

OREGON STATE CAPITOL RENOVATION PROJECT

June 3rd 2013



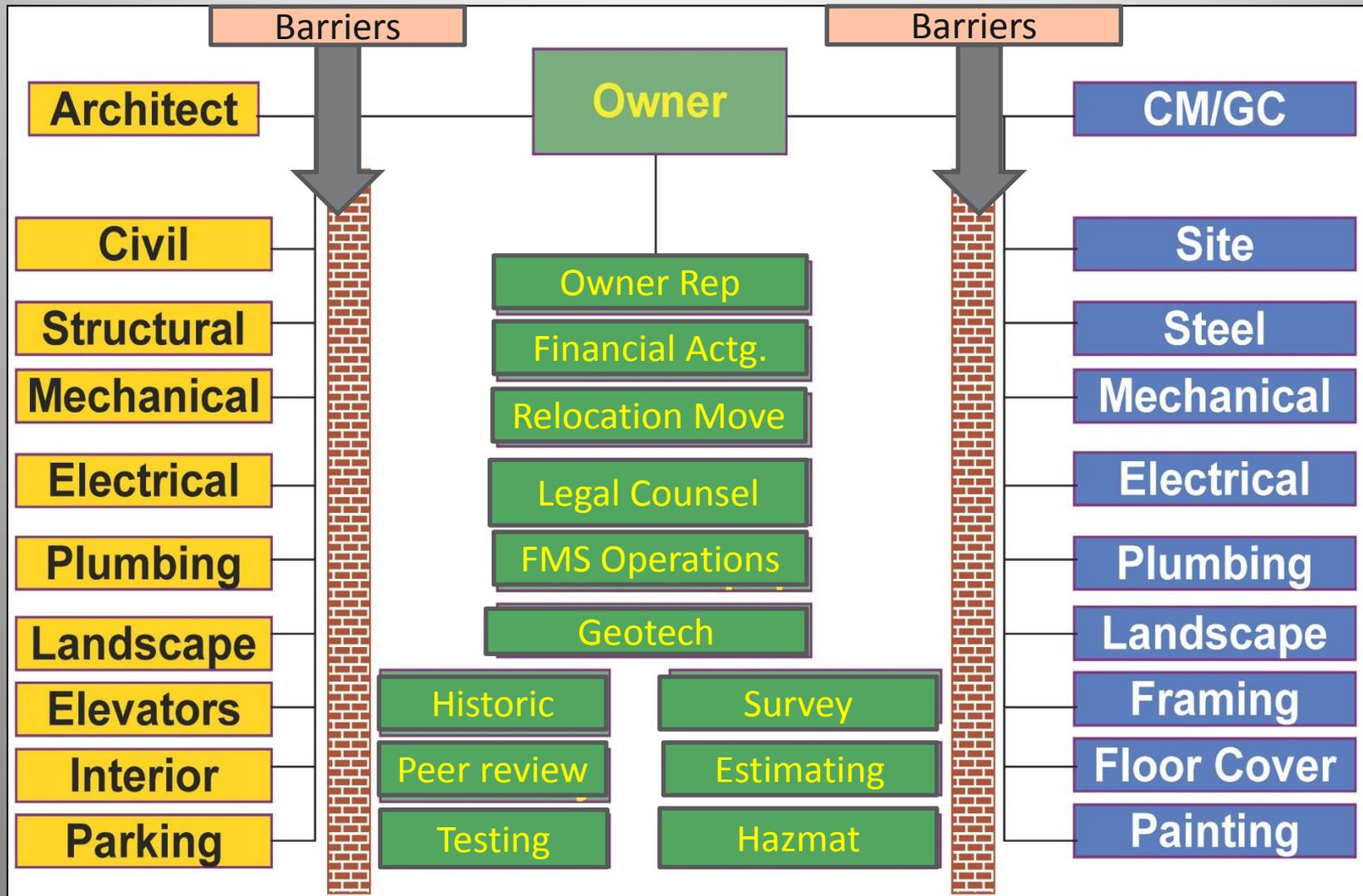
CM/GC & Integrated Project Delivery: (IPD)

