Capturing the Science in the "ART" of Milling

Experience Base or Learning Base Knowledge

Safety Contact: How do you Teach & Learn?

- **How To Make It Work**
- Here are 3 ways to make micro learning work for your employees:

1. **Make the learning modules/updates mobile compatible**

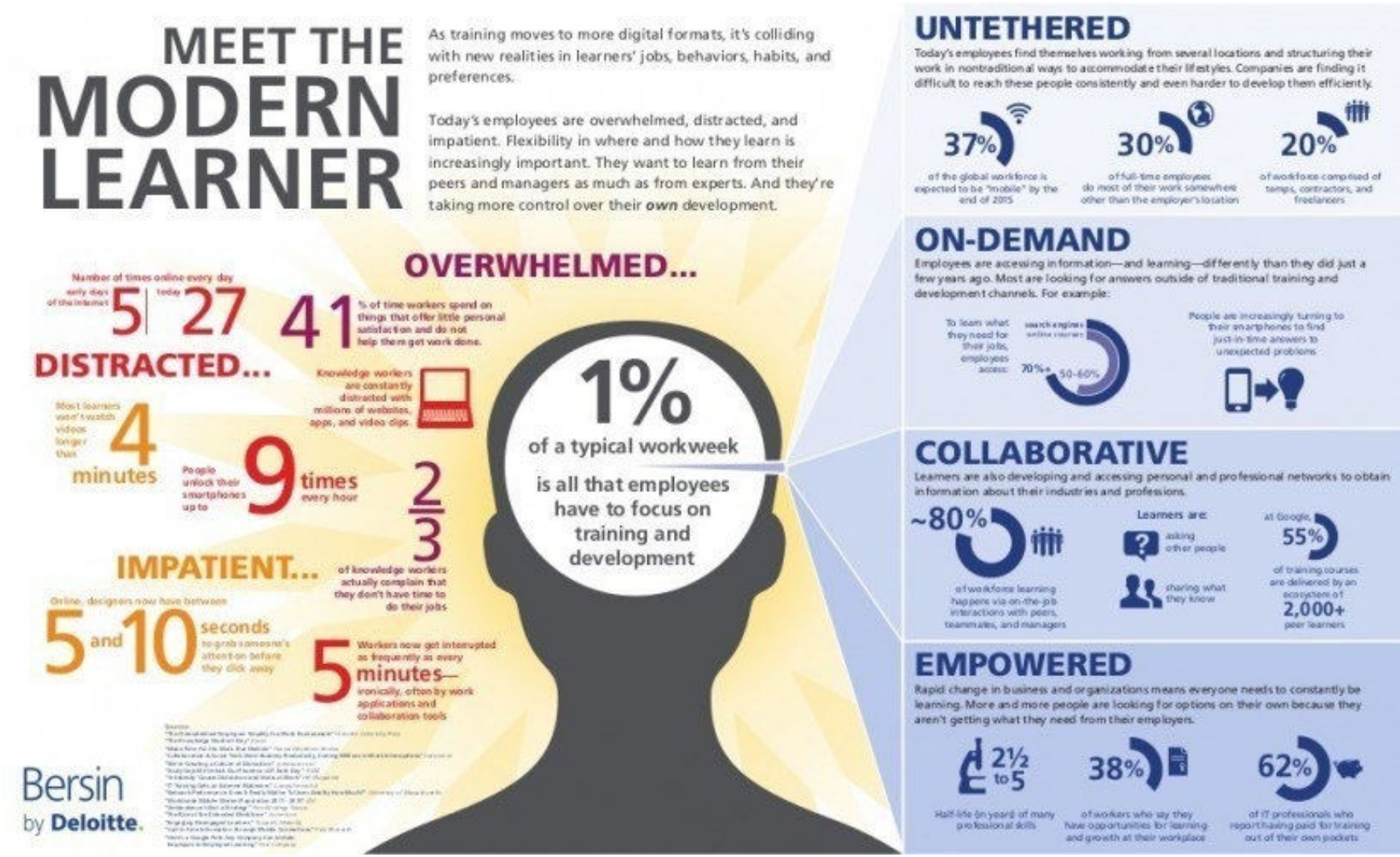
2. The whole point of micro learning is flexibility for the learner. That flexibility means that all modules and all updates must be mobile-friendly. People do not go home and get on their desktops. They use their phones and gadgets and should have easy access to their learning with fast loads and 5-10 minute chunks.

