



Presentation to:

Northwest Construction Consumer Council

Chatt Smith

Manager of Project Controls -
Jacobs



Critical Success Factors

- Structured Work Process - JSTEPSsm
 - Best in Class FEL
 - Best Practices/JVEPS
- Integrated Aligned Team
 - Business, Operations, Maintenance, Engineering, Projects
- Project Metrics
 - Safety, Cost, Schedule, Operability
 - Value Creation
- Disciplined Implementation of Change Management

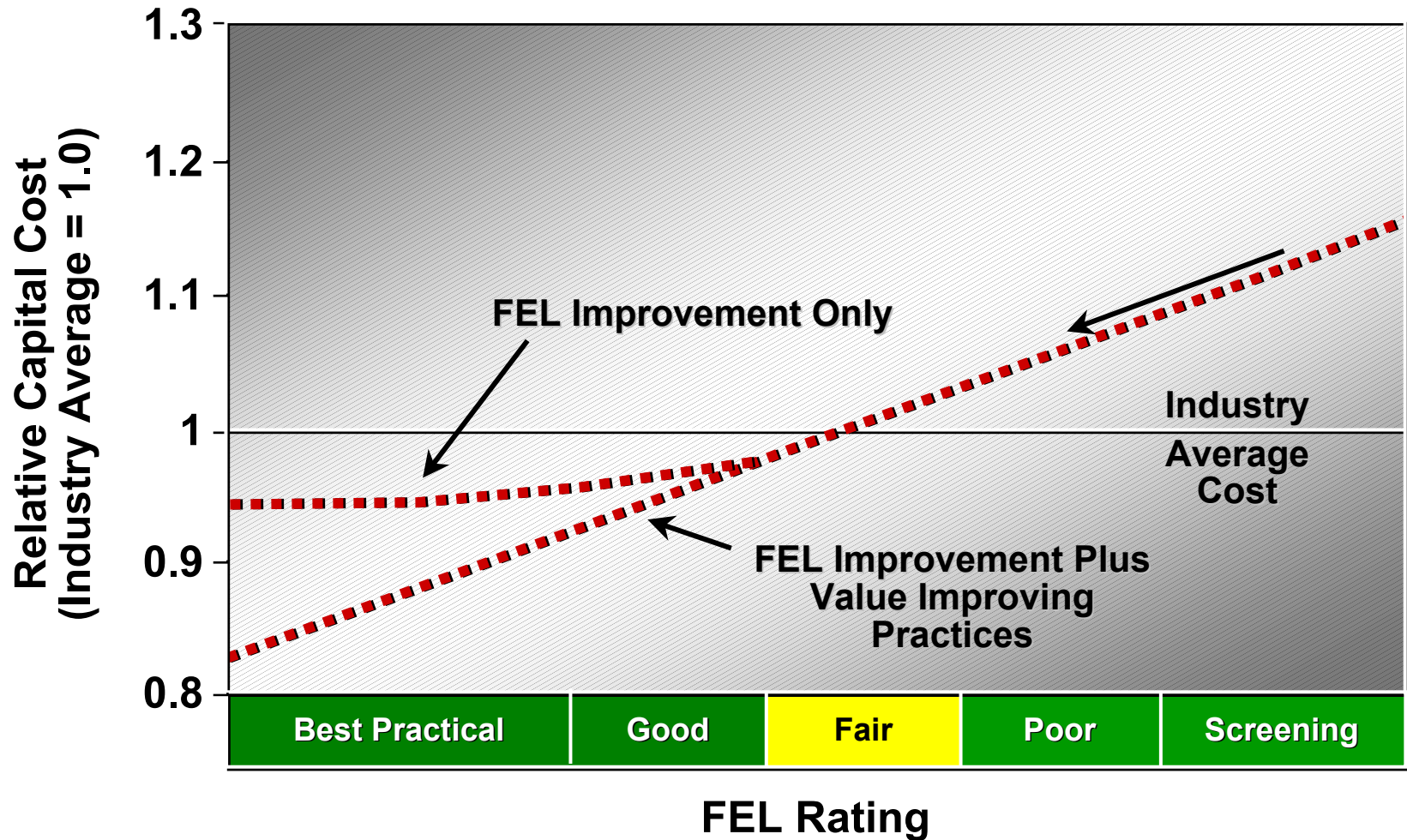
What is JSTEPSsm?

- Staged Gate Process
- Plan the Work, Work the Plan
- The “Plan” is defined during FEL

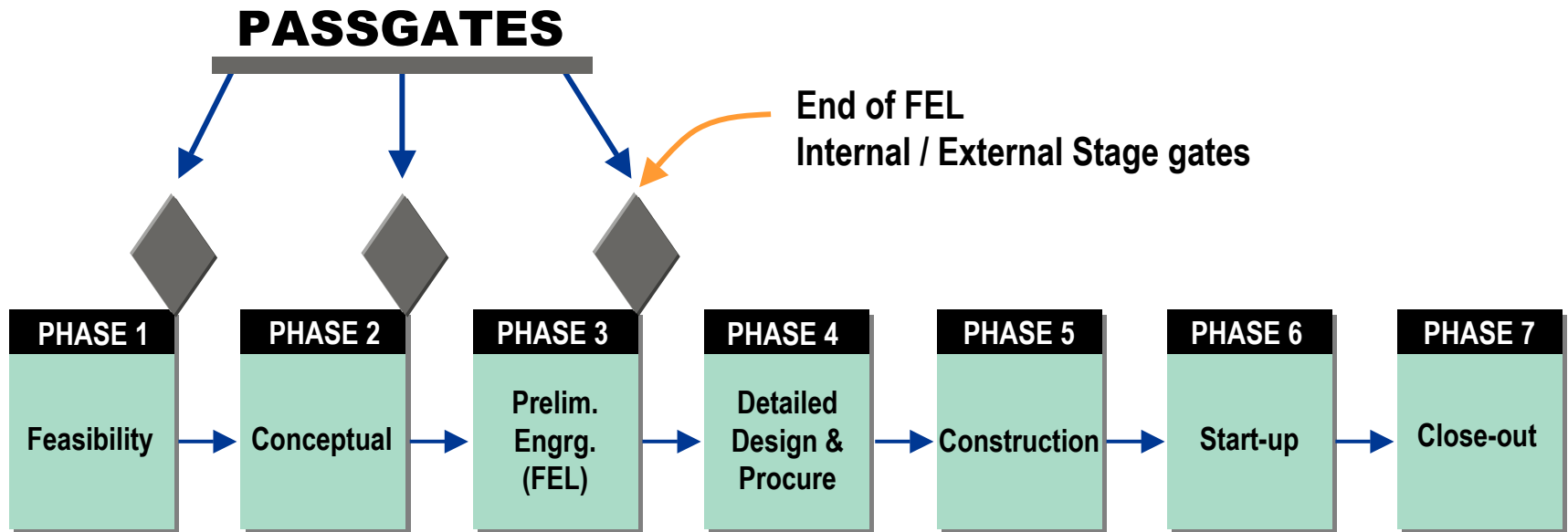
JSTEPSsm - Objectives

- Through effective FEL and alternative selection, the BEST project is selected
- Improve the planning and execution of all projects
- Improve the identification, sharing and application of lessons learned and best practices.
- Improve single, multi- and virtual office project coordination and execution.
- Improves internal and external communications through a common language

