

Supply Chain Optimization

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PBSRG
GLOBAL

Performance Based Studies Research Group



www.pbsrg.com

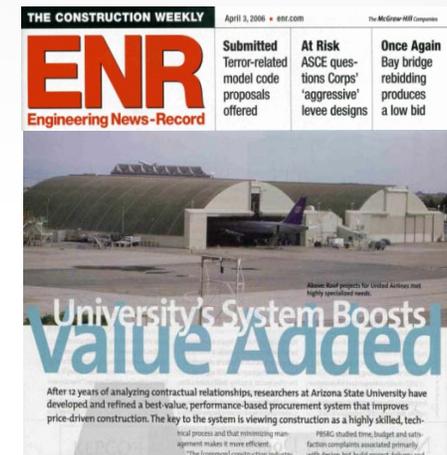
November 12, 2009



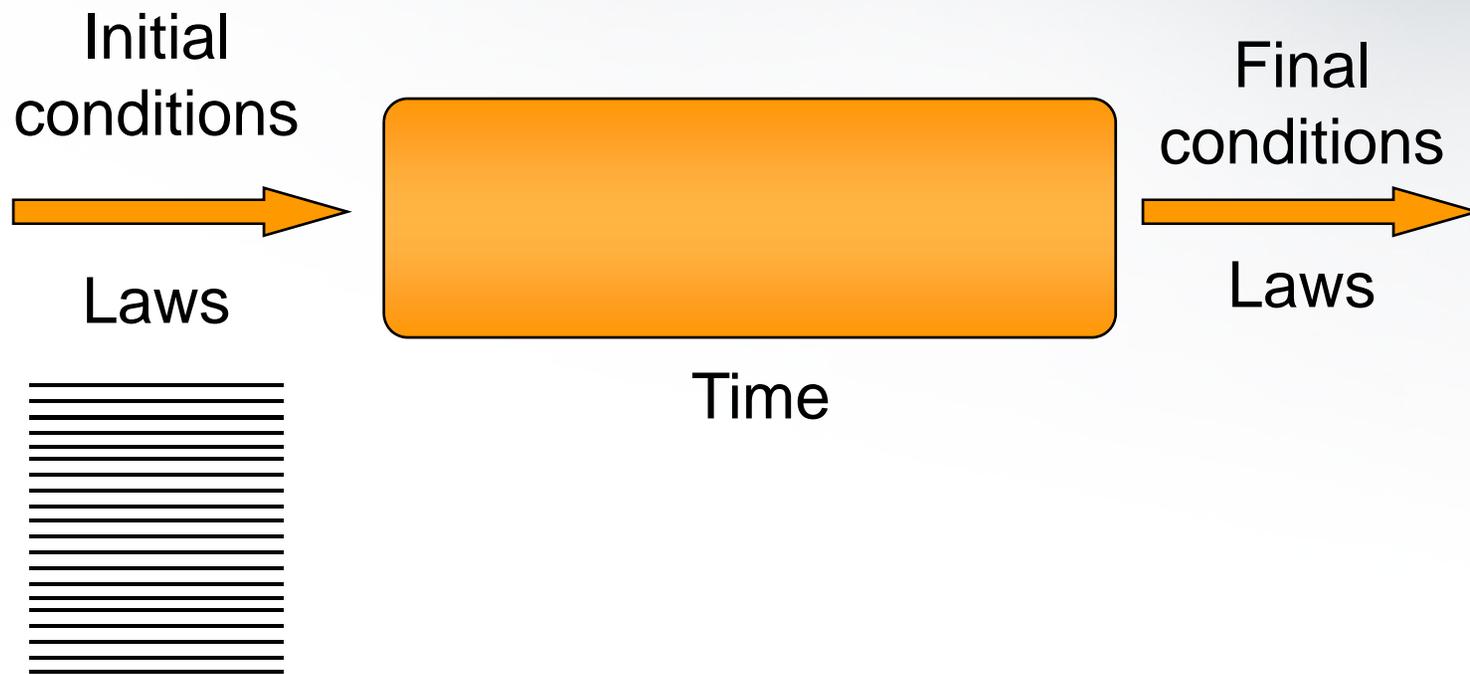
PBSRG

(Performance Based Studies Research Group)

- Conducting research since 1994
- 175 Publications
- 483 Presentations, 8,600 Attendees
- 683 Procurements
- \$808 Million Construction services
- \$1.7 Billion Non-construction services
- \$1.3B Euro (\$2B) construction test ongoing in the Netherlands
- Africa/Southeast Asia/Australia (7 universities)
- ASU procurement - \$100M over ten years
- GSA implementation in 2009
- 50 Different clients (public & private)
- 98% Customer satisfaction, 90% of PM/RM transactions minimized



Event

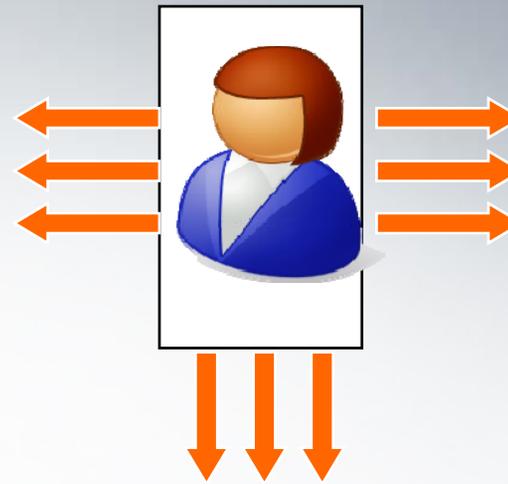
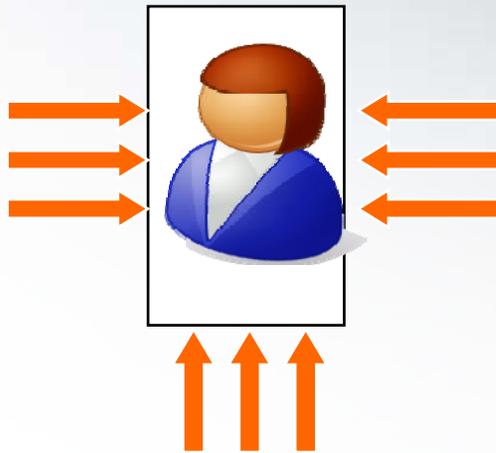


Influence Vs. No Influence



- **Chance?**
- **Being controlled?**
- **Controlling others?**
- **Does not adequately preplan?**
- **Blames others when problems occur?**

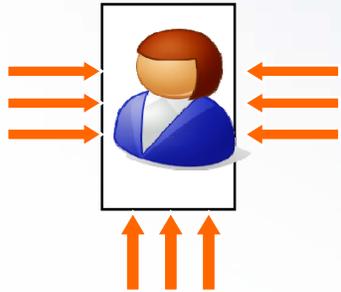
Influence Vs. No Influence



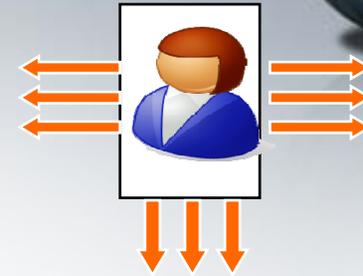
- Chance
- Controlled
- Controls others
- Does not adequately preplan
- Blames others

- Does not believe in chance
- They dictate their own future
- Cannot control others
- Preplans
- Identifies what they may have done wrong

Change to Optimize



- Chance
- Controlled
- Controls others
- Does not adequately preplan
- Blames others



- Does not believe in chance
- They dictate their own future
- Cannot control others
- Preplans
- Identifies what they may have done wrong