3. **Less information at a time**

4. Students make flash cards for a reason: They allow them to absorb small bits of information at a time and the brain processes it better. Condensing a learning/training module down to the size of a flash card would be tough if it were all text, of course, but this is where graphics and videos come in. And they are far more engaging for learners.

5. **Include as much interaction as possible**

6. An interactive quiz, even a game, can be a powerful learning tool. Teachers know this. Time for business executives to know it too.



Why are we at this juncture?

- Society is showing a shift from blue to white collar jobs
  - Manufacturing Industry must evolve to keep a pipeline of talent
- Workforce expectations
  - 3-5 years in role is the new 20-25 years
  - Growth & Development is how everyone stays engaged
  - Work Life Balance is shifting as priority to compensation plans
- Technology is maturing and inserted everywhere
  - By 2025, 80% of the global population will own a smart phone

Foundational Systems

- Breaking down the art of milling from our industry experts and capture into value actions for the type/design of mill.
- Starts and ends with LEADERSHIP development at all levels
- DATA driven and BUSINESS RESULTS focused
- ORGANIZED for success through LINE Level Integrated Work Teams
  - Structure enables deeper technical understanding
  - Leaders OWN CI, People Development, and Results for their lines
- Delivers BREAKTHROUGH, sustainable results through PROCESS rigor (CI) and PEOPLE development

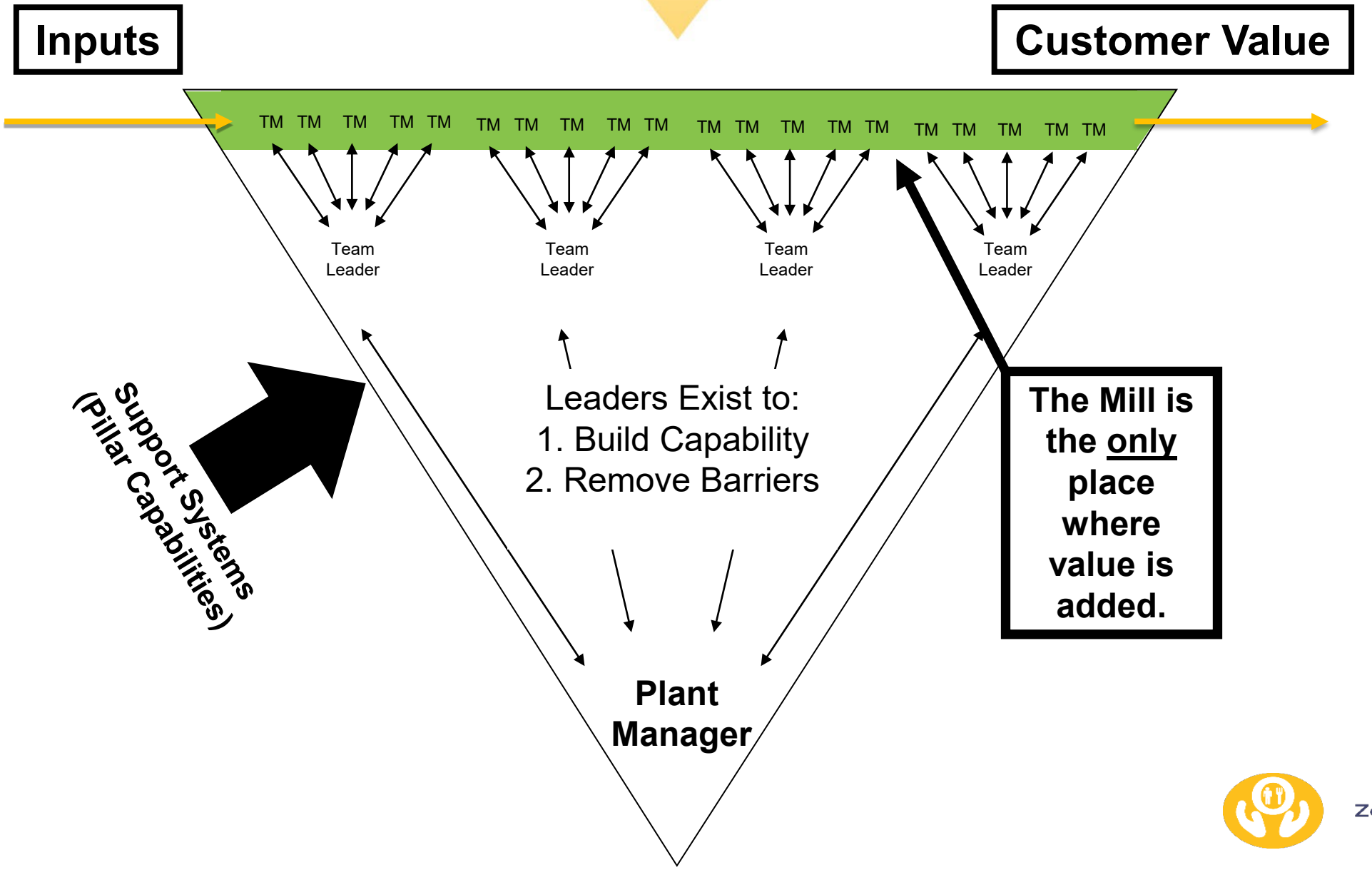
How do you RUN & MAINTAIN your Mill?