FEL Plus VIP's Enable Better Cost Performance



JSTEPSSM Summary Map



Ongoing Activities: VEP's, Performance Measurements, Quality Audits, Alliance Satisfaction Surveys, Progress Reporting, Cost and Schedule Control, Total Value Added

JSTEPSsm – Project Phases

Phase 1 - IDENTIFY BUSINESS OPPORTUNITY

Phase 2 - SELECT / QUANTIFY BEST OPTION

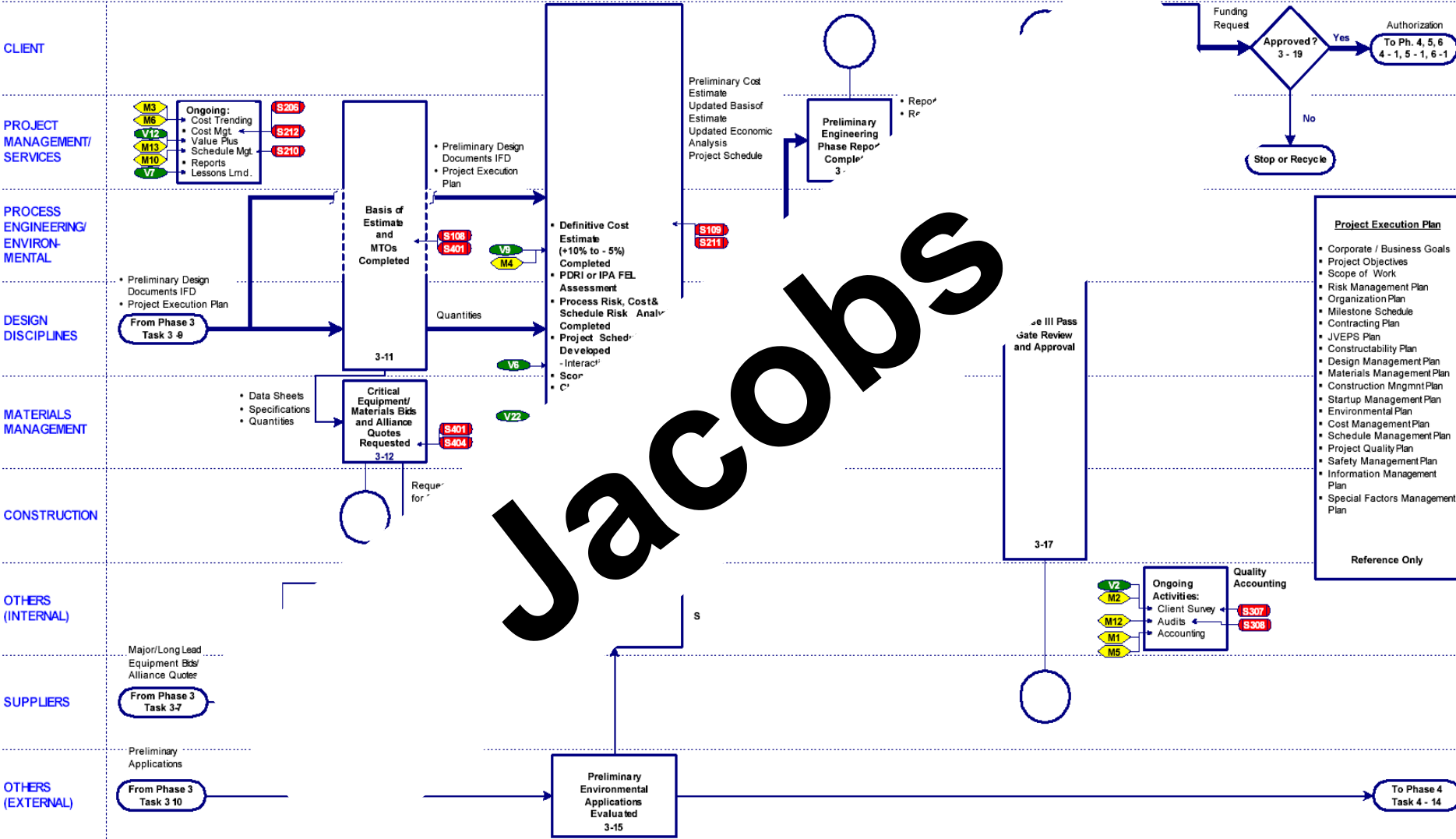
Phase 3 - FINALIZE / QUANTIFY THE PLAN

*Phase 4 - COMPLETE DETAILED DESIGN /
PROCURE MATERIALS / EQUIPMENT*

Phase 5 – CONSTRUCT FACILITY

Phase 6 – STARTUP FACILITY

*Phase 7 - EVALUATE COMPLETED PROJECT/
CLOSEOUT PROJECT*



JACOBS

- Project Execution Plan**
- Corporate / Business Goals
 - Project Objectives
 - Scope of Work
 - Risk Management Plan
 - Organization Plan
 - Milestone Schedule
 - Contracting Plan
 - JVEPS Plan
 - Constructability Plan
 - Design Management Plan
 - Materials Management Plan
 - Construction Mngmnt Plan
 - Startup Management Plan
 - Environmental Plan
 - Cost Management Plan
 - Schedule Management Plan
 - Project Quality Plan
 - Information Management Plan
 - Safety Management Plan
 - Information Management Plan
 - Special Factors Management Plan
- Reference Only

See Glossary for explanation of terms; and definitions of Standard Operating Procedures, Value Enhancing PracticesSM, and Measures.

KEY:

S203 Standard Operating Procedure

V3 Jacobs Value Enhancing PracticeSM

M2 Measurement

□ Task(s)

▣ Regional Task(s)

◇ Decision

○ Involvement

◻ Process Connector or Terminator

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JSTEPSSM - Application

- Potential starting point of JSTEPSsm application:
 - Planning discussions with the team, before and after receipt of work and during project execution
 - JSTEPSsm Training at the beginning of each stage
 - Guide during Interactive Planning
 - Basis for developing the Project Execution Plan and Project Quality Plan
 - Basis for monitoring performance during the execution of a project.

