



PROJEKTE laufen selten wie geplant ab. Verzögerungen und Budgetüberschreitungen sind die Regel und nicht die Ausnahme; hinzukommt, dass der erwartete Wert oft nicht erreicht wird. Bauprojekte sind seit langem für ihre ungenügende Zielerreichung bekannt, aber heutzutage schneiden IT-Projekte noch schlechter ab.

DIE WELT verfügt über eine umfangreiche Literatur zum Projektmanagement, Systeme für seine Steuerung und über Berater, die bereitwillig helfen, aber es scheint, dass alles das ohne Wirkung auf die eigentlichen Ergebnisse des Projektes bleibt.

Aber warum?

SUCHE DAS KNOW-WHY und das Know-how wird von alleine kommen, sagt der Autor und ist dabei von Shigeo Shingo inspiriert, und er tut genau das. In diesem Buch legt er sein Verständnis für die Natur des Projektes dar und bietet eine neue Herangehensweise für dessen Management auf der Basis seiner Value-Flow-Operations Theorie, in einer leicht lesbaren und verständlichen –und oft unterhaltsamen– Form.

DAS BUCH IST EINE PIONIERARBEIT, in der der Autor seine eigene professionelle Projekterfahrung von mehr als fünfzig Jahren mit Inspirationen aus den verschiedensten Feldern wie Hydraulik, Theorie der komplexen Systeme und Chaos, sowie Sozialwissenschaften und Kriegswesen kombiniert und auch mit der Forschung in Lean Construction verknüpft.

IM GRUNDE HABEN WIR die wahre Natur des Projektes NICHT VERSTANDEN, ist seine provokative Hypothese, und deswegen gerät es so oft außer Kontrolle. Es ist die fundamentale Annahme, dass Alles geplant werden kann und die Pläne umgesetzt werden können, die wir aufgeben müssen. Pläne werden niemals ganz erfüllt, nicht weil das Planen schlecht war, sondern weil Pläne in der Realität niemals erfüllt werden können, ist seine provokative Aussage, bevor er eine Lean Herangehensweise für das Projektmanagement vorschlägt, eine Herangehensweise, die funktioniert!



SVEN BERTELSEN aps

Das Widerspenstige Projekt

SVEN BERTELSEN

SVEN BERTELSEN

DAS WIDER- SPENSTIGE PROJEKT



Ein neues Verständnis seiner
Natur und Leitung

SVEN BERTELSEN aps

The background of the slide is a solid blue color. Overlaid on this background is a large, faint, light-blue watermark of the University of California seal. The seal is circular and features a central sunburst, a book, and a ship, surrounded by the text "UNIVERSITY OF CALIFORNIA" and "1868".

Integrated Lean Project Delivery

Glenn Ballard

University of California, Berkeley

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*

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

‘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)

Two Types of IPD

- 1. Client IPD: Client signs multi-party agreement with key members of the project team**
- 2. Design-Build IPD: Client signs agreement with Design-Builder, who signs multi-party agreement with key members of their project team**

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 years, two other IPD contracts were developed, by Consensus Docs and the American Institute of Architects.**

from

Traditional

to

Lean

- A. Planners plan/Doers do
- B. Zero sum game-some must lose for others to gain
- C. Competition is between individual companies
- D. Better looking at it than for it
- E. Innovation is stifled by the problem: Who pays?/Who gains?
- F. Control is reactive to negative differences between DID & SHOULD
- G. Problems are sins and sins are punished

- A. Doers plan
- B. Everyone wins—by reducing waste & increasing value
- C. Competition is between supply chains
- D. Produce/deliver goods and services on request
- E. Innovation is promoted-money and resources move where most needed
- F. Control is steering toward targets-doing what's needed to achieve objectives
- G. Problems are opportunities for learning

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.

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)



A diagram consisting of a horizontal line with two blue circular nodes at each end. The left node contains the text 'Simple & Certain Projects' and the right node contains the text 'Complex & Uncertain Projects'.

Simple &
Certain
Projects

Complex &
Uncertain
Projects

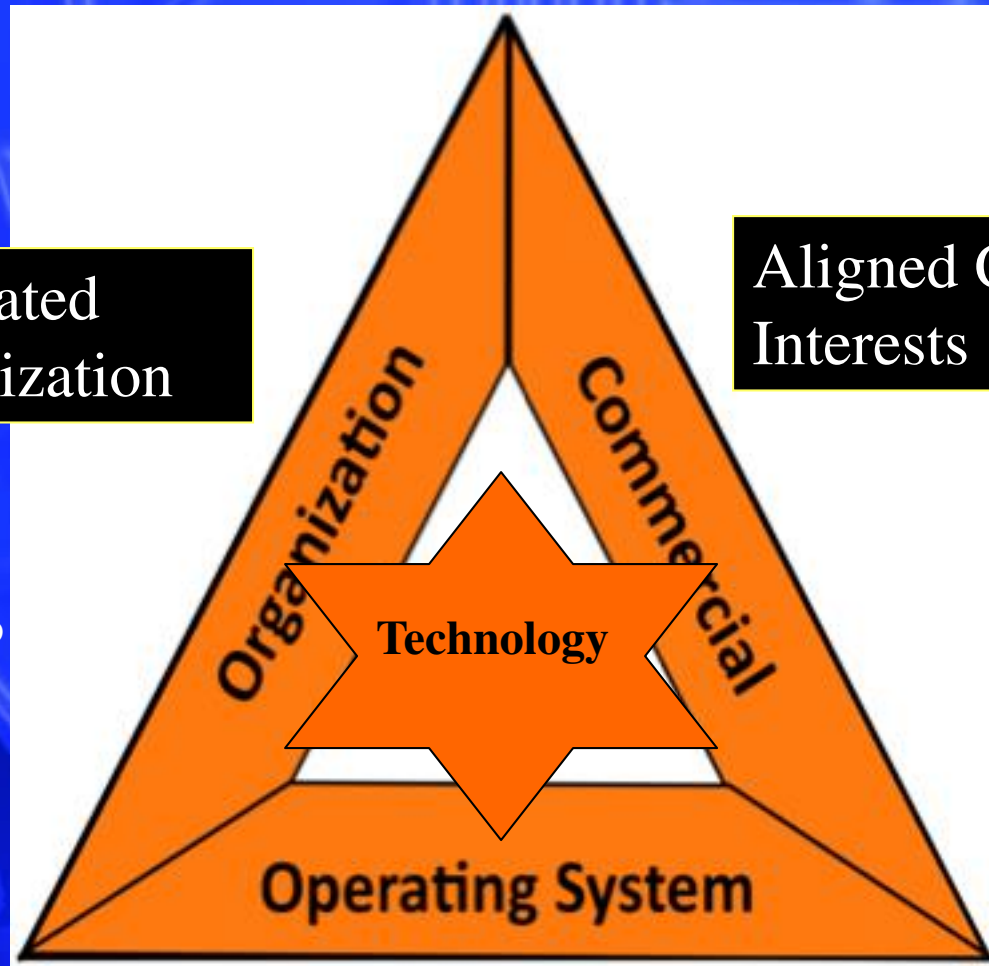
The Lean Construction Institute Triangle

