Structuring Integrated Project Delivery

College of Arts + Architecture
UNC Charlotte

AIA North Carolina

February 5, 2013
We have met the enemy and he is us.

Walt Kelly—Pogo
The Committee concluded that the difficulties experienced in typical construction projects, including those identified by CURT members, are artifacts of a construction process fraught by lack of cooperation and poor information integration. The goal of everyone in the industry should be better, faster, more capable project delivery created by fully integrated, collaborative teams.

*CURT WP 1202 (2004)*
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CURT WP 1202 (2004)
Full Collaboration AND Integration

Is wholesale industry change necessary to achieve these ends, or can these characteristics be consistently achieved within traditional project arrangements? Consider that

- Traditional contracts and roles often impede collaboration.
- Incentive of the parties (both financial and risk-related) is often to do as little as possible.
- Team-member focus is often on self-efficiency rather than project efficiency.

Thus the answer to the second question is clearly “no,” and industry’s need for a whole new project structure and approach becomes clear.

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_CURT WP 1003 (2006)_
• **Integrated Project Structures**: The building process cannot be optimized without full collaboration among all members of the design/build/own project.

• **Open Information Sharing**: Project collaboration must be characterized by open, timely and reliable information sharing.

• **Virtual Building Models**: Effectively designed and deployed technology will support full collaboration and information sharing and will lead to a more effective design/build manage process.
Egan and Latham Reports (UK)

- Rethinking Construction (Egan, J. 1998)
- Constructing the Team (Latham, M. 1994)
- Constructing Excellence
  - [http://www.constructingexcellence.org.uk/](http://www.constructingexcellence.org.uk/)
- Partnering Contracts
  - Dr. David Mosey. Trowers & Hamlins LLP
  - PPC2000
  - Association of Consulting Architects
Starting from Scratch

• CII Research Summary 271-1
  – Complex, uncertain, and quick projects perform better when designed and managed in accordance with alignment of interest, organizational integration, and management-by-means methods.
  – i.e., IPD and Lean
**Mortenson Survey 2012**

**What is the most exciting trend you see in architecture today?**

<table>
<thead>
<tr>
<th>% of respondents who mentioned*</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BIM / VDC</td>
<td>42%</td>
</tr>
<tr>
<td>IPD</td>
<td>33%</td>
</tr>
<tr>
<td>Sustainable design</td>
<td>13%</td>
</tr>
<tr>
<td>Blending of technologies / approaches</td>
<td>8%</td>
</tr>
<tr>
<td>Lean</td>
<td>4%</td>
</tr>
<tr>
<td>Public Private Partnerships</td>
<td>4%</td>
</tr>
<tr>
<td>All other</td>
<td>8%</td>
</tr>
</tbody>
</table>

*Does not sum to 100% due to multiple responses per respondent*

**All Require Integration**

"IPD has enough advantages that the market will see a significant move in this direction."

"Should be the standard business model."

"IPD could be a very effective and efficient use of time, talent, and resources, although it is still developing effective direction."

"As construction costs continue to rise, I feel that IPD and other non-traditional methods are the necessary evolution."

"It is the future, but the details need to be resolved."

IPD was seen as being superior to other delivery methods for a full 12 of the 16 quality, value, and efficiency areas assessed. This perception of IPD exists even though most participants (71%) have not yet participated in an IPD project.
IPD Structure
Birdwatcher’s Guide to IPD

- Multi or Poly-party Contract
- Profit at Risk Based on Project Outcome
- Shared Savings if Improved Performance
- Jointly Managed Project
- Liability Waiver/Limitation Among Parties
Projects Suited to IPD

• Complex
• Demanding
  – High Value to Cost
  – Accelerated Schedule
  – Highly Sustainable
• Innovative Technologies or Processes
• Adaptive
  – Change in Business Case
  – Change in Technology
• Suitable
  – Functionality Aligned to Organizational Goals
  – Integrated with Organizational Systems
Structure Influences Behavior
Peter Senge—The Fifth Discipline
Structure Influences Behavior

Peter Senge—The Fifth Discipline

- Structure
  - Limitations
    - Behaviors
      - Processes
        - Outcomes
Polyparty Contract
Microstructure