Jacobs Value Enhancing Practices (JVEPsSM)

Definition:

- Best Practices, Identified by CII and IPA, that when used consistently Significantly Increase the Value of the Project

JVEPsSM

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- Best Practices, Identified by CII and IPA, that when used consistently Significantly Increase the Value of the Project

V-1	Client Expectations	V-12	Total Value Added
V-2	Client Surveys	V-13	Class of Plant Quality*
V-3	Constructability*	V-14	Customized Standards/Specs*
V-4	Design to Capacity*	V-15	Energy Optimization*
V-5	Execution Planning	V-16	Reliability Planning*
V-6	Interactive Planning	V-17	Process Reliability Modeling*
V-7	Lessons Learned	V-18	Process Simplification*
V-8	Team Alignment	V-19	Technology Selection*
V-9	PDRl	V-20	Waste Minimization*
V-10	Project Objectives	V-21	Integrated CAE*
V-11	Value Engineering*	V-22	Change Management

CII Best Practices

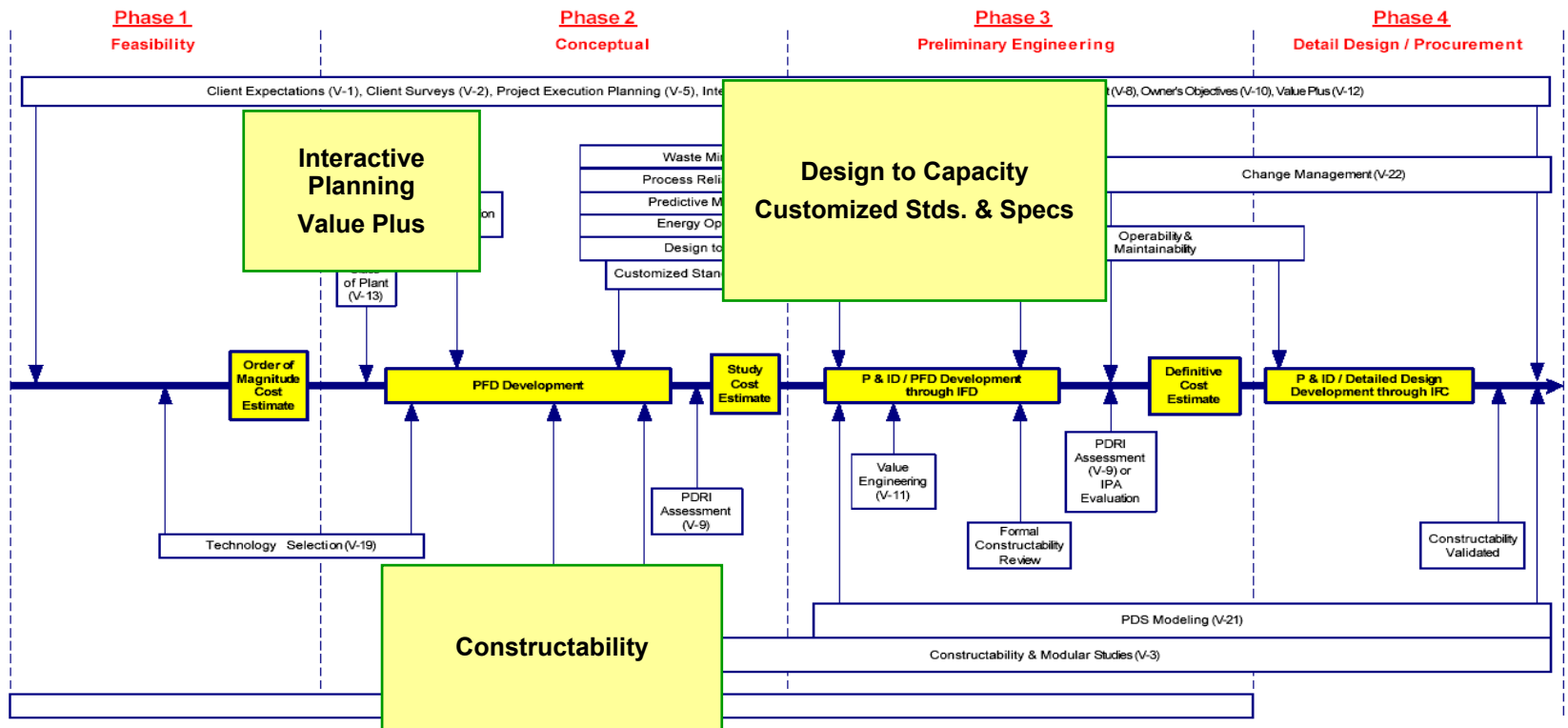
- Zero Accident
- Pre-Project Planning
- Constructability
- Change Management
- Team Building
- Alignment during PPP
- Materials Management
- Quality Management
- Partnering
- Design Effectiveness
- Dispute Resolution
- HazAsmtSafActPIn
- JSTEPSsm - Phases 1-3
- JVEPsm V3
- JVEPsm – Proj Cntrls
- JVEPsm V8
- JVEPsm V8
- JVEPsm V5, V6
- Surveys, Audits
- Relationship Co., Client Surveys, Alliances

IPA VIPs

- Technology Selection
- Class of Plant
- Design to Capacity
- Process Simplification
- Process Reliability Modelling
- Predictive Maintenance
- Value Engineering
- Customized Standards and Specs
- Constructability
- Energy Optimization
- Waste Minimization
- 3D CADD

JVEPsSM need to be done at the right time... or they become lost opportunities

Jacobs Value Enhancing PracticesSM - Intentional Innovation Process JSTEPSSM Macro Phase Map - Chemical Process Industry (CPI)



Note: JVEPsSM V-1, V-2, V-5 through V-8, V-10 and V-12 continue through project closure, as applicable. Constructability (V-3), PDS Modeling (V-21) & Change Management (V-22) continue through Phase 5, Construction, as applicable.

