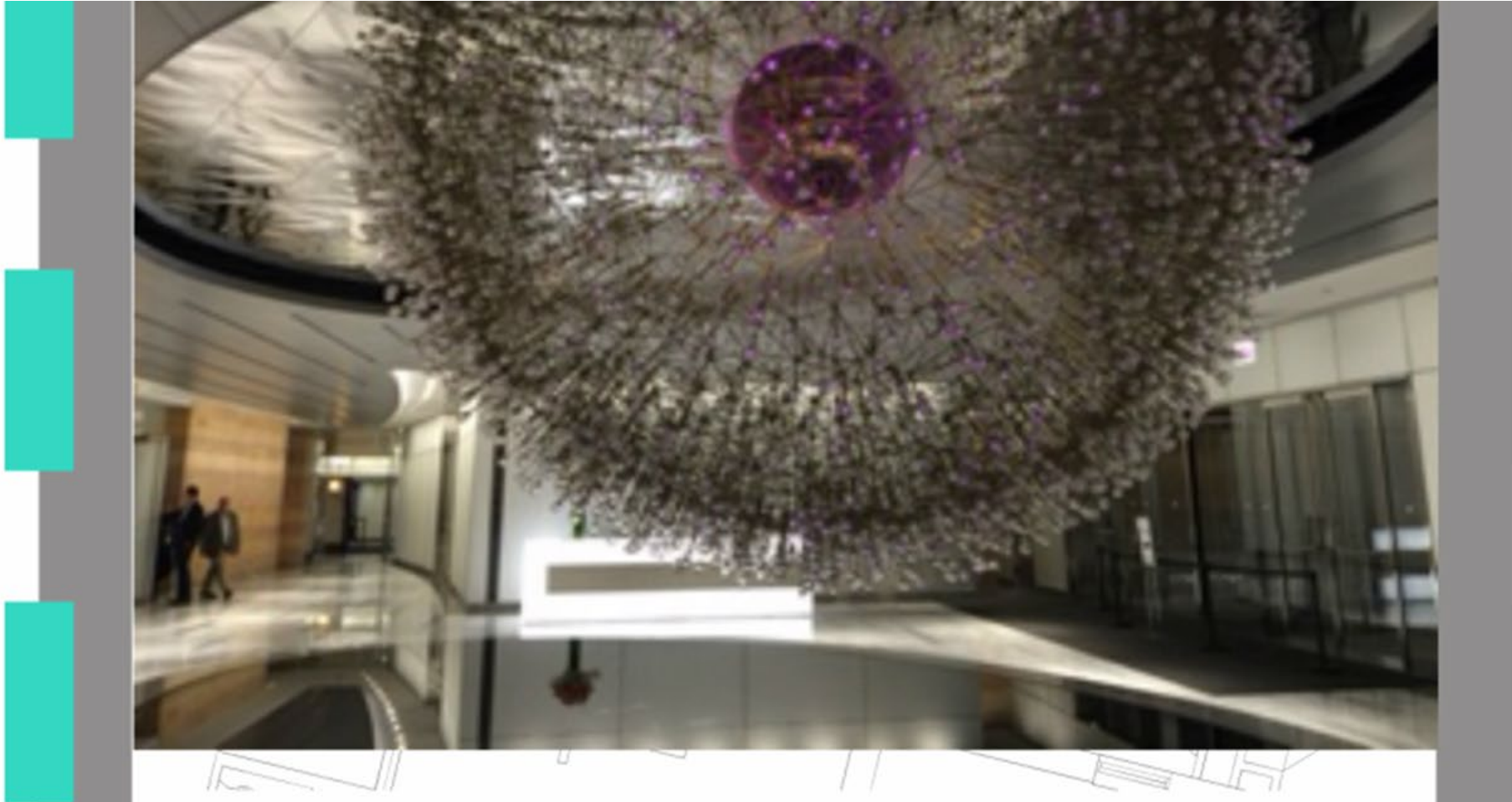
# Example of Design Assist Knowledge





# Example of Design Assist Knowledge

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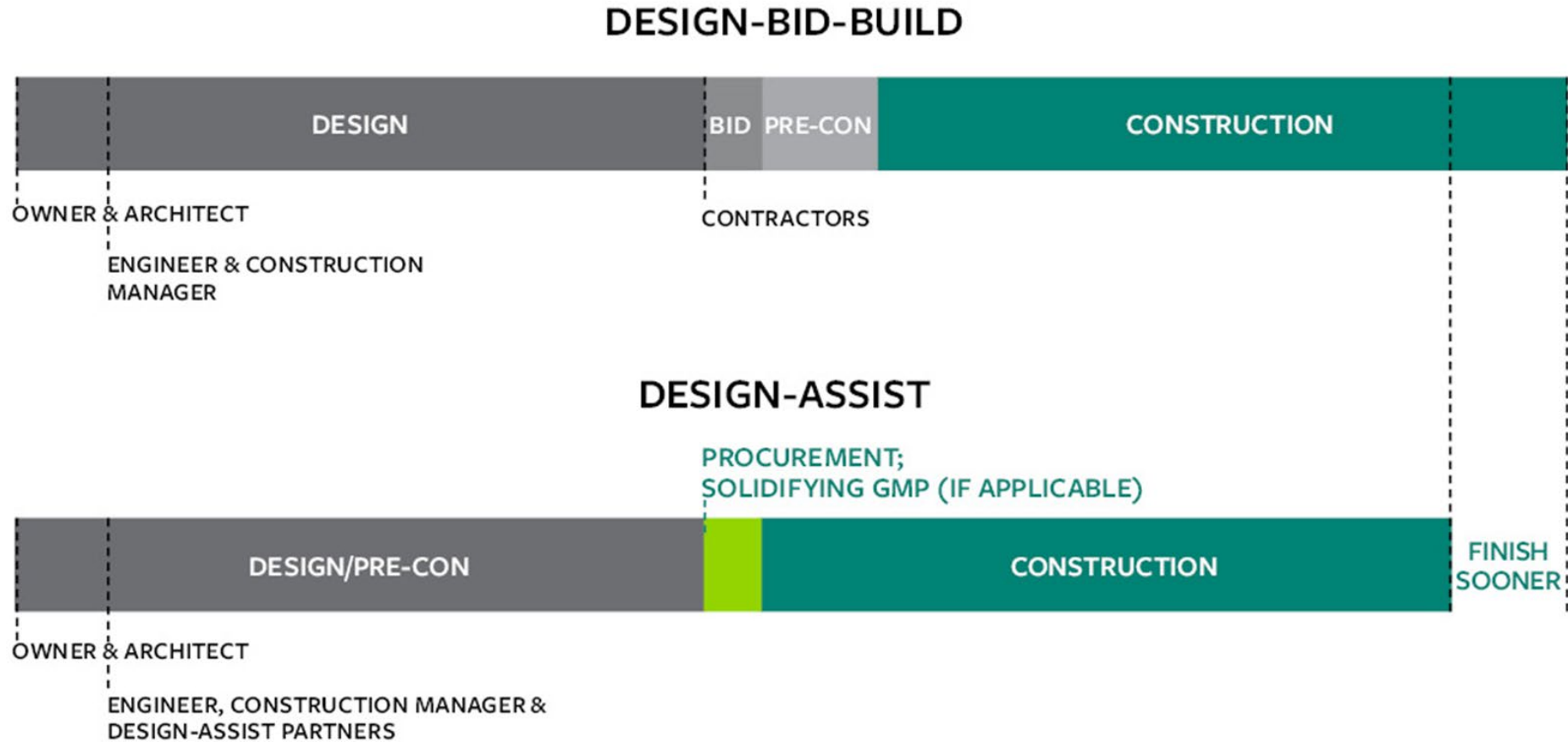


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# Better Schedules



# Schedule + Cost Benefits

## ACTUAL RESULTS



ORIGINAL  
SCHEDULE

JANUARY  
2013  
–  
JUNE 2015

ACTUAL  
SCHEDULE

JANUARY  
2013  
–  
APRIL 2015

COMPLETED  
2 MONTHS  
AHEAD OF SCHEDULE



WHAT DOES  
**8 WEEKS**  
MEAN TO THIS ED?