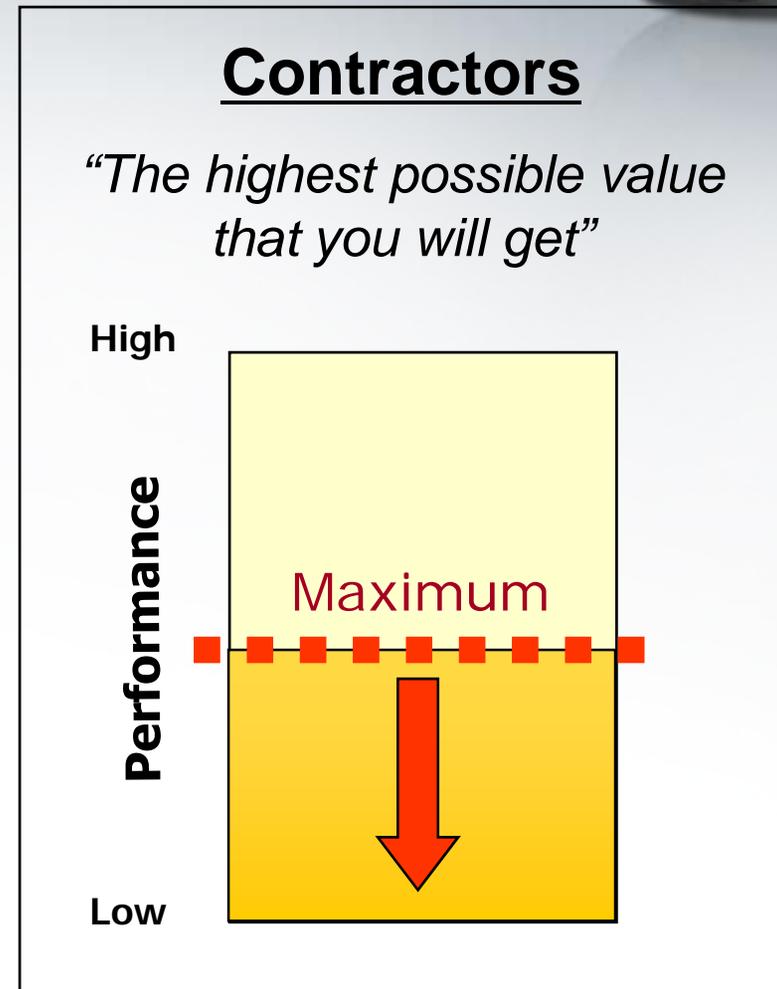


Industry Structure

Performance	High	<p><u>III. Negotiated-Bid</u></p> <p>Owner selects vendor Negotiates with vendor Vendor performs</p>	<p><u>II. Value Based</u></p> <p>Best Value (Performance and price measurements) Quality control</p> <p>Contractor minimizes risk</p>
	Low	<p><u>IV. Unstable Market</u></p>	<p><u>I. Price Based</u></p> <p>Specifications, standards and qualification based Management & Inspection</p> <p>Client minimizes risk</p>
		Low	High

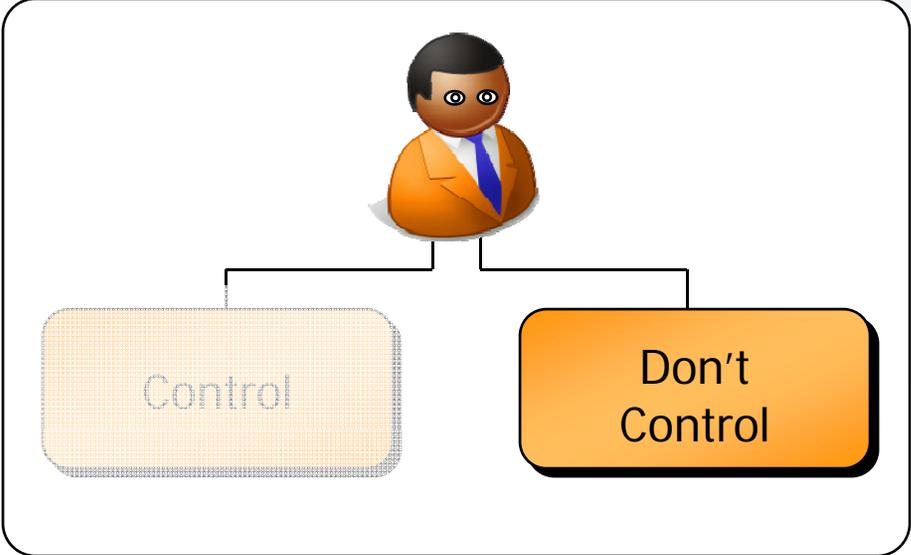
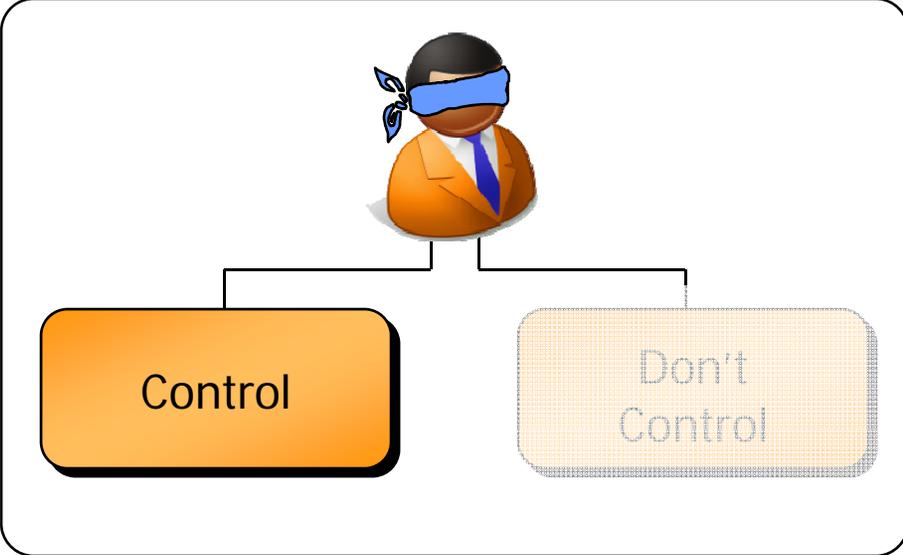
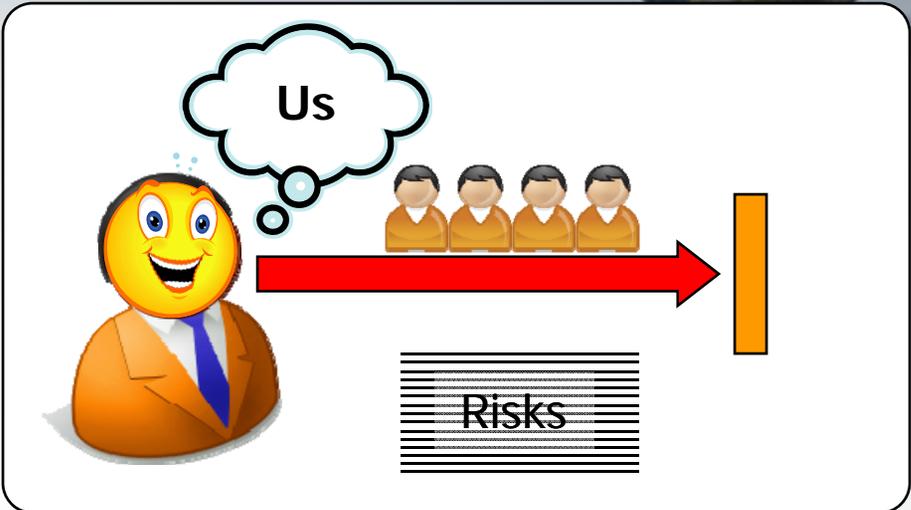
Competition