Integrated Aligned Teams

- Include all stakeholders in kickoff meetings and “scope review” meetings (business, operations, maintenance, engineering, projects, construction)
 - Request business rep kicks off meeting
- Team building
- Interactive Planning
- Project Execution Planning

Interactive Planning Session

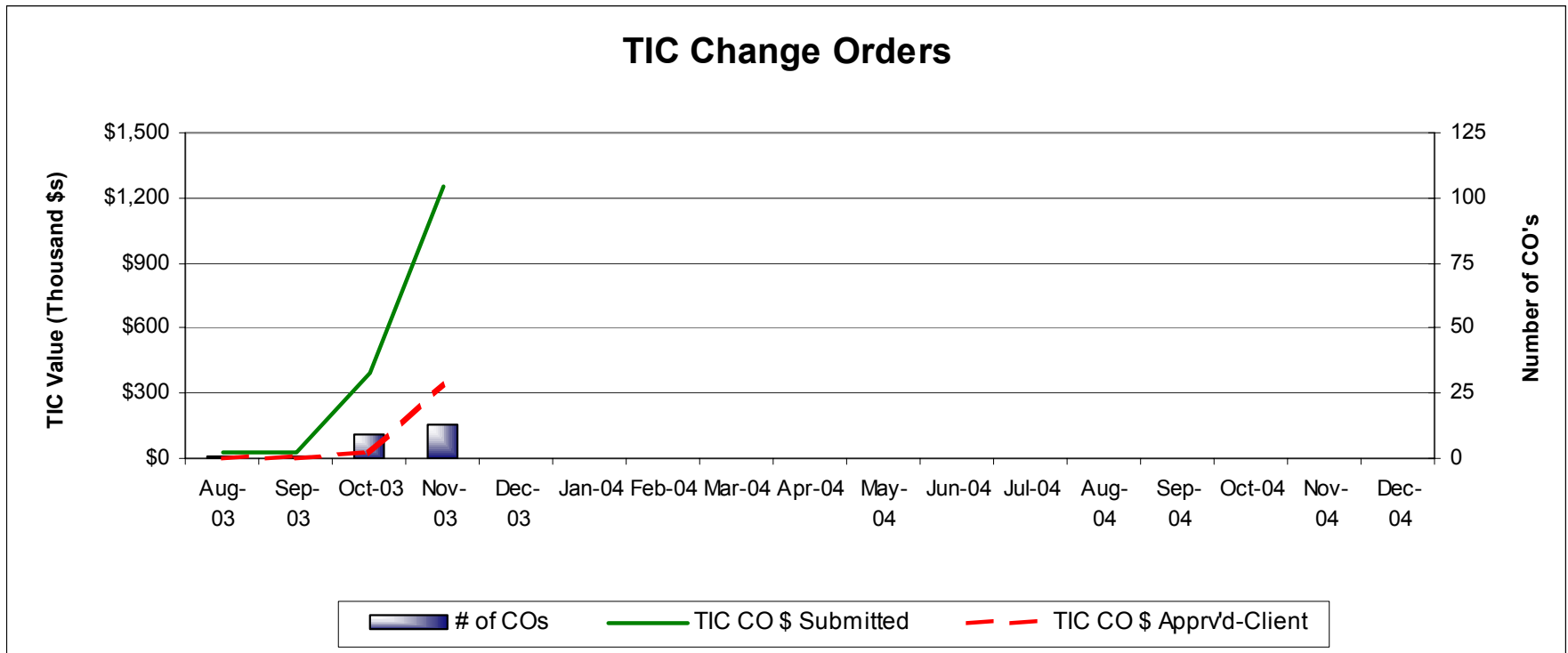


- Develop Overall Plan
- Brings together Project Stakeholders
- Ability to place and move activities
- Everyone sees the overall schedule

Potential Metrics

- Safety
- Cost vs. FEL estimate (AFE / AFC)
- Schedule performance
- Work process compliance
- Change management
- Workhours
- IPA results (FEL score)
- Customer survey

Change Management



“Leading” metrics lay the groundwork for project success - BEFORE

		Pre-Flight Conditions							Staffing/Resources					In-Flight Gauges										COMPLIANCE BY PROJECT			
Team	No 3rd Party Proj. w/Liability	Kick-Off Meeting w/PGM	Defined & Do-able Scope	Budget/Estimate	Good Schedule	Project Fully Funded	Known Expectations & AFC	Jacobs is Lead	PM/Team Relevant Exp.	Staffing	Infrastructure in Place	APL Can Support Project	Front End Loading (BP)	Scope Adherence	Change Control (BP)	Document Control	On or Ahead of Schedule	On or Under Budget	PGM Review in Status Meetings	APL Project Evaluation	Quality Process (BP)	Safety is Job # 1 (BP)	Constructability R/w (BP)		Value Plus	Project Close-Out	
COMPLIANCE BY PRACTICE		N/A	23%	75%	77%	41%	69%	70%	86%	94%	95%	52%	86%	75%	80%	94%	52%	84%	84%	95%	95%	50%	95%	50%	50%	50%	68%
58-P977	PIPE LINES																										50%
58P97601	Project A	AO							0												0		0	0	0	0	86%
58-P975	LOCATION A																										
58P97502	Project B	BL	-1			-1	-1	-1			0		0			0	0	0			0		0	0	0	0	66%
58-P974	LOCATION B																										
58P97405	Project C	PC	1	-1	1	1	-1	1	-1	1	1	0	1	0	0	1	0	0	0	1	1	0	1	0	0	0	68%
58P97407	Project D	PC	1	0	1	1	-1	-1	1	-1	1	1	0	1	0	0	1	0	0	0	1	1	0	1	0	0	64%
58P97408	Project E	PC		-1			-1		-1	-1		0	0	0		0	0	0			0		0	0	0	0	64%
58-P978	MARINE TERMINALS																										
58P97801	Project F	SWMT	1	-1	0	-1	-1		0	1	1	1	0	0	0	0	0	-1	-1	1	1	0	1	0	0	0	54%
58P97802	Project G	SWMT	1	-1	1	0	0	0	0	1	1	1	0	1	1	1	0	0	0	1	1	0	1	0	0	0	72%
58P97803	Project H	SWMT	1	-1	-1	0	-1	1	0	1	1	1	0	1	-1	0	1	0	1	1	1	0	1	0	0	0	66%
58P97804	Project I	SWMT	1	-1	1	1	-1	0	1	1	1	1	0	1	1	1	0	1	1	1	1	0	1	0	0	0	78%
58P97805	Project J	SWMT	1	-1	0	0	-1	0	1	1	1	1	0	1	1	1	0	1	1	1	1	0	1	0	0	0	74%
58P97824	Project K	SWMT	1	-1	1	1	-1	0	1	1	1	1	0	1	1	1	0	1	1	1	1	0	1	0	0	0	82%
58P97825	Project L	SWMT	1	-1	1	0	-1	0	1	1	1	1	0	1	1	1	0	1	1	1	1	0	1	0	0	0	76%
58P97827	Project M	SWMT	1	-1	0	0	-1	0	0	1	1	1	0	0	0	0	1	0	1	1	1	0	1	0	0	0	66%
58P97830	Project N	SWMT	1	-1	0	0	-1	0	0	1	1	1	0	0	0	0	1	0	1	1	1	0	1	0	0	0	66%
58P97831	Project P	SWMT	1	0	1	1	-1	0	1	1	1	1	0	1	1	1	0					0		0	0	0	78%
58P97833	Project Q	SWMT		-1			-1	0	0		0	0	0	0	0	0	0	1	1	1	1	0	1	0	0	0	70%
58P97834	Project R	SWMT	1	0	0	0	-1	0	0	1	1	1	0	0	0	0	1	0	1	1	1	0	1	0	0	0	66%
58P97840	Project S	SWMT	1	0	0	0	-1	0	0	1	1	1	0	1	1	0	1	0	1	1	1	0	1	0	0	0	70%
58-P978	PIPE LINES																										
58P97701	Project T	SWPL	1	-1	1	1	-1	1	1	1	1	1	0	0	1	1	1	0	1	1	1	0	1	0	0	0	78%
58P97702	Project U	SWPL	1		1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	1	1	0	1	0	0	0	84%
58P97811	Project V	SWPL	1	-1	0	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	0	1	0	0	0	82%
58P97812	Project W	SWPL	1	-1	0	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	0	1	0	0	0	82%
58P97813	Project X	SWPL	1	-1	0	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	0	1	0	0	0	82%
58P97814	Project Y	SWPL	1	-1	0	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	0	1	0	0	0	82%
58P97832	Project Z	SWPL	1	-1	1	0	0	0	0	1	1	1	0	1	1	1	0	1	1	1	1	0	1	0	0	0	76%
58P97835	Project AA	SWPL	1	0	0	0	0	?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50%
58P97836	Project AB	SWPL	1	0	0	0	0	0	0	1	1	1	0	1	0	1	1	0	1	1	1	0	1	0	0	0	72%
58P97837	Project AC	SWPL	1	1	1	1	1	0	1	1	1	1	0	1	0	1	1	0	1	1	1	0	1	0	0	0	80%
58P97838	Project AD	SWPL	1	-1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	0	1	0	0	0	84%
58P97839	Project AE	SWPL	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	0	1	0	0	0	84%
58P97841	Project AF	SWPL	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50%
58-P979	LAND TERMINALS	ML																									

