Miron
Building Excellence

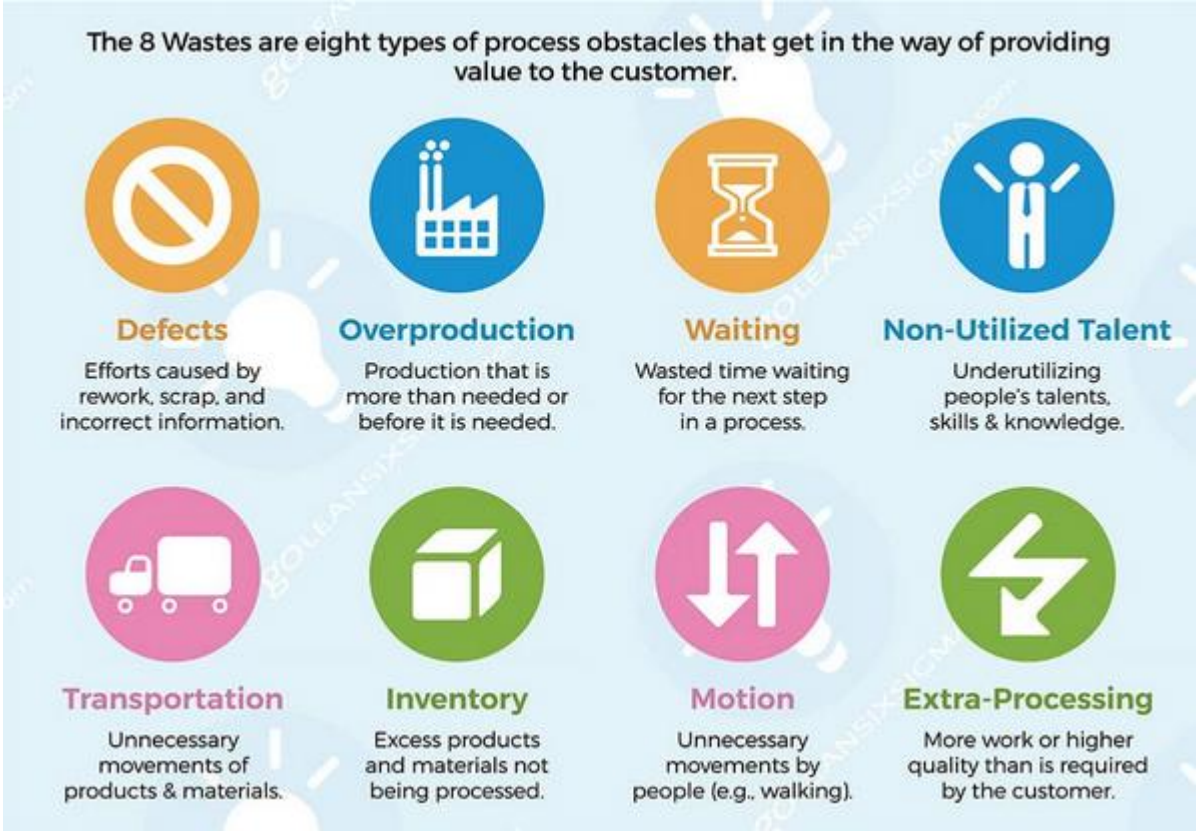
LEAN TOOLS –

WHAT ARE THEY AND WHAT DO WE USE THEM FOR?

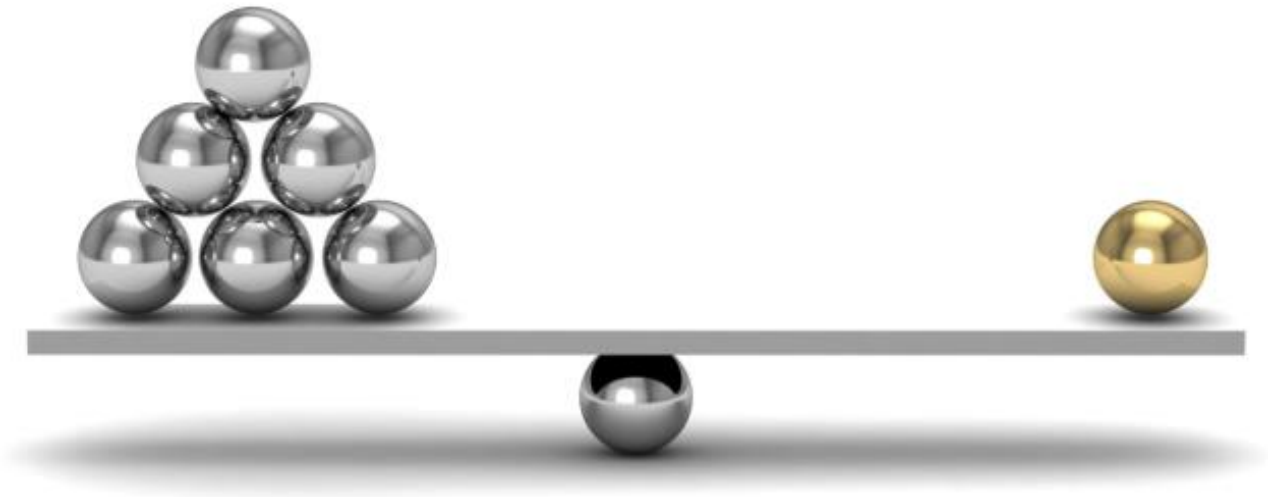
EXPECTATIONS FOR TODAY'S DISCUSSION

1. What is Lean?
2. Review lean tools:
    a) What are they?
    b) How do they work?
    c) What are the benefits?

WHAT ARE WE TRYING TO ACHIEVE?



LEAN - Balancing Culture and Tools



TOOLS

CULTURE/ MINDSET

Lean has so many tools - how do I know when to use which one?

INTEGRATED FORM OF AGREEMENT (IFOA) – in lieu of traditional owner contracts

- A Tri-Party Integrated Form of Agreement (IFOA) is where the owner, primary designer and primary builder execute a single contract for delivery of a project. Other partners for design and construction may be bound to the same terms as the primary signatories yet they do not sign the base agreement.

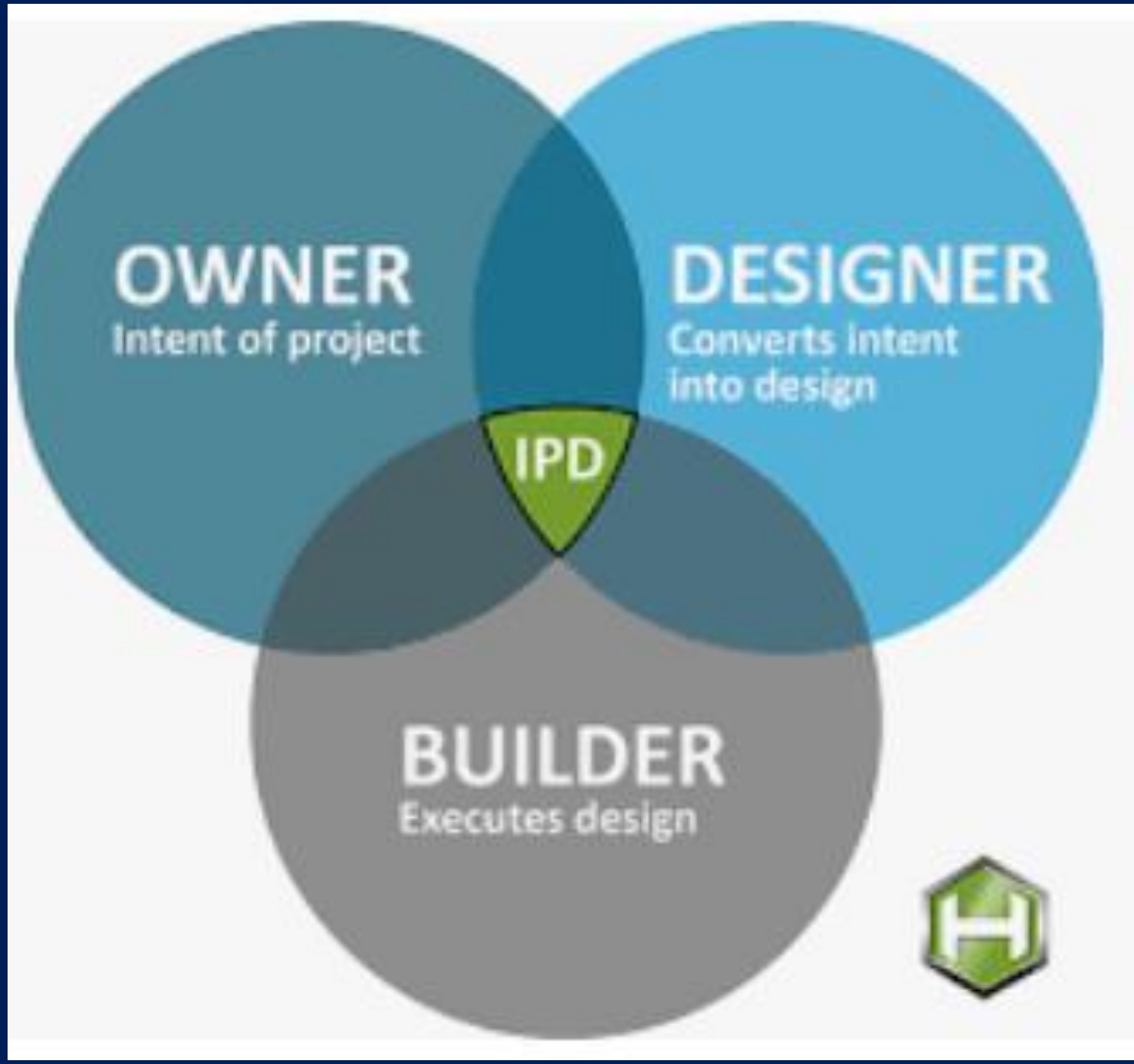
- A Multi-Party Integrated Form of Agreement (IFOA) is a contract where the owner, primary designer, primary builder and other key parties to design and construction execute a single contract for delivery of a project. Each member that is bound to the terms of the agreement is a primary signatory with at least 4 signatories and as many as the team chooses to include in the contract. (this is sometimes called a Poly-Party Agreement).