Problem with Priced Based Systems

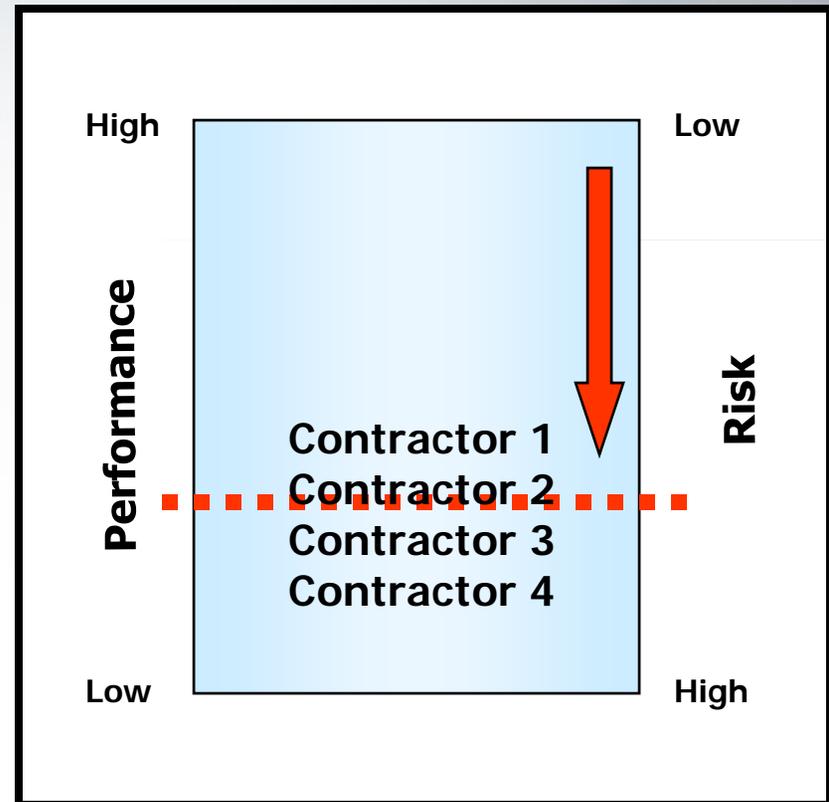
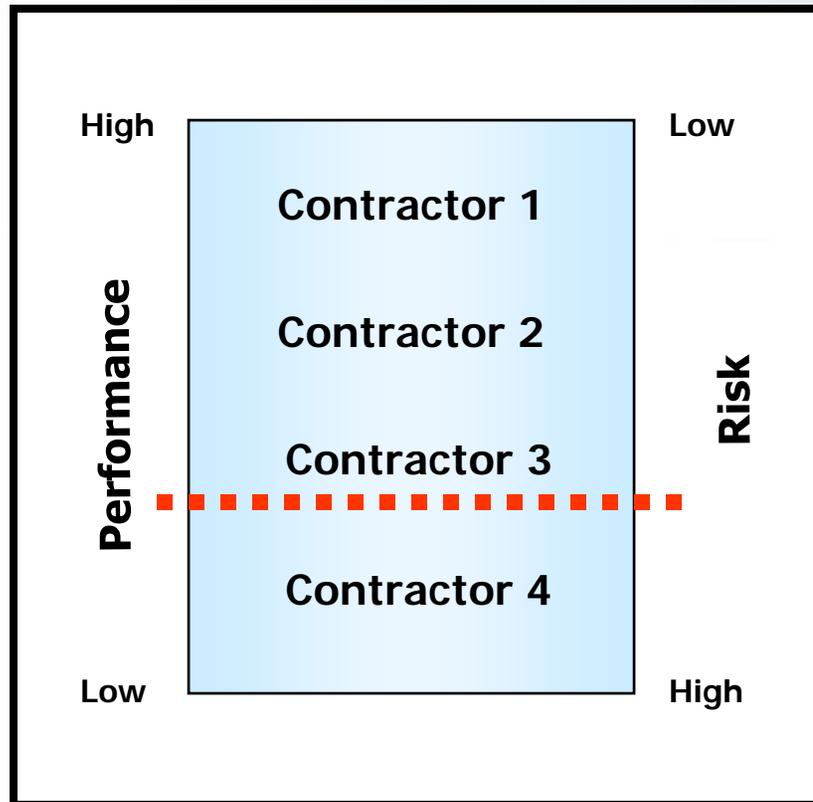




Inexperienced vs Experienced



Impact of Minimum Standards



Decision making: what is the minimum standard, and do all contractors meet the minimum standards

Industry performance and capability



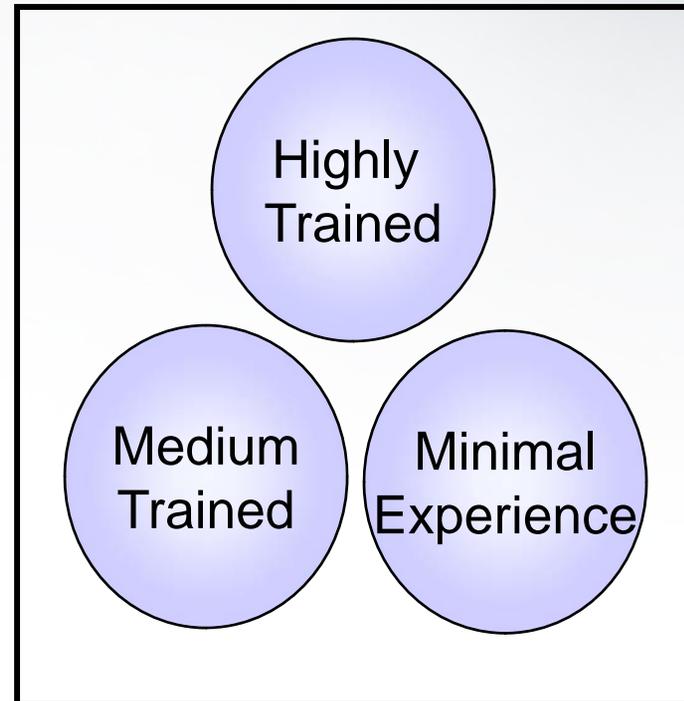
Customers

Outsourcing
Owner

Partnering
Owner

Price
Based

Vendor X



"Best Value" Processes and Structures

Performance Information Procurement System (PIPS)



- Win: Minimize up to **90%** of project management/administration/busy work and minimize transaction costs by **20%**.
- Win: Increase vendor profit up to 100%
- Win: Minimize **risk to 2%** of projects not on time, not on cost, and client not satisfied
- Win: Cost does not increase with higher value