**\$77K**

CONSTRUCTION  
SAVINGS

**\$37K**

CONTRIBUTION  
MARGIN

**134**

PROJECTED EXTRA  
VISITS FOR THE YEAR

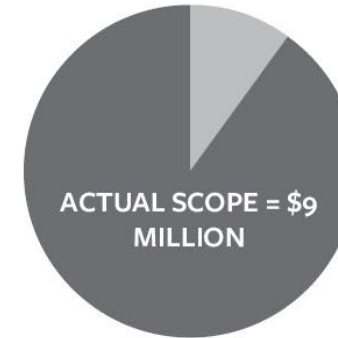
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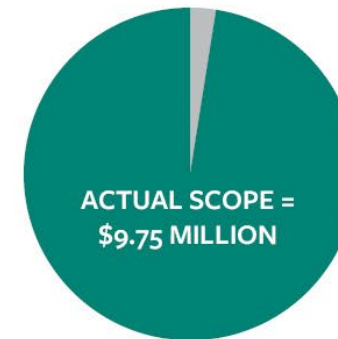
# Cost + Scope Benefits

## \$10 MILLION BUDGET INCLUDES:

TRADITIONAL	Pre-Construction	\$0
	Risk	\$500,000
	Errors & Omissions	\$200,000
	Delays	\$200,000
	Existing Conditions	\$100,000
	TOTAL	\$1,000,000



DESIGN-ASSIST	Pre-Construction	\$250,000
	Risk	\$0
	Errors & Omissions	\$0
	Delays	\$0
	Existing Conditions	\$0
	TOTAL	\$250,000





# Ohio Allows Design Assist on Public Projects

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Available Design-Build or CM at Risk projects

Ohio Revised Code 153.501(B)

Contract documents for CM at Risk and Design-Build projects

- *General Conditions*
- *Contracting Definitions*







# At the End of Your Project?

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# And Most Importantly...

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FUN

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# Driving Speed to Market

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## DRIVING SPEED TO MARKET



COST CERTAINTY



CONTRACTOR ENGAGEMENT

### DESIGN-BID-BUILD / GC

**DESIGN**



**CONSTRUCTION**

### CM AT RISK

**DESIGN**



**CONSTRUCTION**

### DESIGN-BUILD COLLABORATIVE APPROACH



**DESIGN**



**CONSTRUCTION**



# Subcontractor Engagement

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TEAM shares overall risk

## **Pros:**

- Design is driven by budget
- Commitment to manpower
- Opportunity for pre-fab, early clash detection, ordering materials

## **Cons:**

- Limited subcontractor pool
- Schedule of resources must align
- Checks and balances



# On-Boarding Subcontractors

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Select subcontractors is priority to take advantage of delivery model

**RFQ process** – Provide scope criteria including bonding and insurance

**Direct selecting** – Strong partner from past projects

Know the market, capabilities of subcontractors, and allocation of resources



# Keys to Success

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- Defining roles and responsibilities
- Creating a master schedule through design
- Use one shared design model
- Encourage field investigation
- Consistent project team through project
- **Advance design for material procurement**







# Pre-Fab & Procurement

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Procurement:

Opportunity to address long lead items:

Projects with electrical gear, AHU, roofing, concrete, doors

Pre-Fab:

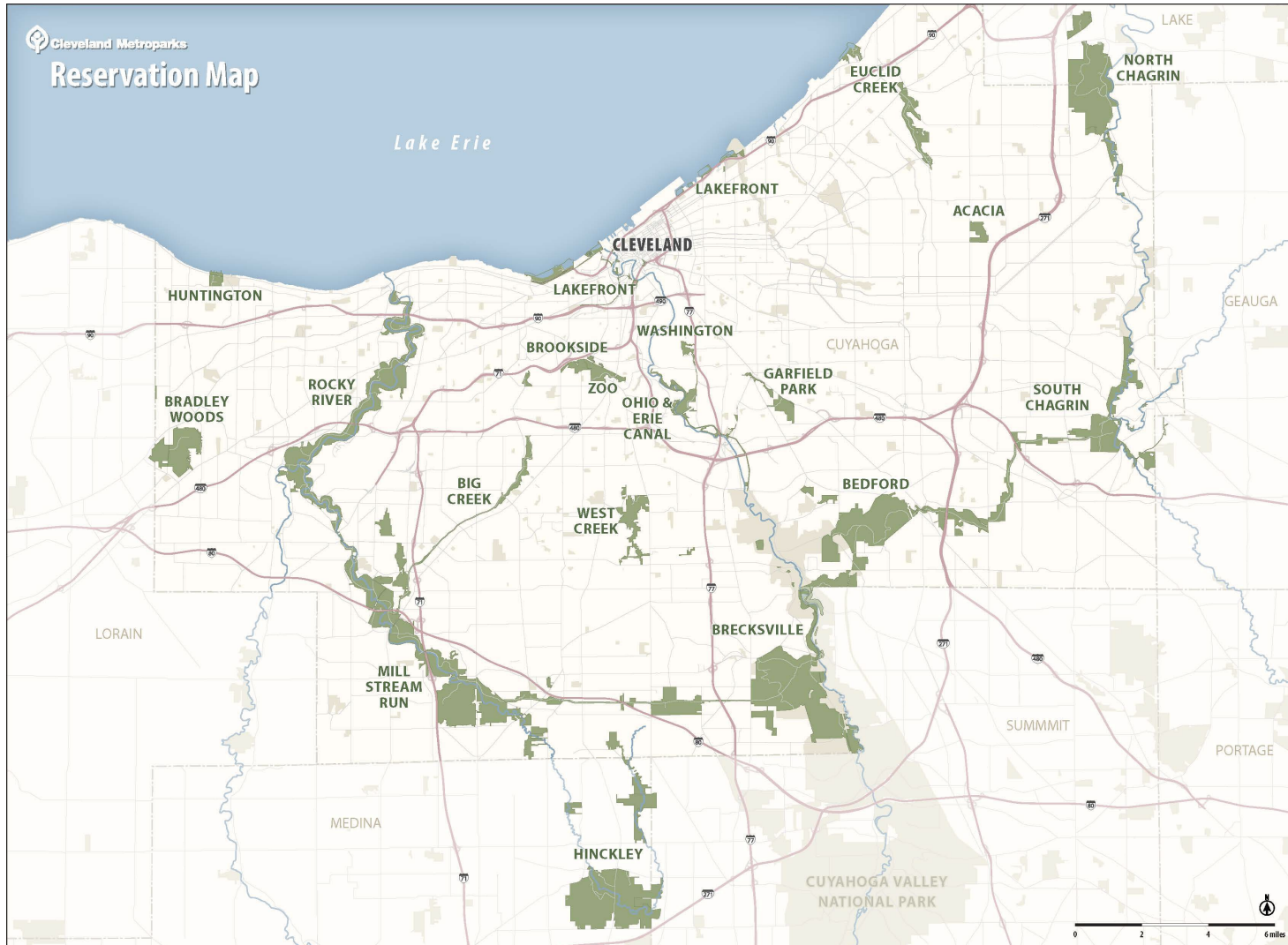
Off-site construction

MEP racking

Modular



# Journey to Design Assist



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# Journey to Design Assist

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# Journey to Design Assist



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# Journey to Design Assist

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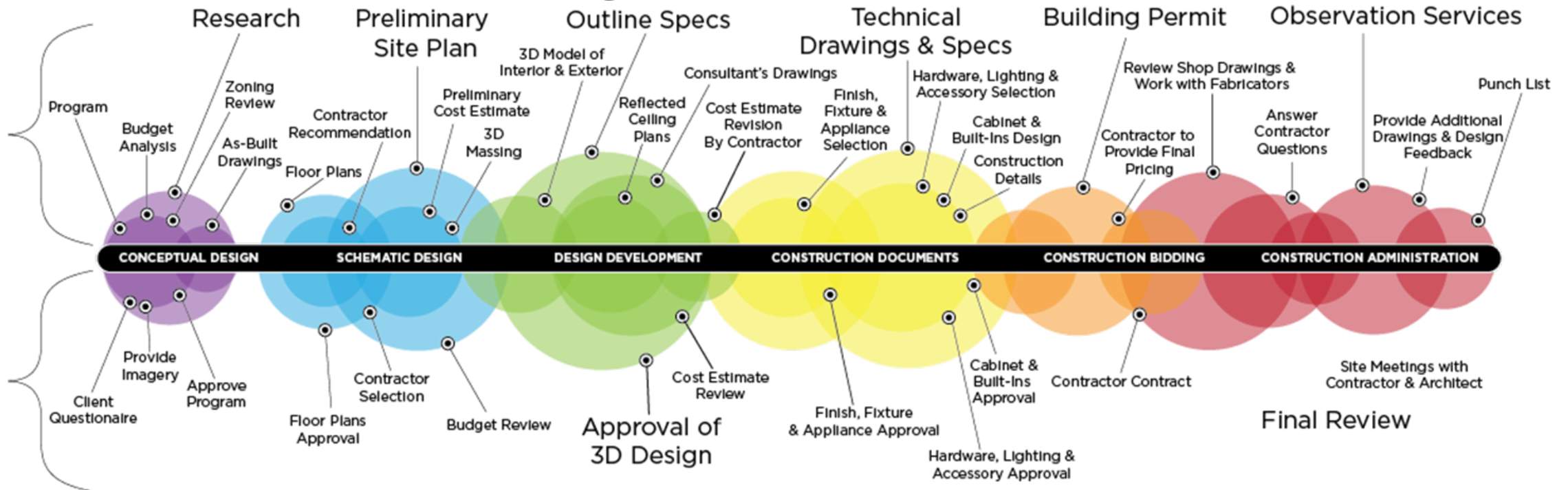
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# Journey to Design Assist