1 = Status is Acceptable
0 = Status Warrants Monitoring or is Not Ideal
-1 = Status is Unacceptable

“Leading” metrics lay the groundwork for project success - AFTER

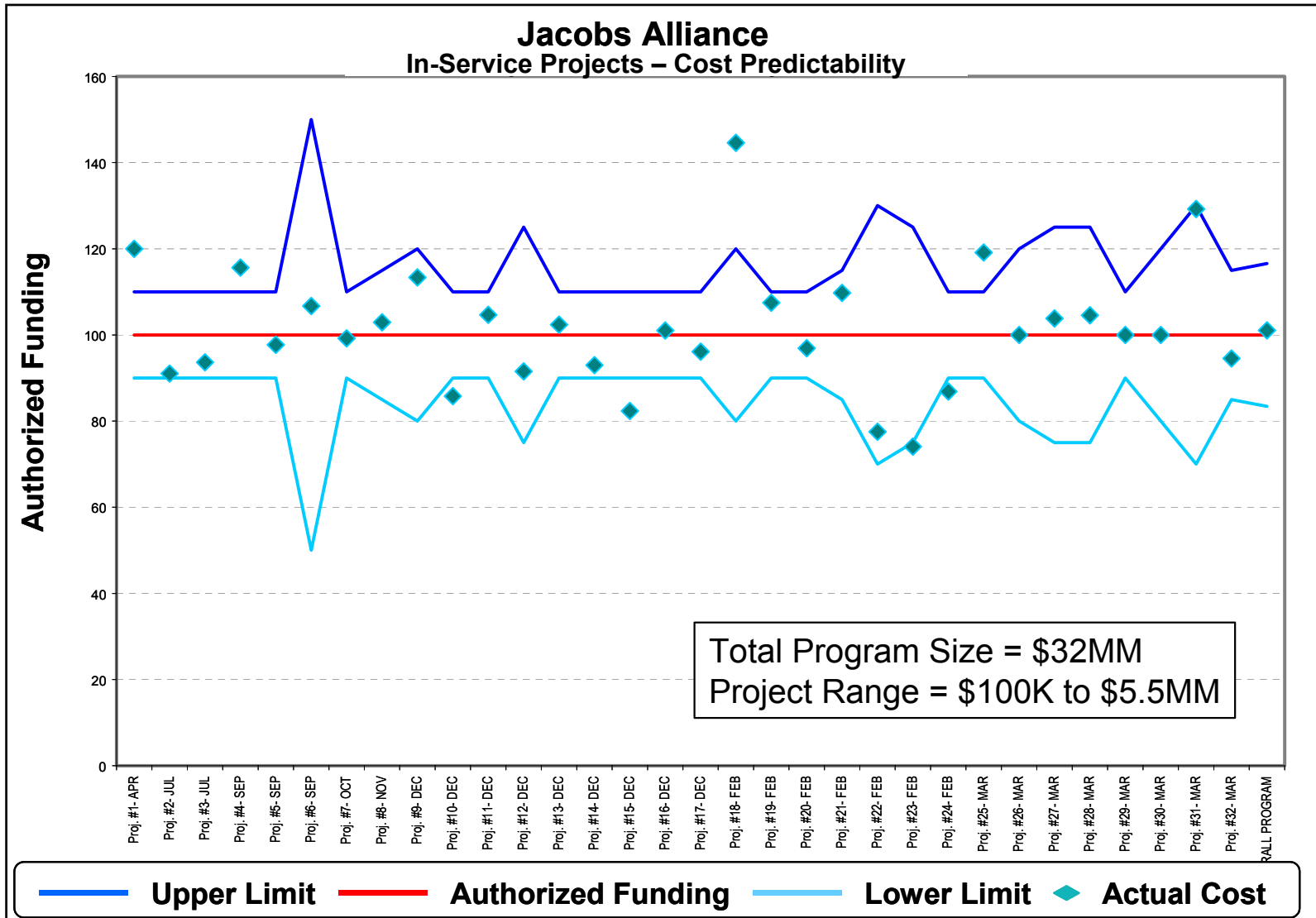
PROJ. NO.	COMPLIANCE BY PRACTICE	Current Phase of Project	Pre-Flight Conditions							Staffing/Resources					In-Flight Gauges										COMPLIANCE BY PROJECT	CHANGE FROM PRIOR MONTH			
			No Third Party Proj. w/Liability	Kick-Off Meeting w/PGM	Defined and Do-able Scope	Good Budget	Good Schedule	Project Fully Funded	Known Expectations & AFC	Jacobs is Lead	PM/Team Relevant Exp.	Staffing	Infrastructure in Place	Can Support Project	Front End Loading (BP)	Scope Adherence	Change Control (BP)	Document Control	On or Ahead of Schedule	On or Under Budget	PGM Review in Status Meetings	Project Evaluation	Quality Process (BP)	Safety is Job # 1 (BP)			Constructability Review (BP)	Value Plus	Project Close-Out
	COMPLIANCE BY PRACTICE		N/A	69%	90%	88%	87%	81%	85%	79%	98%	####	96%	96%	68%	95%	95%	87%	84%	84%	95%	71%	63%	####	71%	71%	55%	84%	
	CHANGE FROM PRIOR MONTH			G	G	G	G	H	G	G	G	G	G	G	G	G	G	G	G	G	H	G	H	G	G	G	H	G	
	PIPE LINES																												
02Q50725	Project A	CN	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	0	92%	F
02Q50828	Project B	CN	1	0	0	0	0	1	1	0	1	1	1	1	0	0	0	0	0	0	0	1	0	0	1	0	0	67%	F
02Q50831	Project C	CO	0	0	1	1	1	1	1	0	1	1	1	0	0	1	1	1	1	1	1	0	0	1	0	1	0	83%	F
02Q50835	Project D	CN	0	0	1	1	1	1	1	0	1	1	1	1	1	1	1	0	0	1	1	0	1	1	0	0	85%	H	
02Q50836	Project E	CO	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	1	1	1	0	1	0	0	0	81%	F	
02Q50837	Project F	PE	0	0	0	0	0	0	0	0	1	1	1	1														68%	G
02Q50838	Project G	DE	0	0	1	0	1	0	0	0	1	1	1	1	0	1	1	1	1	1	1	0	0	1	0	0	0	77%	F
02Q50839	Project H	PE	0	1	1	1	1	0	0	1	1	1	1	1															
	MARINE TERMINALS																												
02Q50809	Project I	CN	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	98%	G
02Q50811	Project J	CN	1	0	1	1	0	1	0	1	1	1	1	1	1	1	1	0	0	0	1	0	0	1	1	0	0	79%	F
02Q50818	Project K	DE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	96%	H
02Q50830	Project L	CO	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	0	0	90%	F
02Q50834	Project M	PE	1	1	1	1	1	0	0	1	1	1	1	1														91%	F
02Q50841	Project N	PE	1	0	1	1	1	0	1	1	1	1	1	1														91%	F
02Q50905	Project O	PE	0	1	1	1	1	0	1	1	1	1	1	1														95%	F
02Q50909	Project P	DE	1	0	1	0	0	0	1	0	1	1	1	1	1	1	1	0	0	1	1	1	0	1	0	0	0	77%	H
	LAND TERMINALS																												
02Q50805	Project Q	CO	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	0	1	0	0	1	0	1	1	85%	F
02Q50826	Project R	CO	0	0	1	0	0	0	0	1	0	1	0	1	-1	0	0	1	0	0	1	0	0	1	0	1	1	67%	F
02Q50840	Project S	PE	1	1	0	0	0	0	0	0	1	1	0	0														64%	F
	CITY TERMINALS																												
02Q50720	Project T	DE	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1	1	0	0	1	0	1	0	85%	F
02Q50721	Project U	CN	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	96%	G
02Q50722	Project V	DE	1	0	1	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	0	1	0	1	0	88%	G
	OTHER ASSETS																												
02Q50724	Project W	CN	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	0	1	1	0	0	90%	F
	SUPPORT SERVICES																												
02Q51002	Project X	CE	0	1	0	1	1	0	0	0	1	1	1	1														82%	H
02Q51004	Project Y	DE	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	0	1	0	0	85%	G
02Q51005	Project Z	DE	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	0	1	0	0	85%	G