Subject Matter Experts

- Knowledge & System Retention
  - Experienced based knowledge and expertise learned through shared experiences
  - **MTTR** drastically changes with staffing changes
  - Shift tenure impacts breakdown prevention and recovery
  - The human element creates a quick fix or a reoccurring headache
  - Prevention shouldn't be celebration, but how we run our mills reliably and predictable
  - Successors won't learn or retain knowledge in the same fashion…….companies must EVOLVE

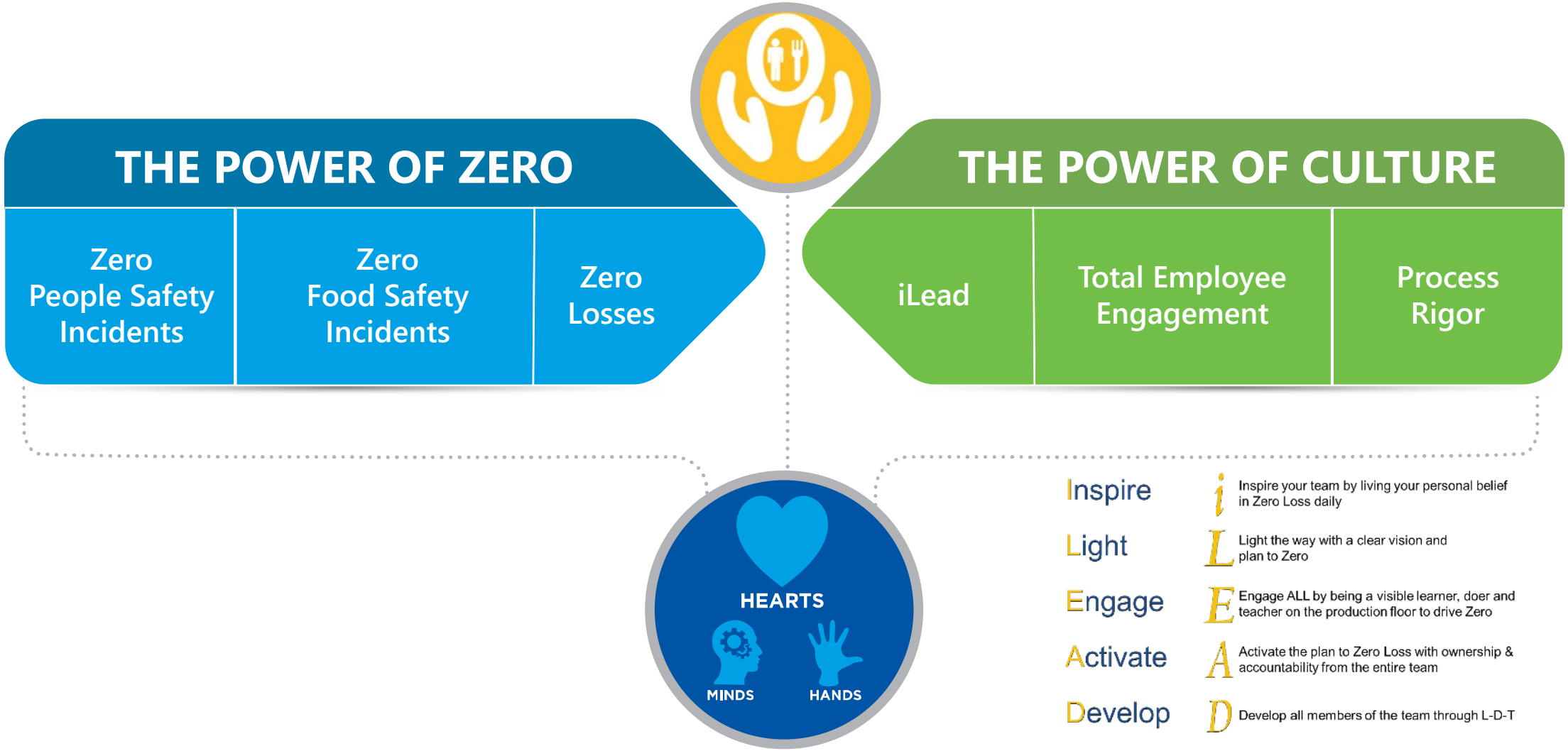
Servant Leadership

It starts with you being truly servant



Zero Loss Culture

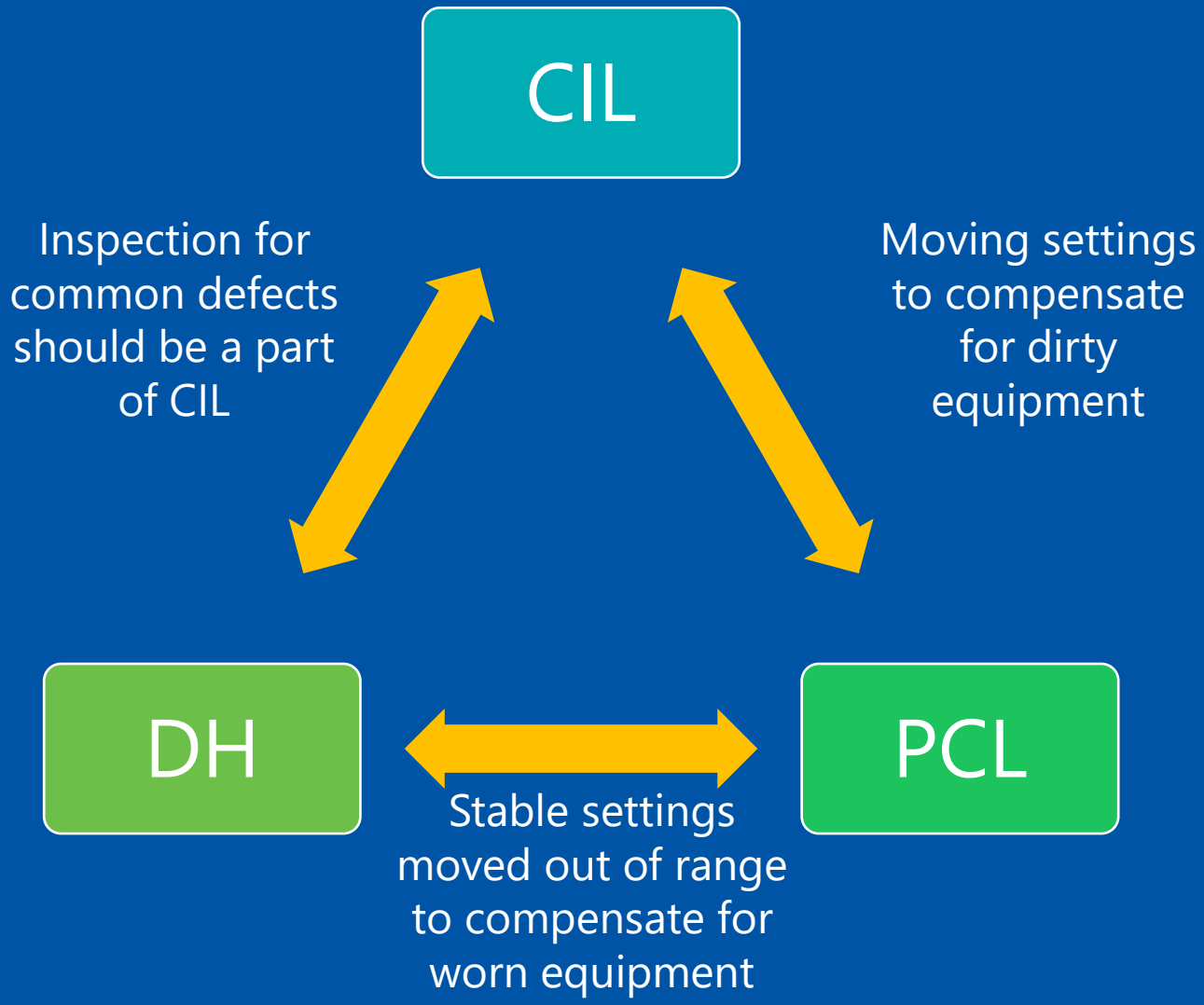
Zero Loss Culture



Foundational Systems

CIL, PCL, DH

Foundational Trinity



Intent of CIL's

- Drive out safety, quality, and reliability losses
- Based on fundamental belief that losses will be driven out of system when equipment is kept at basic condition
- Proper execution of CIL's should tie to Defect Handling
  - CIL's should identify Defects before they become safety/quality issue, or equipment breakdown
