



# An Integrated Project Delivery Adoption Framework for Construction Projects in India

**Aritra Pal** : Ph.D. Student, Department of Civil Engineering, National Taiwan University, Taipei, Taiwan

**Asif Nasarudin**: Assistant Project Manager, Aspect Commercial Services, Dubai, UAE



# Introduction



- The traditional delivery methods are found less effective in managing complex project issues like cost overrun, time overrun, disputes
- These methods also face many challenges in maintaining coordination and cooperation throughout the process
- Integrated Project Delivery (IPD) system which is built on trust, collaboration, and pooled risk-reward sharing have been devised as an effective solution almost a decade ago.
- Despite its advancement, the adoption rate of IPD in India remains very low because of several reasons

# Need for the Study



- The Indian construction industry is struggling to achieve the desired success by using traditional practices.
- According to PropEquity reports more than 4.65 lakh units of housing projects in India have failed in meeting the delivery deadlines because of construction delays.
- the adoption of a new delivery system like IPD has become essential. However, the AEC sector in India is facing various challenges for IPD adoption
- One of the challenges is the non-availability of the IPD adoption framework specific to the Indian scenario.
- This study is aimed at developing a step by step IPD adoption framework for construction projects in India considering the challenges of IPD implementation in the country

# Research Method

- Literature Review Approach: Journal Paper, Conference Papers, Reports, Case studies, Guides, Policies.
- Database: Scopus, IGLC & LCJ.
- Lack of sufficient document on IPD in India
- 4 Step study →

## 1. About IPD

- Mechanism of IPD
- Benefits of IPD for project stakeholders



## 2. IPD in India

- Challenges in IPD implementation in India
- Current Status of IPD implementation



## 3. Lesson Learned

- 22 Case Studies from USA & Canada
- Successfully Completed Projects



## 4. Framework

- Mapping of Challenges in step 2 and lesson learned in step 3
- IPD adoption framework for Indian

