

University of Huddersfield
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Collaboration on IPD Projects

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Glenn Ballard – a brief CV

Previous Experience

**Pipefitter, Foreman, Construction Engineer, Productivity & Quality Specialist,
Internal Management Consultant for Brown & Root and Bechtel**

**Independent Management Consultant. Clients include Petroleos de
Venezuela, U.S. Dept. of Energy, Pacific Gas & Electric, Koch Refining,
BAA (Heathrow Terminal 5), Channel Tunnel Rail Link (St. Pancras
Station), Aera Energy, & Hess Oil**

Current Position

Research Director, Project Production Systems Laboratory, UC Berkeley

Education

M.B.A.

PhD (Civil Engineering)

Co-founder

International Group for Lean Construction (1993)

Lean Construction Institute (1997)

Topics to be Covered

- **What is IPD?**
- **What can go wrong?**
- **Getting it right: the Temecula Valley Hospital project**

Trading Ponies for Horses

Why was IPD formed?

- * To overcome the obstacle to innovation: 'Who pays? Who gains?'*

How does IPD operate?

- * All team members are equally responsible for delivering the project*
- * Shared risk and reward*

Benefits of IPD

- * Better plans and execution * More flexible to changes*
- * Purchasing by partner with best price * Shared costs*
- * Better safety from single superintendent * Trading ponies for horses*

‘Owners need to decide early in a project if they are buying a product or engaging the services of a team of professionals to help them solve a problem.’

(Construction Industry Institute Research Team 12-2: Organizing for Project Success, 1991)

What Underlies A Relational Contract?

- **Relations of significant duration**
- **Objects of “value” are not all easily measurable**
- **Many individuals, collective poles of interest**
- **Future cooperation anticipated**
- **Benefits and burdens shared**
- **Trouble is expected**
- **Relations will vary as unforeseeable future unfolds**

Ian Macneil - Head of Law School at Northwestern University until his retirement

How IPD is Supposed to Work

Reducing financial risk of service providers and linking their profit to project outcomes, persuades those companies to allow their people to collaborate.

Individuals are selected for their willingness to collaborate, led through training and supervision to be collaborative, and removed if unable or unwilling.

IPD Timeline

There are three major strands in the development of what is now called IPD:

- 1. BP's Project Andrew spawned Australia's Project Alliancing**
- 2. UK push for partnering led to the NECC and PPC2000**
- 3. Owen Matthews' IPD in 1999 in the U.S., based on a Design-Construct model, led to the Lean Construction Institute's 2004 International Symposium on Relational Contracting, which spawned Sutter Health's Integrated Form of Agreement in 2005. Within 3-4 years, two other IPD contracts were developed, by Consensus Docs and the American Institute of Architects.**

IPD Building Blocks

- **Making the right deal**
- **Selecting the right companies and individuals**
- **Building the team and culture**
- **Steering to targets**

Commercial Incentives are not Aligned

15 possible ways to get this wrong are listed in “An analysis of potential misalignments in commercial incentives” (iglc.net).

Here’s #6: Excluding key players from the risk pool.

The company responsible for fabrication and installation of the very complex curtain wall was excluded from the risk pool, struggled and failed to perform, yet was difficult to engage. They eventually went bankrupt and risk pool companies made no profit.

When faced with similar challenges, other projects were able to attack the problem early and collectively develop solutions.