- Both of these are typically paired with a Cost Plus, fee at risk model (profit sharing) and TVD (Target Value Delivery)

INTEGRATED PROJECT DELIVERY (IPD)

- IPD is a delivery methodology that fully integrates project teams in order to take advantage of the knowledge of all team members to maximize the project outcome. Integrated Project Delivery is the highest form of collaboration because all the parties are aligned by a single contract.

- IPD lite is when you apply the concepts and practices of IPD but without an IFOA.



TRUE NORTH – CONDITIONS OF SATISFACTION

True North

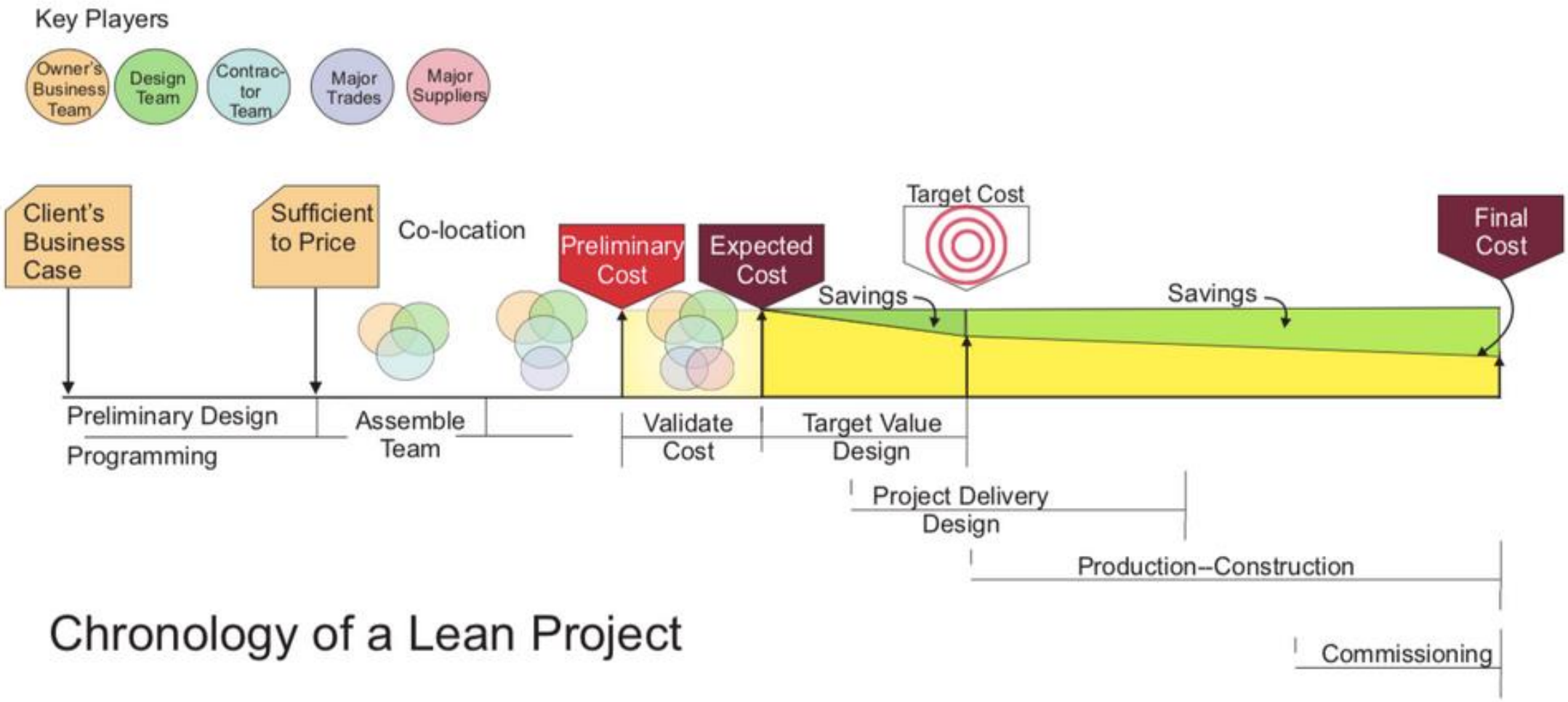
- What it is
  - A short phrase that expresses the vision (hoshin)
  - It must have emotional impact
  - It must be accompanied by numerical targets

Current Performance

Purpose

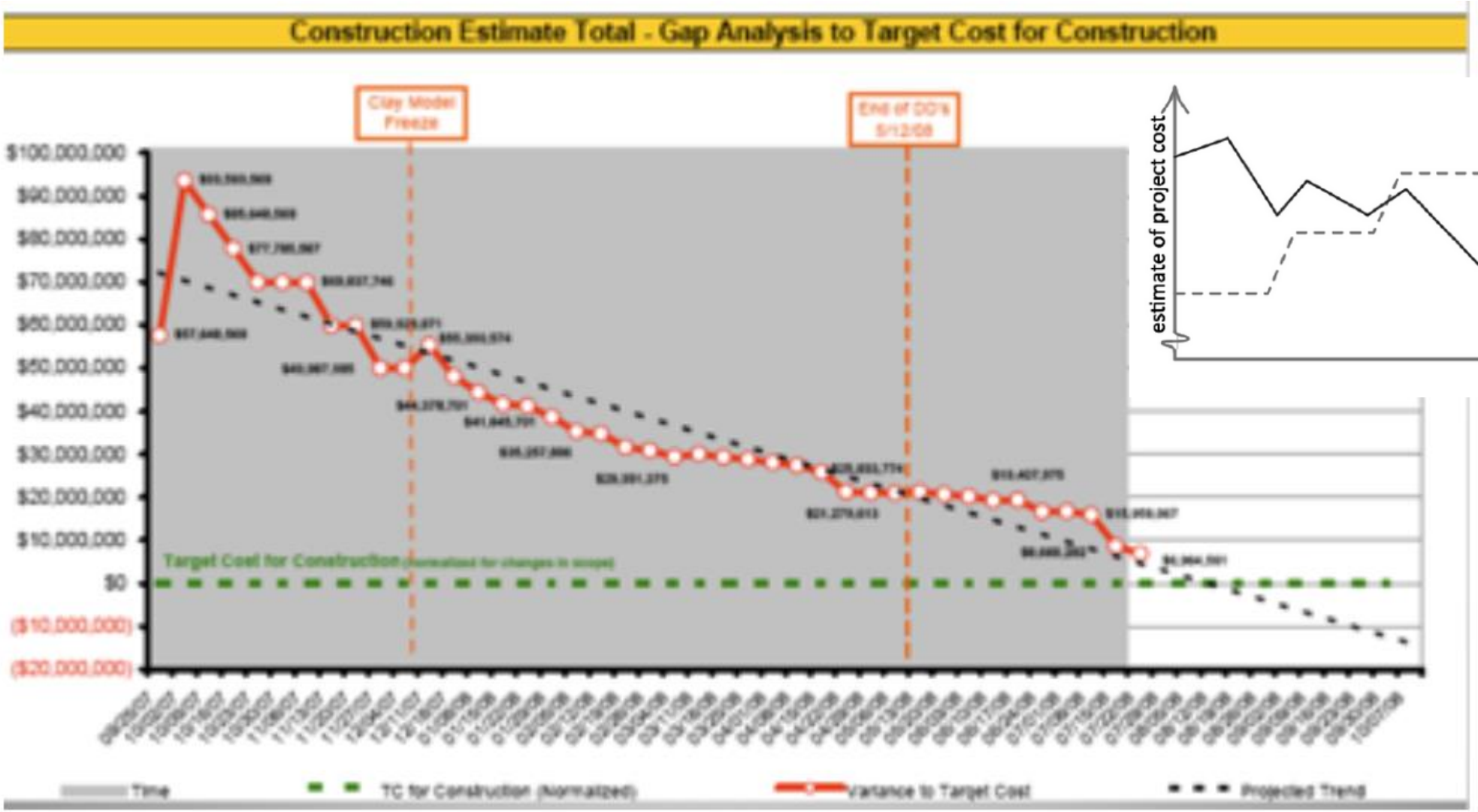
- It must come out of our experience (visited customers, shopfloor, analysed data, SWOT, – grasp the situation)
- It is a contract, not a wish list or marketing
- It expresses business needs that MUST be met;
- DRAWS people to action

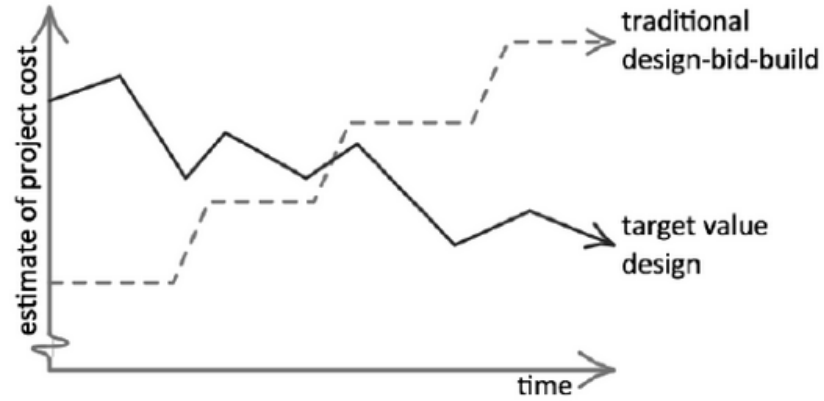
TARGET VALUE DELIVERY (TVD)



Chronology of a Lean Project

TARGET VALUE DELIVERY (TVD)