**Integrated
Organization**

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

**Aligned Commercial
Interests**

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



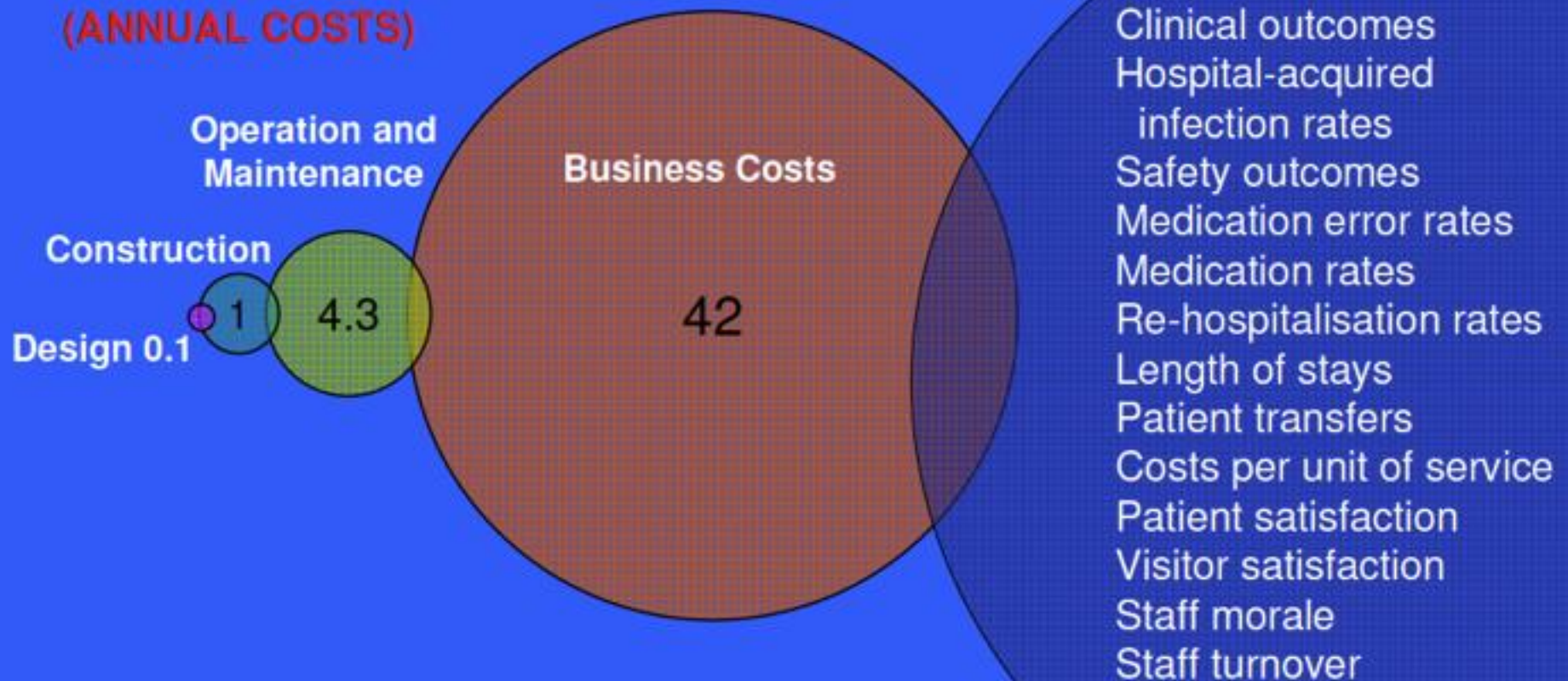
Lean Management Methods

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



Target Value Delivery

What HEALTHCARE customers really need



Target Value Delivery Process

Develop project business plan



Validate the project business plan



**Set targets for what's wanted and
conditions of satisfaction**