A Catalyst for Collaborative Design
and Construction

Agenda: State Capitol 6-3-13

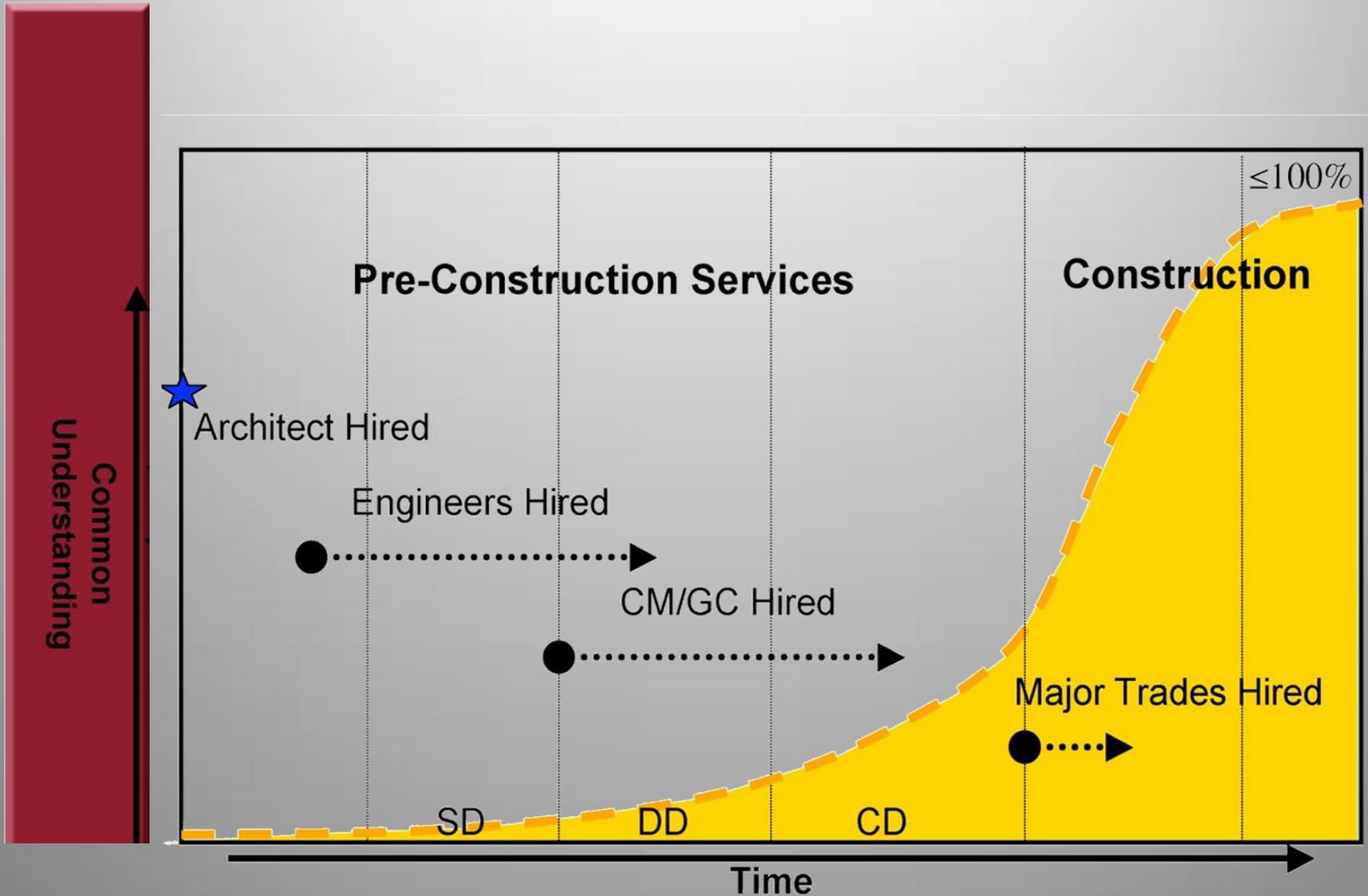
- **Comparison to Traditional Delivery**
- **CM/GC- Integrated Project Delivery (IPD)**
- **IPD Best Practices, Keys to Success**
- **Q&A**

Typical Traditional Organization



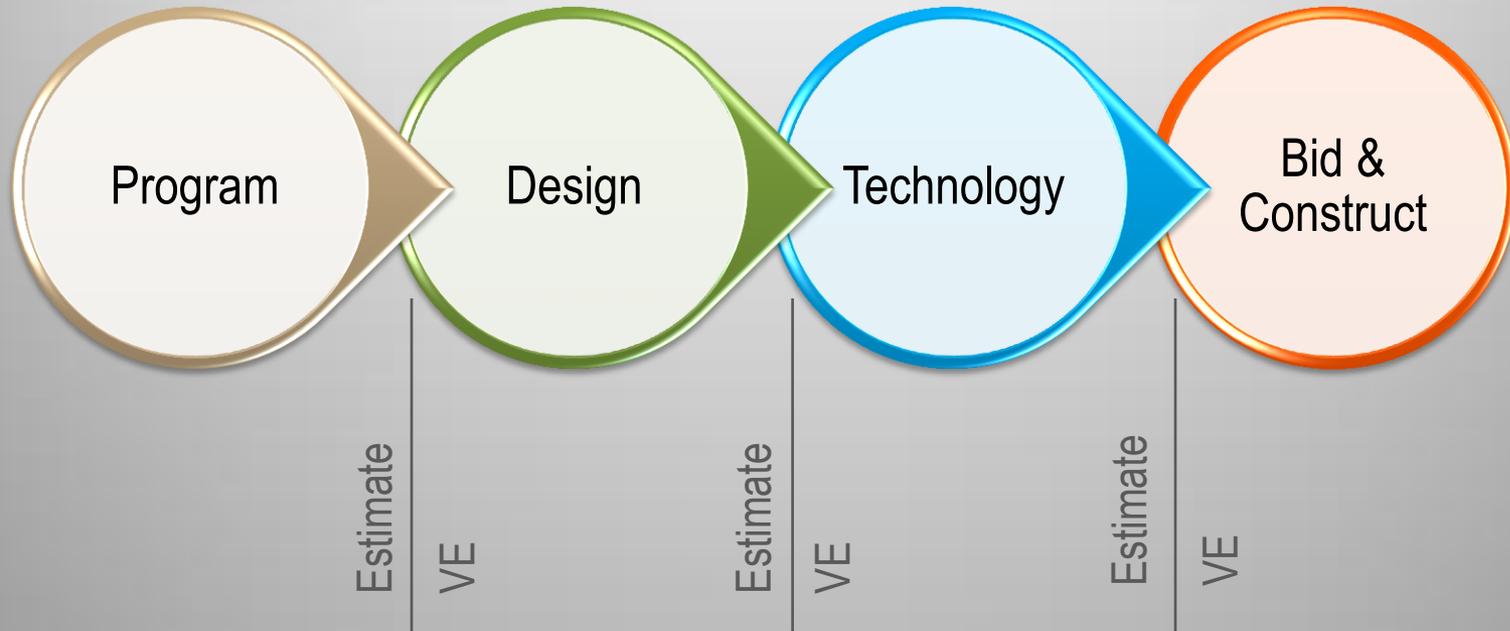
Traditional Project Delivery

Level of Common Understanding



Traditional Project Delivery Process

Conventional Process: Traditional CM/GC, & Design / Bid / Build



**Put it In & Take it Out | Wasteful / Value
Reduction
VE= VULTURE ENGINEERING**



Integrated Project Delivery (IPD): An evolving definition

Best Practices



“IPD is a project delivery approach that integrates people, systems, business structures and practices into a process that collaboratively harnesses the talents and insights of all participants to optimize project results, increase value to the owner, reduce waste, and maximize efficiency through all phases of design, fabrication and construction.”