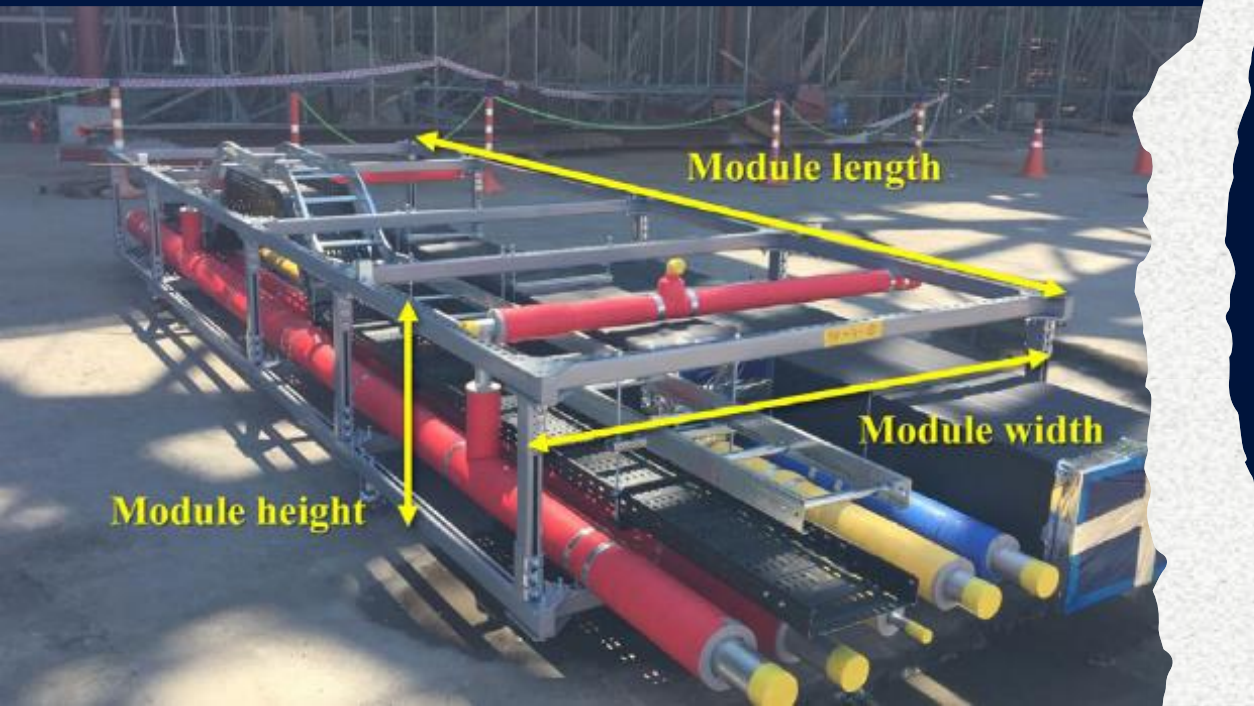




TARGET VALUE DELIVERY (TVD)

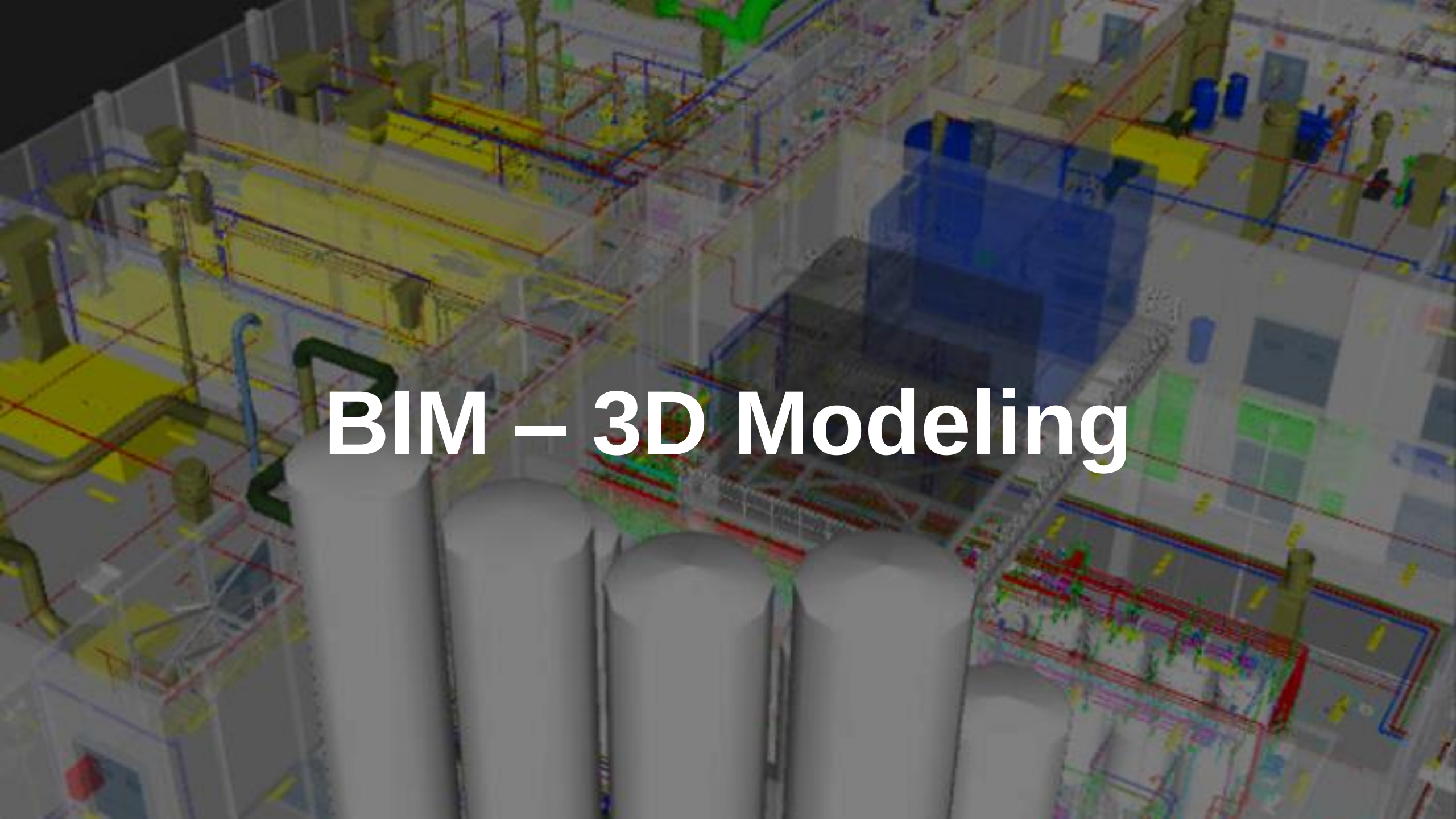
RISK & OPPORTUNITY LOG

No	Description	Estimated Cost	Responsible Party	Approved	Rejected	Moved into Budget	Comments
OPPORTUNITIES							
Enclosure Cluster							
1.01	Prefabricate exterior walls(Included in base)	$0	GSI	$0	$0	$0	Already in base budget
1.02	Eliminate deep horizontal covers at curtain wall	$0	GSI	-$95,775	$0	-$95,775	3 - wish list
1.03	Eliminate all exterior covers(4-sided SSG curtain wall)	$0	GSI	$0	$0	$0	Can not accept with 1.02
1.04	Alt. ADD metal composite panels at columns	$0	GSI				See items 1.32 thru 1.35
1.05	Alt. ADD metal composite plate panels at end wall	$0	GSI				See items 1.32 thru 1.36
1.06	Alt. ADD Alpolic stone series finish on columns and endwalls	$0	GSI				See items 1.32 thru 1.37
1.07	Brick Parapet and CMU Backup	$0	Pepper				See items 1.32 thru 1.38
1.08	Parapet Brick Shelf Angle	$0	Pepper				See items 1.32 thru 1.39
1.09	Stone with 3" Insulation	$0	Pepper				See items 1.32 thru 1.40
1.10	CFMF/Sheathing	$0					See items 1.32 thru 1.41
1.11	CFMF/Sheathing at Columns	$0					See items 1.32 thru 1.42
1.12	CFMF / Sheath - 9" gap infill between CW and cols (vert)	$0		-$63,365		-$63,365	Included with GSI Build Costs
	GRAND TOTAL	**-$1,524,925**		**-$12,004,580**	**-$9,295,027**		
RISKS							
Enclosure Cluster							
5.01	Testing of the curtainwall system	$0		$0	$100,000	$0	Not Needed
5.02	Third Party E.J.s	$15,000		$15,000	$0	$15,000	Assume 5 E.J.s at $3,000 EA
5.03	Schedule Slippage for IDPH/City Reviews	$0		$0	$52,425		1 Week GC Cost
5.04	Punched Windows Budget	$0		$2,926,777	$0	$2,926,777	$2,635,000 GSI + $249,712 Pepper + $42,065 edge guard protection
5.05	Freight for oversized curtainwall units	$100,000	GSI	$0	$100,000		
5.06	Lighting protection on all roofs	$0	JB	$18,000	$0	$18,000	
5.07	Lighting protection on all roofs	$0	Olsson	$40,000	$0	$40,000	
5.08	Grind and tuckpoint Building A	$0	Pepper		$464,896	$0	
5.09	Grind and tuckpoint Building C	$0	Pepper		$223,536	$0	
5.10	Grind and tuckpoint Building D	$0	Pepper		$279,456	$0	
5.11	Clarify davit scope	$0	Pepper	$89,865			Need scope clarification from BSA before we can create a ROM ($322,000 in current budget) Need to add $400 ea temp pipe through roof, $600 ea permanently flash each davit. There shouldn't be a need for temporarily roofing in the davit's.



PREFABRICATION

- Pods
- Multi-trade racks
- Kitting



BIM – 3D Modeling

What is a Big Room?