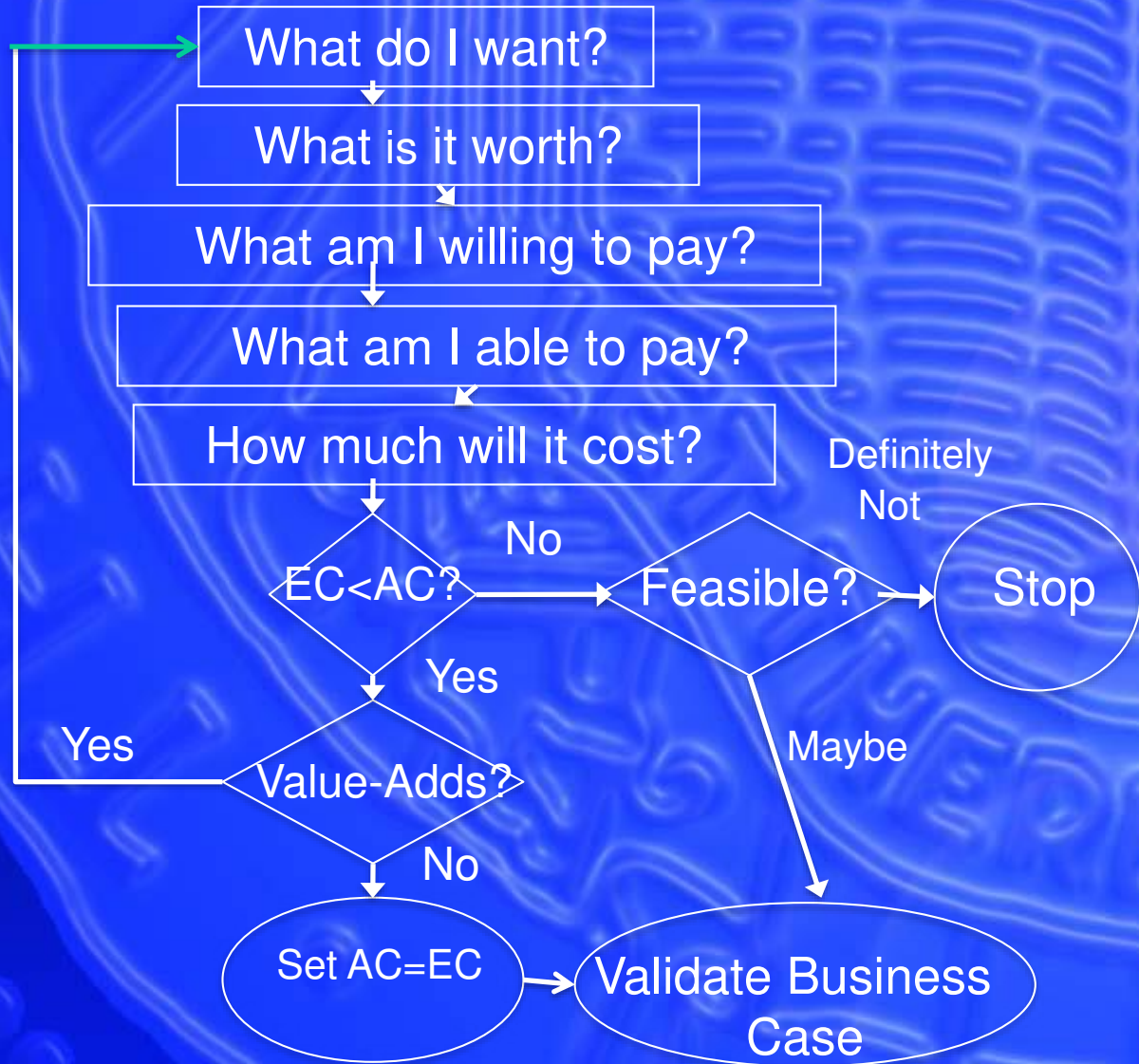
Steer design to targets



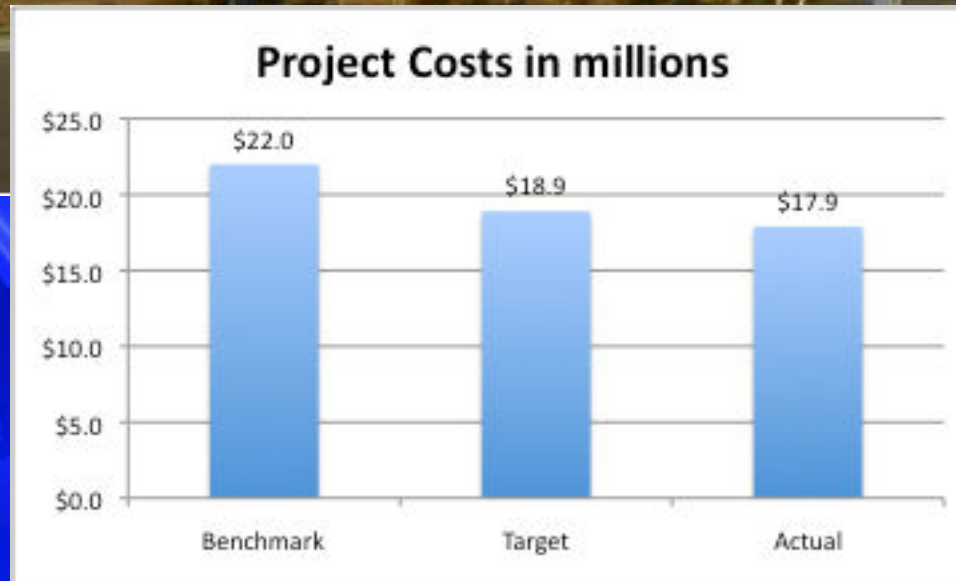
Steer construction to targets

Allowable
Cost (AC):
what I am
willing and
able to pay.

Expected
Cost (EC):
what it
would cost
based on
the market.



Sutter Fairfield Medical Office Building



Cost at completion was 5.2% below target and 18.6% below market

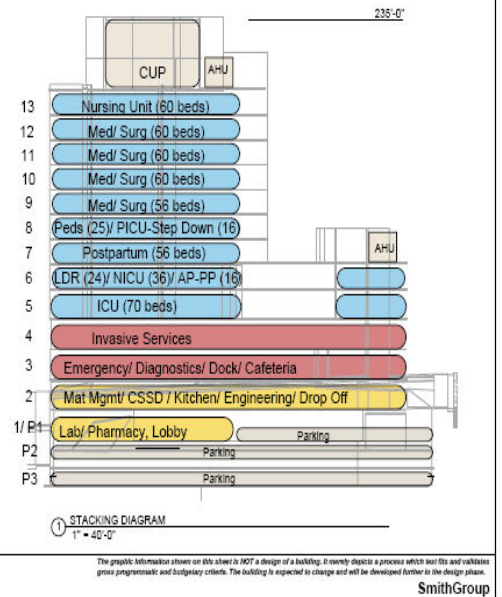
Validation Study

Basis of Design, Budget and Schedule.