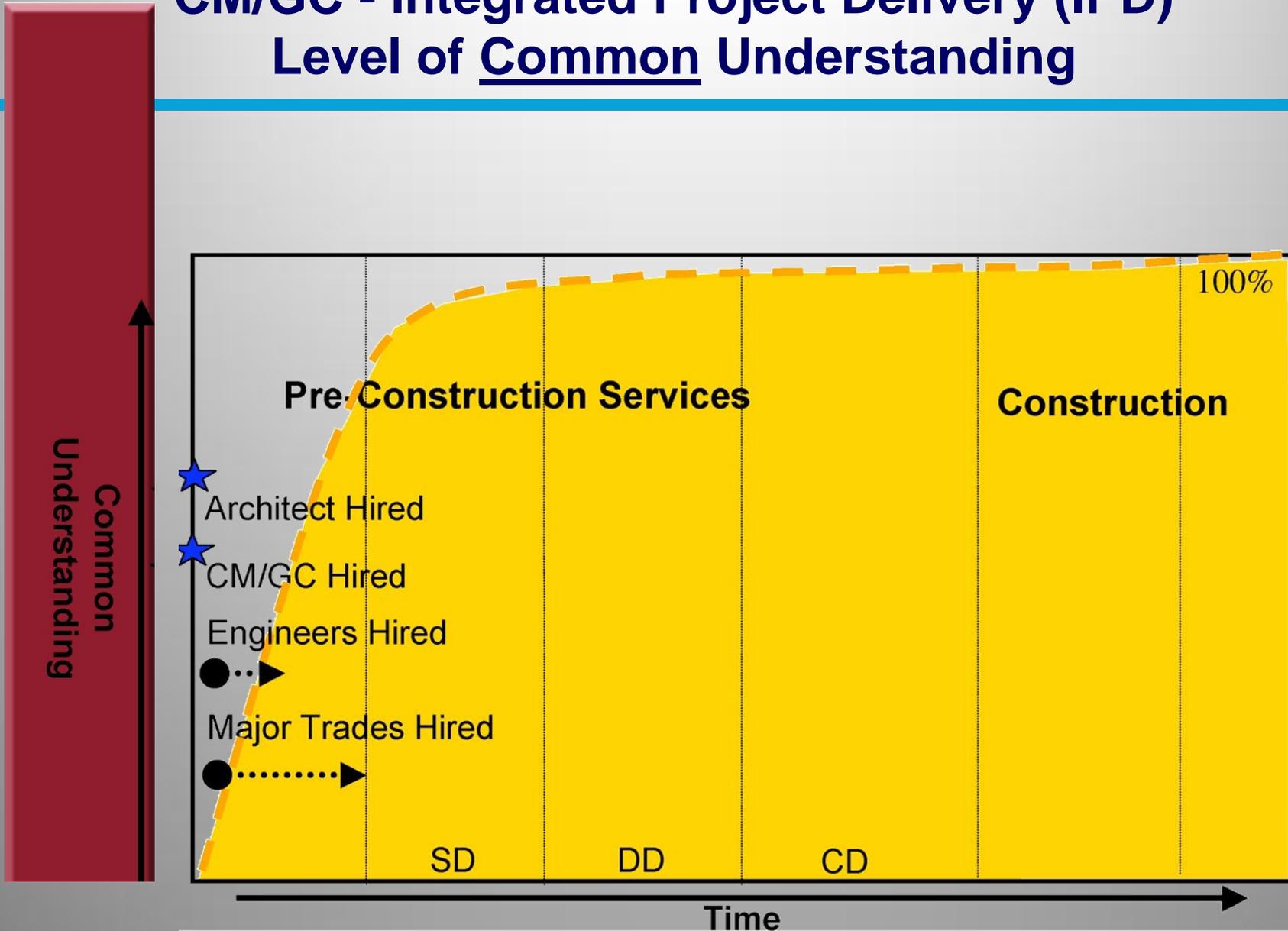
A Working Definition: Integrated Project Delivery
Integrated Project Delivery Task Force; California AIA