NOTE: 1. For projects with status CE or PE, only pre-flight conditions and staffing/resources should be filled out.
 2. For projects with status DE or CN, pre-flight conditions should be frozen, and staffing/resources and in-flight gauges should be updated.
 3. For projects with status CO, all conditions are frozen except Project close-out (last column).

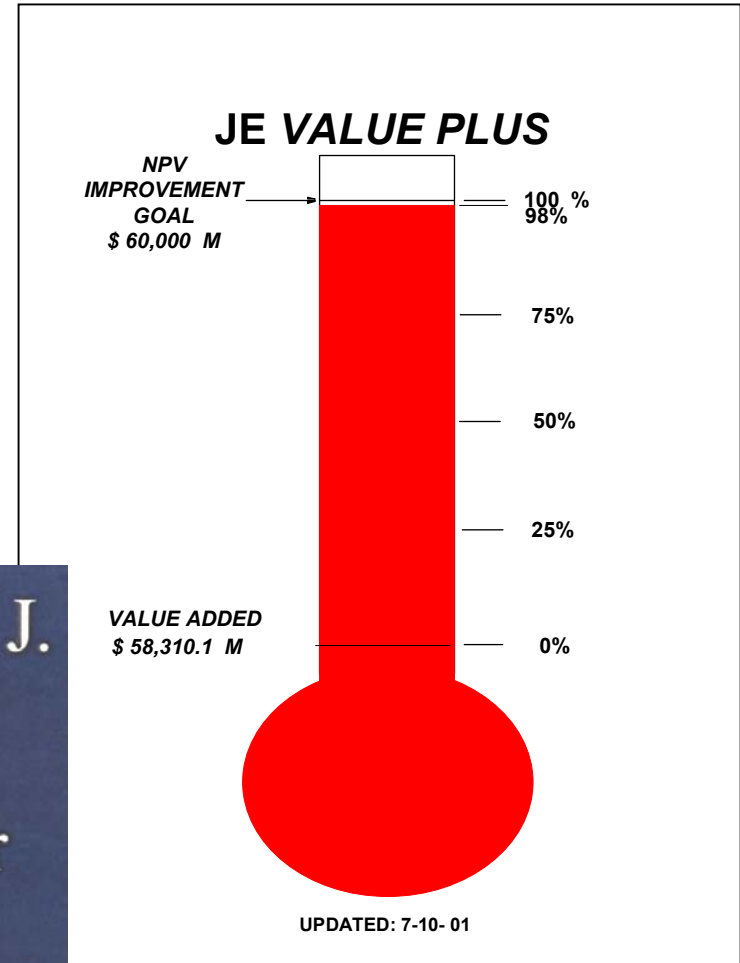
Project Phases:
 CE = conceptual engineering
 CN = construction
 PE = preliminary engineering
 DE = detail engineering

Compliance Percentages:
 80 - 100% **Green**
 50 - 80% **Yellow**
 0 - 50% **Red**