Best Value System

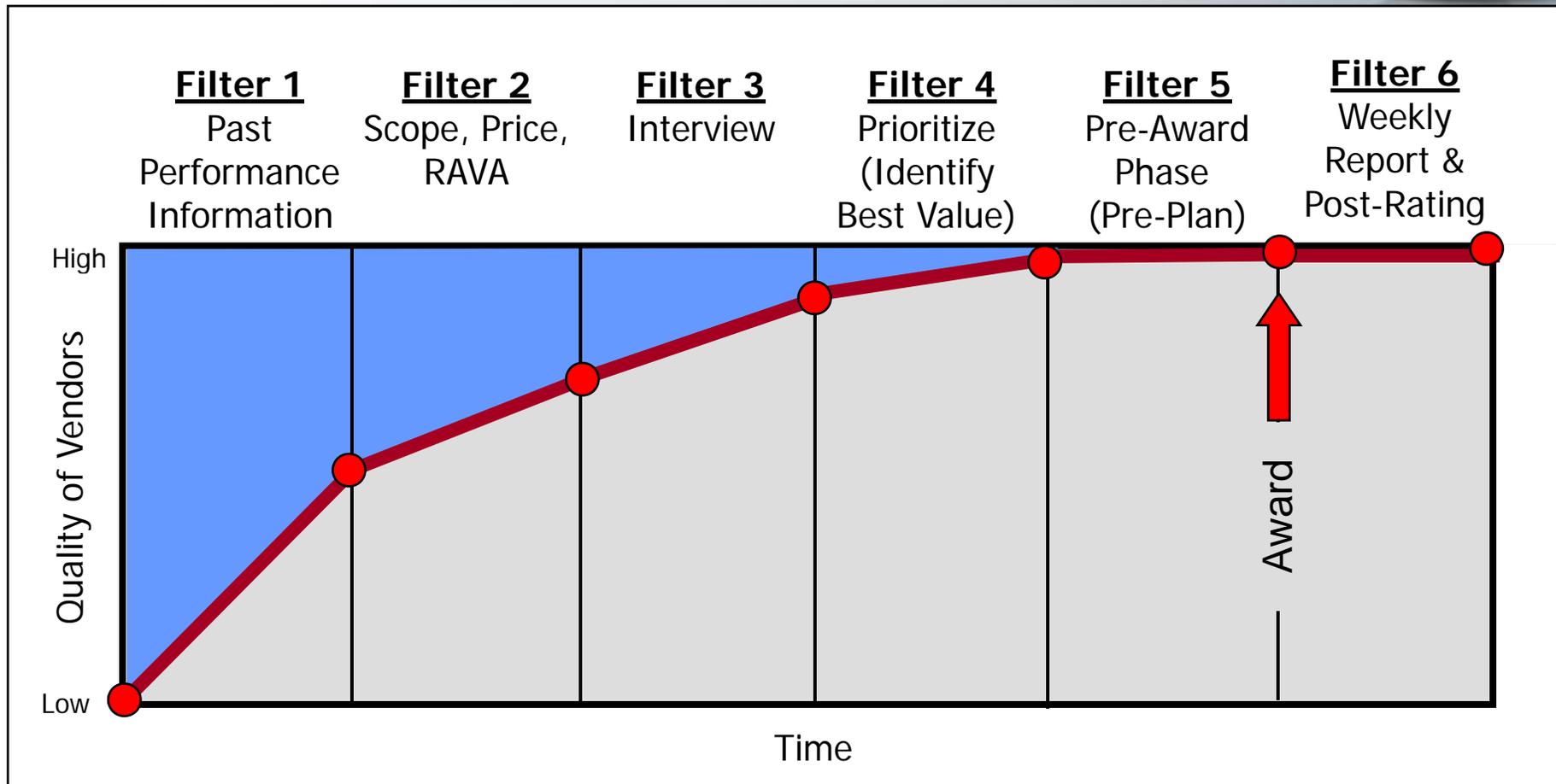
Performance Information Procurement System (PIPS)

PM model, Risk Management model



Best Value also known as “sealed competitive bid” in State of Texas

Performance Information Procurement System (PIPS)

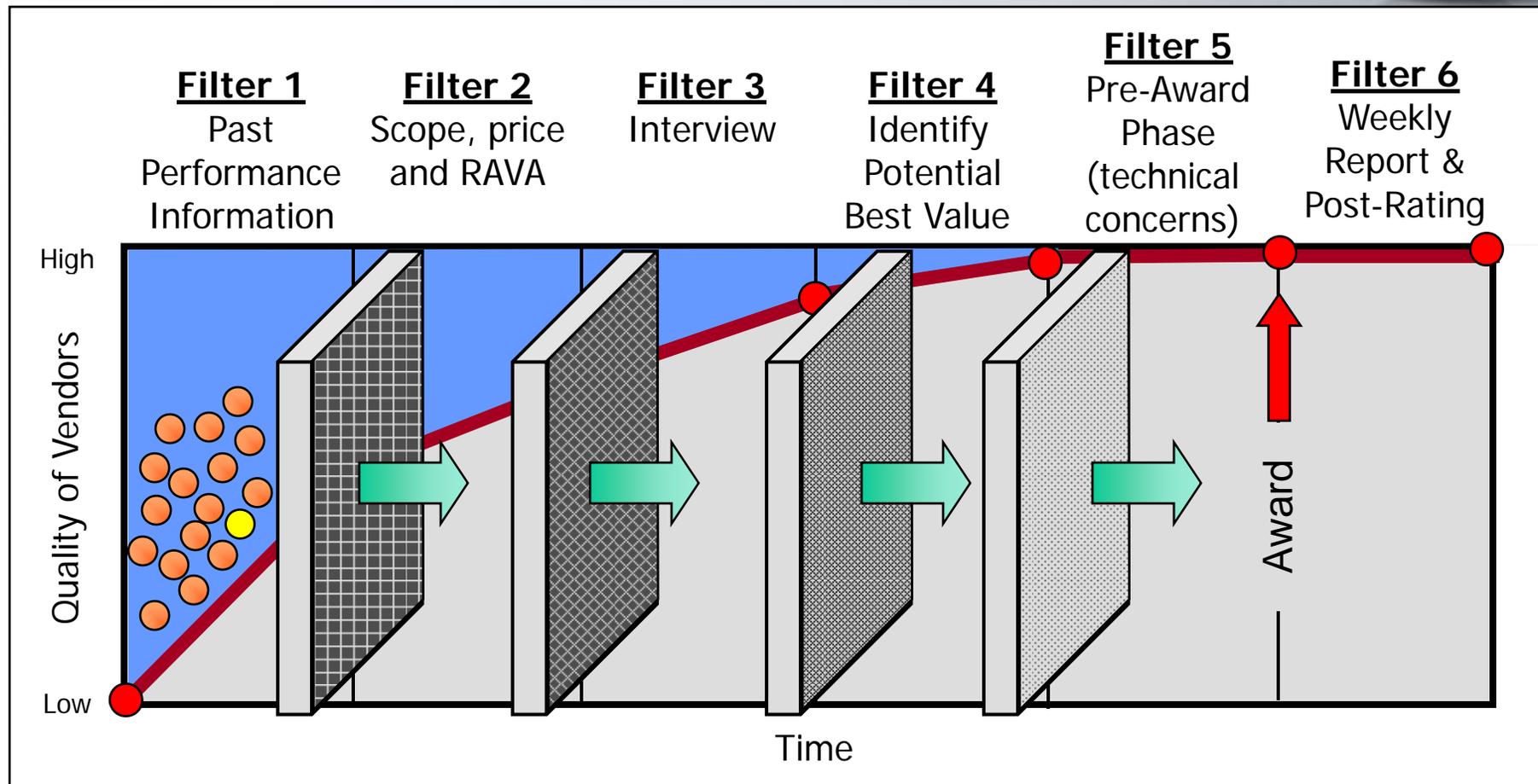


Vendor Selection Criteria (Performance)



- Past performance information on the critical elements (15%)
- Scope(as understood by the vendor from RFP) (20%)
- Schedule with major milestones (10%)
- Risk assessment value added (RAVA) plan (25%)
- Interview of key personnel (30%)

Remember – PIPS Has Multiple Filters



High Performers are Experts in What They Do



- High performers know what they do (technical requirements)
- High performers know the only factor that can stop them from performing is “what they do not control”
- High performers think in terms of the complete job, beginning to end
- High performers know that everyone has to win
- High performers think in the best interest of everyone because their understanding leaves them no other option