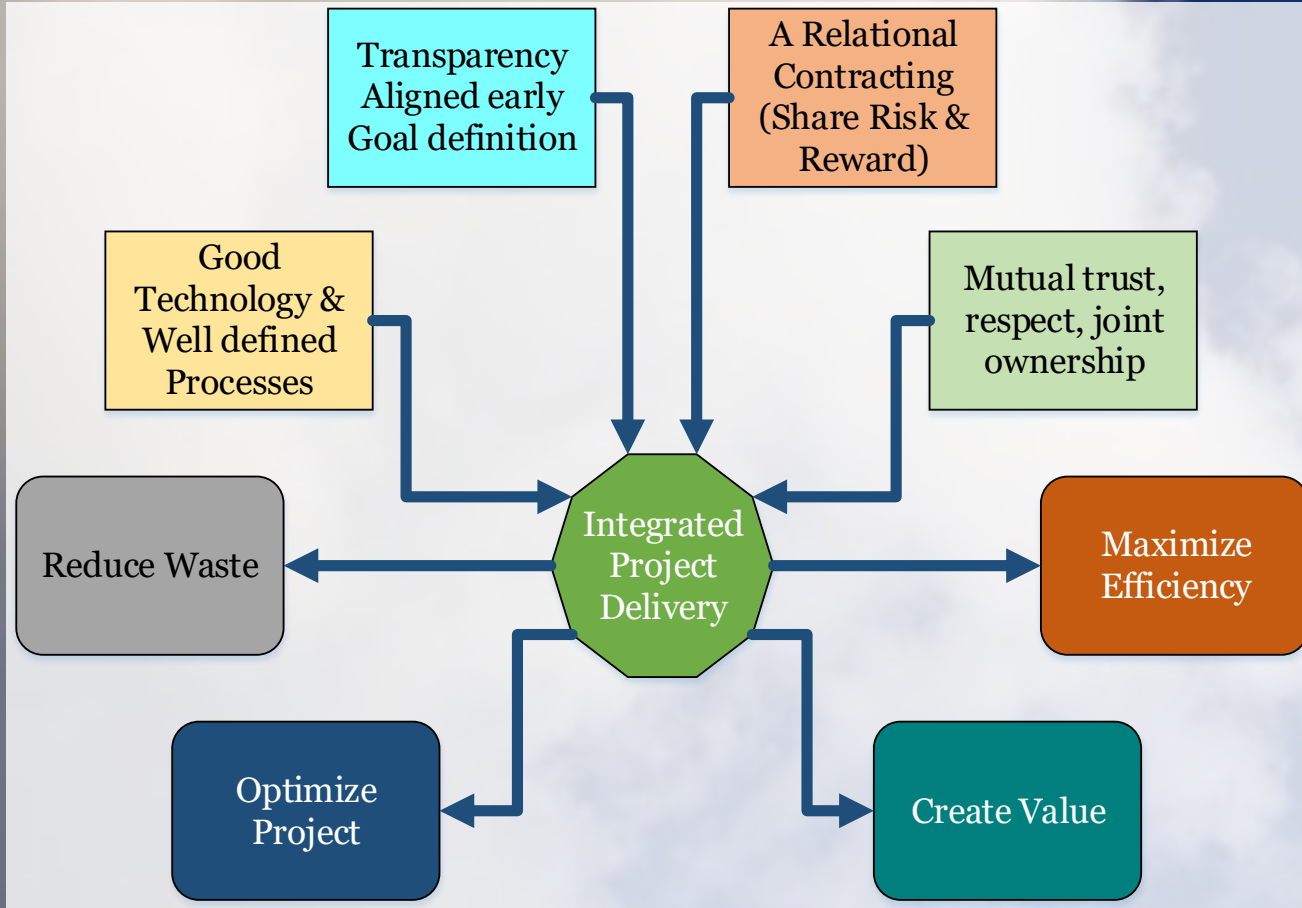
# About IPD



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION



## Benefits:

- Owners benefitted with better quality, lesser dispute & Claim, shorter project time
- Architects benefitted with additional profit through risk reward sharing, market advantages
- Contractor gets benefits through reduced overheads leading to profit gains, lesser chances of claims and litigations

Ref: (AIA 2007)

# IPD Implementation in India



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

- IPD implementation in India was found to be very limited
- IPD Implementation Challenges – Technical, Legal, Financial, and Cultural

Technical	Legal	Financial	Cultural
<ul style="list-style-type: none"><li>• lack of clarity in BIM usage</li><li>• Goals definition in the absence of fully mature design</li></ul>	New legal framework for the value-based selection over lowest bid selection	Devising a formula and accounting system for risk-reward sharing	<ul style="list-style-type: none"><li>• The development of mutual trust and respect</li><li>• Lack of knowledge in IPD</li></ul>

- Reluctance to cultural change needed to be overcome to contractually and behaviorally implement IPD.
- Recently completed projects named Ramanujan IT city has made the Indian AEC practitioners hopeful by adopting few key features of IPD

# Learning from Case Studies



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

- Willingness of all parties to collaborate.
- Project participants were benefitted with continuous training.
- BIM standards and BIM execution plans available in the country had made the projects for implementing BIM and achieve seamless collaboration.
- The adoptive legal framework also eased the process of implementing new legal requirements for IPD projects.
- For effective implementation of IPD, policy formulation based on IPD principles were very useful.
- Early engagement of a team with mutual trust, respect, and a collaborative attitude was found to be at the core of the IPD success.
- The mechanism of pain and gain sharing, fiscal transparency, and open communication incentivized the collaborative culture.
- The common goal of all participants to project success had finally paid off through cost savings or time savings.

