Transformation of European Procurement Environment

Dean Kashiwagi, P.E., PhD
Director, Professor, Fulbright Scholar
Isaac Kashiwagi KSM

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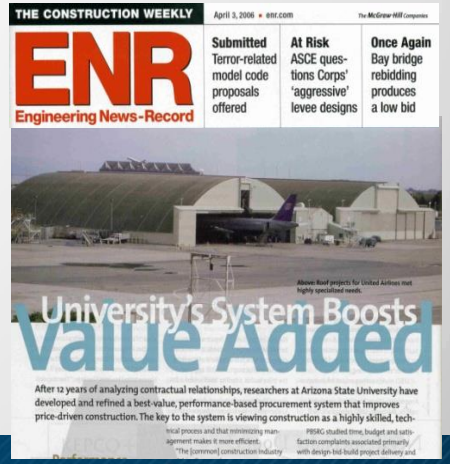
BV Approach: Motivation to Change

- Cut project cost by 5 – 30%
- Vendors increase performance and maximize profit
- Expertise becomes very valuable
- Use expertise to lower cost and improve performance

Performance Based Studies Research Group [ASU]

- 123+ Clients [Public and Private]
- Most licensed technology at ASU [47]
- New PM, RM and Procurement model
- 1,800 tests in 7 different countries and 32 different states in the U.S.



THE CONSTRUCTION WEEKLY

April 3, 2006 • enr.com

The McGraw-Hill Companies

ENR Engineering News-Record

Submitted Terror-related model code proposals offered

At Risk ASCE questions Corps' 'aggressive' levee designs

Once Again Bay bridge rebidding produces a low bid

Above: Roof projects for United Airlines met highly specialized needs.

University's System Boosts Value Added

After 12 years of analyzing contractual relationships, researchers at Arizona State University have developed and refined a best-value, performance-based procurement system that improves price-driven construction. The key to the system is viewing construction as a highly skilled, tech-

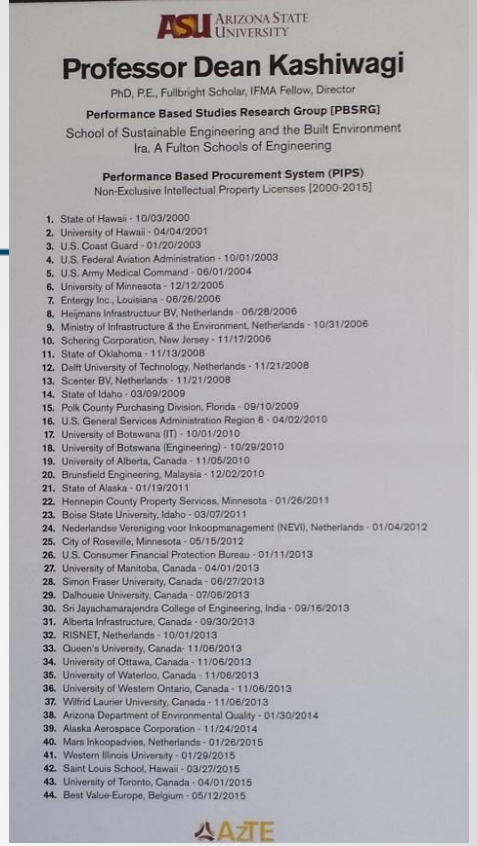
rical process and that minimizing management makes it more efficient.

"The [common] construction industry

PBSRG studied time, budget and satisfaction complaints associated primarily with design-bid-build project delivery and

COAA Construction Owners Association of America
2007 Gold Award
Design and Construction

Best Value Approach



ASU Arizona State University

Professor Dean Kashiwagi

PhD, P.E., Fullbright Scholar, IFMA Fellow, Director

Performance Based Studies Research Group [PBSRG]

School of Sustainable Engineering and the Built Environment
Ira. A Fulton Schools of Engineering

Performance Based Procurement System (PIPS)
Non-Exclusive Intellectual Property Licenses [2000-2015]