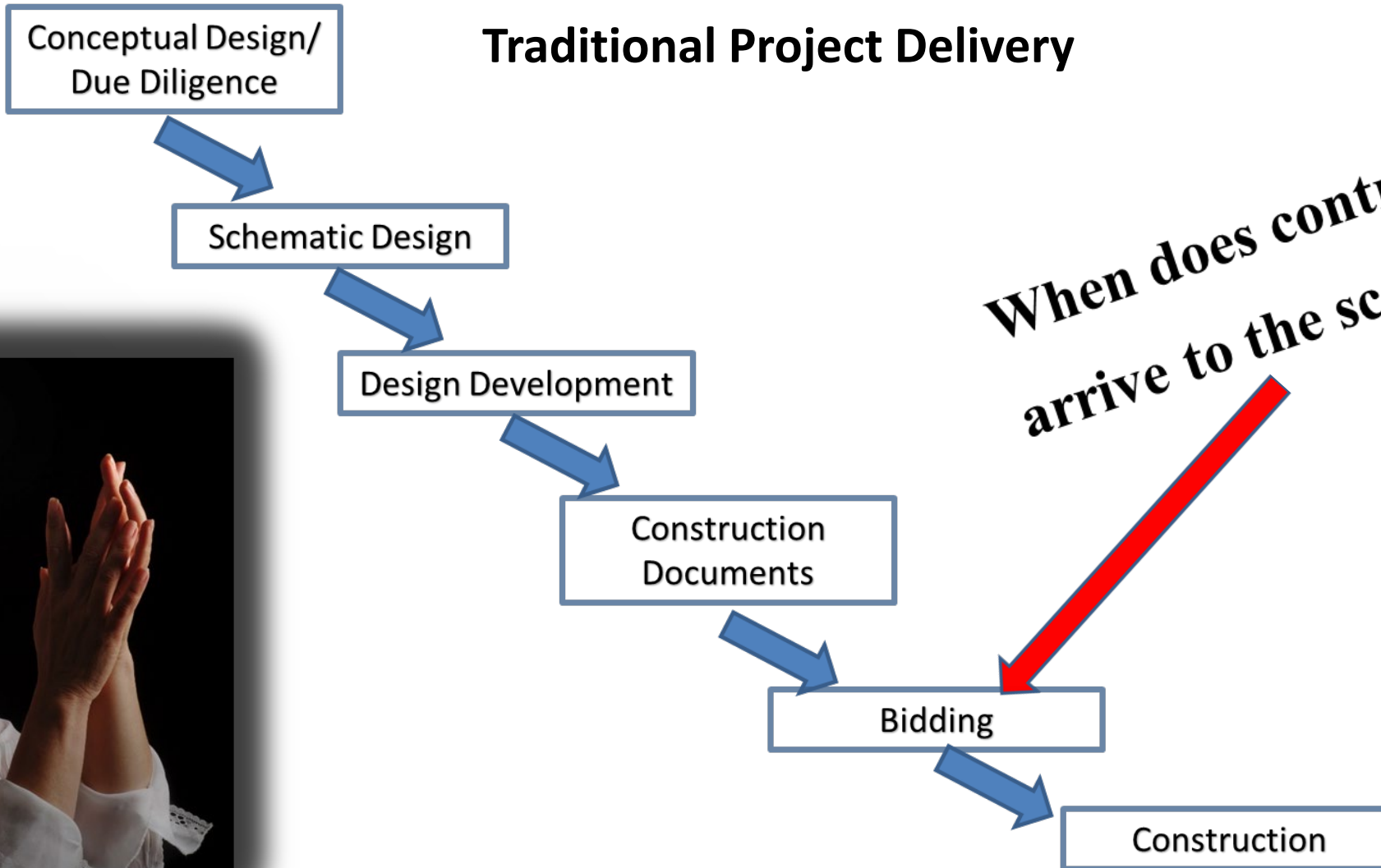
## Traditional Project Delivery Project Phases