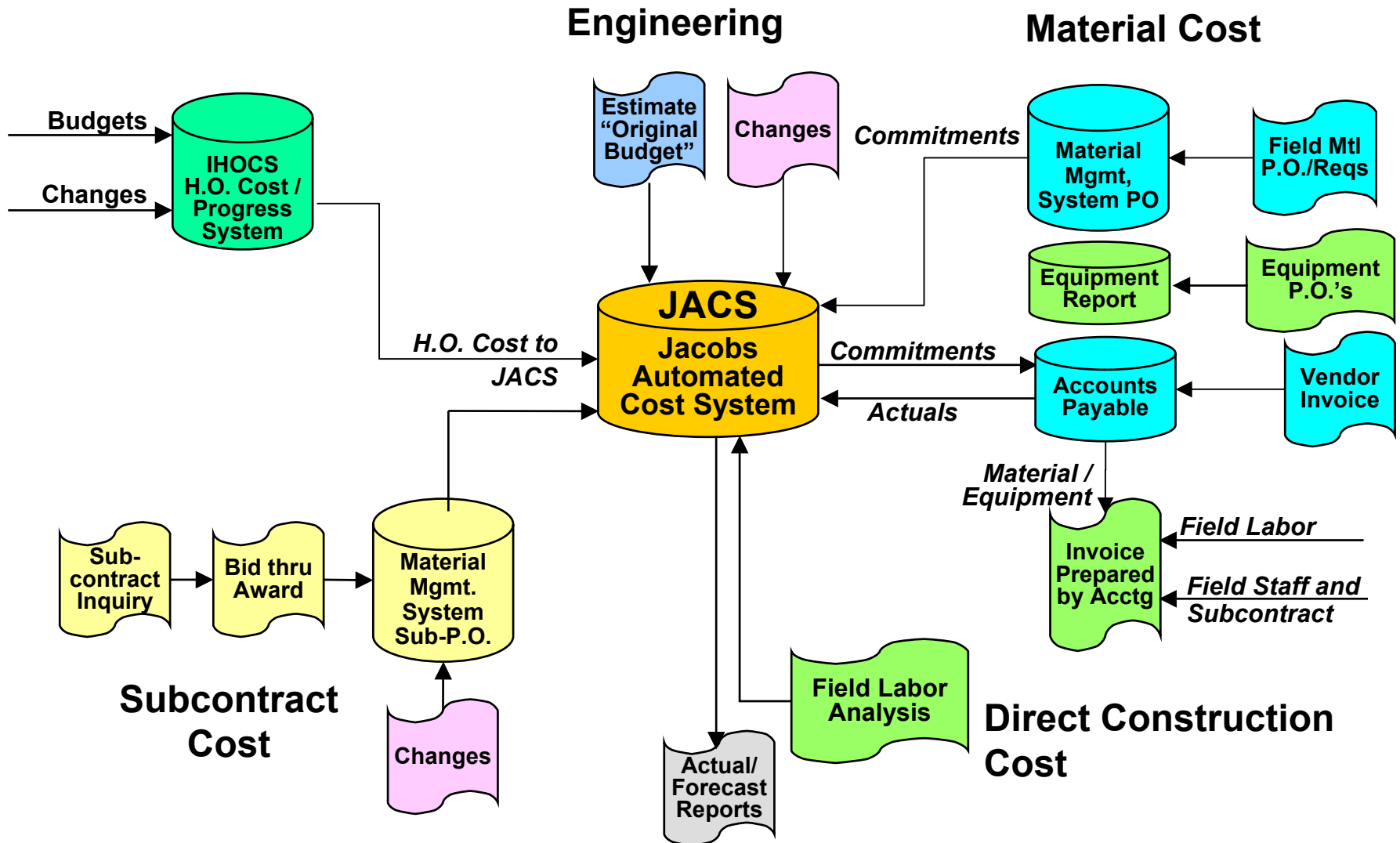
Cost Predictability and Control



Individual and team recognition help change behaviors and improve results



Jacobs Project Cost Control System



Change Management

- Freeze Scope at End of FEL
- FEL Gate Review
- Client and Project team “sign off” on Scope
- Client/Jacobs jointly define change at end of FEL (for example, No changes unless it won't work or unsafe)
- Identify changes promptly including cost/schedule impact and obtain approval.

Challenges

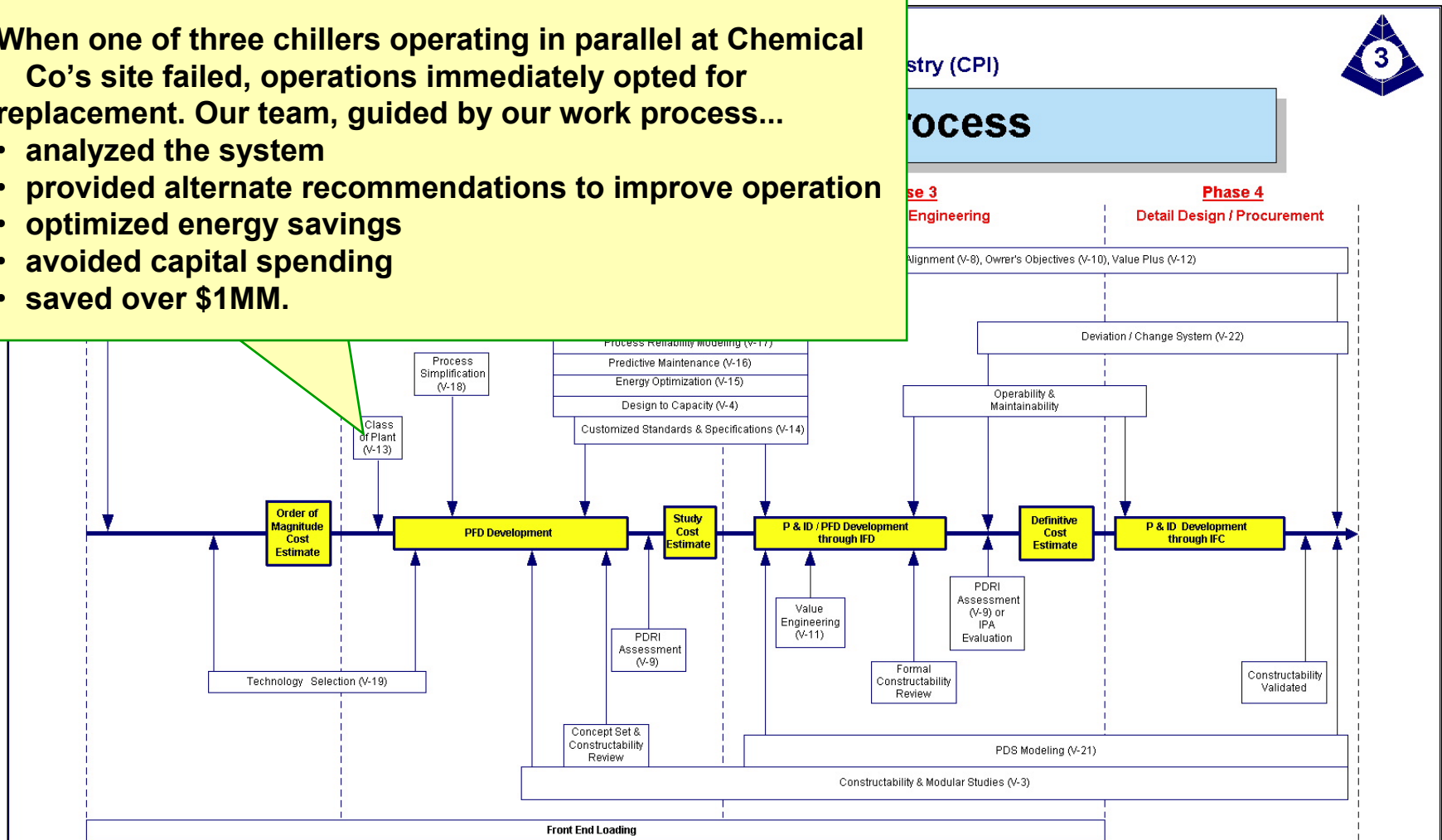
- Didn't do all this on last project
- Don't have the time
- My Project is Different
- Time to make decision for selected option (FEL2)
- “Checking boxes” vs ensuring value (VIPs, fully completing FEL)
- Including all stakeholders to define and freeze scope (construction, operations)
- Continuing to change/improve design after scope is frozen
- Timely identification/control/approval of changes