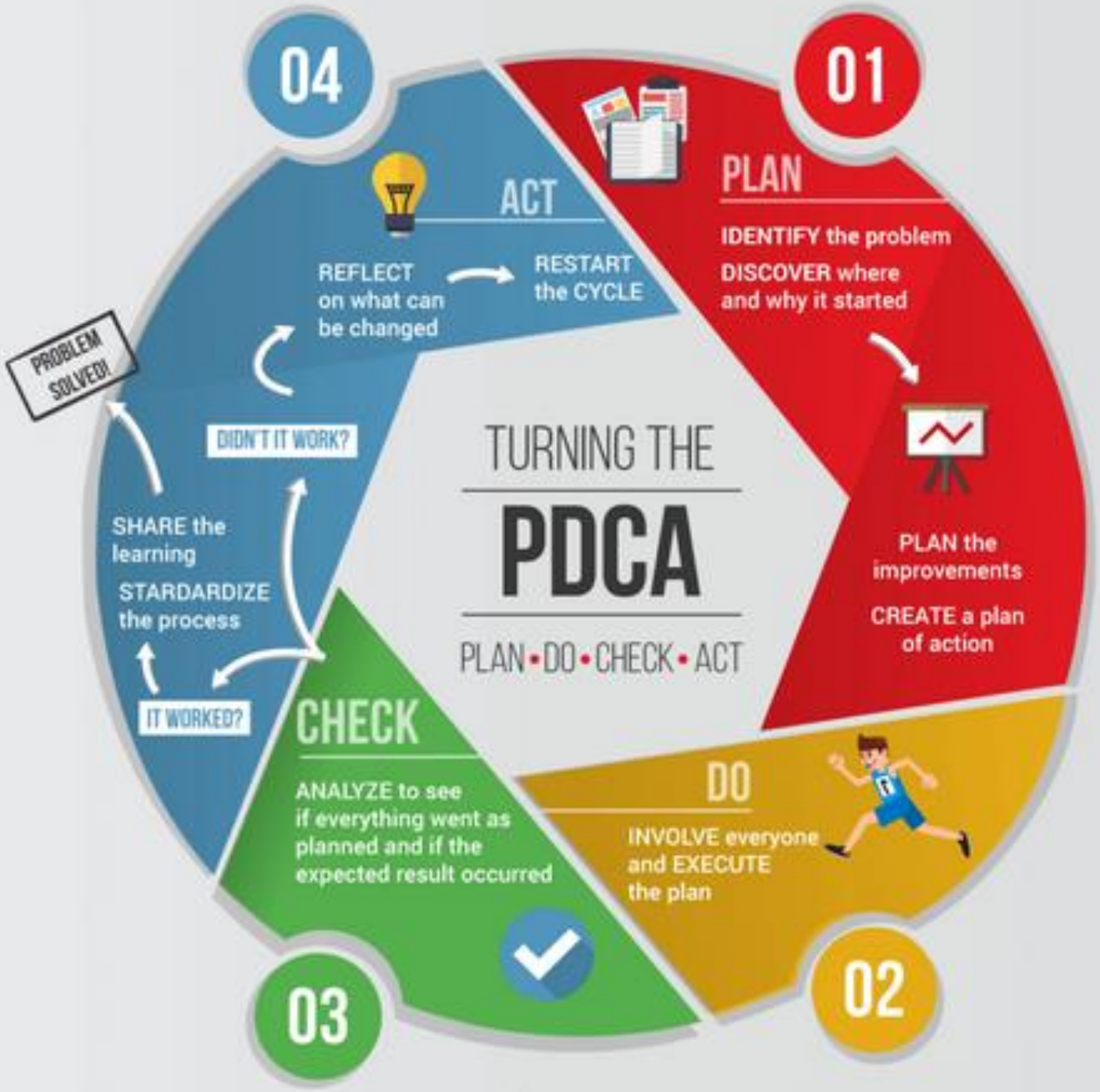
Photo Credit: InsideOut Consulting, Inc.

- Space that physically brings together designers, builders and facility operators.
- Supports cross-functional team collaboration.
- Its about collaborative behavior of a team and the work they are producing.

Week 23
10/27/2020

		RECURRING Interior Design & Finish Coordination	HVAC YE Levers LRM and GMP documentation	Cancer Center Connections (invite for Mike A)	Moisture Mitigation (Invite Stephen F)	UV Disinfection - AHUs	Misc. Details Touch Base														
Who initiated the swarm?		KB	DG	JD	KB	JR	HH														
How long is needed (MINUTES)		**60**	**30**	**30?**	**30**	**30**	**15**														
Todd Sabourin	TS				X																
Amy Lohaus | Interior Designer	AL																				
Austin Cable | Technology	AC																				HGA
Branden Schneider | Mechanical	BS																				
Catherine Hall | Lighting	CH																				
Lena Raffin | Structural	LR																				
Chad O'Donnell | Structural	CO																				
Cory Powers | Engineering PM	CP		O			X															
Dave Guzlecki | Mechanical	DG		X			X															
Dave Janous | Medical Planner	DJ																				
Dave Tomaz | Electrical	DT		O			X															
Kate Bautista | Interior Designer	KB	X			X																
Keith Grabarczyk | Project Coordinator	KG																				
Kevin Kerschbaum | Project Manager	KK	O		X	X																
Kevin Vonderberg | Project Architect	KV	X		X	X		X														
Lori Magalen | Medical Planner	LM																				
Michael Lee | Medical Planner	ML																				
Ray Schwalbe | Mechanical	RS																				
Scott Zietlow | Electrical	SZ																				
Stephen Webber | Designer	SV																				
Tryg Hansen | Landscape	TH																				
Tim Scanley | Designer	TSc	X																			
Rochelle Monahan | Food Service	RM																				Rippe
Amy Fick | Food Service	AF																				
Mike Kohlbeck | Civil	MK			X																	McMahon
John Ransom | Project Exec. Pre Const.	JR		X			X															Ahern
Jason Brenner | Sr PM	JB		X			O															
Peter Granlund | Sheetmetal Design Manager	PG																				
Tim Chapin | Sr Estimator	TC		X			X															
Tom Weister | PM	TW																				
Ben Misikin | PM Pre Construction	BM																				Pieper
Jason Beulen | Dept. Supervisor	JBe																				
John Kletti | Project Advisor	JK																				
Tim Guyant | Project Advisor/Service Manager	TG																				
Scott Westphal | Project Manager	SWe		X			X															

Zoom (PASSWORD IS 333 FOR ALL)	11:00 AM	11:15 AM	11:30 AM	11:45 AM	12:00 PM	12:15 PM	12:30 PM	12:45 PM	1:00 PM	1:15 PM	1:30 PM	1:45 PM	2:00 PM	2:15 PM	2:30 PM	2:45 PM	3:00 PM	3:15 PM	3:30 PM	3:45 PM	4:00 PM
Big Room 960 0716 2842				Misc. Detailed TB	BREAK				RECURRING Interior Design & Finish Coordination (SW, KB, TSc, KV Opt. KK)				Moisture Mitigation (AG, JD, HH, SW, TS, KB, KK, KV)								Report Out
Cranium 920 2868 4873I							HVAC YE Levers/GMP Doc (DG, JR, JB, TC, SWe								UV Disinfections AHUs (HH, CP, DG, JR, TC,						
Spine 956 9160 2487																					
Humerus 980 3033 8851							Cancer Center Connections (AG, JD, HH, KK, KV,														
Tibia 991 0217 3500																					
See Outlook invite																					



PLAN, DO, CHECK, ADJUST (PDCA)

PLAN, DO, CHECK, ADJUST (PDCA)

3/23/2023
Job No. 228100

LP Sagola Constraints

Bid Package or Vendor Engineering Review	Type of Issue	Division Responsible	Miron Champion	Plan (high level description)	Do (detail description of the issue and how to resolve it)	Assigned To (Company)	Assigned To (Person)	Cost Impact	Status	Needed By (A) [MIRON]	DELTA (A-B)	Date Promised (B) [RESP PARTY]	PROMISED DELTA (B-C) OR (B-today's date)	Actual Date Resolved (C)	NEEDED BY DELTA (A-C) OR (A - today's date)	CHECK (+/-)	ADJUST/ACT
Bid Package 9	Engineering	Electrical	Jeremy K.	Camera Locations	LP to review and provide input. Interior cabinets. Cables are in the scope but need to finalize location once equipment is installed.	PCTM	Steven Little		Open	9/28/2022	0	9/28/2022	-176		-176	Team member went to Dawson to review locations. Cabling is captured may have some minor adjustments in the field.	
Vendor Engineering Review	Engineering	Electrical	Jeremy K.	XBC Air Compressor Controls	PCTM needs to review controls for compressed air system and advise how the system will function	PCTM	Steven Little		Open	9/15/2022	0	9/15/2022	-189		-189	9/6 PCTM reached out to XBC. Waiting on a quote from XBC for a central controller option. Quote received and LP is moving forward. PCTM to confrim cabling is captured.	
Vendor Engineering Review	Install	Mechanical	Wyatt G.	Superior Automation Alignment Check	Before final alignment need to stack hands and sign off on alignment	JBW	Mike Kershaw		Open	11/1/2022	2	10/30/2022	-144		-144	8/30-meeting scheduled on 9/7 to review with Superior Automation. Superior will be on site around 12/16 to compelte alignment verification.	
Vendor Engineering Review	Design	All	Wyatt G.	Convey On-Machine Piping	Con-Vey to generate a procurement list of items contractors need to purchase. This is in reference to the piping systems. Wyatt is pulling this together.	JBW	Mike Kershaw		Open	9/30/2022	21	9/9/2022	-195		-195	9/7-Convey to put together a misc. piping procurement list. 11/28 JBW to have updated scope of work by 12/2	
All	Engineering	Steel	Luke	Handrailing for Roof Tops	Confirm design intent for each building roof and the handrailings that are shown in the model.				Open		1/0/1900		-45008		-45008		
	Engineering	Electrical	Jeremy K.	Dry Valves	Dry valves being added will need temp electrical to function	PCTM	Steven Little	Yes	Open	10/31/2022	1/0/1900	10/31/2022	-143		-143	PCTM has a weeks worth of design to complete then can price with Contractors. Engineering costs approved by George.	
BP 07	Engineering	HVAC	Dan G.	Curb Extensions and opening sizes	Meeting to determine options for ducts running thru curbed openings	JBW	Daniel Blomquist		Open	10/19/2022	-22	11/10/2022	-133		-133	11/8/22: Determined that the straight thru duct will work, but the dampers still need to be installed, and they have been ordered, so transitions will still be needed. GLM looking into changing the order for the dampers to get duct (in line size) and not have to transition. Potential cost savings if we can obtain favorable delivery for the dampers. 11/17/22: GLM checking on delivery of dampers, as of Friday the 18th no confirmation. 11/23/22: Dampers are being shipped, in transit. Ordering smaller dampers isn't an option. The ducts will have to be adjusted to accomadate. We will ask Windor next week to submit a CB regarding. 11/28/22: Request to Windor for a CB today.	
BP09	Design	Mechanical	Ross B.	Insulation for Grecon	Complete Insulation Drawings and issue for pricing.	JBW	Kyle Levanen		Open	11/21/2022	11/21/2022		-45008		-45008		
	Engineering	Process	Dan G.	Plate wash design specs and criteria	Working with Pearl to define the plate wash tank design conditions for AW to design towards. % concentration of NaOH liquid.	Pearl	Jeff F		Open	11/9/2022	1/0/1900	11/9/2022	-134	11/11/2022	-134	11/14/22: Leaving the item open due to questions on the % concentration of NaOH. 11/21/22: Meeting with engineer and AW to finalize the design documents and proceed with submittals for approval. 11/23/22: JBW sent over the requirements for the plate wash tank via email. Pearl will have to submit a formal document pertaining to the requirments. AW is moving forward with the informatino provided.	
Bid Package 6	Engineering	Concrete	Phillip T.	Exterior Equipment Pads - Baghouse 4/6	JBW to provide details for equipment pads.	JBW - Corey	Corey Weichel		Open	11/18/2022	11/18/2022		-45008		-45008		

