

Broadening the Perspective of Technology in Architectural Practice

October 19, 2012 | Stanford, CA
Stanford University Center for Integrated Facility Engineering

IPD, BIM and LEAN: *a case study*

Rick del Monte
Managing Director
Beck



Broadening the Perspective of Technology in Architectural Practice is registered with AIA CES.

Online + Components: **TAP101912W**

Stanford CIFE Live Event: **TAP101912S**

Questions? Contact tap@aia.org



Learning objectives

- Contractual issues and their impact on a successful IPD project
- Lean and its role in a collaborative process
- How IPD changes the use of BIM

The Project

THR Methodist Alliance Hospital, Fort Worth, Texas.

Hospital;

188,000 s.f. \$46m

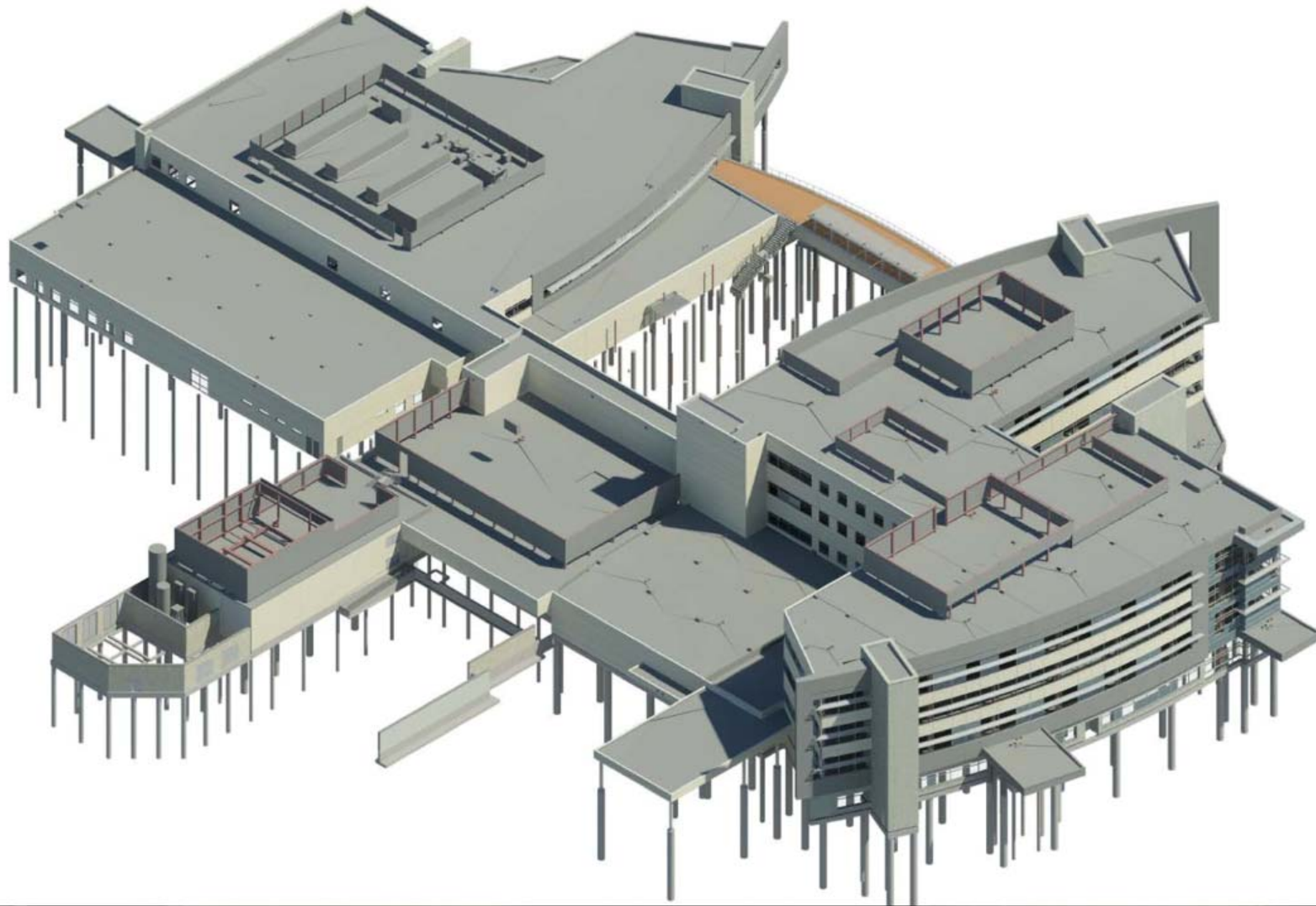
58 beds with growth potential of 300 beds