1. State of Hawaii - 10/03/2000
2. University of Hawaii - 04/04/2001
3. U.S. Coast Guard - 01/20/2003
4. U.S. Federal Aviation Administration - 10/01/2003
5. U.S. Army Medical Command - 06/01/2004
6. University of Minnesota - 12/12/2005
7. Entergy Inc., Louisiana - 06/26/2006
8. Heijmans Infrastructuur BV, Netherlands - 06/28/2006
9. Ministry of Infrastructure & the Environment, Netherlands - 10/31/2006
10. Schering Corporation, New Jersey - 11/17/2006
11. State of Oklahoma - 11/13/2008
12. Delft University of Technology, Netherlands - 11/21/2008
13. Scenter BV, Netherlands - 11/21/2008
14. State of Idaho - 03/09/2009
15. Polk County Purchasing Division, Florida - 09/10/2009
16. U.S. General Services Administration Region 6 - 04/02/2010
17. University of Botswana (IT) - 10/01/2010
18. University of Botswana (Engineering) - 10/29/2010
19. University of Alberta, Canada - 11/05/2010
20. Brunsfield Engineering, Malaysia - 12/02/2010
21. State of Alaska - 01/19/2011
22. Hennepin County Property Services, Minnesota - 01/26/2011
23. Boise State University, Idaho - 03/07/2011
24. Nederlandse Vereniging voor Inkoopmanagement (NEVI), Netherlands - 01/04/2012
25. City of Roseville, Minnesota - 05/15/2012
26. U.S. Consumer Financial Protection Bureau - 01/11/2013
27. University of Manitoba, Canada - 04/01/2013
28. Simon Fraser University, Canada - 06/27/2013
29. Dalhousie University, Canada - 07/06/2013
30. Sri Jayachamarajendra College of Engineering, India - 09/16/2013
31. Alberta Infrastructure, Canada - 09/30/2013
32. RISNET, Netherlands - 10/01/2013
33. Queen's University, Canada- 11/06/2013
34. University of Ottawa, Canada - 11/06/2013
35. University of Waterloo, Canada - 11/06/2013
36. University of Western Ontario, Canada - 11/06/2013
37. Wilfrid Laurier University, Canada - 11/06/2013
38. Arizona Department of Environmental Quality - 01/30/2014
39. Alaska Aerospace Corporation - 11/24/2014
40. Mars Inkoopadvies, Netherlands - 01/26/2015
41. Western Illinois University - 01/29/2015
42. Saint Louis School, Hawaii - 03/27/2015
43. University of Toronto, Canada - 04/01/2015
44. Best Value Europe, Belgium - 05/12/2015

AzTE

- Created in 1991
- Logic: Information Measurement Theory (IMT)
- New procurement model BV PIPS
- New Project Management Model
- New Risk Management Model
- Research based program:
- 23 year program, $16.6M, 1,800 tests delivering $6B services, 7 countries, 32 states in the U.S.
- **<u>Only research program in the world that has been successfully passed four audits by independent auditors</u>**

1st Test in Netherlands $1B Infrastructure Delivery

- Infrastructure repair critically needed [drivers spend 1-2 hours on road going and coming].
- Procurement and execution takes too long [12 years].
- Over-management of vendors
- 16 project, 6 awards, $1B test of best value PIPS.
- Goal is to finish 10 projects in 3 years.

Test Results

- Program results: 15 projects finished (expectation was 10).
- Delivery time of projects accelerated by 25%.
- Transaction costs and time reduced by 50-60% for both vendors and client.
- 95% of deviations were caused by Rijkswaterstaat or external [not vendor caused].
- NEVI , Dutch Professional Procurement Group [third largest in the world] adopts Best Value PIPS approach.
- Now being used on complex projects and organizational issues.

Minnesota Consortium

General Overview	Overall	Group B	Group C	Group D	Group F
Total Number of Projects	399	8	21	10	355
Total Awarded Cost ($M)	$434.88	$37.81	$17.24	$5.07	$332.70
Overall Change Order Rate	**8.83%**	**3.73%**	**4.04%**	**1.27%**	**10.16%**
Client	7.61%	2.15%	1.08%	0.33%	8.83%
Designer	0.69%	1.68%	2.07%	0.63%	0.33%
Contractor	0.01%	-0.21%	-0.17%	0.00%	0.01%
Unforeseen	0.52%	0.12%	1.06%	0.31%	0.51%
Overall Delay Rate	**47.17%**	**35.31%**	**1.59%**	**16.38%**	**51.68%**
Client	21.92%	15.26%	0.00%	7.41%	24.13%
Designer	4.47%	5.69%	1.59%	8.97%	4.48%
Contractor	2.65%	10.93%	0.00%	0.00%	2.42%
Unforeseen	4.54%	3.42%	0.00%	0.00%	5.04%

US Army Medical Command

Before report:

- Did not have a way to track projects.
- Unaware how much cost or time deviation was occurring.
- Thought the vendors were "cheating" them.
- Could not quantify problem was coming from.