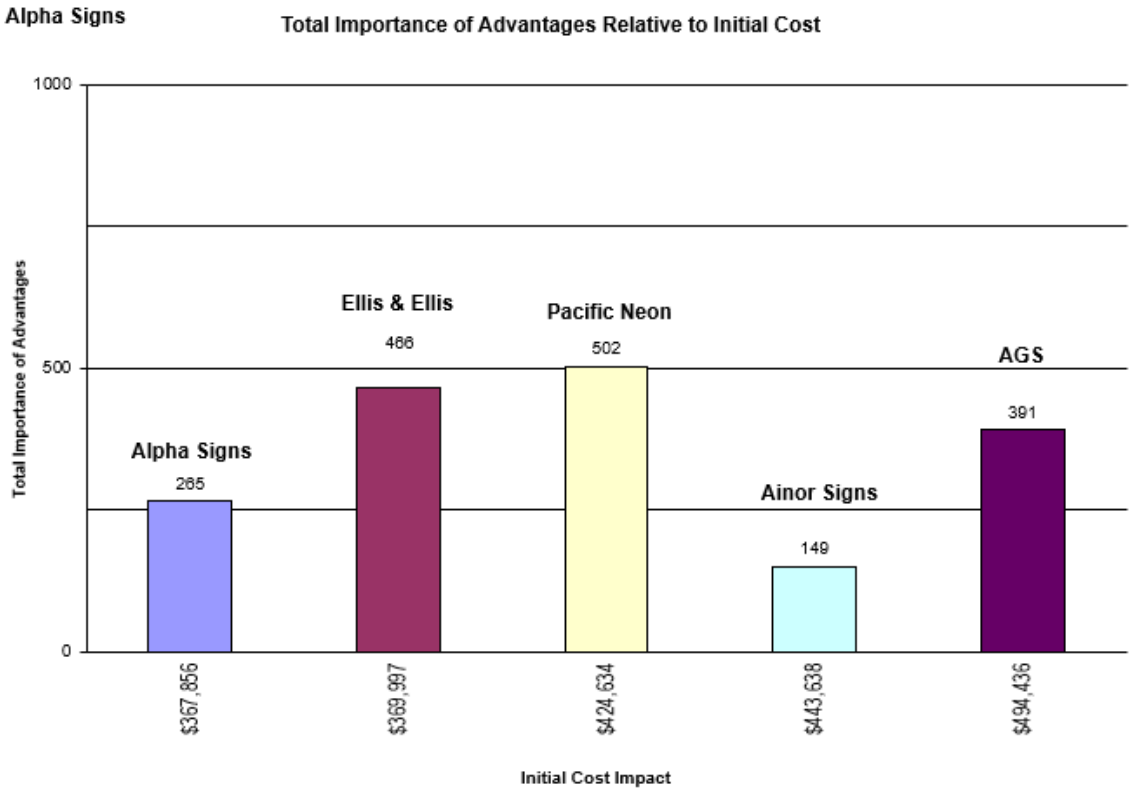
FIRST RUN STUDIES – ANALYZING IN THE “CHECK” PHASE OF PDCA

ON-BOARDING AND CULTURE

CHOOSING BY ADVANTAGES (CBA)

Choosing By Advantages Decision Study

LEGEND Underline-Least Preferred Attribute Yellow cell - most important Advantage in Factor Blank - no advantage Circle - paramount advantage	Alternative 1 Ellis & Ellis		Alternative 2 Ainor Signs		Alternative 3 Alpha Signs		Alternative 4 Pacific Neon		Alternative 5 AGS	
Factor: Collaboration with the ILPD team *Criteria:* Whole team's ability to come up with solutions with ILPD team. Lean philosophy and attitude.	Earlier involvement the better. Talked about communicating with the owner to determine wants/needs		Never heard of lean. Dedicated team for each project. Not sophisticated.		Good look ahead. Likes to make phone calls, proactive. Brought their field superintendent.		Team effort. Communication important. Everyone is available. Invited to shop. Did not bring the point person to the interview.		DVRC lean certified program. Practicing for 10 years. Extensive and long relationship with Sutter Health and program.	
Attributes:										
Advantages:	More collaborative and lean understanding	85	!	0	Slightly more collaborative and lean understanding	70	More collaborative and lean understanding	85	Much more collaborative and lean understanding	100
Factor: Understanding of the project requirements *Criteria:* The contractor knows and understands the schedule and phasing constraints for the project and has a good plan to address these concerns.	Flexibility		none		Flexibility. Off hours included.		Have it ready early so it is not a fire drill. Good understanding and time coordination with OSHPD. Store in shop.		Understands the requirements and the preferred vendor. Working on SGH and SMF currently. Worked with Sutter for the past 5-7 years.	
Attributes:										
Advantages:	Better understanding of project requirements	20	!	0	Better understanding of project requirements	20	Much better understanding of project requirements	25	Significantly better understanding of project requirements	30
Factor: Experience of internal designer and engineer *Criteria:* The internal designer and engineer have good knowledge of hospital signage requirements. More experience is better.	YJ Ink. 15 years OSHPD experience. Structural engineering sub'd out		Did not know if engineers had OSHPD experience. Bill has 20 years experience. Structural engineering sub'd out		Did not know if engineers had OSHPD experience. Jim Hogan in Florida. Structural engineering sub'd out		Various engineers all with OSHPD experience. In-house designers. Structural engineering sub'd out		STC out of SD and do much OSHPD experience. Structural engineering sub'd out	
Attributes:										
Advantages:	Much more experience for engineer	45	Slightly more experience for engineer	35	!	0	More experience for engineer	41	Significangly more experience for engineer	51
Factor: OSHPD Hospital Experience *Criteria:* Demonstrated ability to work with OSHPD. Hospital experience. More experience is better.	Yes. Has worked on hospital projects in the region		Unknown		None		Yes OSHPD and yes hospital. Extensive work for UC Davis Med Center and Mercy		Yes. Kaiser account. Work with Sutter previously.	
Attributes:										
Advantages:	More OSHPD hospital experience	26	!	0	!	0	Much more OSHPD hospital experience	31	Significantly more OSHPD hospital experience	36
Factor: Quality of Work *Criteria:* Provider must define QA/QC program. Has good systems in place to prevent defects. Portfolio of other work displays high quality signage.	Informal QA/QC process. Screw letters in. Good work in portfolio		Informal QA/QC process. Glue letters in		Informal QA/QC process. Three point of QA/QC. Stickers that it has been checked		Informal QA/QC process. Good portfolio of work.		QA/QC program in place.	
Attributes:										
Advantages:	Slightly better QA/QC program and quality	60	!	0	Slightly better QA/QC program and quality	60	Slightly better QA/QC program and quality	60	Better QA/QC program and quality	75
Factor: Size of Fabrication Shop	32,000 SF		15,000 SF		15,500 SF		65,000 SF		30,000 SF	
Criteria: Physical size of shop.										
Attributes:										
Advantages:	19500 SF larger shop	29	2,500 SF larger shop	9	!	0	52,500 SF larger shop	40	17,500 SF larger shop	24
Factor: Location of Fabrication Shop and Responsiveness *Criteria:* Sacramento based is preferred. Closer is better.	Sacramento		Rocklin		Sacramento		Sacramento		Sonoma based. Fabrication in PA. Tightly knit and responsive PM group. East coast PM's, but available by cell for CA close of business	
Attributes:										
Advantages:	Significantly closer fabrication shop	55	Significantly closer fabrication shop	55	Significantly closer fabrication shop	55	Significantly closer fabrication shop	55	!	0
		466		149		265		502		391



A3 – PROBLEM SOLVING

- A3 Report

SMCS MSP- Exterior Signage Package

Baseline

In an effort to confirm that the most collaborative, quality driven, cost-aware team members are on the SMCS Project, we bid out the exterior signage package to five companies.

a. The companies include Ellis& Ellis, Ainor Signs, Alpha Signs, Pacific Neon, and AGS.
b. AGS has done a number of projects for Sutter Health already and works closely with the GNU group who has designed the Master Signage Program (MSP).

Analysis

A series of interviews were conducted with the candidates in order to determine the best fit for the project. Potential trade partners were asked to bid the current set of documents designed by the GNU group and offer any VE/cost savings ideas as alternatives.

a. The tabular CBA method was used for the scoring of the potential trade partners based on the importance of advantages.
b. Scope of Work included exterior signage for the entire campus which includes: OSE Adams Medical Pavilion, Capitol Pavilion, Buhler Pavilion, WCC exterior signage, Parking Garage Signage.