MOB;

74,000 s.f. \$10m

Project of identical scale completed within the last year set the base budget number.

The Project



Contractual Issues

AIA C191 contract-multi party agreement, similar to C195 but does not require the formation of an LLC.

Perkins + Will in Dallas is the architect, no previous IPD experience.

Beck is the contractor, internal integrated experience, but no IPD experience.

Owner had become a national spokesman for IPD and LEAN, left halfway through the project.

Contractual Issues

Owner/Architect/Contractor agree to waive all claims.

.5% of architect's and contractor's fee held;
\$500,000 to be paid back with initial savings.

Additional incentives based on shared project savings provided an additional .5% to Architect and Contractor.

Project began \$2m above baseline goal, project ended \$800,000 below budget, with \$2m in added value. No accounting for added value.

Contractual Lessons

The reward structure has to be sufficient to compensate the architect for the additional work.

Not including Structural and MEP engineers in the reward structure caused problems on the team.

Without an active and supportive owner the process will not succeed.

People matter more than process.

There can be value in the RFI process.

Contractual Lessons

Do not underestimate the cultural and accounting differences between architects and contractors.

Architect felt financially challenged because of higher labor requirements in the drawings, quantity of meetings, process revisions, and extra CA time.

LEAN Process

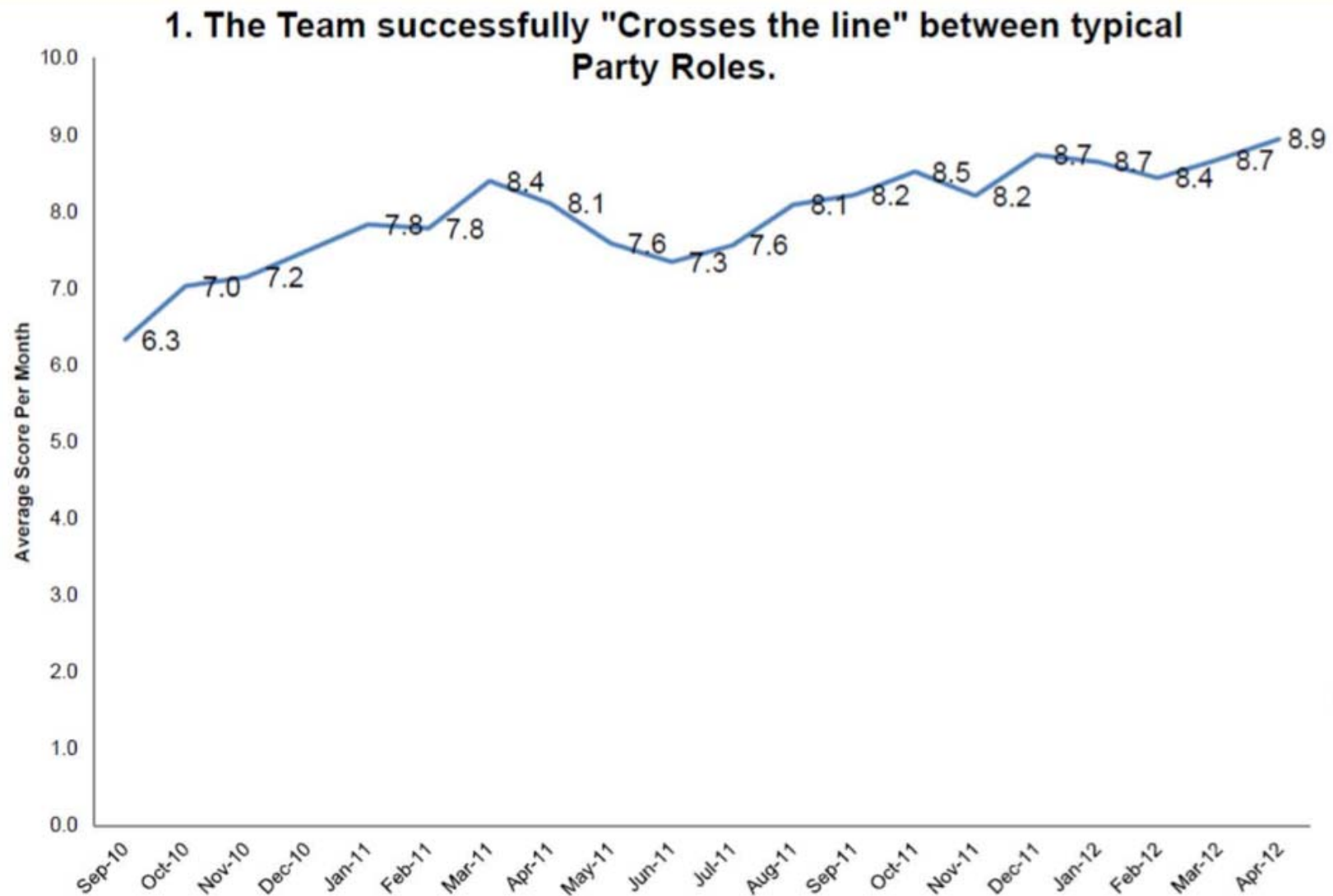
LEAN is a principle that came over from manufacturing, most closely associated with Toyota; 'Continuous quality improvement'.

There is not one correct way to do LEAN.

It is an attitude and series of processes, each team selecting the ones to be implemented.