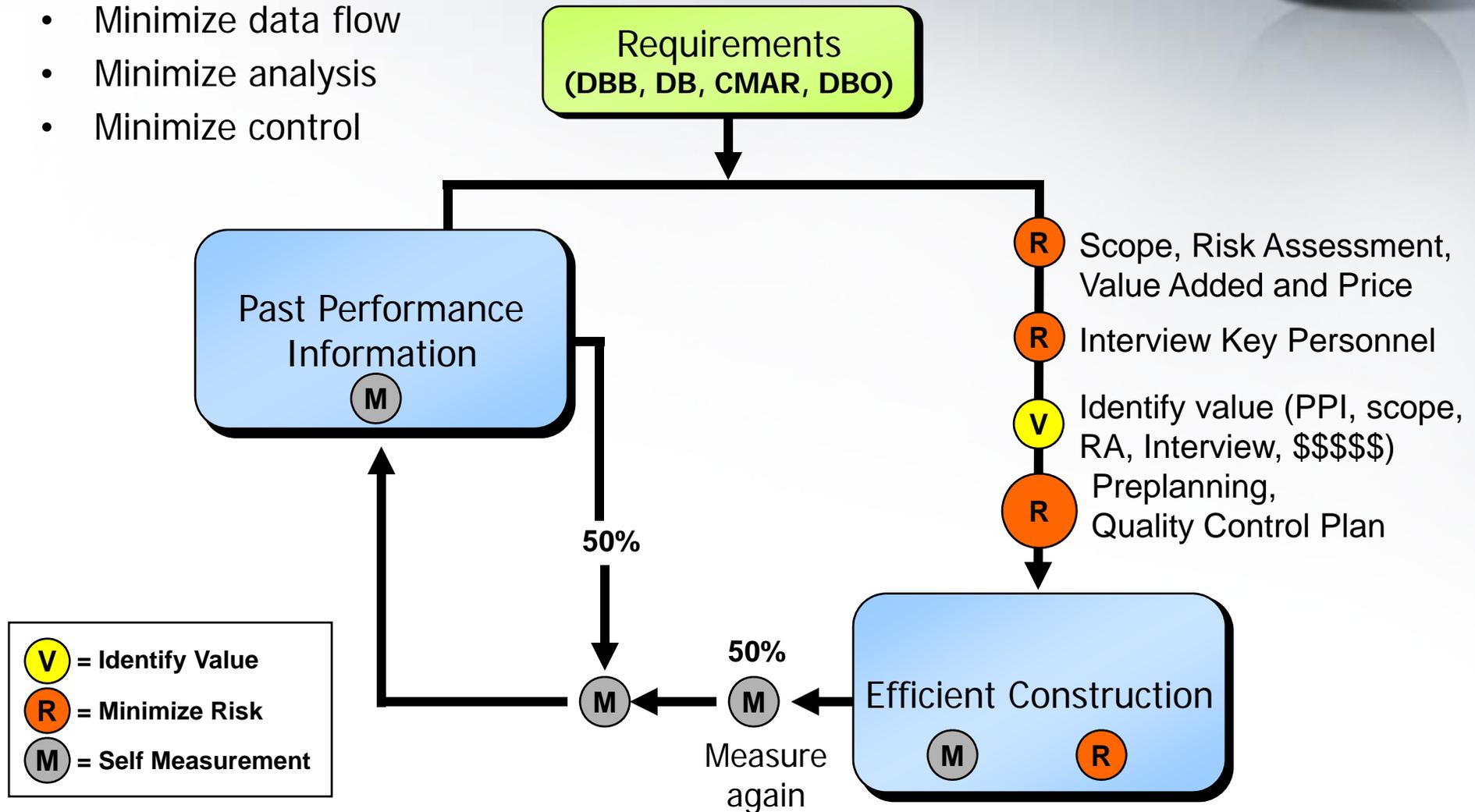
Self Regulating Loop

(Six Sigma DMAIC Generated)



Actions

- Minimize data flow
- Minimize analysis
- Minimize control



Important Aspects of PIPS



- Vision beginning to end
- No technical risk
- 30K foot elevation analysis
- Preplan
- Schedule is risk focused
- Quality Control/Risk Management (minimize risk they don't control)
- Supply chain thinking
- Win-win



Comstock Hall

- Scope = Replace existing lighting fixtures
- Budget = \$180,000



No	Criteria	1st	2nd	3rd	4th
		CH04	CH03	CH02	CH01
1	Price	\$ 72,400	\$ 70,350	\$ 87,850	\$ 96,575
2	Risk Assessment Plan	7.5	5.8	4.2	2.7
3	Schedule	35	30	35	25
4	PPI (1-10) Average	9.7	9.6	9.8	9.6
5	PPI (Jobs & People) Average	20	18	16	23

- Awarded to Gephart Electric
 - Estimated budget \$180,000
 - Award cost \$72,400 (-60%)

- Results:
 - On time
 - No cost change orders
 - Client highly satisfied





Physics Tate Building

- Scope = Chilled water lines
- Budget = \$490,000



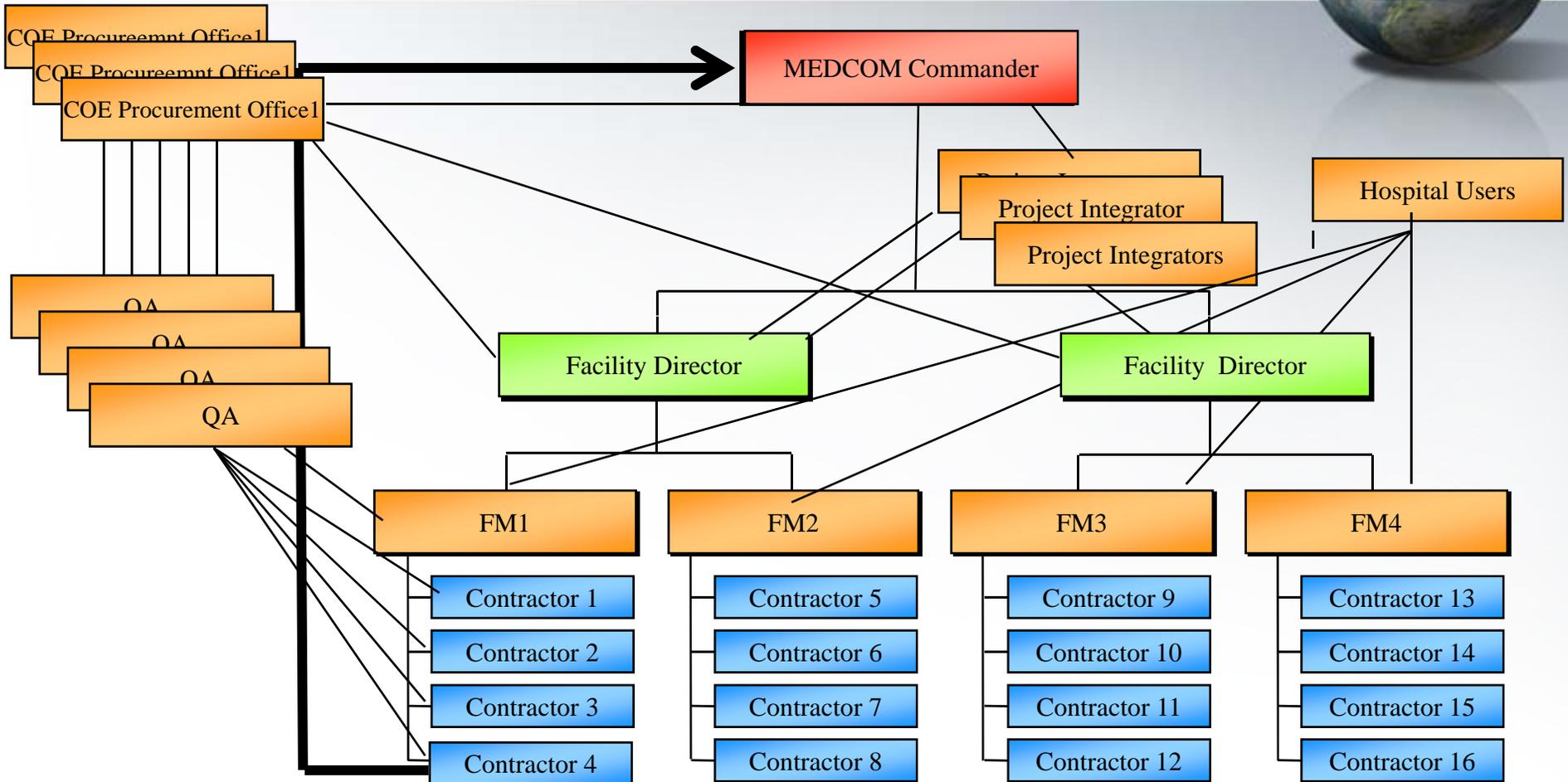
No	Criteria	1st	2nd	3rd
		T1	T3	T2
1	Price	\$ 465,700	\$ 489,545	\$ 538,500
2	Risk Assessment Plan	8.1	7.1	2.3
3	Schedule	75	61	120
4	PPI (1-10) Average	9.6	9.6	9.8
5	PPI (Jobs & People) Average	19	24	11