The Starting Point for Designing to Targets



Stacking Diagrams



California Pacific Medical Center
Cathedral Hill Hospital
Integrated Project Delivery Team

Validation Study Report
Acknowledgment

Validation Report Team (continued)

The Marchese Company
Tracy Cramer
Ralph Marchese
Geoffrey Nelson
Bob Passmore

Degenkolb Engineers
Jay Love
Mark Gindlar
Raj Upantkar

Ted Jacob Engineering Group
Thomas Ho
Ted Jacob
Pol Marzan
Shulamit Rabinovitch

Silverman & Light
Joe Bazzell
Michael Gill
Tam Schuchroff
Chuck Silverman

Vantage Technology Consulting Group
Phil Corrodon
Deval Shah

On-line Consulting Services
Sandy Zimnik

Syska & Hennessy
John Moran III

Parkway Builders
Lorrie Andrews
Andy Beyer
Jim Clark
Kim Lum

Marshall Associates
Adrienne Deffno
Steve Marshall

The Schachinger Group
John Bach
Deborah Becker
John Collins
Ed Schachinger
Jesseon Sargent
Pamela Teague
Rob Wallace

Navigant
Tom Grosswell
Tom Heller
Andrew Mazurek

Ghafari
Robert Mauck
Ronald Moran
Samir Simanet

Rolf Jensen Associates, Inc.
Theresa DeGuzman
Teisha Paulner
John Keady
Kerwin Lee
Ron Mahiman

July 16, 2007

ROOM NAMES OR

Operating Room - Or

Operating Room - Or

Operating Room - Or

Cardiac Cath Lab -

(Interventional)

Angiography - (Inter

Cystoscopy

Patient Holding Prep

Recovery

Intensive Care/Coro

Emergency Waiting

Emergency Treatment

Patient Room

Patient Area Corridor

Negative Pressure

Room

Negative Pressure

Treatment and Exam Room

Imaging - CT Scan

Imaging - General Radiology

Imaging - MRI Room

Janitors Closet

Sub-sterile Room

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Notes: (1) These values include an allowance for lighting and power for

Total for 200120 VAC, 3 Phase, 4 Wire Unit Substations

Location: Distributed throughout the Building

Lighting 858,135 SF 0.50 VASFP

Receptacles 858,135 SF 3.25 VASFP

Equipment 858,135 SF 3.00 VASFP

Miscellaneous 858,135 SF 1.00 VASFP

TOTAL 7.75 VASFP

@ 208 VAC =

@ 12.47 KV =

Notes: (1) These values include an allowance for lighting and power for

B. Emergency Power and Distribution

1. The proposed emergency power system shall be designed to

emergency within the new facility. The system will consist of

three generators connected via paralleling switchgear located

on the roof. The paralleling switchgear shall be rated 12.47 KV

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Electrical Systems

Page 3 of 15

TOP - 75F - - NO-35

Imaging - CT Scan TOP - 75F - - NO-40

Imaging - General Radiology TOP - 75F - 30% - 50% NO-40

Imaging - MRI Room TOP - 75F - 30% - 50% NO-40

Janitors Closet TOP - 80F - - -

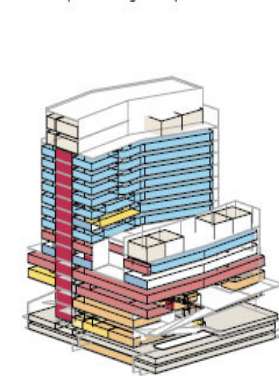
Sub-sterile Room TOP - 75F - - NO-40

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Mechanical Systems

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- Develop a massing concept



Integrated Project Delivery Team

July 16, 2007

Target Cost Model

Legend:

Worth (Target)
Current Estimate

Const TOTAL per SF
89.33

D-B TOTAL per SF
94.12

Project:	Fieldhouse Expansion
Location:	St. Olaf College Northfield MN
Phase of Design:	Schematic Target
Date:	June 21, 2001

Construction	Owner Reserves	Escalation	Construction TOTAL
9,840,302	343,115		10,183,417

Design-Build TOTAL
10,729,883

Incl Design at \$504,886+41600

NOTES:	
Bldg. Type:	Recreational
Target (SQFT)	114,000
Floors:	Single story plus mezzanines

SITE WORK	BUILDING					
594,500	9,245,802					
Site GC OH&P	SHELL	INTERIOR	MECHANICAL	ELECTRICAL	SPECIAL	GENERAL
	4,334,488	1,710,386	1,111,402	794,890	706,862	587,774
G10 Site Prep, Demo & Excav	A10 Foundation A20 Basement	C10 Interior Construction	D20 Plumbing	D5010 Service and Distribution	E10 Specialties & Equipment	Z1010 Project Administration
146,500	1,006,004	528,427	85,927	739,390	492,534	
G20 Site Improvements	B10 Superstructure	C20 Stairs	D30 HVAC	D5020 Lighting & Branch Wiring	E20 Furnishings Fixed/Movable	Z1030 General Conditions
373,000	1,218,797	62,639	824,160		34,000	
G30+40 All Utilities	B20 Exterior Closure	C30 Interior Finishes	D40 Fire Protection	D5030 Security Comm/Data	F10 Special Construction	Z1060 Fee
75,000	2,007,061	1,069,320	109,740		89,520	
G90 Other Site Structures	B30 Roofing	D10 Conveying	Testing and Special Mech	D5090 Other Electrical	F20 Selective Demolition	Z20 Risk and Contingency
	102,626	50,000	91,575	55,500	90,808	587,774