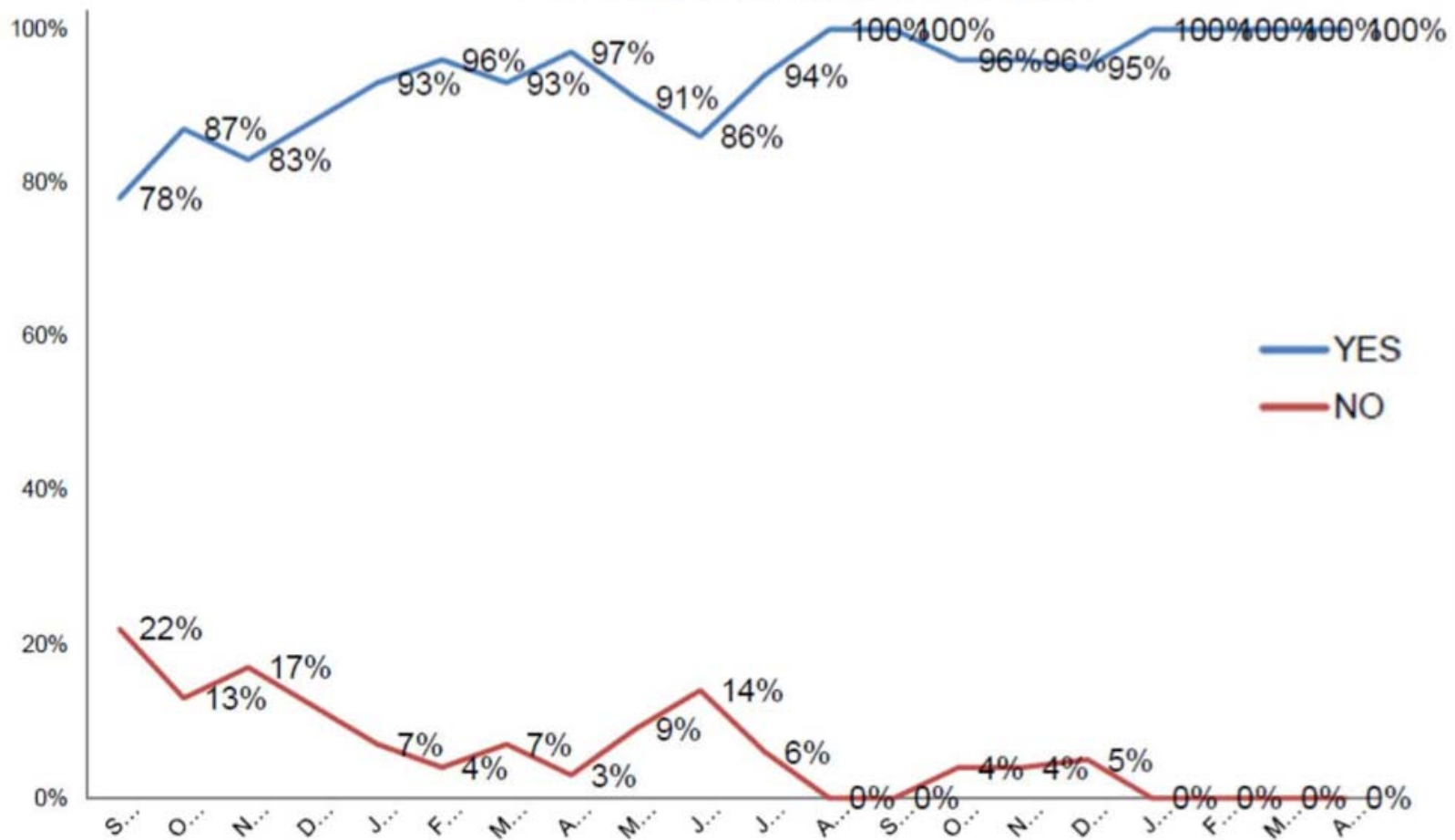
On Alliance we chose A3, scorecards, pull schedule, and retrospective.

LEAN Process



LEAN Process

13. In comparison to your normal process do you find IPD to currently be beneficial to you?



LEAN Lessons

LEAN does not mesh with typical efficient architectural processes; 'go slow to go fast', 'target based design', many more meetings.

Savings in CA from early additional planning and documentation did not occur.

BIM in IPD

Signed the AIA E202 but referred to the P+W BIM protocol for more detail.

Model is no longer primarily for 2D documentation, it is now a tool for estimating, coordination, and phasing.

Everything gets modeled, eliminate 2D content in the 3D model.

Accuracy of model is critical, floor and roof slopes modeled, walls modeled to correct height.

BIM in IPD 2.0

Separation of model elements into objects that match estimating elements.

Coding all library items into Timberline database.

Focus on model not drawings as building tool to eliminate 80% of notation.

Generating datapoints to feed directly into Trimble for layout.

Model generated by the team for the team.

BIM final thoughts

BIM is not a substitute for an experienced estimator.

Without the IPD liability waiver true BIM cooperation becomes more challenging.

He/she who controls the model controls the process, do not give this up lightly.

The general standard of architectural documentation is currently low, this will hurt the profession. How to get paid for higher quality?

BIM final thoughts

FAQ on AIA C191; Standard form multi-party agreement for Integrated Project Delivery

<http://www.aia.org/aiaucmp/groups/aia/documents/pdf/aiab081563.pdf>

AIA BIM execution document E202

<http://www.fm.virginia.edu/fpc/ContractAdmin/ProfSvc/BIMAIASample.pdf>