Workflow Design

Team Design

Communication Design

Lean Principles and Techniques
Team Scope and Responsibility
Selection Organization
Training Leadership

Cross-functional Teams
BIM Workflows
Coordination Strategies

ENGAGEMENT

Team Communication and Coordination Building Information Modeling
IPD Compensation
Compensation Principles

• Profit based on Group Outcome
  – Project
  – Subgroup

• Profit and Cost Separated
  – No incentive to increase work
  – No disincentive to moving work to best capable
  – Fixed Fee on Variable Costs

• Transparent Costs
  – Accountable and Auditable

• Profit at Risk Sufficient to Buffer Overruns
Compensation Issues

- Amount At-Risk
- Metrics for Increasing/Decreasing
  - Shared Savings Percentage
- Targets
  - When Should They Be Set
  - Benchmarking and Validation
- Cashflow
- Buffering
Simplified Compensation Model

Costs Guaranteed
Profit Based on Project Outcome

Owner Cost
Target Cost

Profit  Direct Cost
Multi-variable Risk/Reward

- Expected Cost
- At-Risk Threshold
- Target Cost

Validation Period: M1, M2, M3, M4, M5, M6

- Painshare
- Gainshare

Profit at Risk
Actual Project Cost

Gainshare %
### Milestone Distribution Matrix

#### Percentage of Profit Distributed at Milestones
- If Preconditions Met
- Distribution Percentages Vary Between Team Members
- Portion of Profit Held to Final Distribution

<table>
<thead>
<tr>
<th></th>
<th>Milestone 1</th>
<th>Milestone 2</th>
<th>Milestone 3</th>
<th>Milestone 4</th>
<th>Milestone 5</th>
<th>Milestone 6</th>
<th>Totals</th>
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</thead>
<tbody>
<tr>
<td>Architect</td>
<td>15.0%</td>
<td>30.0%</td>
<td>4.5%</td>
<td>10.0%</td>
<td>10.0%</td>
<td>10.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>(Structural)</td>
<td>6.0%</td>
<td>30.0%</td>
<td>1.8%</td>
<td>10.0%</td>
<td>10.0%</td>
<td>10.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>(Mechanical)</td>
<td>6.0%</td>
<td>30.0%</td>
<td>1.8%</td>
<td>10.0%</td>
<td>10.0%</td>
<td>10.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>(Electrical)</td>
<td>6.0%</td>
<td>30.0%</td>
<td>1.8%</td>
<td>10.0%</td>
<td>10.0%</td>
<td>10.0%</td>
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</tr>
<tr>
<td>Contractor</td>
<td>23.0%</td>
<td>10.0%</td>
<td>2.3%</td>
<td>20.0%</td>
<td>20.0%</td>
<td>20.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>(Structural Steel)</td>
<td>6.0%</td>
<td>10.0%</td>
<td>0.6%</td>
<td>25.0%</td>
<td>30.0%</td>
<td>20.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>(Curtain Wall)</td>
<td>6.0%</td>
<td>5.0%</td>
<td>0.3%</td>
<td>10.0%</td>
<td>15.0%</td>
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<td>100.0%</td>
</tr>
<tr>
<td>(Mechanical)</td>
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<td>10.0%</td>
<td>0.9%</td>
<td>10.0%</td>
<td>20.0%</td>
<td>15.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>(Electrical)</td>
<td>9.0%</td>
<td>5.0%</td>
<td>0.4%</td>
<td>10.0%</td>
<td>25.0%</td>
<td>20.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>(Plumbing)</td>
<td>9.0%</td>
<td>5.0%</td>
<td>0.5%</td>
<td>10.0%</td>
<td>25.0%</td>
<td>20.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>(Fire Protection)</td>
<td>6.0%</td>
<td>6.0%</td>
<td>0.3%</td>
<td>20.0%</td>
<td>25.0%</td>
<td>15.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

**Totals**:
- 100.0%
Other Factors

Quantitative
• Schedule
• Safety
• Plan Percent Complete
• RFI/Change Order Reduction
• Energy Performance