What is Integrated Project Delivery

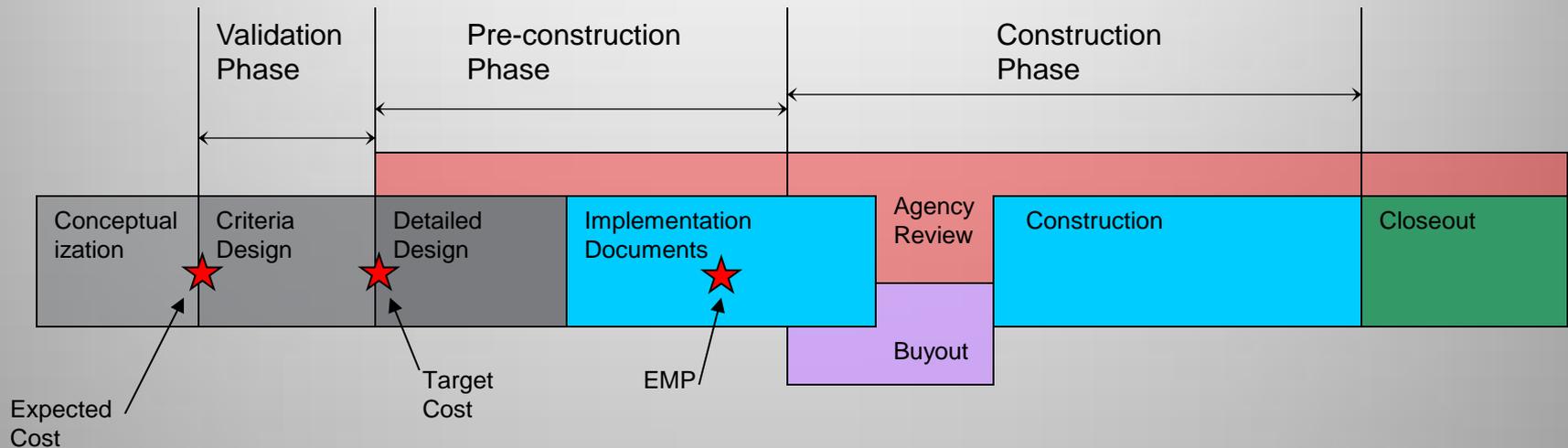
- Key participants bound together as equals: Relatedness
- Shared Risk & Reward
- Collaborative Decision Making
- Fiscal Transparency
- Eliminate Overlap in Services
- Early Involvement Key Participants
- Dynamic Cost Modeling
- Target Value Design
- Integrated Virtual Design / Construct
- Incubator of Lean concepts
- Gone with the paradigms!



CM/GC - Integrated Project Delivery (IPD) Level of Common Understanding



IPD Project Phases

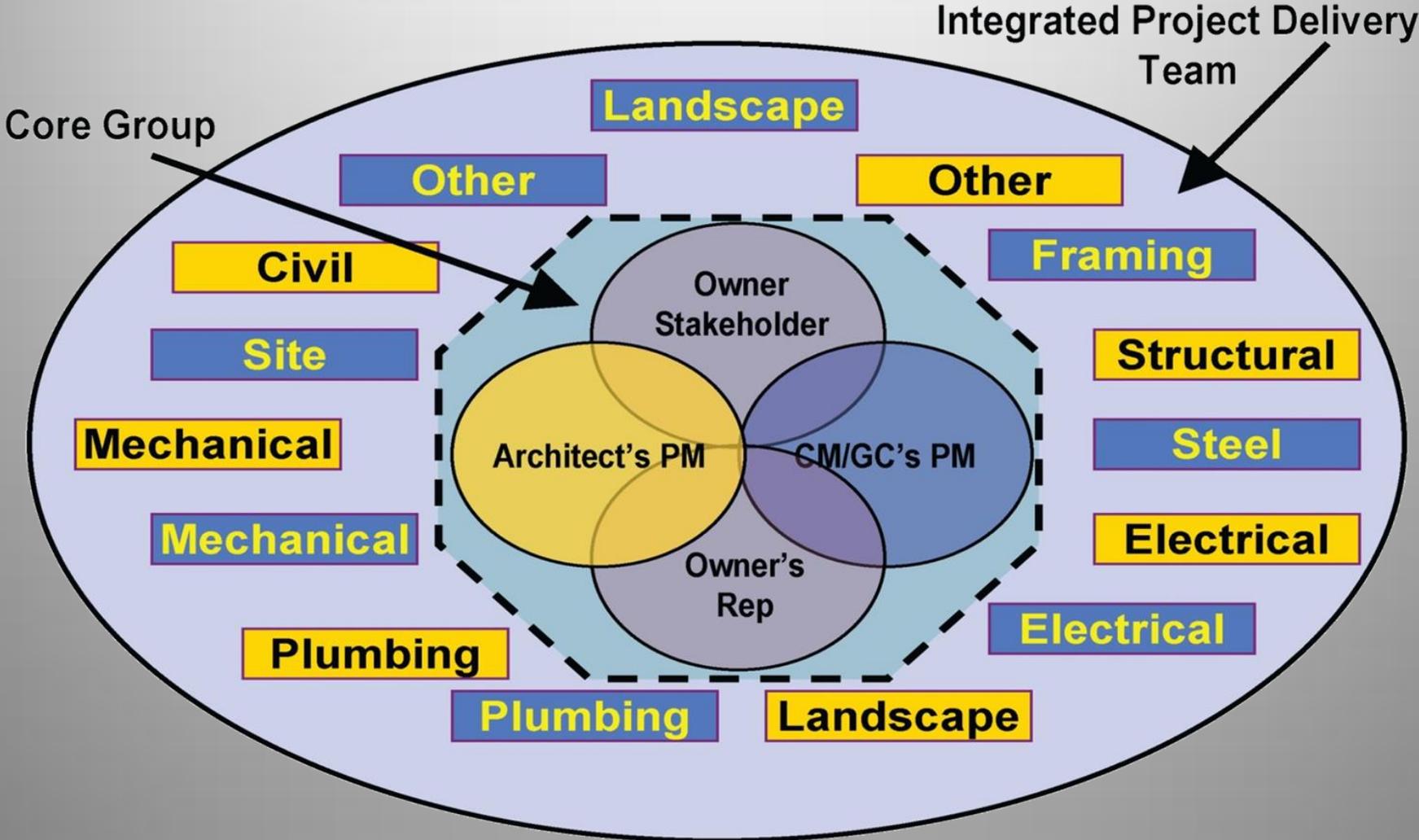


The flow of the project from Conceptualization through Closeout differs significantly from a Conventional project. Conventional terminology, such as Schematic Design, Design Development, and Construction Drawings, creates workflow boundaries, whereby one party waits for the work product of another, which does not align with the collaborative process. However, the Conceptualization, Criteria Design and Detailed Design phases involve more effort than their respective counter parts under a Conventional project, due to a broader integrated team participating early on in the process, result in a higher level of understanding and completion of the entire project prior to entering into the documentation phase.