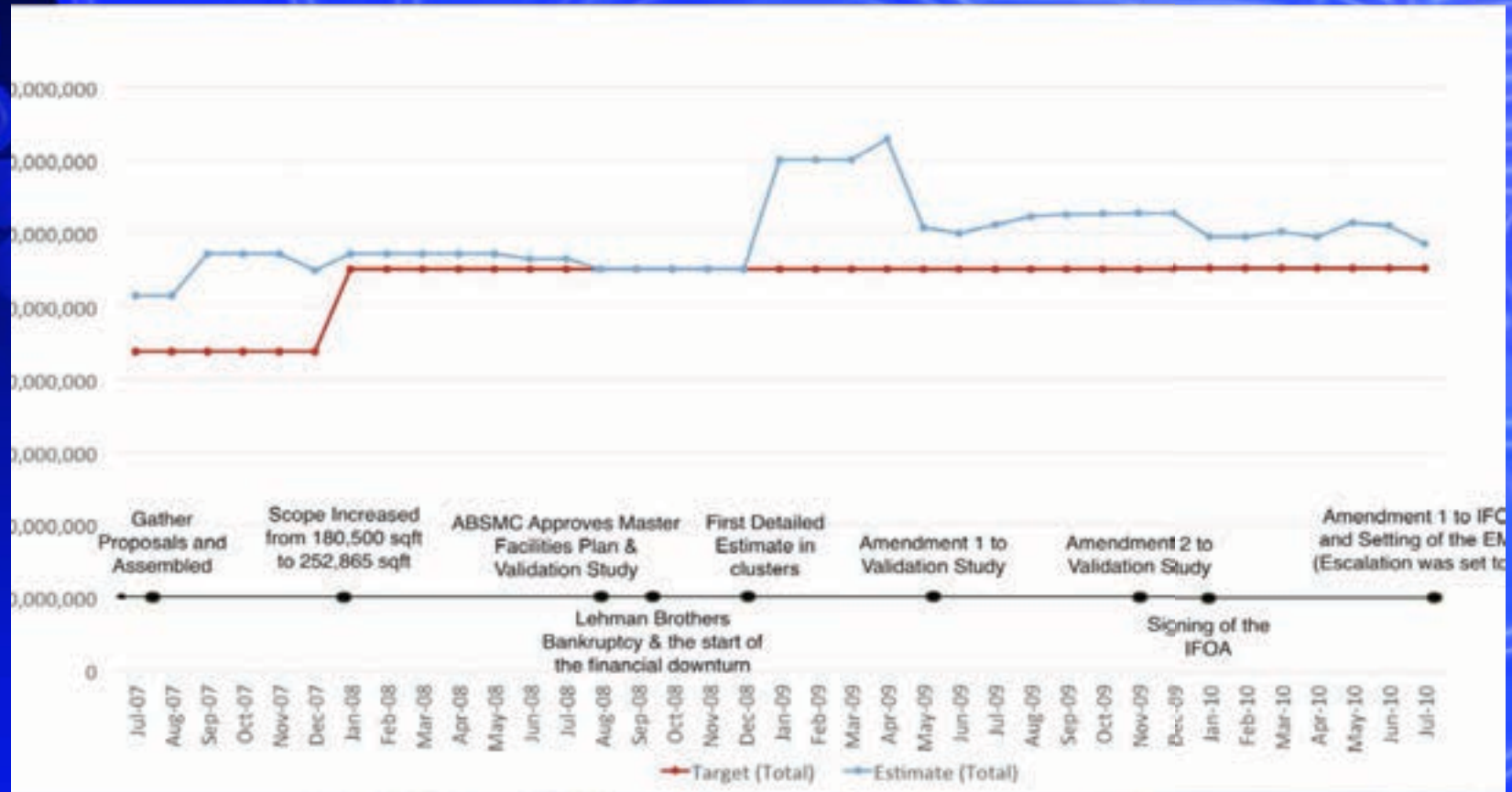
The Nasty 15

- 1. Imbalance of overheads and profits**
- 2. Designers have too small profit at risk**
- 3. Hard to move scope and \$ across boundaries**
- 4. Inadequate forecasting of cost to complete**
- 5. Untimely payment of profits**
- 6. Key players not in the risk pool**
- 7. Lack of coordination with players not in risk pool**
- 8. Target cost set on price, not worth**

The Nasty 15

- 9. Owners not pulling their oar**
- 10. Owners forcing team to cut profits**
- 11. Inadequate and hidden contingencies**
- 12. Owners exploitation of the team to get projects without paying any profits**
- 13. Firms using reimbursability to carry other-wise idle staff**
- 14. Withholding best personnel**
- 15. Failure to set target costs at or below market**