- Awarded to Metropolitan Mechanical
 - Estimated budget \$490,000
 - Award cost \$465,700 (-5%)
 - Award schedule 87 days

- Results:
 - On time
 - No cost change orders
 - Client is highly satisfied

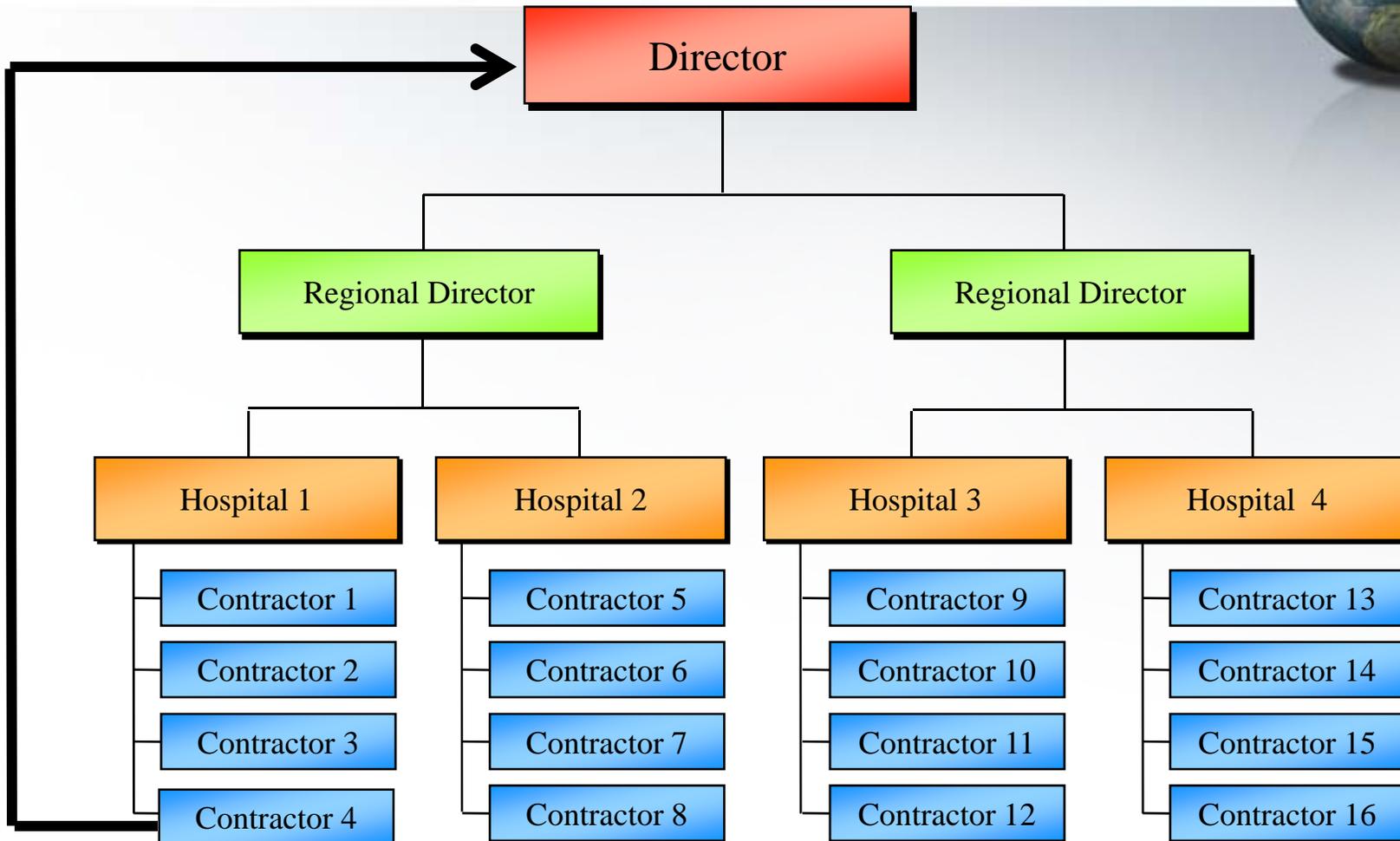


MEDCOM Structure



Case Study: US Army Medical Command

26 major hospitals, 200 projects, \$250M



On Going Projects: Division Overview



DIVISION OVERVIEW		06/06/08
Original projects budget		\$355,788,650.88
Current estimated cost		\$370,969,089.86
Estimated cost over budget		\$15,180,438.98
% estimated cost over budget		4.27%
PROJECT OVERVIEW		
Total number of projects		148
% projects on time		40%
# of jobs delayed		89
% projects on budget		67%
# of jobs over awarded budget		49
# of projects missing owner ratings		8
AVERAGE PROJECT		
Project budget		\$ 2,403,977.37
% over Awarded Budget		4.27%
% over budget due to owner		3.35%
% over budget due to contractor		0.10%
% over budget due to unforeseen		0.82%
Average length of project		500
% Delayed		23.11%
% Delayed due to owner		16.72%
% Delayed due to contractor		2.22%
% Delayed due to unforeseen		4.24%
# of risks		1.53
# owner generated risks		1.07
# of overdue risks		0.64
Owner rating		9.02
Risk number		2.81

Top 10 Risk Projects



TOP 10 RISK RANKING PROJECTS (WRMC)							
No.	Project	Location	Risk #	Contractor	# Weeks on Top 10	NTP of Project	Risk Type
1	Addition to Third Floor Women's Health Care Suite	Ft. Lewis, WA (MAMC)	42.63	J & J Maintenance	31	10/18/2007	approval
2	Renew Health Clinic, Building 990	Yuma Proving Grounds, AZ	11.01	J & J Maintenance	21	9/11/2007	NTP
3	Renew Smith Dental Clinic	Ft. Carson, CO	8.04	John J. Kirlin	2	9/25/2008	Review
4	Repair HVAC Building 9782	Ft. Lewis, WA (MAMC)	8.00	J & J Maintenance	1	10/16/2008	approval
5	Repair Bldg 9921 A & B	Ft. Lewis, WA (MAMC)	7.95	J & J Maintenance	1	10/16/2009	approval
6	Repair Bldg 9912B	Ft. Lewis, WA (MAMC)	7.86	J & J Maintenance	1	10/16/2006	Scope
7	Condenser cooling water Sys.	Ft. Lewis, WA (MAMC)	7.77	J & J Maintenance	1	10/15/2008	Scope
8	Sea Level Aquifer P/T System	Ft. Lewis, WA (MAMC)	7.69	J & J Maintenance	1	9/16/2008	approval
9	Repair Team Center & Observation Room	Ft. Lewis, WA (MAMC)	7.39	J & J Maintenance	1	10/10/2008	approval
10	Physical Therapy/Ortho Clinic	Ft. Leavenworth, KS (MACH)	6.09	United Excel Corporation	1	6/16/2008	approval