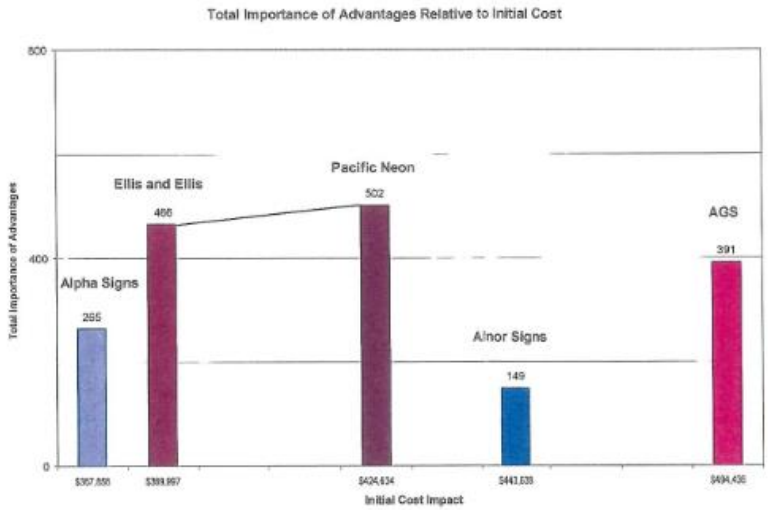
"MUST CRITERIA" The solution must have the characteristics below (no variance can be tolerated):

a. Manpower resources for an aggressive schedule.
b. Satisfy a company prequalification analysis reviewing company financial, performance, safety, surety, and insurance.
c. Willingness to participate in an IPD team and contract
d. In depth knowledge of signage details, applications, and products best practices.
e. Good understanding of the project requirements and program
f. Provide a QA/QC and Safety programs
g. Experience installing skyline signs safely and efficiently

"SHOULD CRITERIA" The solution should have the characteristics below (some latitude can be tolerated):

a. Experienced internal designers and engineers
b. OSHPD Hospital experience in the region
c. The physical project capacity will not adversely effect the company's ability to manage scope of this magnitude.
d. Large fabrication shop for manufacturing
e. Demonstrate opportunities for VE and efficiencies that can be applied to this project.
f. Willingness to work with lean concepts
g. Short time frame to acclimate to the project conditions.
h. Located in the region for easier material handling and team collaboration

Advantages	Alternative 1: Ellis and Ellis	Alternative 2: Ainor Signs	Alternative 3: Alpha Signs	Alternative 4: Pacific Neon	Alternative 5: AGS
	• See CBA for detail	• See CBA for detail	• See CBA for detail	• See CBA for detail	• See CBA for detail
	Total Importance of Advantages: 466	**Total Importance of Advantages: 149**	**Total Importance of Advantages: 265**	**Total Importance of Advantages: 502**	**Total Importance of Advantages: 391**
Cost of Work	$369,997	$443,638	$367,856	$424,634	$494,436
Budget	$635,806	$635,806	$635,806	$635,806	$635,806
Delta	[illegible]	($192,168)	($267,950)	($211,172)	($141,370)



Proposal

Based on interviews by team members and experience on current and past projects, the interview panel recommends Alternative 1: **Ellis and Ellis Signs** for the award of the Master Signage Program (MSP).

a. Ellis and Ellis has the second lowest cost at $369,997 and the second highest Total Importance Value at 466
b. Ellis and Ellis has performed Sutter work in the past that has given them a competitive advantage over Pacific Neon

Action Plan

The path forward consists of :

- Champion: Karen Newhouse
- Notify bidders of bid results and give them the opportunity to receive feedback
- Introduce new trade partner into project and sign LOI
- Immediately begin planning and coordinating to expedite the temporary way finding signs

a. Approval by Core Group- Karen Newhouse
b. Notification of selection- Karen Newhouse
c. Prepare Trade Partner Agreement or Subcontract with Core Group approval of negotiated Commercial Terms. – Karen Newhouse, K. Conrod, and D. Kievet

Author	Participants:	Reviewed: Cluster Ldr ____ Value Mgr ____ Op Mgr ____
A3 No.: 10140-00176	Doc Date: 08/11/10	File: SMCS-A3-00176-Selection of an Exterior Signage Trade Partner-01- Feliz- 08 11 10.doc

APPROVAL SIGNATURES (Please initial and date)

A3 – PROBLEM SOLVING

A3 – TITLE

PLAN

Step 1: Goal/Background

- What are we trying to achieve?
- What is the Background to the problem (be as specific as possible)
- Give an explanation which helps people to better understand the problem state and its importance.

Step 2: What is the Current Condition?

- Describe the current condition, use metrics if available.
- Why is this not working?
- What issues is this creating?

Step 3: Root Cause Analysis

- Collect and analyze data to identify root cause.
- Use 5 Why's

Step 4: Target Condition/Future State/Desired Outcome

- Show/explain what new process will look like.
- Identify WHERE the root cause is being eliminated.
- Define target to support proposed improvement.

DO

Step 5: Countermeasures/Suggested Actions/Changes

- What specific actions are needed to eliminate the problem?

Step 6: Implementation

- Show the plan to implement countermeasures.
- Make sure to identify WHO will do WHAT by WHEN.

CHECK

Step 7: Evaluation

- Check the results.
- Did the improvement work?
- Did it work as well as we predicted?
- Collect data and compare before and after.

ACT

Step 8: Follow-up

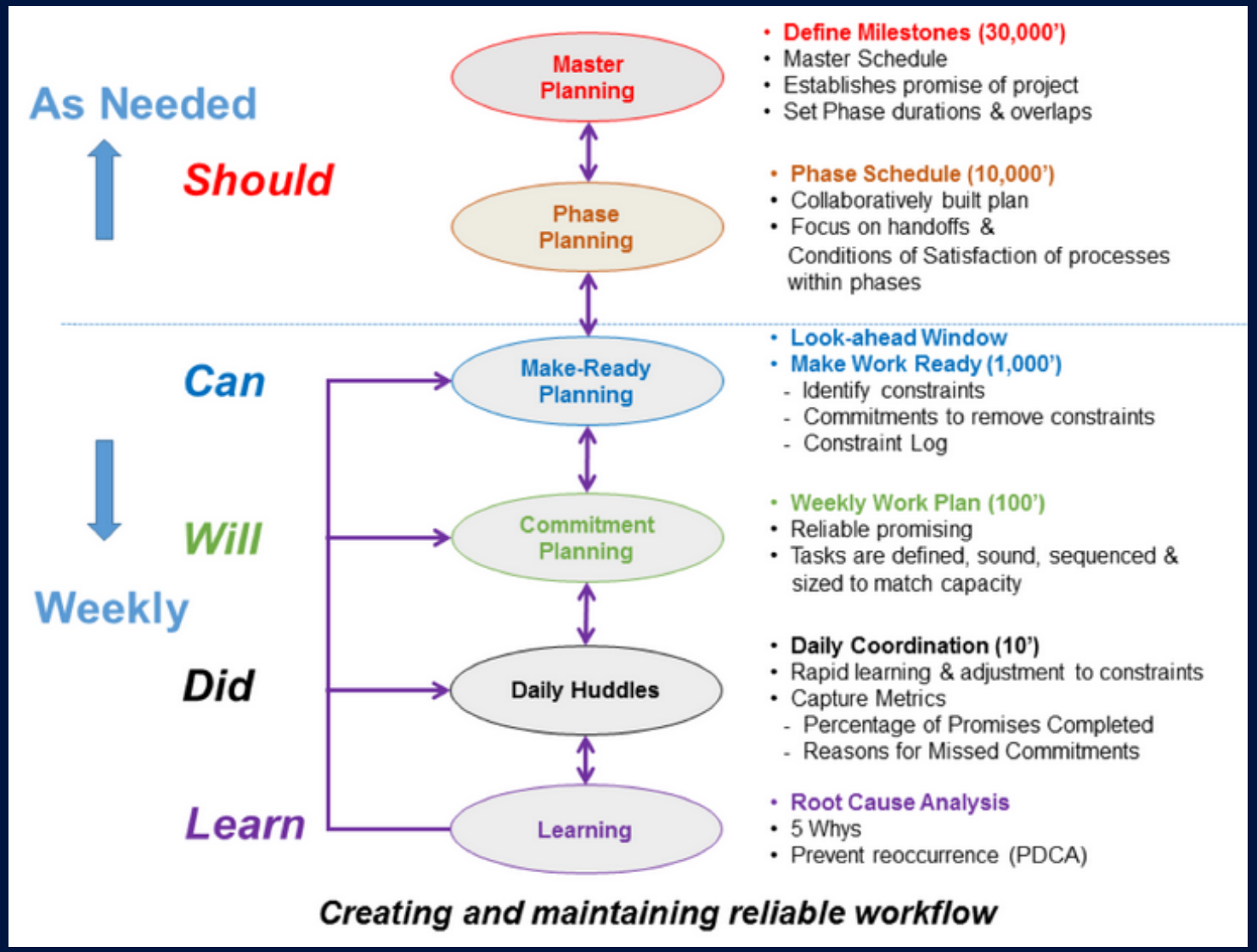
- What actions must we do in the future to sustain the improvement?
- Schedule meetings @ 7/30/90 days
- Did we achieve @ 7/30/90 what we wanted?
- Is the problem eliminated and does the process show measurable improvement?
- Can we close this problem solving process and archive it as complete/closed?