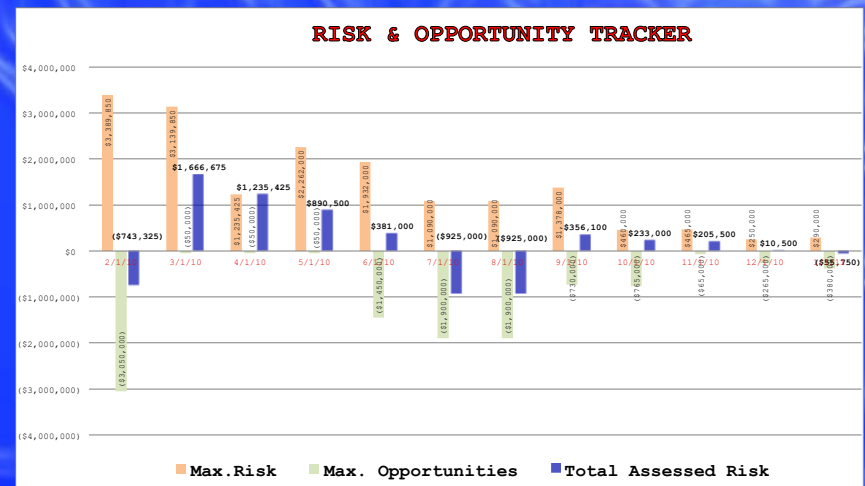
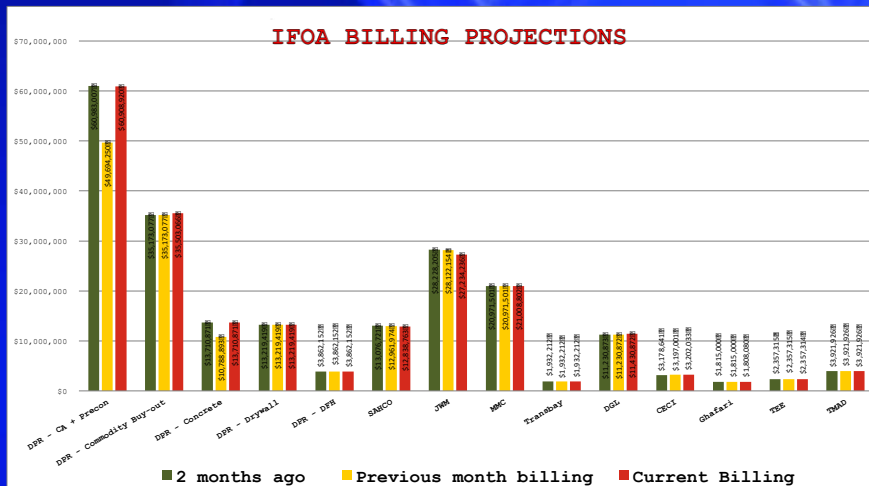
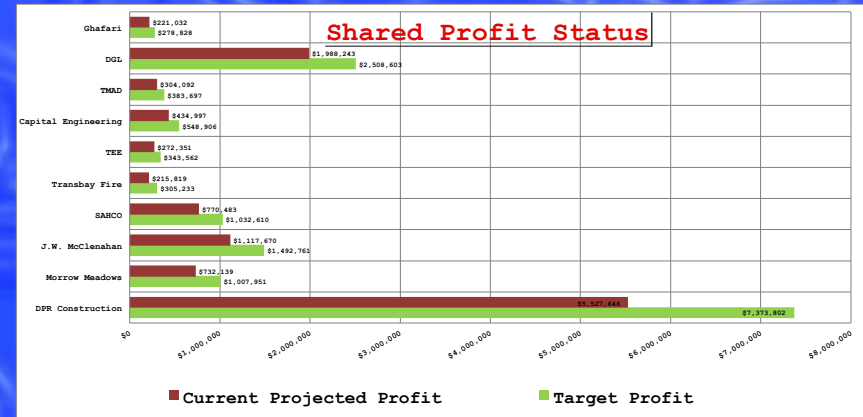
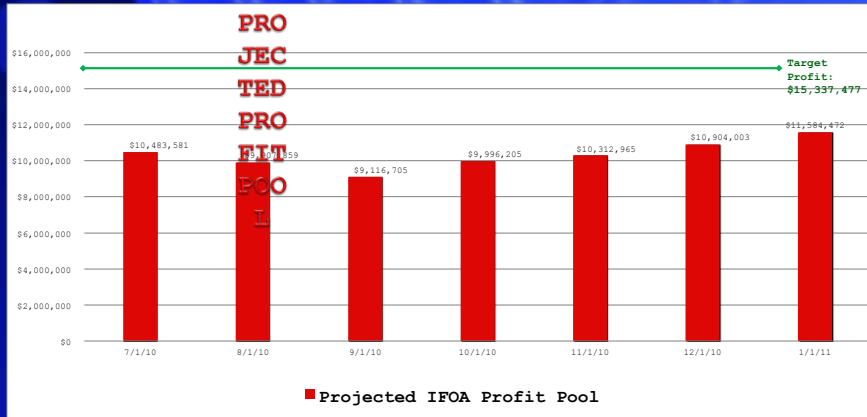
Sutter Medical Center Castro Valley

Target Value Design

Tuesday, January 11, 11

Construction Budget Summary

Original EMP: \$228,197,957
Preliminary Change Orders: \$4,923,778
Total Projected EMP: \$233,121,735
Total Projected Actual Cost *: \$221,537,265
Total Assessed Cost of Risk (incl. in above): (\$55,750)
Total Target Profit: \$15,337,477
Current Projected Profit: \$11,584,472
TOTAL COST REDUCTION REQUIRED TO REACH PROFIT GOAL:
\$3,753,005



LIPS2015 Barcelona

Lean in Public Sector Construction Conference

Case study of an alliance railway renovation project Lielahti – Kokemäki (Liekki)

Pekka Petäjäniemi
Finnish Transport Agency



#LIPS2015
@itec_es

It all started in LIPS 2009 in Karlsruhe, Germany



LIPS 2009-Jim Ross
introduced Project Alliancing
➤ EU-legislation is a challenge
in the public sector

LIPS in Washington DC 2010
➤ We can challenge the EU
legislation



**First Alliance pilot started
2011**

➤ No problems with
procurement laws

Lielahti-Kokemäki rail renovation project

Length of railway renovation project 89,6 km

Project original budget 91 M€ (incl. owner's material 20–30 M€)

Goal for the renovation:

Improve safety for railway section and reduce maintenance costs by renewing and repairing constructions (railway sleepers, rails, ballast, culverts, bridges, drainage, build new and tear down old platforms)

Reinforce surface and bench structures of the railway track so that it is possible to operate on 250 kN in 80-100 km/h.