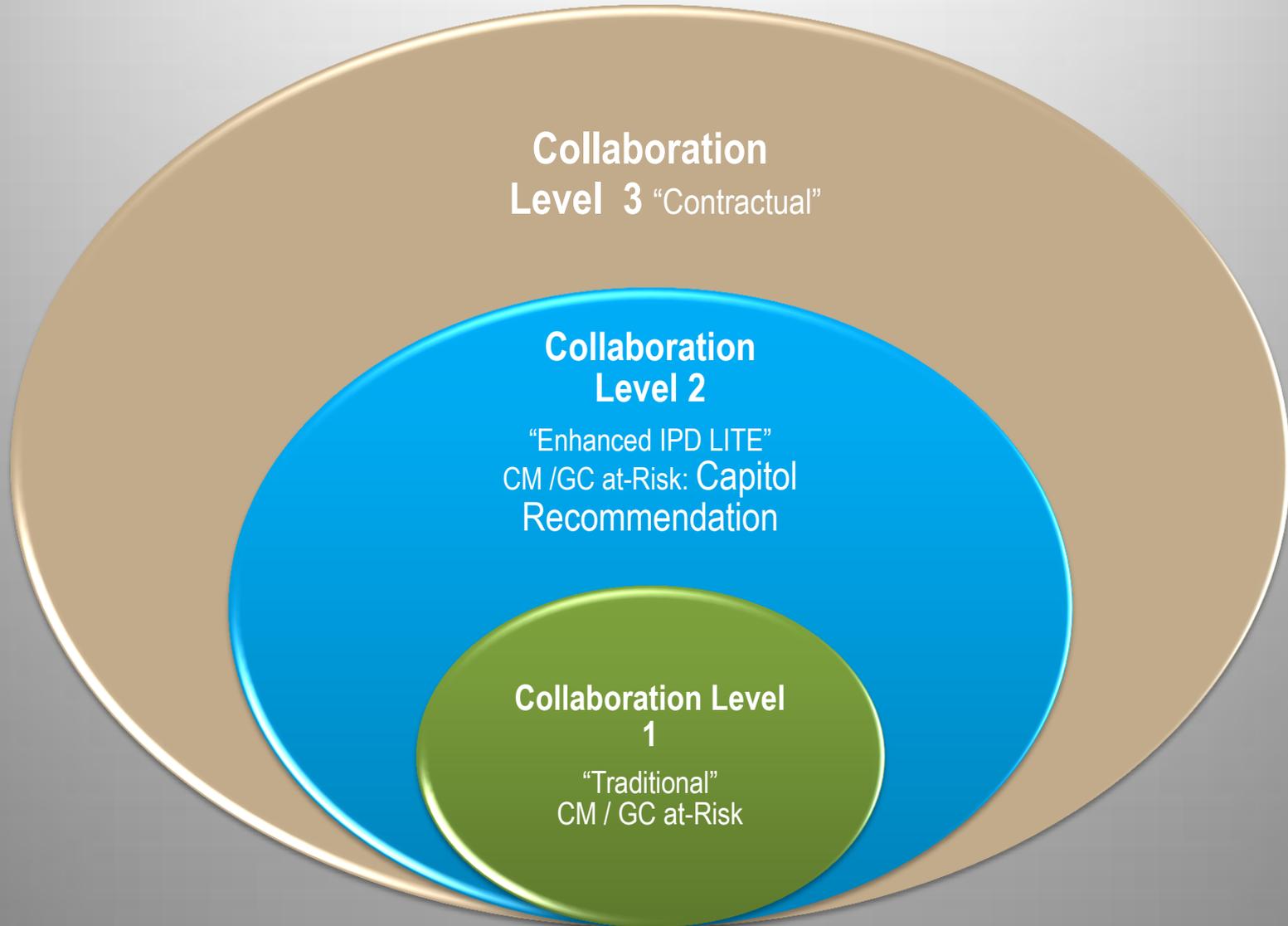
Forces Driving The Need for IPD

- Waste / Lack of productivity
- Technological evolution: BIM, VDC “virtual design /construct”
- Owner demand for more value
- Budget / Design alignment: TVD “target value design”
- Risk Reduction / shared risk
- Sustainability / Operations and Maintenance
- Lean design and construction

IPD Team Concepts (contrast to Traditional)



Three Levels of Collaboration



IPD Behavioral Principles

- Mutual respect
- Willingness to collaborate
- Open communication
- Experimentation
- Trust & transparency
- Reliable Promising
- Experts are the experts
- A new vocabulary