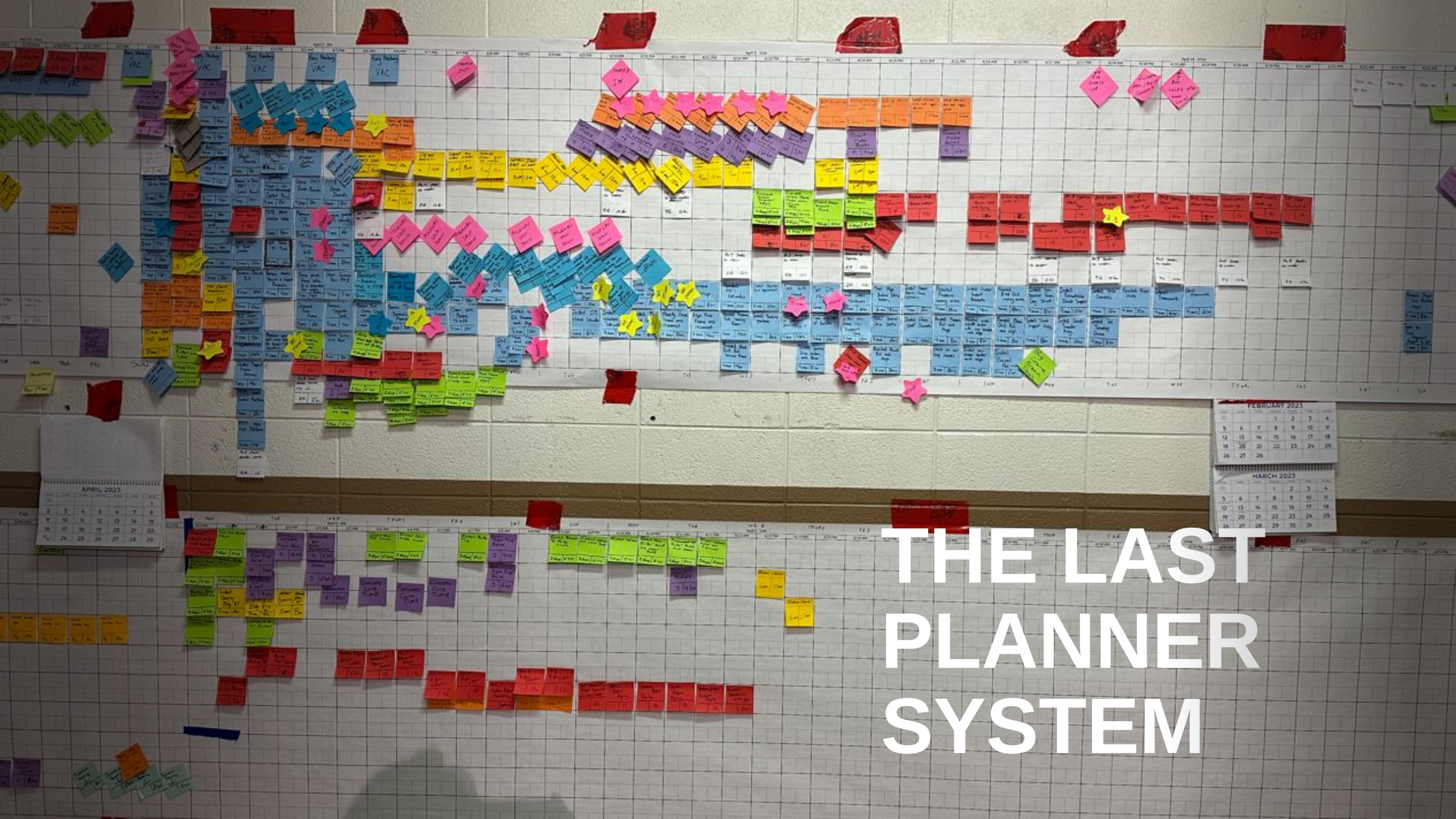
Author:	Participants:		Reviewed:
A3 No:	Doc. Date:	File Path:	

APPROVAL SIGNATURES:			
(Please initial and date)			

THE LAST PLANNER SYSTEM

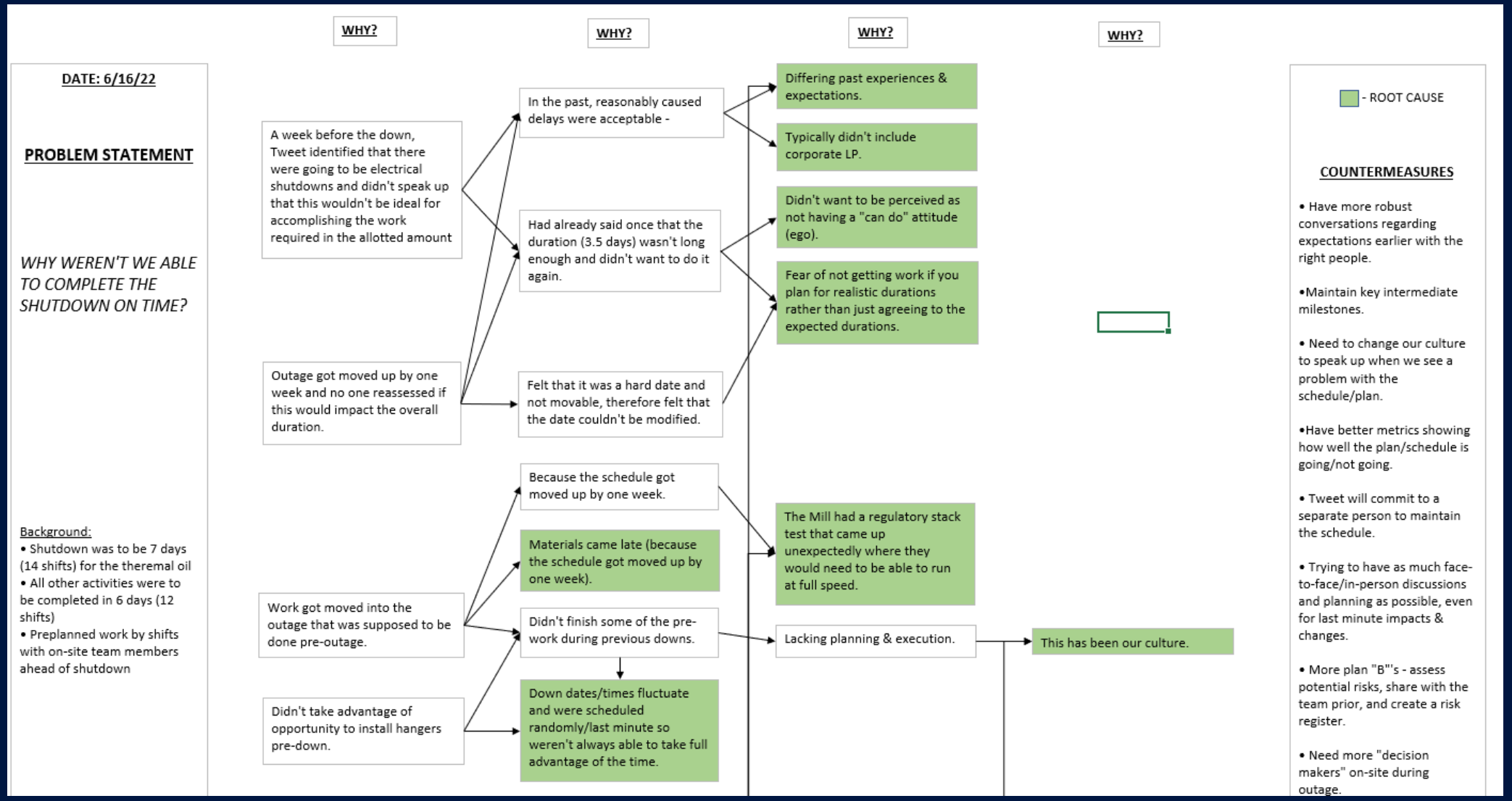
- Reliable Promising
- Pull Planning
- Constraint Identification/Removal
- Planned Percent Complete (PPC)
- Root Cause Analysis – 5 Why's
- Daily Huddles

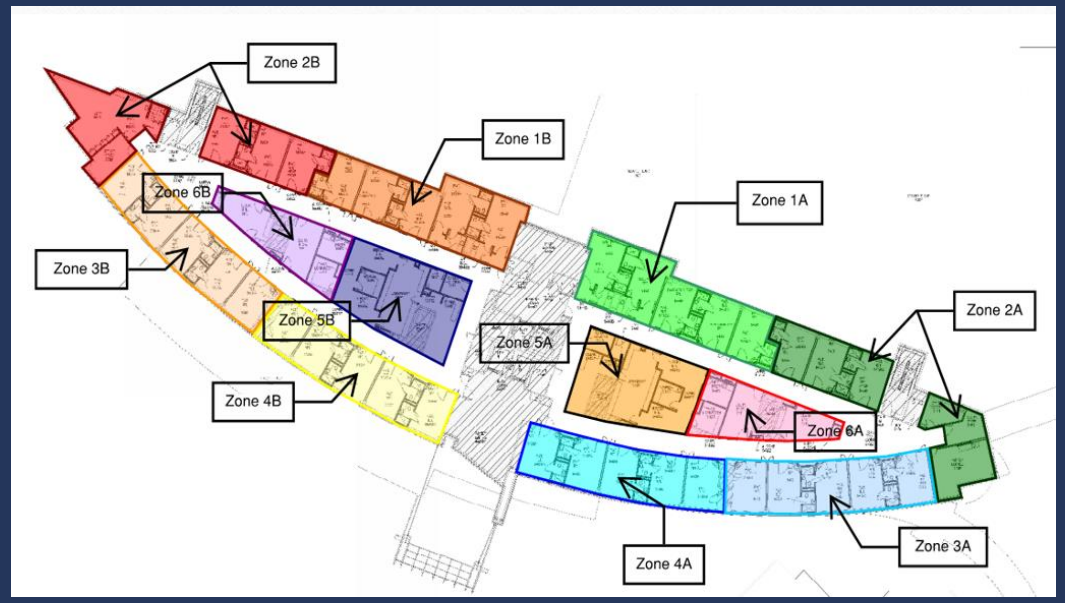




THE LAST PLANNER SYSTEM

THE 5 WHY'S


WHY?
WHY?
WHY?
WHY?
DATE: 6/16/22
PROBLEM STATEMENT
WHY WEREN'T WE ABLE TO COMPLETE THE SHUTDOWN ON TIME?
Background:
• Shutdown was to be 7 days (14 shifts) for the theremal oil
• All other activities were to be completed in 6 days (12 shifts)
• Preplanned work by shifts with on-site team members ahead of shutdown
A week before the down, Tweet identified that there were going to be electrical shutdowns and didn't speak up that this wouldn't be ideal for accomplishing the work required in the allotted amount
Outage got moved up by one week and no one reassessed if this would impact the overall duration.
In the past, reasonably caused delays were acceptable -
Had already said once that the duration (3.5 days) wasn't long enough and didn't want to do it again.
Felt that it was a hard date and not movable, therefore felt that the date couldn't be modified.
Differing past experiences & expectations.
Typically didn't include corporate LP.
Didn't want to be perceived as not having a "can do" attitude (ego).
Fear of not getting work if you plan for realistic durations rather than just agreeing to the expected durations.
Work got moved into the outage that was supposed to be done pre-outage.
Didn't take advantage of opportunity to install hangers pre-down.
Because the schedule got moved up by one week.
Materials came late (because the schedule got moved up by one week).
Didn't finish some of the pre-work during previous downs.
Down dates/times fluctuate and were scheduled randomly/last minute so weren't always able to take full advantage of the time.
The Mill had a regulatory stack test that came up unexpectedly where they would need to be able to run at full speed.
Lacking planning & execution.
This has been our culture.
- ROOT CAUSE
COUNTERMEASURES
• Have more robust conversations regarding expectations earlier with the right people.
•Maintain key intermediate milestones.
• Need to change our culture to speak up when we see a problem with the schedule/plan.
•Have better metrics showing how well the plan/schedule is going/not going.
• Tweet will commit to a separate person to maintain the schedule.
• Trying to have as much face-to-face/in-person discussions and planning as possible, even for last minute impacts & changes.
• More plan "B"'s - assess potential risks, share with the team prior, and create a risk register.
• Need more "decision makers" on-site during outage.