Qualitative
• Project Quality
  – Index Projects
  – 3rd Party Review
• Team Self-Reviews
• Owner Satisfaction
• Added Value List
Risk and Reward
Limited Change Orders (HB)

- No Change Orders, *Except*
  - Owner Elected Changes (changed scope)
  - Owner Directives (unilateral changes)
  - Differing Site Conditions
  - Changes in Laws and Regulations
  - Owner’s Suspension or Termination

- What Isn’t in the List
  - Errors and Omissions
  - Owner Interference
Limited Claims (HB)

- Waiver of ALL Liability Among IPD Parties, Except:*
  - Willful Default
  - Warranty Claims
  - Project Performance
  - Allocation of Third Party Claims
  - Owner Directives
  - Non-payment by Owner
  - Termination or Suspension Costs
  - Indemnification Obligations
  - Failure to Procure Required Insurance
  - Insured Claims?

*All projects have custom negotiated provisions that may differ from this description.
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• Complete Liability Waiver, Except:
  – Express Warranty
  – Owner’s Failure to Pay
  – Express Indemnification
  – Failure to Procure Insurance
  – Damages arising from 3rd party liens
  – Damages Covered by Insurance
• Consequential Damage Waiver
• But Liquidated Damages
• 2 Options
  – Safe Harbor Decisions
    • But What is a Safe Harbor
    • Exception for Willful Default
  – Traditional Risk Allocation
    • But Option to Limit Liability
• Mutual Consequential Damage Waiver
Insurance Developments

• Most IPD Projects use Traditional Insurance Products
  – Contractor/Trades should have Contractor’s Professional Liability
• A few multi-insurer integrated programs
  – MaineGeneral
• Integrated Policies being developed
Integrated Project Insurance Programs

- One Underwriter—Multi-lines
- Mixed Underwriters—Multi-lines
  - OCIP/CCIP Plus Integrated Professional
- But All Risk/Reward Participants Included
- Professional Liability is the Big Issue
  - Rectification Coverage
    - Extent
    - Who is covered
  - Large Self-Insured Retentions
- How are SIR/Deductibles Handled?
  - During Project
  - After Completion
- Will Still Need Some Traditional Insurance
  - Offsite Work
Decision Making
Project Decision Flow (HB/C191)

1. Project Management Team
2. Unanimous
   - Yes: Decision
   - No: Senior Representatives
3. Senior Representatives
   - Yes: Majority?
     - Yes: Contest Directive?
       - Yes: Owner's Directive Unlocks Target Cost And Schedule
       - No: Decision
     - No: Owner Objects?
       - Yes: Owner's Directive (Circular)
       - No: Decision
   - No: Decision
Putting it Together
Phase Ø Plan

Develop Business Case → Identify Goals, Concerns and Limitations → Team Selection → Pre-Contract Interviews (Optional) → Contract Negotiation Workshop → Project Kickoff → Commence Design/Pre-construction

Typical Team Generated Exhibits are:
- Project Objectives
- Project Schedule
- Target Cost
- Contract Task Matrix

Project Manual information started in Kickoff
- Charter
- Management Metrics
- Clutter Group Organization
- Information Organization
- Pre-Fabrication Strategy
- BIM Execution Plan
- Risk Register
- Colocation Strategy/Plan
Resources
The IPD Framework

IPD Teams: Creation, Organization and Management

December 28, 2011

IPD Resources

- *IPD: A Working Definition* (AIACC, 2007)
- *Negotiating an IPD Agreement* (Hanson Bridgett, 2011)
- *IPD Case Studies* (AIA/AIACC, 2010)
- *IPD Case Studies* (AIA 2011)
- *Managing Integrated Project Delivery* (CMAA, 2010)
- *IPD For Public and Private Owners* (NAFSA, COAA, APPA, AIA, AGC, 2010)
- *Comparison of IPD Agreements* (Hanson Bridgett, 2010)
- *IFOA Executive Summary* (Hanson Bridgett, 2010)
IPD Resources

www.ipd-ca.net
www.aia.org/ipd
www.consensusdocs.org
www.leanconstruction.org
www.bimforum.org
www.hansonbridgett.com