General Overview	MEDCOM
Total Number of Projects	619
Total Awarded Cost ($M)	$973.94
% Over Awarded Budget	**5.50%**
Client	4.13%
Designer	0.60%
Contractor	0.00%
Unforeseen	1.31%
% Delayed	**41.13%**
Client	30.84%
Designer	0.25%
Contractor	1.48%
Unforeseen	8.57%

The Industry Structure

High

Performance

III. Negotiated-Bid Minimized competition Long term Relationship based Vendor selected based on performance	**II. Value Based** Buyer selects based on price and performance Vendor uses schedule, risk management, and quality control to track deviations Buyer practices quality assurance **Utilize Expertise**
IV. Unstable Market	**I. Price Based** Designers and engineers do not know construction Procurement assumes all contractors are the same [not reality] No transparency and inefficient **Manage, Direct and Control [MDC]**

Low — Perceived Competition — High

1976 (40)

Change in Approach

- Talk less
- Talk simple
- Do not talk unless asked
- Do not try to influence or control
- You can possibly change yourself, you cannot change anyone else

System Created to Assist People to See

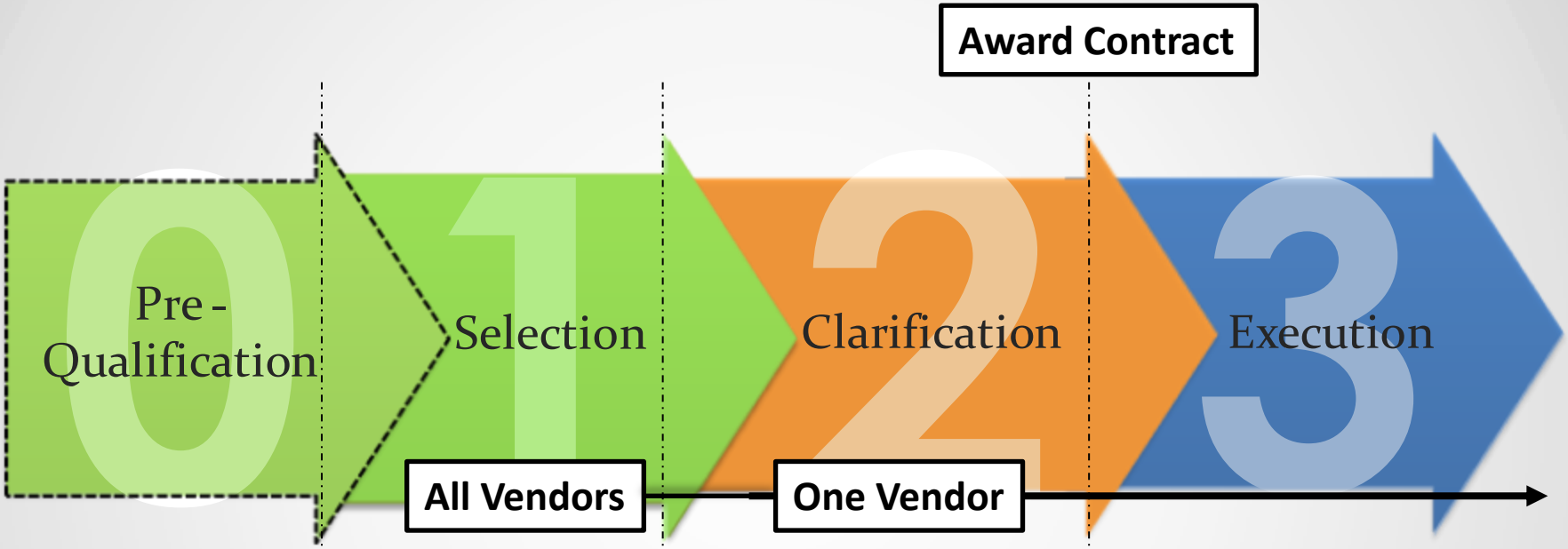
System Created to Increase Value and Performance

Create BV Structure to Minimize Risk

Decision Making by Non-Experts

- Increases risk and cost [transactions]
- Make people think and make decisions
- Increases relationships and bias and trust
- Minimizes continuous improvement and lowers the level of expertise
- Forces owner to “trust” that systems will work

Four Phases of PIPS



Education
Pre-qualify

Dominant
Simple
Differential
(non-technical
performance
measurements)

Clarification
Technical review
Detailed technical
schedule
Milestone schedule

Risk Management
Quality Control
Quality Assurance
(WRR / DR)

Best Value Case Studies

CL Business Outcomes: Costs

Business Outcomes	Pre MSA	MSA (2010)	MSA (2013)
MSA Baseline	$12.29M	$10.81M	$11.96M
Growth – Out of Scope	N/A	N/A	$1.15M
Value Add	N/A	$0.43M/yr	$0.98M/yr *see appendix for details
Net MSA	$12.29M	$10.38M	$9.83M

CL Business Outcomes: Reliability & Satisfaction

Business Outcomes	Pre MSA	MSA (2010)	MSA (2013)
# of Major Outages	N/K	37	11
% Uptime	99.802	99.989	99.998
Customer Satisfaction	3.6	3.71 (max 4.0)	3.81 (max 4.0)
% of Tickets within SLA	94%	97%	97%