Target cost not aligned with target scope



"How to make shared risk & reward sustainable", www.iglc.net

Countermeasures

- 1. Don't be greedy/Don't be foolish.**
- 2. Anchor target cost in allowable cost.**
- 3. Keep target scope and cost aligned.**
- 4. Involve the right people when needed**
- 5. Share governance: Owner and all risk pool members decide who joins and who leaves the project.**

Countermeasures

- 6. Maintain shared governance throughout the project.**
- 7. Move money and scope across organizational boundaries to increase value/reduce waste.**
- 8. Require the same level of evidence for cost reductions as for cost increases.**
- 9. Match contingency to project uncertainty and complexity.**

A Cautionary Tale

Following BP's breakthrough Project Andrew in the early 1990s, Statoil delivered 2 offshore platform projects in the North Sea using an IPD model, each at a cost well below market. Then came Project Oscar, budgeted at 50% of market. It failed and no 'IPD' project has since been done in oil & gas.

Individuals must be 'taught' how to be collaborative.

- **Training/Lean Boot Camps/Co-location**
- **Leadership**
- **Building Trust**
- **Measurement & Feedback**

On Boarding/Lean Boot Camps

- **Conditions of satisfaction**
- **Design vision**
- **Team structure**
- **Team culture**
- **Linguistic protocols; e.g.,
reliable promising**

Transforming Design and Construction: A Framework for Change, Lean Construction Institute

Leadership

- **Modeling desired behavior**
- **Challenging non-collaborative behaviors & coaching**
- **Everyone a leader**

Building Trust

Trust is not an object, but rather an action—trusting.

Building trust starts with trusting—not blind, but with a real possibility of betrayal.

Trust is not given only to the trustworthy, but rather to develop new possibilities through new relationships.

Team Self-Assessment



Getting Value



- A full service hospital:
 - Emergency room, 20 intensive care units, 5 high-tech surgical suites, and cardiac catheterization lab.
- Owner: Universal Health Services
- Project cost: \$151 million
- Square meters: 16,436
- Patient beds: 140
- Location: Temecula, California
- Completed: August 2013

Temecula Project



11. Cost estimating and budgeting is done continuously through intimate collaboration between members of the project team—'over the shoulder estimating'.	4.2	3	5	.8
12. The Last Planner [®] system is used to coordinate the actions of team members.	4.4	3	5	.9
13. Targets are set as stretch goals to spur innovation.	4.2	3	5	.8
14. Target scope and cost are allocated to cross-functional TVD teams, typically by facility system; e.g., structural, mechanical, electrical, exterior, interiors, ...	4.8	4	5	.5
15. TVD teams update their cost estimates and basis of estimate (scope) frequently. Example from a major hospital project during the period when TVD teams were heavily in design: estimate updates at most every three weeks.	4.4	3	5	.9
16. The project cost estimate is updated frequently to reflect TVD team updates. This could be a plus/minus report with consolidated reports at greater intervals. Often project cost estimates are updated and reviewed in weekly meetings of TVD team coordinators and discipline leads, open to all project team members.	4.4	3	5	.9
17. Co-location is strongly advised, at least when teams are newly formed. Co-location need not be permanent; team meetings can be held weekly or more frequently.	5	5	5	0
18. Set-Based Design was used in the design stage.	4	3	5	1
19. Choosing By Advantages was used to select between alternatives.	4.8	4	5	.5
20. A3s were used to document design alternatives.	4.8	4	5	.5
21. A3s were used to solve problems.	4.4	4	5	.5
TVD SCORE (%)	85.7%			

Cultural Outcomes

Cultural Outcomes Survey (rated on a scale of 1 to 5)	Mean
1. The team collaborated, "really" collaborate	5
2. The project was optimized for the whole rather than optimized for local maxims.	4.8
3. The team tightly coupled learning with action	4.5
4. The project was managed as a network of commitments	4.1
5. Long lasting friendships and trust were formed as a result of this project.	5