- "Are CIL's driving an increase in uptime, defects found, and improved lubrication on my system?"

Examples & Outcomes of CIL's

- **Clean**: Clean Purifier Screens & Brushes
- **Inspect**: Pneumatic Filter solenoid pulsing / Roll chill application
- **Lubricate**: Drive chains / bearings with weekly cycle times

Outcomes:

- Decrease in losses after CIL completion
- Reduce equipment stops
- Improve morale
- Enable equipment ownership
- Learn about equipment and defect handling
  - Drive technical mastery

CIL Ownership: Common Mistakes

- Document CILs once and assume they will never change again (CIL's do not evolve)
- Not engaging employees in defining CIL's
- Not finding defects from Inspections
- Not seeking to understand barriers to proper CIL completion
  - Required Tools at Point of Use
  - Number of CIL points
- Not coaching on proper CIL completion
- Building own mastery vs team
- Not understanding connection to other foundational systems

What is Centerlining?

Process Centerlines (PCL)

- Is a *foundational system* that is used to ensure that optimal settings for all process parameters are maintained in ideal state in order to reduce variability and increase reliability.

- In Milling, PCLs are a starting point, to aid in troubleshooting (root cause), not mask problem with changing adjustments and to run as best as we can

Centerline and CIL's

Process Centerlines for Purifier

- Changeover Centerlines
  - Main air inlet CFM
  - Deck Progression adjustments
  - Trough outlet orientation
  - Screen changes due to wheat class
- Downtime adjustments
  - Overhead compression height
- Runtime adjustments
  - Inlet distribution for even/continuous product flow
  - Discharge stock

CIL for Purifiers

- Permanent (items that should never change – add to CIL)
  - Screen Brushes & slide rods
  - Discharge stream cuts (visual stock gold standard)
- Basic conditions
  - Bushing condition
  - Discharge & inlet buildup
  - Trough corner build up
  - Door seal and blinding over
  - Screen condition

4 Steps to Process Centerlines

1. Identify All Known Adjustment Points
2. Determine Target Settings and Visual Controls
3. Run to Target and Follow Centerline Process
4. Changes and Trials