Modifications and Risks

AWARDS & MODIFICATIONS						
No.	Award / Modification	Date	Type	Days	\$\$	Description
1	Award 1	1/2/2007			\$9,500,000.00	Award
2	Modification 1	01/05/07		0	\$ 250,000.00	Risk 1
3	Modification 2	3/8/2007		20	\$ 100,000.00	Risk 2
4	Modification 3	5/10/2007		0	\$ 150,000.00	Risk 3
					Total Contract:	\$ 10,000,000.00
					% Billed:	50%
					% Completed	60%

No	Date Entered	Risk Items	Plan to Minimize Risk	Planned Resolution Date	Actual Date Resolved	Impact Days to Critical Path (Calendar)	Impact to Cost
0	3/17/2006	EXAMPLE: Risk A	Risk A Plan: 1) Problem background - why is this an unexpected project risk? 2) What will be done to minimize this? 3) Who is responsible for the plan? 4) What kind of impact will this have?	3/17/2006		0	\$ 10,000
1	12/25/2007	Delay in Workplan	Risk Plan B	1/3/2007	1/3/2007	0	\$ 250,000
2	3/1/2007	Contaminated Material	Risk Plan C	3/6/2007	3/7/2007	20	\$ 100,000
3	4/30/2007	Scope Change	Risk Plan D	5/5/2007	5/6/2007	0	\$ 150,000

On-Going Projects: Regional Performance Lines



REGION OVERVIEW	CHPPM	PRMC	AMEDD	SRMC	WRMC	MRMC	NRMC	AFIP	Average
Total Number of Projects	3	28	7	49	38	26	27	1	22
Total Awarded Budget	\$27,782,738	\$ 44,409,340	\$ 18,452,757	\$148,750,286	\$133,683,925	\$ 60,138,879	\$118,356,664	\$9,754,941	\$70,166,191
Current Cost	\$27,910,447	\$ 47,054,360	\$ 20,198,239	\$155,289,910	\$139,654,057	\$ 63,259,537	\$121,621,485	\$9,823,830	\$73,101,483
PROJECT INFORMATION	CHPPM	PRMC	AMEDD	SRMC	WRMC	MRMC	NRMC	AFIP	Average
% Projects On Time	100%	64%	57%	53%	34%	31%	22%	0%	45%
% Projects On Budget	67%	61%	86%	47%	53%	46%	33%	0%	49%
% Delayed	0.00%	22.50%	13.70%	15.80%	21.50%	37.90%	32.80%	0.06%	18%
% Over Budget	0.46%	5.96%	9.46%	4.40%	4.47%	5.19%	2.76%	0.71%	4%
Average Risk Number	1.01	2.14	1.52	1.92	4.33	2.77	3.05	1.07	2.2
GENERAL INFORMATION	CHPPM	PRMC	AMEDD	SRMC	WRMC	MRMC	NRMC	AFIP	Average
# of QA's	1	14	5	17	14	8	14	1	9
# of Projects per QA	3.0	2.0	1.4	2.9	2.7	3.3	1.9	1.0	2
# of Facilities	1	2	4	9	8	9	10	1	6
Accurate Weekly Risk Reports	66%	60%	50%	60%	45%	37%	50%	0%	46%
Risk Management Plans	100%	68%	66%	77%	60%	55%	59%	100%	73%
Average Risk Resolving Time (days)	0.77	12.2	25.3	19.4	23.3	19	22	1.5	15
Projects with risk # more than 7	0	1	0	3	9	2	2	0	2

High Performing QA's



QUALITY ASSURANCE OVERVIEW	QA 1	QA 2	QA 3	QA 4
Facility/Location	Aberdeen Proving Grounds, MD	Walter Reed, Washington DC (WRAMC)	Ft. Lewis, WA (MAMC)	Tripler AMC, Hawaii
Region	CHPPM	NRMC	WRMC	PRMC
Total Number of Projects	2	1	2	5
Total Awarded Budget	\$ 24,148,918	\$3,636,990	\$8,269,142	\$4,089,714
Current Cost	\$ 24,148,918	\$3,636,990	\$8,269,142	\$4,089,714
PROJECT OVERVIEW	QA 1	QA 2	QA 3	QA 4
% Projects On Time	100%	100%	100%	100%
% Projects On Budget	100%	100%	100%	100%
% Delayed	0%	0%	0%	0%
% Over Awarded Budget	0%	0%	0%	0%
Risk Number	1	1	1.00	1.00
GENERAL INFORMATION	QA 1	QA 2	QA 3	QA 4
% Accurate Weekly Reports	100%	100%	100%	100%
% Risk Management Plan	N/A	100%	100%	80%

Low Performing QA's



QUALITY ASSURANCE OVERVIEW	QA 1	QA 2	QA 3	QA 4
Facility/Location	Ft. Lewis, WA (MAMC)	Walter Reed, D.C. (WRAMC)	Schofield Barracks, HI	WRAIR, Silver Spring, MD
Region	WRMC	NRMC	PRMC	MRMC
Total Number of Projects	2	2	1	3
Total Awarded Budget	\$2,542,733	\$4,126,449	\$1,048,173	\$6,477,469
Current Cost	\$3,864,104	\$4,823,428	\$1,094,061	\$7,591,316
PROJECT OVERVIEW	QA 1	QA 2	QA 3	QA 4
% Projects On Time	0%	0%	0%	0%
% Projects On Budget	0%	0%	0%	33%
% Delayed	150.00%	145%	89.6%	63%
% Over Awarded Budget	52%	16.89%	4.4%	17%
Risk Number	25.01	3.59	5.94	3.25
GENERAL INFORMATION	QA 1	QA 2	QA 3	QA 4
% Accurate Weekly Reports	50%	0%	0%	33%
% Risk Management Plan	N/A	0%	N/A	N/A

RMP Comparison



PROJECT OVERVIEW	Without RMP	With RMP	% Progress
% projects on time	38%	56%	48%
% projects on budget	52%	70%	35%
AVERAGE PROJECT	Without RMP	With RMP	% Progress
% over Awarded Budget	5.4%	1.7%	68%
% over budget due to owner	3.83%	1.13%	71%
% over budget due to contractor	0.21%	0.04%	79%
% over budget due to unforeseen	1.33%	0.53%	61%
% Days Delayed	30.6%	14.6%	52%
% Delayed due to owner	19.72%	11.41%	42%
% Delayed due to contractor	4.64%	1.68%	64%
% Delayed due to unforeseen	6.20%	1.47%	76%
# of risks	1.98	1.29	35%
# owner generated risks	1.33	0.87	35%
Owner rating	9.10	9.34	3%
Risk number	3.25	2.38	27%

University of Minnesota Results



- Number of procurements: 111
- Budget amount: \$31.4M
- Amount awarded: \$29.5M
- Number of years: 4
- Award below average bid price: 6%
- Award below budget: 7%
- Award to the lowest price: 60%
- Cost increase due to client: 6% (trying to spend budget)
- Cost increase due to contractors: 0%
- Time deviations: 0% due to contractors