Success Stories

Stimulating “What are you trying to accomplish?” behaviour delivers the “Quantum Leap” change

When one of three chillers operating in parallel at Chemical Co’s site failed, operations immediately opted for replacement. Our team, guided by our work process...

- analyzed the system
- provided alternate recommendations to improve operation
- optimized energy savings
- avoided capital spending
- saved over \$1MM.



Note: JVEPS™ V-1, V-2, V-5 through V-8, V-10 and V-12 continue through project closure, as applicable.
PDS Modeling (V-21) and Constructability (V-3) continue through Phase 6, Construction, as applicable.

Stimulating “What are you trying to accomplish?” behaviour delivers the “quantum leap” change

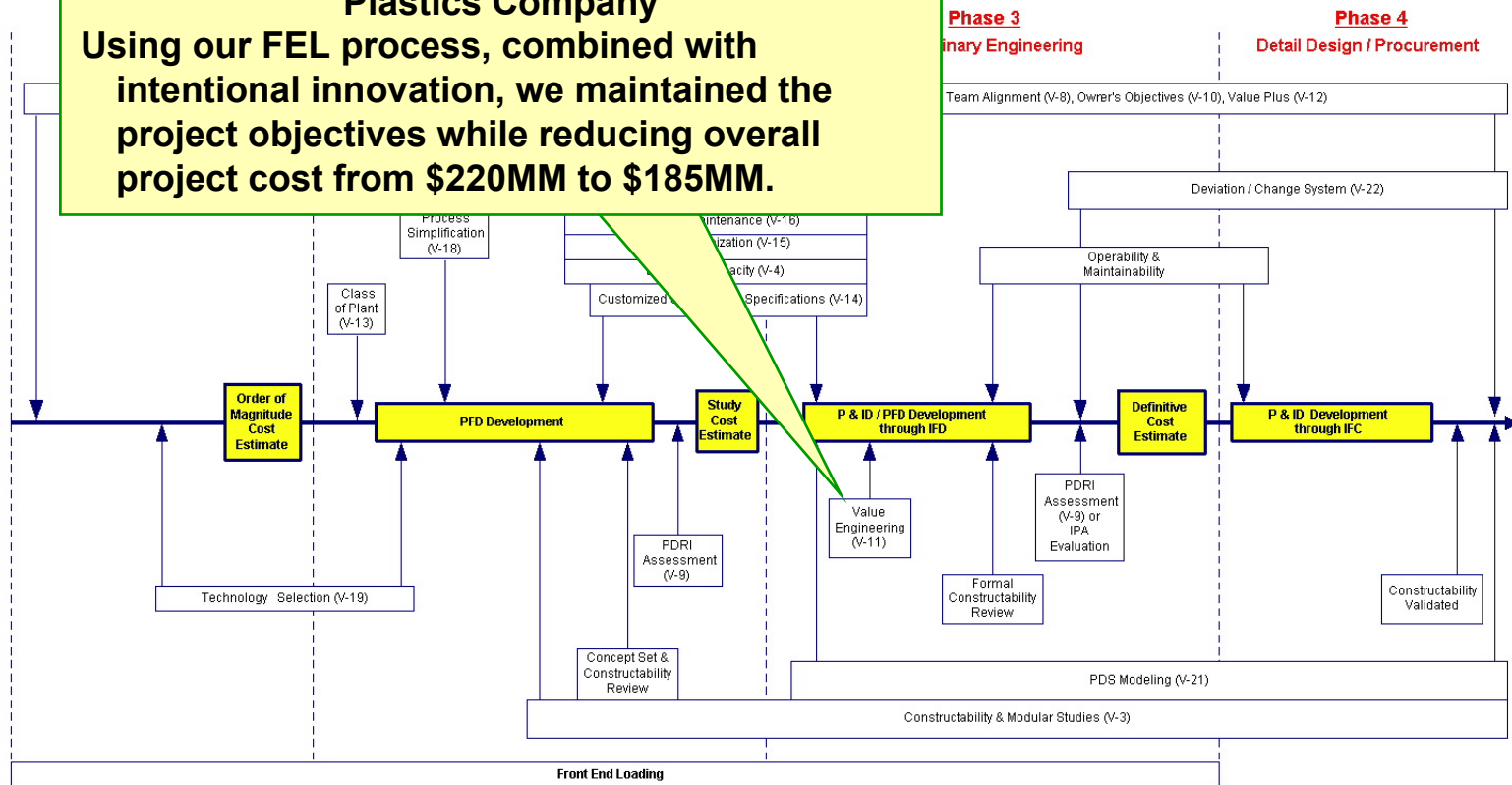
Jacobs STEPSSM

Macro Phase Map - Chemical Process Industry (CPI)



Intentional Innovation Process

Plastics Company
 Using our FEL process, combined with intentional innovation, we maintained the project objectives while reducing overall project cost from \$220MM to \$185MM.



Note: JVEPSSM V-1, V-2, V-5 through V-8, V-10 and V-12 continue through project closure, as applicable.
 PDS Modeling (V-21) and Constructability (V-3) continue through Phase 6, Construction, as applicable.

BP Cherry Point Project

	Early Phase 3	End Phase 3	Forecast	Recommended
Leading Indicators				
FEL	7	4.25		<5
PDRI		131		<175
VIPs	64%	64%		>50%
Team Development	Good	Good		>Good
Lagging Indicators				
Execution Index	0.95	0.90	0.90	
Cost Index	1.08	0.92	0.90	<0.95

Questions