		WEEK											
		1	2	3	4	5	6	7	8	9	10	11	12
ZONE	1A	Top/bottom track	Plumbing & med gas	Electrical RI	Mechanical RI	Sprinkler RI	Insulate/ drywall	Prime/paint					
	1B												
	2A		Top/bottom track	Plumbing & med gas	Electrical RI	Mechanical RI	Sprinkler RI	Insulate/ drywall	Prime/paint				
	2B												
	3A			Top/bottom track	Plumbing & med gas	Electrical RI	Mechanical RI	Sprinkler RI	Insulate/ drywall	Prime/paint			
	3B												
	4A				Top/bottom track	Plumbing & med gas	Electrical RI	Mechanical RI	Sprinkler RI	Insulate/ drywall	Prime/paint		
	4B												
	5A					Top/bottom track	Plumbing & med gas	Electrical RI	Mechanical RI	Sprinkler RI	Insulate/ drywall	Prime/paint	
	5B												
	6A						Top/bottom track	Plumbing & med gas	Electrical RI	Mechanical RI	Sprinkler RI	Insulate/ drywall	Prime/paint
	6B												

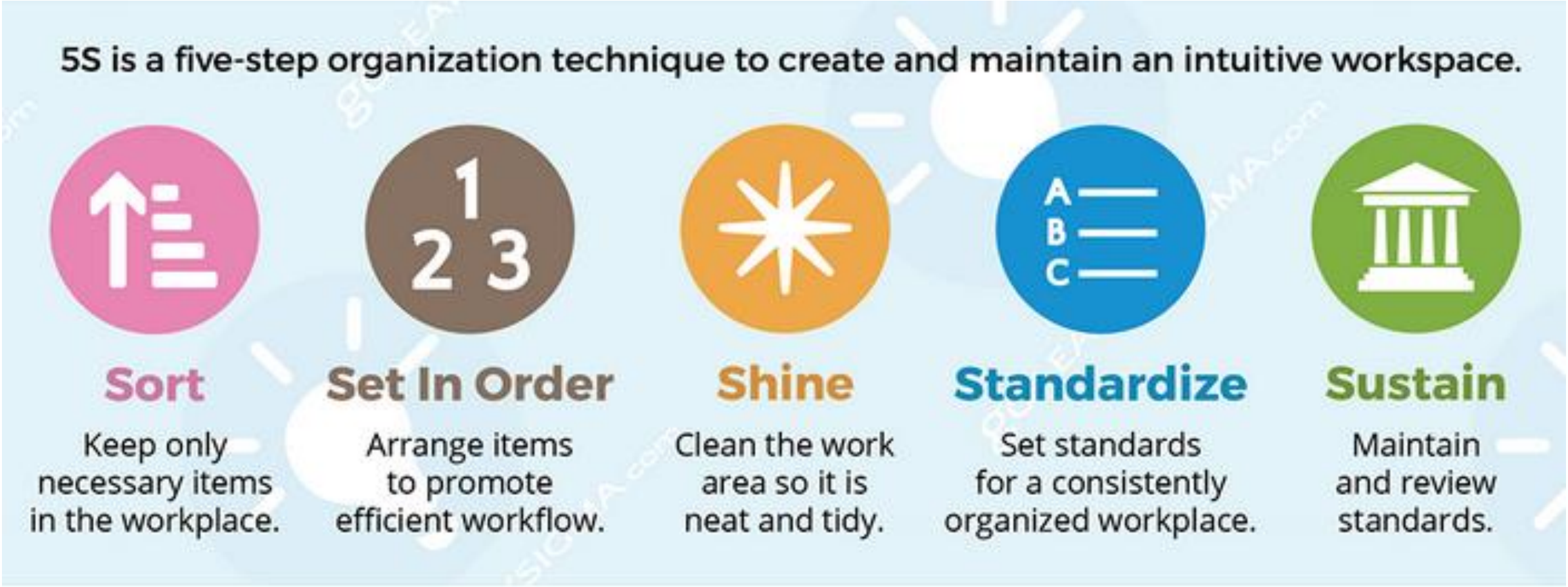
TAKT TIME

TAKT TIME

RULES OF THE SPACE

- Trade Partner assigned to a zone controls all access to the zone
- Adjust manpower to the zone
- Must be done at the end of the takt period
- No other Trade Partners, materials, equipment allowed in a zone when assigned to a trade

5S – Sort, Set in order, Shine, Standardize, Sustain



5S – Sort, Set in order, Shine, Standardize, Sustain

GEMBA WALKS

Key elements of a gemba walk

observe, don't correct

Not meant to be a corrective exercise

value add activities

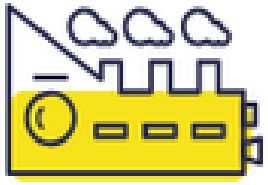
What is working about this process?

innovate and improve conditions, tools, and procedures

Remove the elements that are detrimental to production

seek to understand

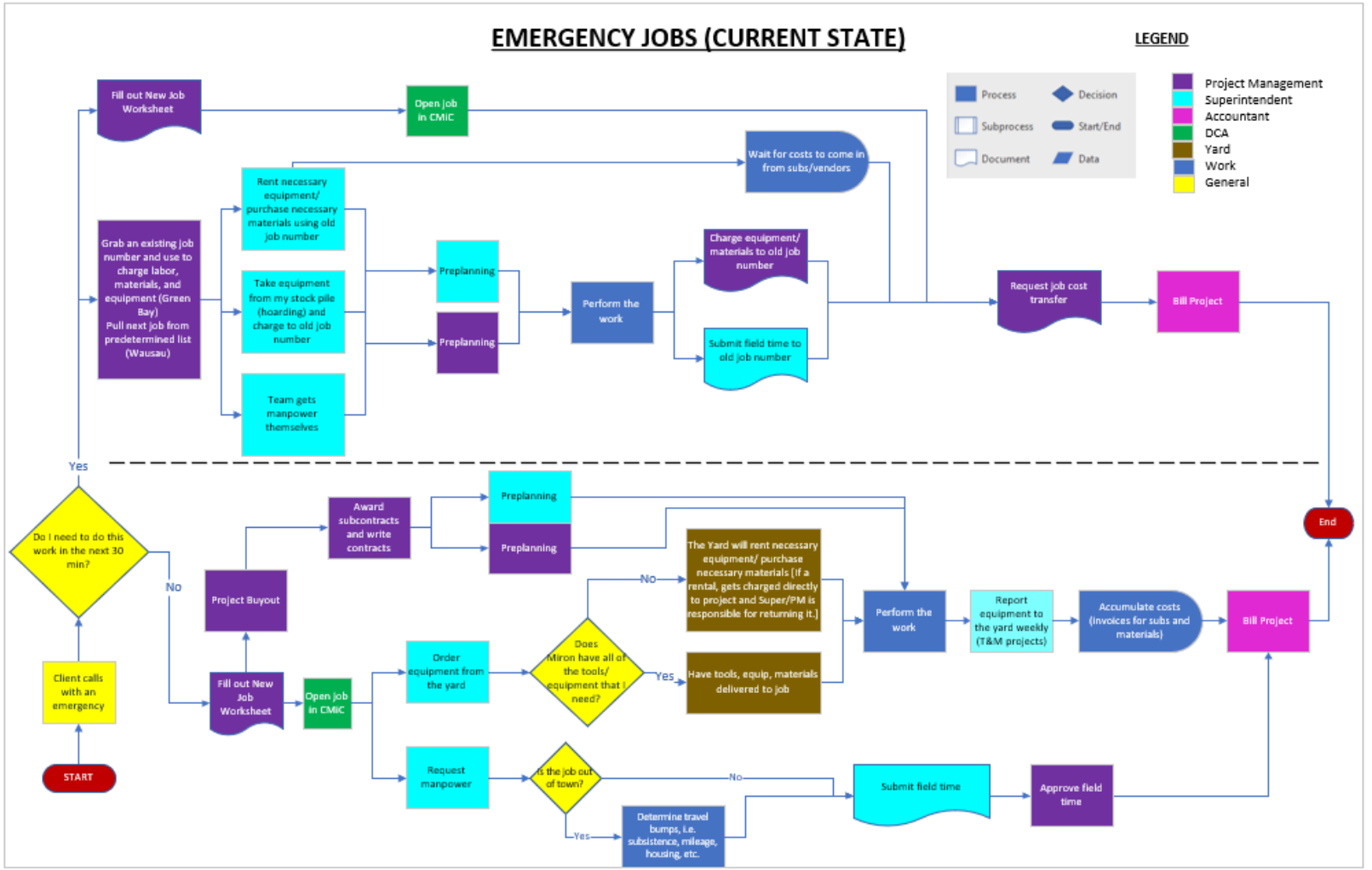
Why is it this way?



subtracting value

Where are you losing value in the existing process? Why?

PROCESS MAPPING




Q
A

THANK YOU!

- If you have further Lean questions or need help, contact:

Karen Newhouse at karen.newhouse@miron-construction.com or 920-574-6380

Miron
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