Besides the renovation there are improvement needs, such as:

Changes in bench width

Removal of railway grade crossings

First Public sector Alliance Pilot in Europe



FinnTran's Strategic Targets for Alliancing

- To improve productivity of the entire industry
- To change the culture into a more open and trusting way of working
- To improve the customer satisfaction for end products – faster, better quality and cheaper
- To develop innovativeness and knowledge

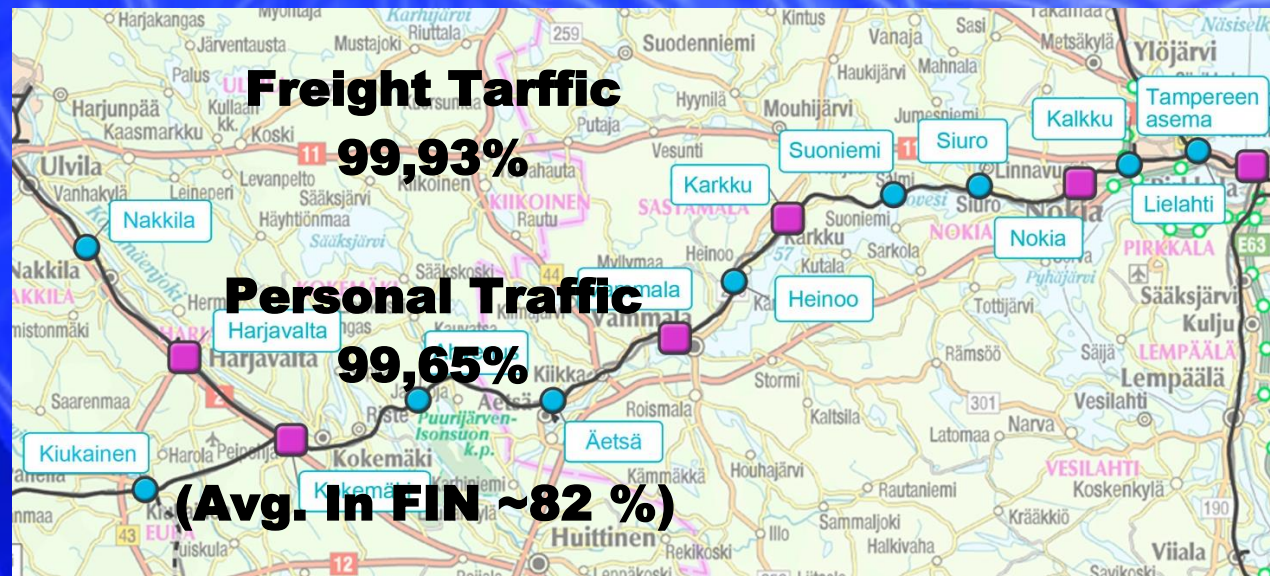


Mikko Nyhä ja
Mikko Heiskanen
vetävät ensimmäistä allianssiurakkaa mennessä.

Usability of track during construction

In three Years delivery period about 27 000 trains passed the site, because of construction only 42 trains have been delayed or cancelled

Accuracy of traffic during constuction:

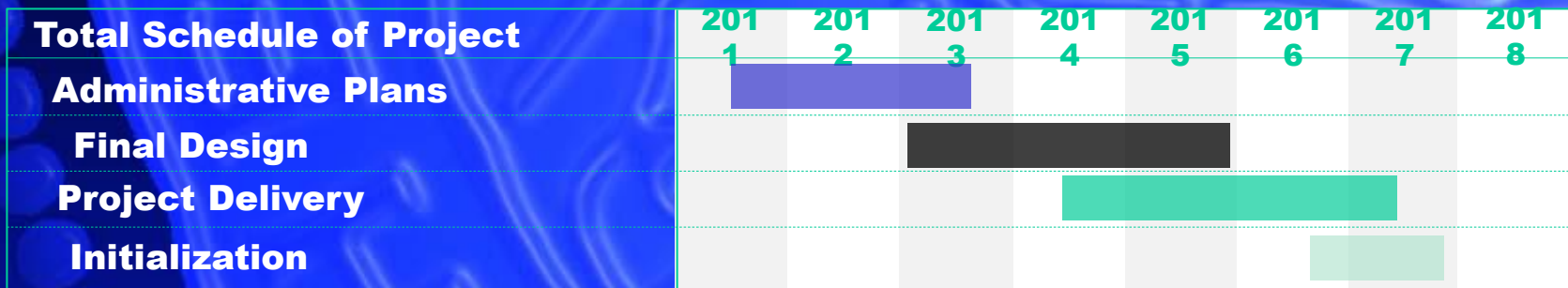


Coordination between construction site and rail traffic has been excellent !