# Mapping of challenges & Lesson Learned



## IGLC 28

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

#	Case Studies	Countries	Source	#	Challenges	Proposed Solutions	Case Study Ref. No.
1.1	Cathedral Hill Hospital	USA	(AIA 2012)	1	Developing mutual trust & respect	The multiparty agreement, risk-reward pooling, and fiscal transparency have proven to develop trust & respect.	1.1,1.2, 2.2, 2.4, 2.6, 2.9, 2.10
1.2	MERCY Master Plan Facility Remodel	USA					
1.3	Lawrence & Schiller Remodel	USA					
1.4	SpawGlass Austin Regional Office	USA					
1.5	Edith Green Wendell Wyatt Federal Building	USA					
1.6	Autodesk Inc.	USA					
1.7	Sutter Health Fairfield Medical Office Building	USA					
1.8	Cardinal Glennon Children's Hospital Expansion	USA					
1.9	St. Clare Health Center	USA					
1.10	Encircle Health AmbulatoryCare Center	USA					
1.11	Walter Cronkite School of Journalism	USA					
1.12	UCSF Mission Bay Medical Center	USA					
2.1	Akron Children's Hospital, Kay Jewelers Pavilion	USA	(Cheng and Johnson 2016)	2	Lack of experience working together and on IPD	Owners initiative in trying IPD on one of his projects to begin with	1.2, 1.8, 2.5, 2.9
2.2	Autodesk Building Innovation Learning and Design Space	USA					
2.3	Mosaic Centre for Conscious Community and Commerce	Canada					
2.4	Quail Run Behavioral Health Hospital	USA					
2.5	Rocky Mountain Institute Innovation Center	USA					
2.6	St. Anthony Hospital	USA					
2.7	Sutter Medical Office Building: Los Gatos	USA					
2.8	Sutter Medical Office Building: Sunnyvale	USA					
2.9	T. Rowe Price Owings Mills Campus Building 1	USA					
2.10	Wekiva Springs Center Expansion	USA					
3				3	IPD awareness & willingness among owners	The need for more IPD workshops and training	1.11, 2.1, 2.3, 2.5, 2.6, 2.10
4				4	Nature and Language of contract Document	A modified version of standard contract documents	1.5, 1.12
5				5	Lack of BIM standards and practices	Implementation of BIM standards and regulations regarding its use	1.7
6				6	Information integration and management systems	Adopt huddle meetings, big room & collaborative software platforms	1.2,1.5, 1.12, 2.1, 2.3, 2.4
7				7	The need to fully developed design for early target setting	Using BIM efficiently in the design phase	1.11
8				8	The requirement of a new legal framework	Develop a new legal framework for IPD	1.5, 2.2, 2.7, 2.8
9				9	Equitable distribution of gain and loss among team members	To be decided based on mutually determined performance goals, with a more precise definition of contingency	1.5, 2.2, 2.7, 2.8
10				10	No uniformity in the accounting system followed by owner, and other firms (designer, contractor, etc.)	Adopt a common accounting system for the project to be developed in earlier phases.	1.6, 2.2
11				11	Involving subcontractors early in the team	Contractor to promote collaboration from subcontractors' side	1.3,1.8,1.9