Business Outcomes: Technology

Business Outcomes	Pre MSA	MSA (2010)	MSA (2013)
% Network supported (Not at end-of-maintenance)	89%	99%	99%
% 1Gb- Wired Connections	57.0%	71.5%	96.0%
% Wireless(n)	9.0%	8.7%	92.6%
IT Spending Ratio	6/94 (New vs. Maintenance)	26/74 (New vs. Maintenance)	56/44 (New vs. Maintenance) Includes New Growth Includes Wireless-n

State IT Outsourcing [Phase I and Phase II]

Del E. Webb
School of Construction

ADEQ Process Improvement
[Creation of Short List of Professional Vendors]

Criteria	% Diff	Traditional	Best Value
Required time to evaluate proposals	- 95%	286 hrs.	13 hrs.
Protests	0%	0	0
Avg. Customer Satisfaction of process (1-10)	63%	5	9
ADEQ Administration Cost	- 96%	$ 98,520.00	$ 3,840.00
ADEQ Admin. Cost Savings	$ 94,680.00		

Overall Professional Vendor Program Performance

No.	Criteria	Traditional	Best Value
1	Total # of projects	35	60
2	Total cost of projects	$5.5M	$5.8M
3	% of projects SOW completed in fiscal year	50%	97%
4	# of ADEQ PMs to manage projects	7	5
5	Customer satisfaction of vendor performance	6.9/10	9/10

*Data was adjusted due to project de-scoping (24 projects, $1.2M (17.32%), 355 days (10.14%)

- ADEQ PMs increased work capacity by 140% [5 PMs do work of 7]
- Contractors performed 94% more work in 33% less time [did 12 months of work in 8 months and finished 47% more work].
- ADEQ customer satisfaction of vendor work increased by 30%

Project Performance [Traditional vs. BV]

ADEQ PM Criteria	Pinal County	Yuma
Total Cost of Projects	**$400K**	**$138K**
Project Duration (days)	730	352
% Total Schedule Deviation	**150%**	**23%**
% Schedule Deviation Due to ADEQ	-	23%
% Schedule Deviation Due to Vendor	-	0%
% Cost deviation	**300%**	**0.5%***
% of Milestone Deliverables Requiring ADEQ Revisions	100%	0%
% of ADEQ Time Required to Support Vendors	50%	TBD

School District 287
Plymouth, MN
Tom Shultz, CFM

Active or Recent Research Partners

Updated: 12/23/2014

School District 287 Report

Intermediate District 287

Project Name	Value ($M)	Percent Complete	Duration (Months)	Schedule Delay %	Change Order	Client Satisfaction
NEC – General Construction	$25.9	100%	17	0%	2.8%	10.0
NEC – Technology Systems	$1.6	100%	7	32.7%	0.9%	7.6
NEC – Demountable Walls	$2.0	100%	7	0%	0.4%	9.0
TOTAL:	**$29.5**	**100%**	**11**	**11%**	**1.4%**	**8.9**

Notes:

1. Technology Systems vendor was not selected using BV
2. CM done by owner saving client $2.6M
3. Tom Shultz won the 2011 IFMA FM of the Year award

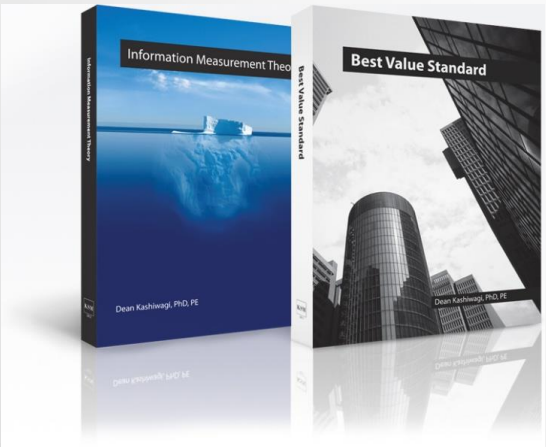
Conclusions

- Husbands, do not tell your spouse what to do
- Minimize your speaking to your spouse
- Accept your spouse for who she is
- Let her do whatever she wants
- A happy wife is a good life
- Do the same thing to the expert vendor

Advantages of BV: Win-win-win

- Minimize project cost by 30%
- Increase the expert vendor's profit
- Increase transparency to minimize risk and improve quality

Q&A



Dean.Kashiwagi@asu.edu
LinkedIn.com/in/deankashiwagi
YouTube.com/user/PBSRG
PBSRG.com
KSMLeadership.com

Jan 9 – 13, 2017
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