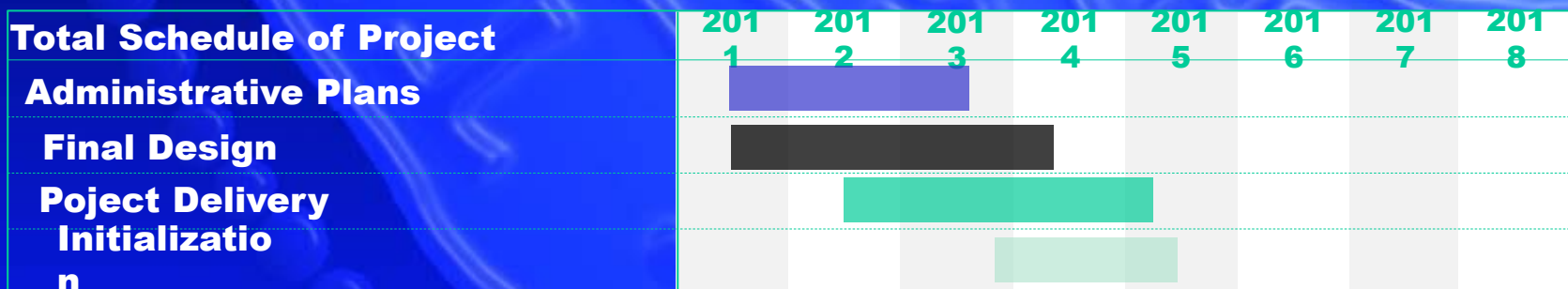
Effective Delivery

Project manage and effective schedule planning with Lean tools

Traditional project delivery

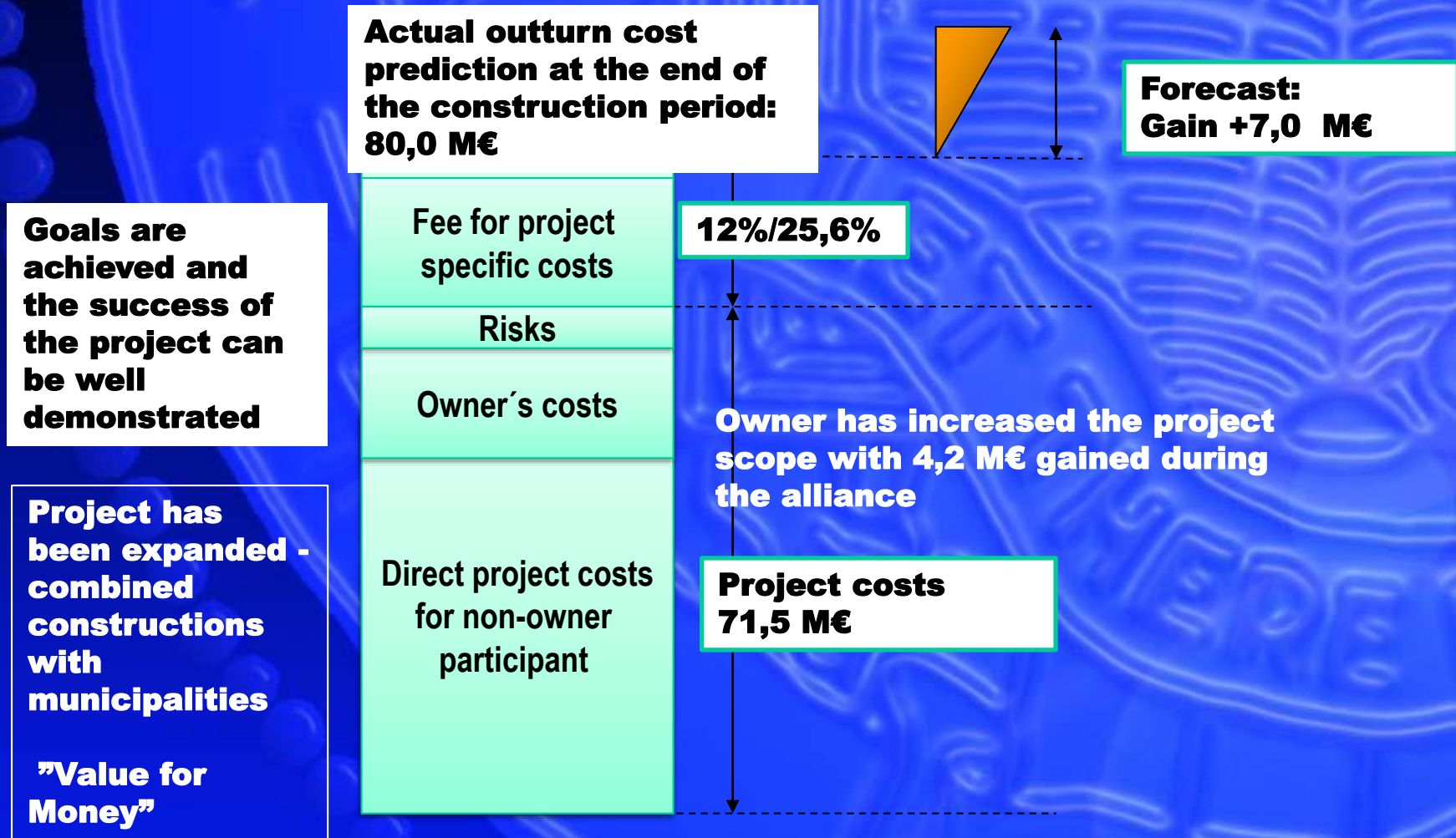


Alliance model



➡ Project Delivery has been reduced about 2 years

Outcomes of the commercial model



Site of the Year 2012 in Finland!

Exceptional collaboration between owner and service providers

Kunniakirja Vuoden työmaa 2012

Lielahiti-Kokemäki-allianssihanke

Helsinki 4. joulukuuta 2012

Rakennuslehti



Integrated Project Deliveries in Finland

Project Alliances in Finland* (date 22.10.2014)			M€	2010				2011				2012				2013				2014				2015			
Client/Owner	Project			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Finnish Transport Agency (FTA)	Lielähti-Kokemäki Railroad Renovation	100																								
2	University of Helsinki	Vuolukiventie Residential Housing Renovation	18																								
3	City of Tampere & FTA	Tampereen Rantatunneli tunnel	180																								
4	Finnavia	Helsinki Airport Paving*	20																								
5	Senate Properties	National Institute for Health and Welfare Head Office*	18																								
6	Järvenpää City	Järvenpää City Hospital	50																								
7	University of Helsinki	Franzenia Renovation from school to day care centre*	6																								
8	City of Lahti	Lahti Transport Terminal	19																								
9	Senate Properties	Joensuu Justice and Police Station	30																								
10	City of Helsinki	Pakila Maintenance	6																								
11	Senate Properties	Nuclear Safety Building for National Research Centre	30																								
12	Fira Ltd	Retkeilijänpolku Rental Residential Housing	10																								
13	Seafarer's Pension Fund	Gunillankallio Rental Residential Housing	10																								
14	KOy Jyrkkälänpolku**	Jyrkkälä Suburban Renovation	20																								
15	Turun Seudun Energiatuotanto Ltd	Naantali Powerplant alliance contract	45																								
16	University of Helsinki	Administration Building Renovation	18																								
17	Kainuu Central Hospital	Kainuu Central Hospital	120																								
18	FTA	Highway 6 Taaveti-Lappenranta renovation	76																								
19	Municipality of Kempele?	Kempele Medical Center	14																								
20	Senate Properties	Kotka Police Headquarters	20																								
21	City of Oulu	Hiukkavaara Community Center	24																								
22	City of Tampere	Tampere Tramway / Infra	250																								