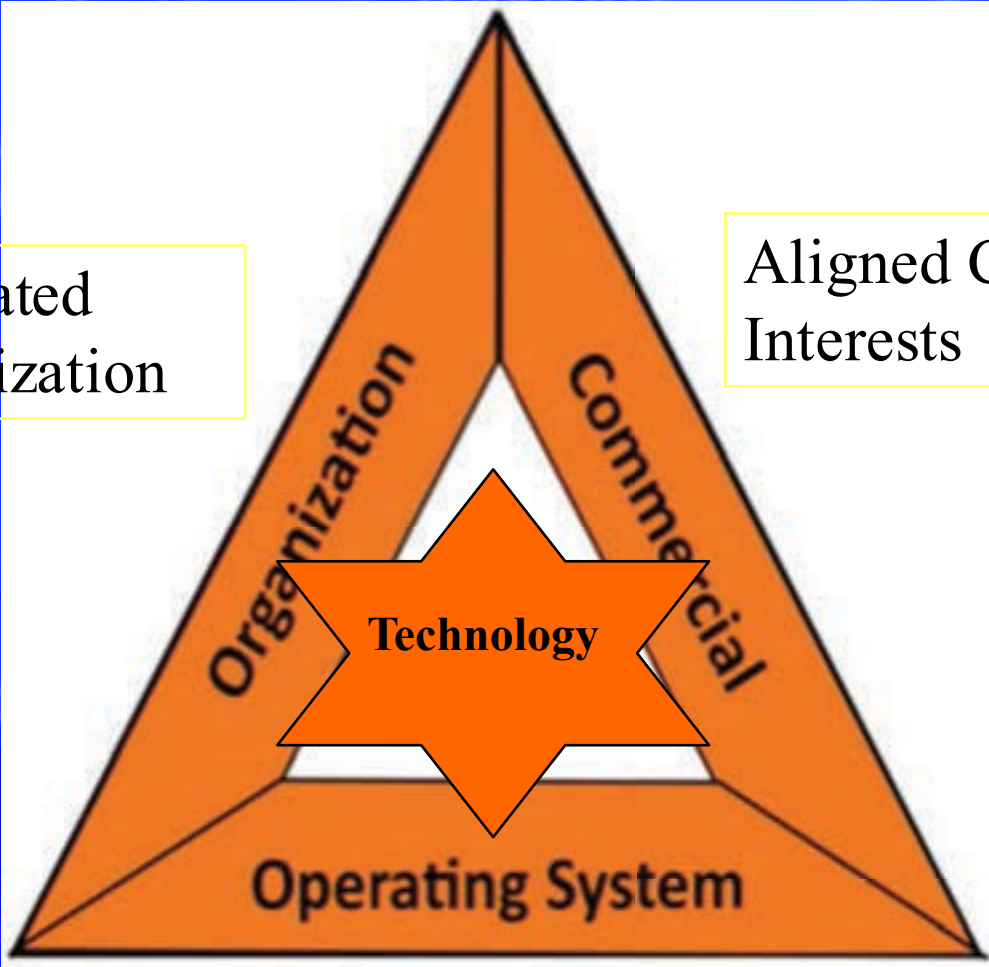
Performance Outcomes

- **2 recordable injuries in 407,958 labor hours; no lost time injuries**
- **1 failed inspection in 1300**
- **\$/m² 30% lower than average for California hospitals**
- **Completed 1.5 months early**
- **Trade partner productivity was better than previous benchmarks by 16-77%**
- **Risk pool companies made maximum profit: 150% of negotiated rate.**

The Lean Construction Institute Triangle

Integrated Organization

Aligned Commercial Interests



Apply all relevant criteria simultaneously to the evaluation and selection from product and process design alternatives.

Make money able to move across organizational and contractual boundaries in search of the best project-level investments.

Lean Management Methods

Target Value Design Value Stream Mapping Last Planner System Built in Quality

©Lean Construction Institute

Complex and uncertain projects perform better when designed and managed in accordance with **alignment of interests, organizational integration, and management by means (lean) methods.** (*Starting from Scratch: A New Project Delivery Paradigm*, Research Report 271-11, Construction Industry Institute, University of Texas at Austin)





**I look forward to your
comments & questions**