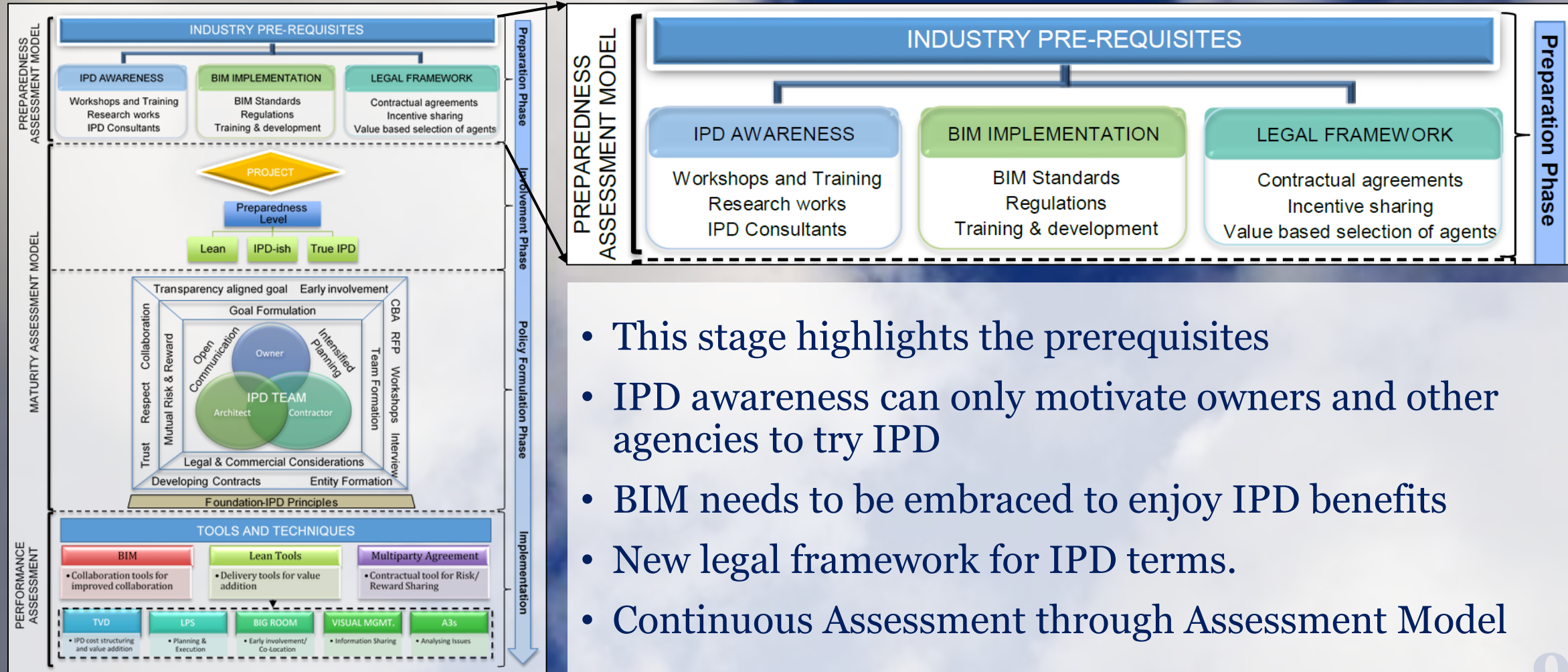
# IPD Adoption Framework



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION



- This stage highlights the prerequisites
- IPD awareness can only motivate owners and other agencies to try IPD
- BIM needs to be embraced to enjoy IPD benefits
- New legal framework for IPD terms.
- Continuous Assessment through Assessment Model