# Journey to Design Assist

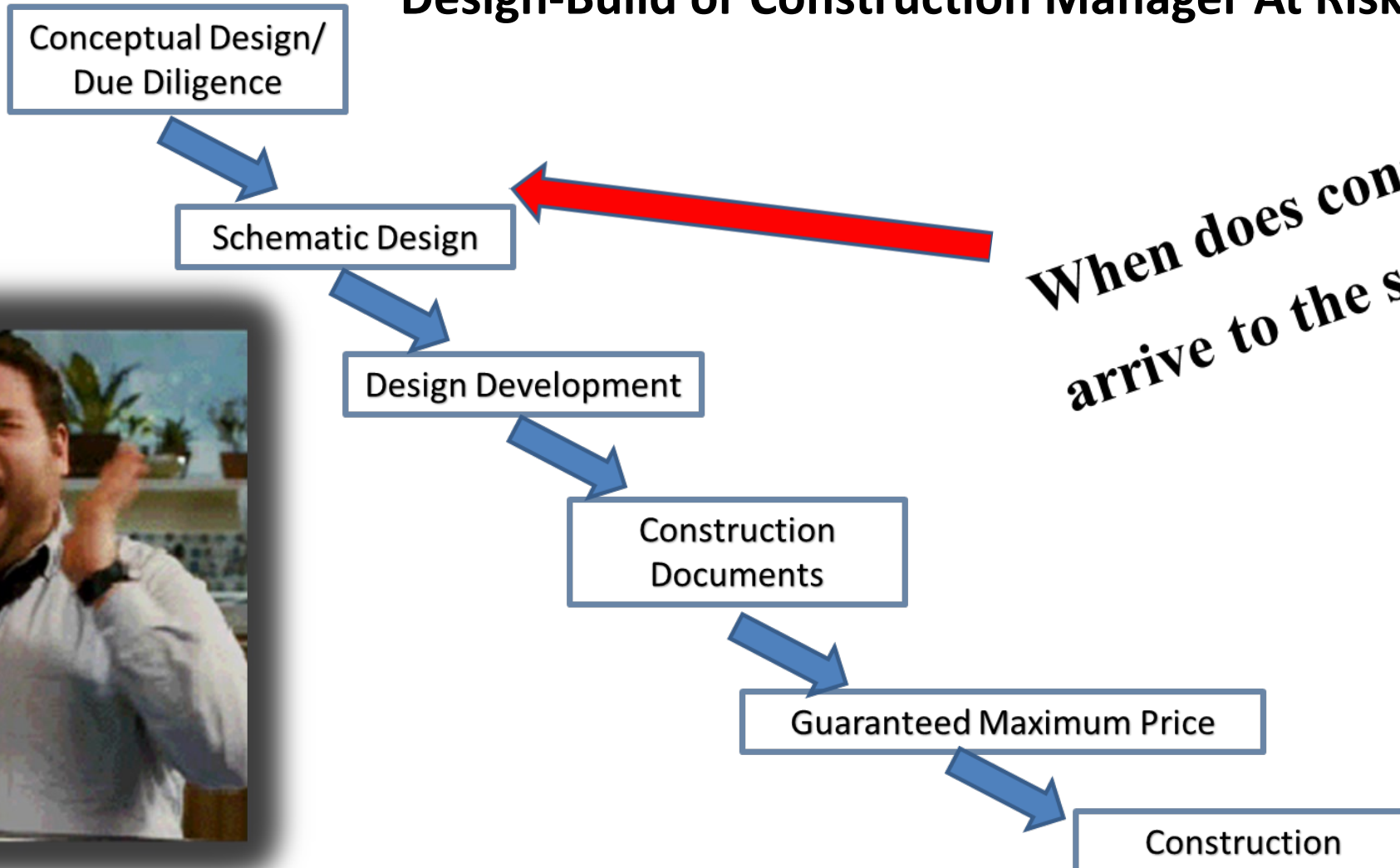
## Traditional Project Delivery





# Journey to Design-Assist

Design-Build or Construction Manager At Risk Delivery



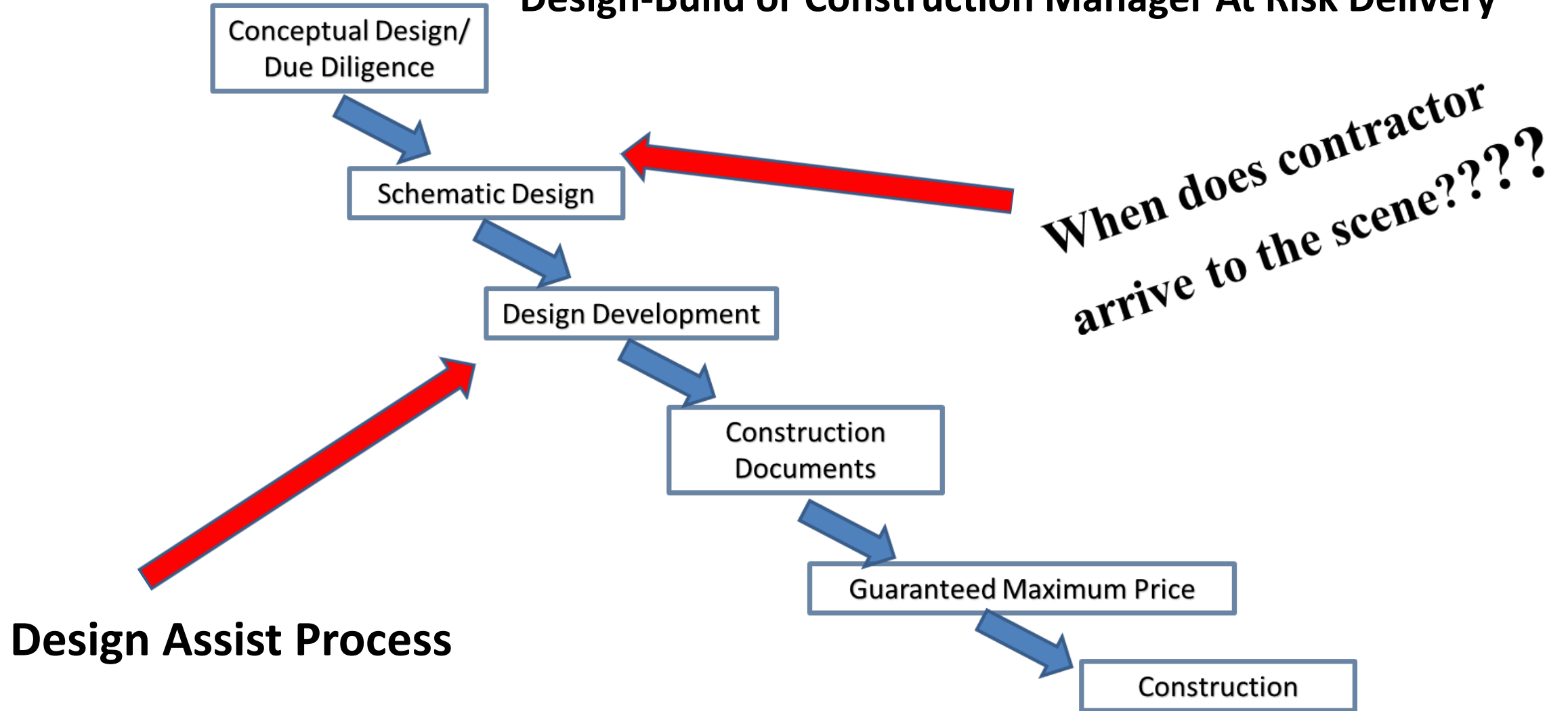
**When does contractor  
arrive to the scene????**





# Journey to Design Assist

Design-Build or Construction Manager At Risk Delivery







# Journey to Design Assist

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# Journey to Design Assist

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# Journey to Design Assist



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# Journey to Design-Assist

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# Journey to Design-Assist

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# Journey to Design Assist



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# Journey to Design Assist

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# Journey to Design Assist



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## QUESTIONS and PANEL DISCUSSION

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