IPD Contractual Principles

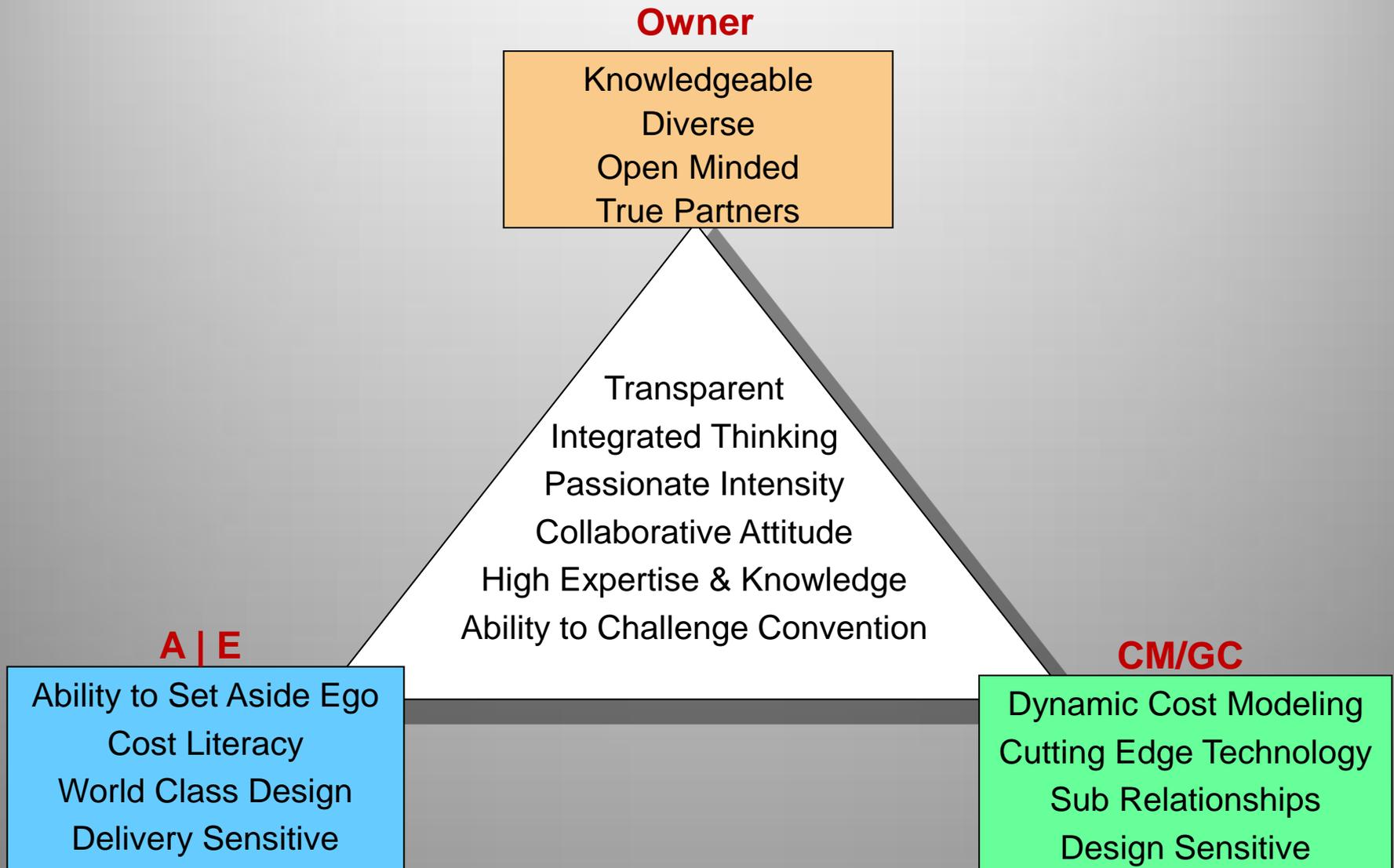
- Key participants bound together as equals
- Shared financial risk and reward based on project outcome
- Fiscal transparency between key participants
- Early involvement of key participants
- Intensified design
- Jointly developed project target criteria
- Collaborative decision making
- Joining agreements to Traditional Contract agreements

Catalysts for IPD

- Collaboration guide / agreement – Jointing Agreements
- Building Information Modeling / Virtual Design & Const.
- Lean Design and Construction
- Trust and Transparency

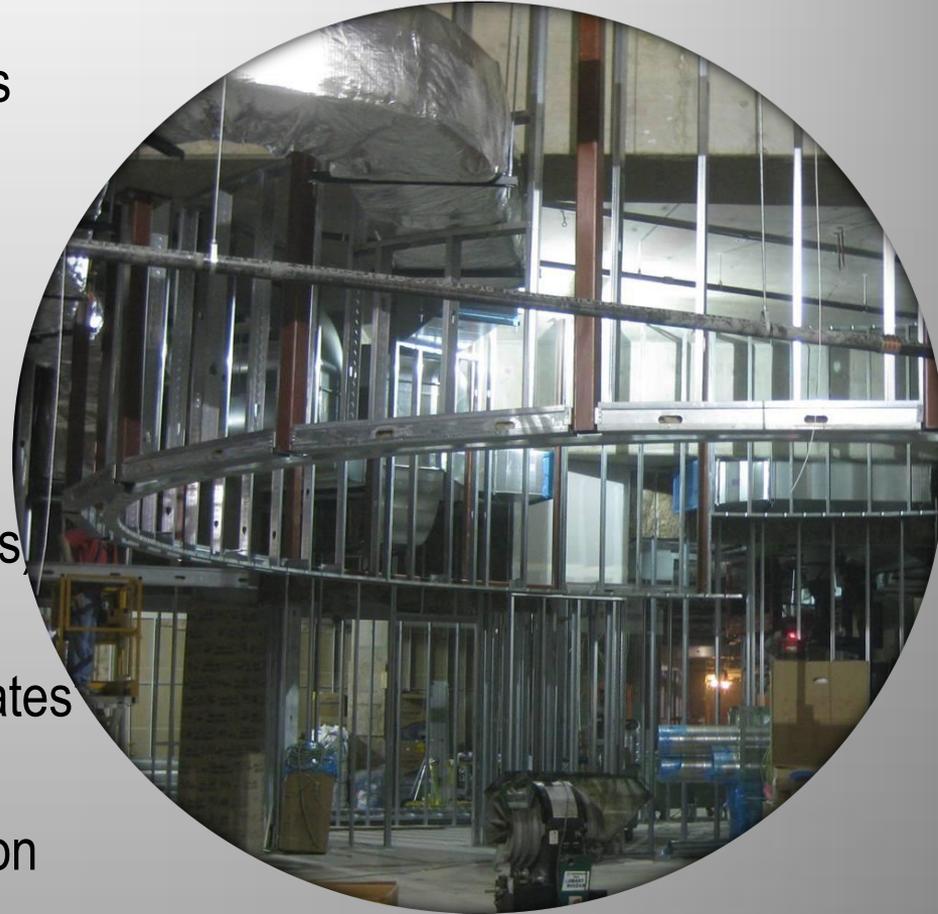


Setting Up the IPD Team: Expectation of Participants



Tools and Processes Used in Achieving IPD Value Propositions

- Establishing baseline performance metrics
- Co-location and the Big Room concept
- Virtual Design and Construction (VDC)
- Value Stream Mapping
- Target Value Design
- Cluster Teams
- Early Trade Involvement Packages (ETIP's)
- Joining / Collaboration Agreements
- Reverse phase scheduling (pull) "stage gates"
- Use of 3rd party consulting
- IPD contingencies for design & construction
- Lean concepts and practices