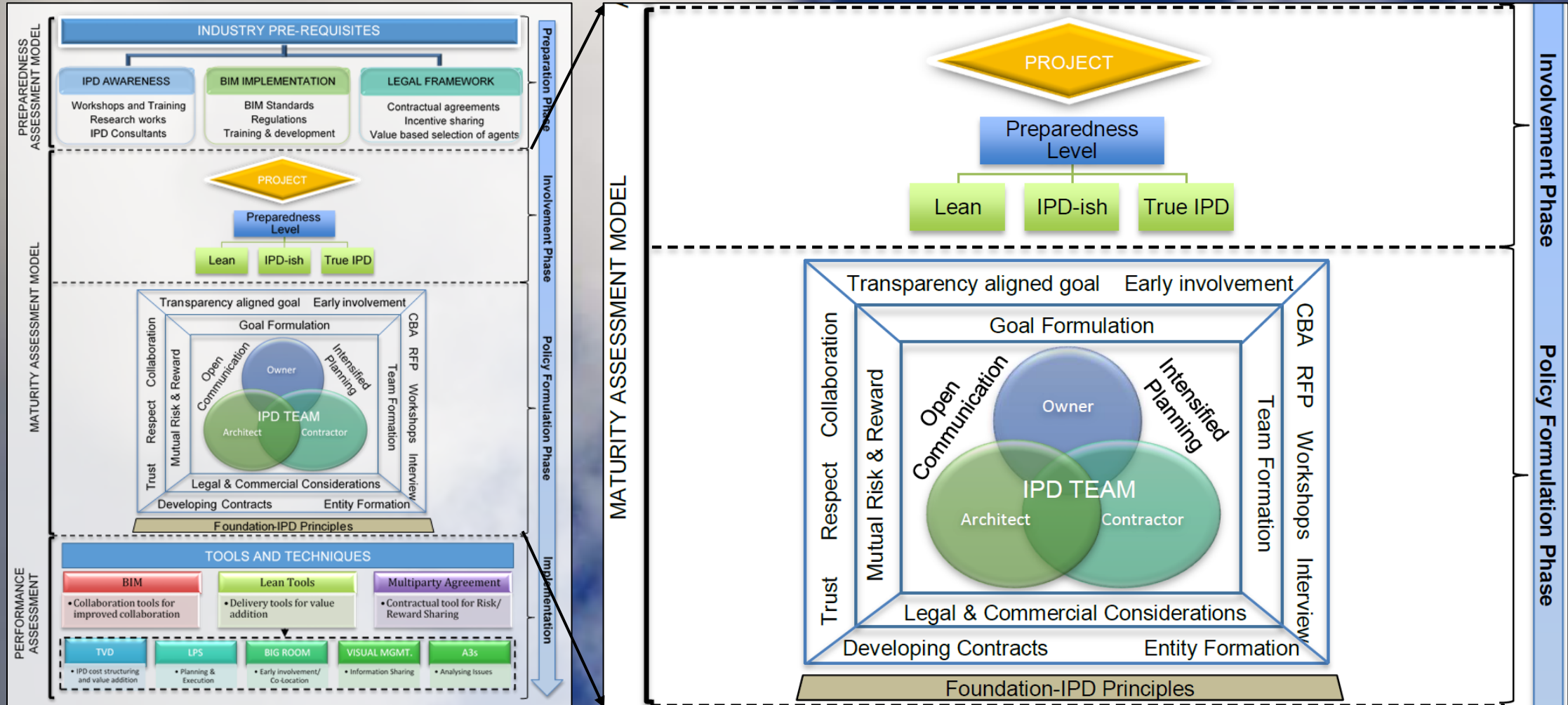
# IPD Adoption Framework



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION



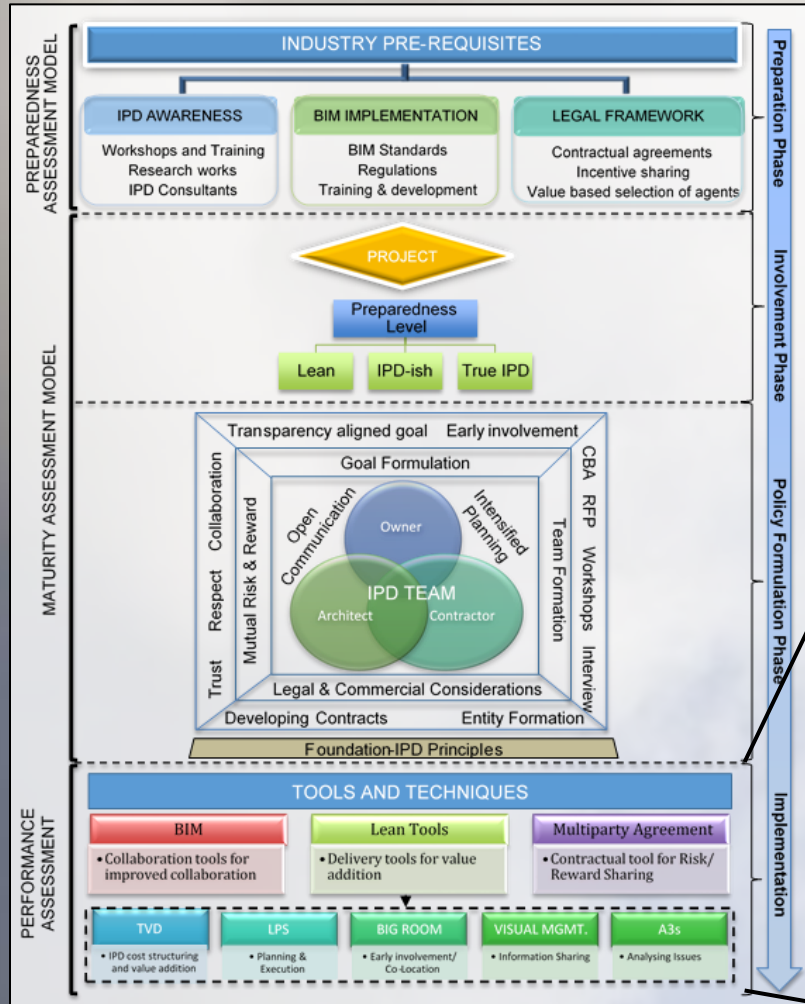
# IPD Adoption Framework



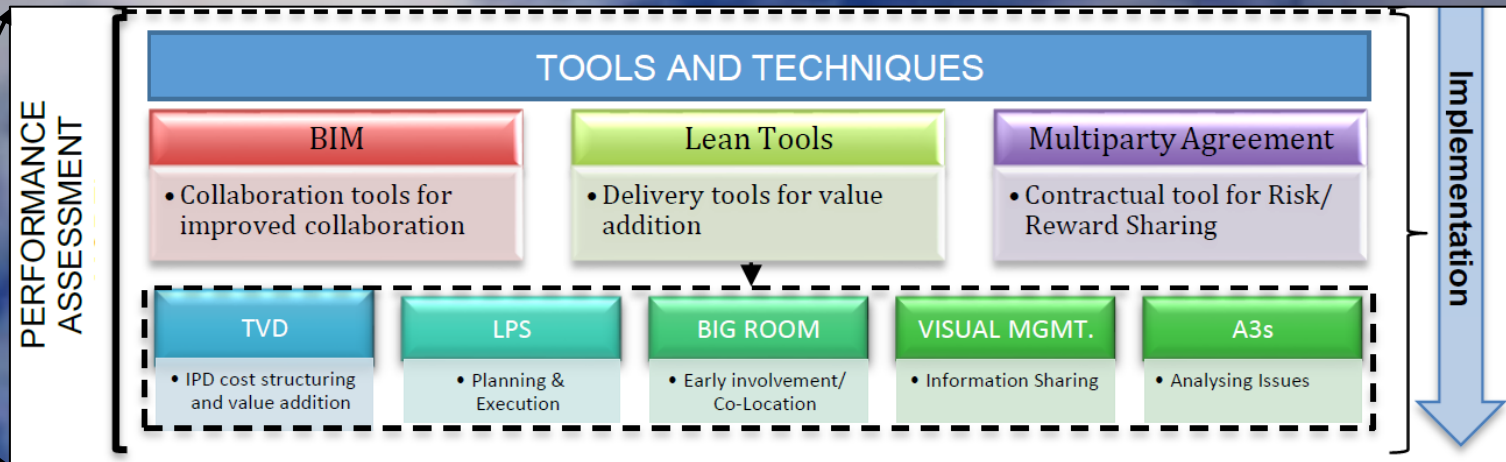
**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION



- Collaborative tools like BIM
- Lean tools for value addition and waste minimization
- Multi party contract for binding IPD Team
- ConsensusDocs 300 and AIA versions of IPD contracts



# Conclusion & Recommendation

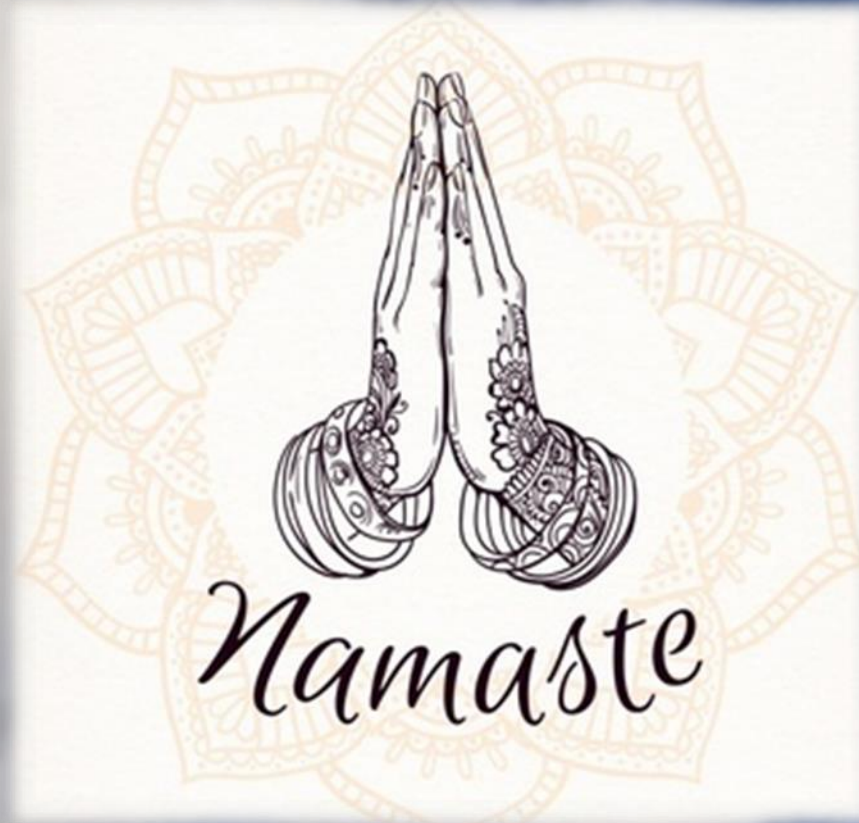


**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

- IPD is only 20% technical and the rest 80% is about the culture.
- IPD advocates a change in the mindset of the stakeholders to collaboratively work for the good of the project.
- Indian Construction Industry needs to work on the prerequisites for effective implementation of IPD in the country.
- Owner has the major role to play by taking the initiative and risk of trying.
- This study suggests the adoption of level 2 integration to observe the associated benefits and gradually move towards level 3
- Continuous assessment of preparedness, maturity and performance will be necessary



**IGLC 28**

BERKELEY, CA 6-12 JULY 2020

28<sup>th</sup> ANNUAL CONFERENCE OF THE  
INTERNATIONAL GROUP FOR LEAN CONSTRUCTION

Thank you for listening!!

Q&A