Arizona State University Food Services Contract

No	Summary Criteria	Out of	Vendor		
			Incumbent	B	C
1	RAVA Plan	10	5.91	7.09	6.31
2	Transition Milestone Schedule	10	5.17	6.96	6.33
3	Interview	25	15.77	16.78	13.53
4	Past Performance Information - Survey	10	9.80	9.99	9.82
5	Past Performance Information - #/Clients	Raw #	5.67	3.00	4.42
6	Past Performance Information - Financial	10	7.02	8.67	6.90
7	Financial Rating	10	4.00	8.00	8.00
8	Financial Return - Commissions	Raw \$	\$ 30,254,170	\$ 60,137,588	\$ 64,000,000
9	Capital Investment Plan	Raw \$	\$ 14,750,000	\$ 20,525,000	\$ 12,340,000
10	Equipment Replacement Reserve	Raw \$	\$ 7,213,342	\$ 4,100,001	\$ 8,171,811
Financial Totals			\$ 52,217,512	\$ 84,762,589	\$ 84,511,811

\$32M more over ten years

No	Summary Criteria	Weight/Out of	Vendor		
			Incumbent	Best Value	C
1	RAVA Plan	28	16.55	19.85	17.67
2	Transition Milestone Schedule	2	1.03	1.39	1.27
3	Interview	25	15.77	16.78	13.53
4	Past Performance Information - Survey	9	8.82	8.99	8.84
5	Past Performance Information - #/Clients	1	1.00	0.53	0.78
6	Past Performance Information - Financial	15	10.53	13.01	10.35
7	Financial Rating	5	2.00	4.00	4.00
8	Financial Return - Commissions	7	3.31	6.58	7.00
9	Capital Investment Plan	6	4.31	6.00	3.61
10	Equipment Replacement Reserve	2	1.77	1.00	2.00
			100	65.09	69.04



After 1 Year: Monitoring/Evaluation based on measurements

- Increase sale of food by 14%
- Increased cash to ASU by 23%
- Minimized management cost by 80%
- Increased customer satisfaction by 37%
- Increased capital investment by 100%

No	Category	FY 06-07 Incumbent	FY 07-08 New Vendor	Difference	% Difference
1	Total Revenue (\$M)	\$ 27.02	\$ 30.83	\$ 3.81	14%
2	Total Return & Commissions (\$M)	\$ 2.17	\$ 2.67	\$ 0.50	23%
3	Capital Investment Contract (\$M)	\$ 14.75	\$ 30.83	\$ 18.08	109%
4	Capital Investment 2006 vs. 2007 (\$M)	\$ 0.26	\$ 5.70	\$ 5.44	2092%
5	ASU Administration (# of People)	7	1.5	-5.5	-79%
6	Customer (Student) Satisfaction (1-10)	5.2	7.1	1.9	37%
7	Myster Shopper Satisfaction	N/A	9.6	--	--

ASU IT Networking Contract



ASU Maintenance Annual Cost	Qwest Maintenance Annual Cost	Total Annual Qwest Savings	Total Qwest Annual Value Added and Savings
\$13,981,934	\$12,500,000	1,481,934	2,756,934

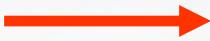
- ASU IT Network Details
 - 76,000 Students and Faculty
 - 5 yr. Contract
 - 4 Different Campuses

Value Added	Estimated Annual Value
Voicemail Integrated w/email	\$75,000
Experts in other areas of Qwest to draw upon	\$75,000
Reduction of ~2000 sqft ASU office space & utilities	\$44,000
Skysong state-of-the-art Network Operations Center	\$100,000
New Contact Center Solution	\$400,000
University Benchmarking	\$50,000
Measurement & Reporting	\$50,000
Engineering & Design	\$150,000
Speech Enabled Voice Messaging	\$25,000
Conferencing & Collaboration Capabilities	\$9,000
IP Fax Capabilities	\$12,000
Unified Communications Management Toolset	\$85,000
Green initiatives (Kw savings)	\$200,000
Total Additional Estimated Annual Value to ASU:	\$1,275,000



Dominant Information

- Dominant Performance Indicators
 - Overall cost of network
 - Top of the line networking
 - Network Sustainability/Accessibility
 - Customer Satisfaction
- Documentation of Deviations to financials



Dominant Measurements	ASU Current	Qwest Value Add
Overall Cost of Network		
Annual IT Spend Ratio (new vs maintenance)	17/83	48/52
Top-of-the-line Networking		
% Converged	7%	100%
% Mobility	2%	100%
% Equipment not out-of-date	58%	95%
Network Sustainability/Accessibility		
% Equipment not needing replacement (Not at end-of-maintenance)	88%	100%
Customer Satisfaction		
Speed/Quickness Available (Wired / Wireless):		
% 1Gb - Wired Connections	59%	98%
% of 300Mb - Wireless Connections	8%	32%

	Dev.	Cap, Exp.	Maint.	FOE Costs	Total
Year 1 Exp.		\$ 4,100,000	\$ 1,652,000	\$ 6,818,000	\$ 12,570,000
Ex. Risk X	\$ 100,000	\$ 100,000	\$ -	\$ -	\$ 100,000
Ex. Risk X	\$ 100,000	\$ 100,000	\$ (25,000)	\$ -	\$ 75,000
Ex. Risk X	\$ 50,000	\$ -	\$ 50,000	\$ -	\$ 50,000
Ex. Risk X	\$ 25,000	\$ 25,000	\$ -	\$ -	\$ 25,000
New Year 1	\$ 275,000	\$ 4,325,000	\$ 1,677,000	\$ 6,818,000	\$ 12,820,000

Dominant Performance Results



- Increased performance, creativity, accountability, professionalism, value to the owner: 40%
- Minimized transactions, bureaucratic constraints, decision making, risk, and wasted effort: 30%
- Increased customer satisfaction: 44%

Statement by ASU IT Visionary



- “Am I dreaming? Am I missing something? When do all the problems begin?”
- “Am I missing something, or have we just made one of the biggest changes with no problems?”
- “This is a unqualified success of the best value PIPS process!”

Adrian Sannier, ASU UTO Director

Arizona State University turning into a measured university



- ASU has embraced and implemented the research internally
 - ASU Research Leaders
 - Business Services (Ray Jensen)
 - Procurement (John Riley)
- Major Tests
 - Dining Services - \$420M, 10 yr contract – largest in dining history
 - Sports Marketing - \$XXM, 10 yr contract
 - Student Recreational Center Equipment - \$840k, 5 yr contract – new outsourced model
 - Student Recreational Center Services
 - UTO IT Network – \$50M in process – first of its kind
 - Parking Structure - \$50M in process – first CPMG test at ASU (\$6M rebate due to process efficiency)
 - Furniture – late 2008 – measured, value, meet expectations
 - Document control/copy service

New Paradigm, New Environment, Dominant Improvement



Performance	High	III. Negotiated-Bid Owner selects vendor Negotiates with vendor Vendor performs	II. Value Based Best Value (Performance and price measurements) Quality control Contractor minimizes risk
	Low	IV. Unstable Market	I. Price Based Specifications, standards and qualification based Management & Inspection Client minimizes risk
		Low	High

Competition

- Minimized decision making
- Concept that experts do not have risk
- Alignment instead of manage, direct, control, and influence
- Best value is win-win
- Simplicity, measurement, transfer of risk and control bring professionalism, and increased expertise, skill, and value
- Efficiency in all activities
- Competition determines value
- The answer is in the system, and not in the details

- The concept was here the entire time
- No one knew how to transfer the logic and common sense into something so "complex"



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