Establishing a Baseline Performance Metrics (Targets)

Top 10

- T1: Target Savings of 5% Across All Project Budgets
- T2: Reduce “Time of Construction” Schedule
- T3: Minimizing Waste in PM Control Systems
- T4: Waste Minimization and Value Enhancement
- T5: Target Value Design: “TVD” - Reliability / Predictability
- T6: Implementation of IPD / Lean Strategies: BIM, VDC, etc.
- T7: Successful administration of Owner’s core directives
- T8: Integration of Design and Construction; QA/QC
- T9: Minimize - RFI’s, C/O’s, payment issues, claims & conflicts
- T10: Sustainability: LEED metrics: energy savings

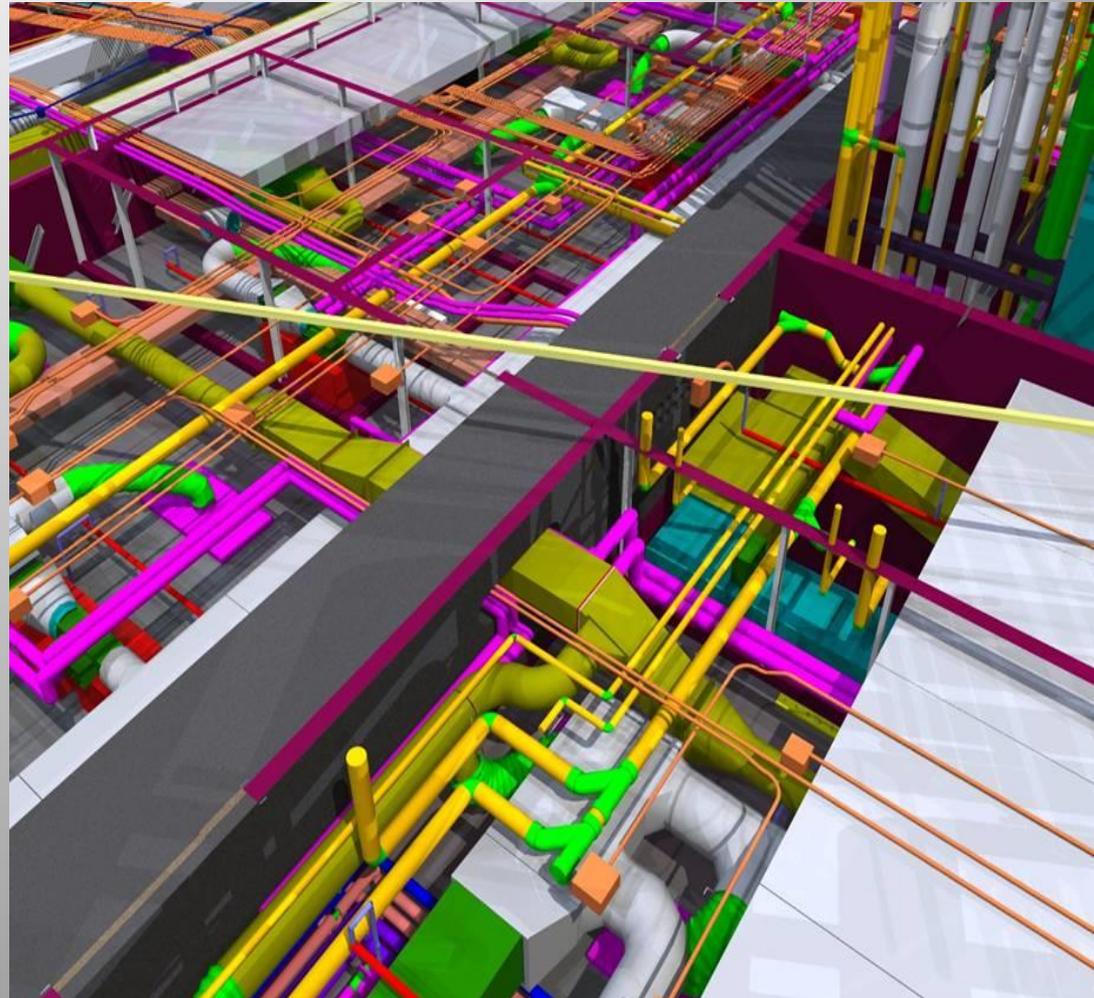
Co-location & The Big Room Concept



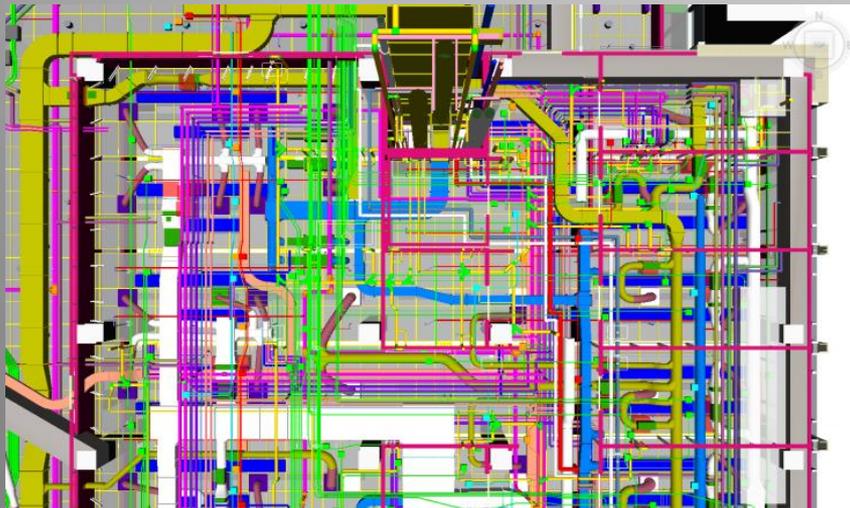
- Utilizing a “Neutral” Location
- Enabling Collaboration and Integration
- Blurring the Traditional Boundaries
- Keeping the Project Team Close to the “Work”
- Reliable Promising
- Dynamic Cost Modeling / Target Value Design - Process

What is Virtual Design and Construction “VDC”

- VDC is not just software!
- Defined tools and processes that allow problem solving in the virtual realm
- Requires early involvement
- Requires and Builds strong working relationships
- Is a true shared resource
- Starts at project conception and lives through the life of the facility



Virtual Design and Construction (VDC)



- All Design Disciplines Utilized 3D Modeling
- IPD Allowed “Right of Reliance” on the 3D Models
- BIM Protocol Manual
- CM/GC Leverages and Uses Model Prior to Design Completion
- BIM Models Recognized as “Key” to Enabling True Integration with fabrication

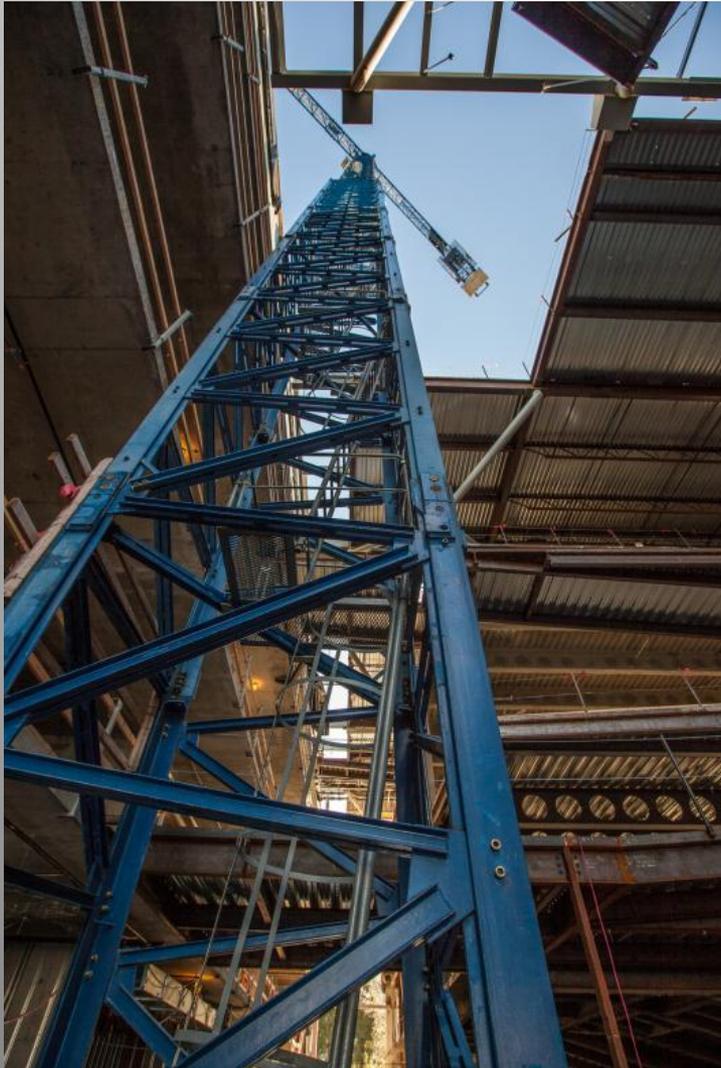
Cluster Teams