* All of the projects are not pure alliances, but rather aim at implementing its principles and using lean practices within modified contractual settings

How IPD can go wrong

The background is a solid blue color with a subtle, embossed texture. On the right side, there is a faint, circular embossed seal. The seal features a central emblem, possibly a crest or a religious symbol, surrounded by text in a circular border. The overall appearance is that of a textured blue surface, possibly a book cover or a piece of fabric.

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

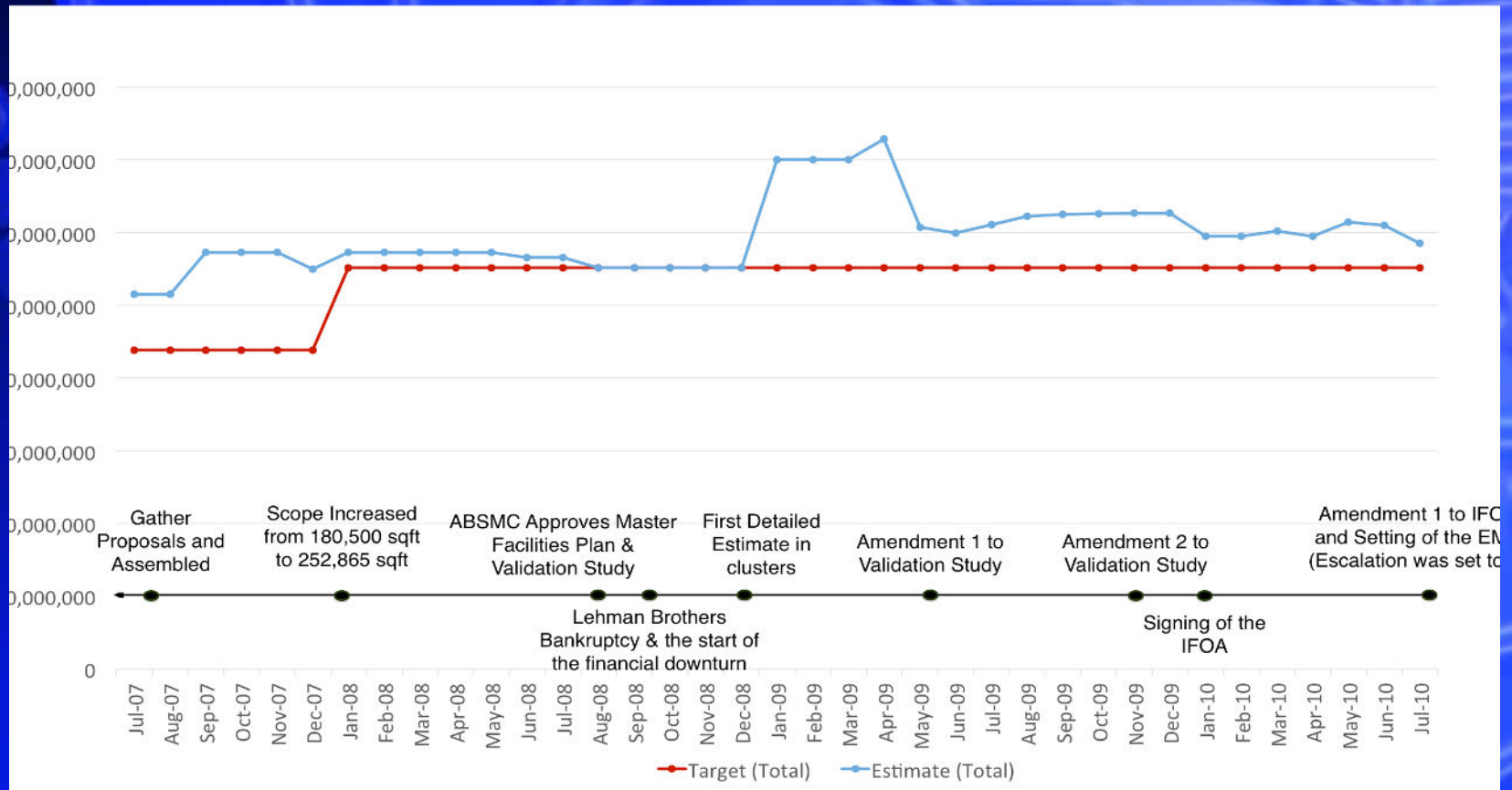
15 possible ways to get this wrong are listed in “An analysis of potential misalignments in commercial incentives” (iglc.net).

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.

Target cost not aligned with target scope



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

The background of the slide features a large, light blue watermark of the University of Michigan seal. The seal is circular and contains a shield with a book and a lamp, surrounded by the text "UNIVERSITY OF MICHIGAN" and "1817".

**What to keep in mind
when considering IPD**

Is the client able & willing to play their part?

- A. Will you pursue the lean ideal, follow lean principles & use lean methods & tools?**
- B. Will you share your project objectives and allowable cost?**
- C. Will you strive to assure the profitability of designers and constructors?**
- D. Will you commit a person with decision making authority to work day-to-day on the project?**

Are designers and constructors willing and able to play their parts?

- A. At first, no design or construction firms may have experience with IPD, so the key question in selection is: Are you willing to develop your lean capabilities on this project?**
- B. Are you willing to put your profit at risk and to open your books for reimbursement of cost of work?**
- C. Are designers willing to include constructors in the design phase of the project?**
- D. Are constructors willing to learn how to contribute in the design phase of the project?**



**I look forward to
hearing your comments
and questions**