- **Definition:** Multi-discipline Teams Empowered to Develop the Design of Specific Scopes and Systems While Working within the Target Budgets & with the Ultimate Goal of Maximizing Project Value.
- Teams Require Strong Leadership and Disciplined Means to Coordinate with Other Clusters

DESIGN PHASE - IPD CLUSTER TEAMS

Site	<ul style="list-style-type: none">• Site Excavation / Utilities:
Structure	<ul style="list-style-type: none">• Concrete / Base Isolation:
Enclosure	<ul style="list-style-type: none">• Marble / Skin:• Curtain Wall:• Metal Panels:• Skylights:
Interior Construction	<ul style="list-style-type: none">• Interior Finishes, Development of OSC standards:• Program and operational changes:• Interior Historic Fabric / Preservation
Other FF&E Equipment	<ul style="list-style-type: none">• FF&E Casework and Equipment
MEP / IT	<ul style="list-style-type: none">• Mechanical• Plumbing:• Electrical:

IPD Contingency / Shared Risk, Reward



- One “pot” of IPD contingency, shared by team members
- Automatic and Discretionary contingency
- Focus on what is best for the “project”
- Incentives to achieve value propositions: Risk / Reward
- Is no “me”, “you”, or “they”; only “us”.
- Managed by IPD Core Team

What Have We Learned?

- Incentivize The IPD delivery Team early
- Co-Locate, really Co-locate
- Collaboratively establish milestones and “stage gates”
- Customize for your project based on Owner’s Core directives
- Incentivize Collaborative Behavior as well as Outcomes
- BIM / VDC technology use from project inception thru close out
- Budget / Design alignment thru - Dynamic Cost Modeling / Target Value Design - Process



Q & A