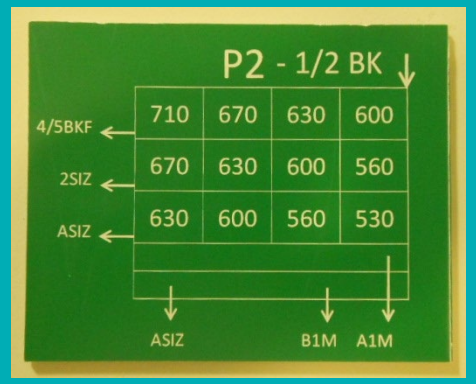
PDMS: Process Centerlines

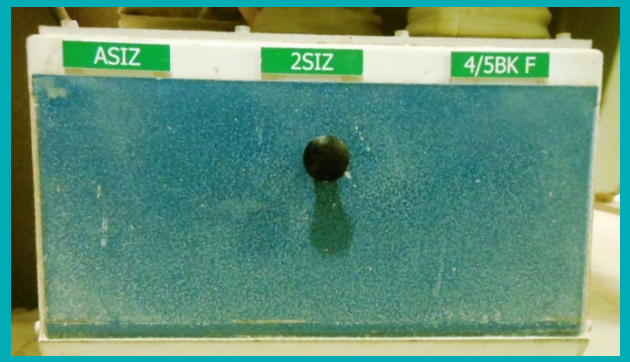
PDMS – Process Daily Management System: AKA – Flow Chart

- Perform PCLs
- Record PCLs in MQIS
- If Green and running well (have a good day)
- If Red
  - Look for data to support PCL being out
  - Move variable back in
  - Take variable back if running is negatively effect (comment)
  - Look for root cause (defects/materials/up flow/wrong target)
  - Write work request/contact maintenance/work with team members/request trail through Line Team

PCL's Implemented

- Set air gates, bottom gates and trunk to established standards.

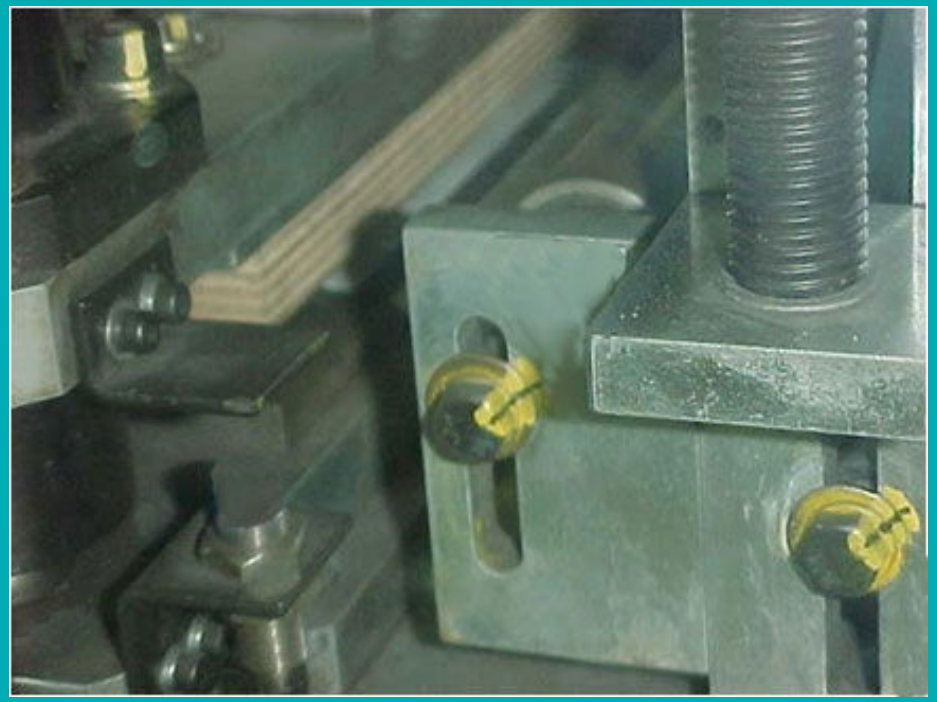




Centerline Visuals

Reduces inspection time and effort

Seko Settings



Marking fasteners to check for Torque

Reduces inspection time and effort

Adjustment Point Variability

- Example
  - 10 Settings / Movable Parts / Adjustment Points
  - 3 Options for Each

59,049 POSSIBLE COMBINATIONS OF THESE ADJUSTMENTS

- Reduce By One
  - 9 Settings / Movable Parts / Adjustment Points
  - 3 Options for Each

19,683 POSSIBLE COMBINATIONS OF THESE ADJUSTMENTS

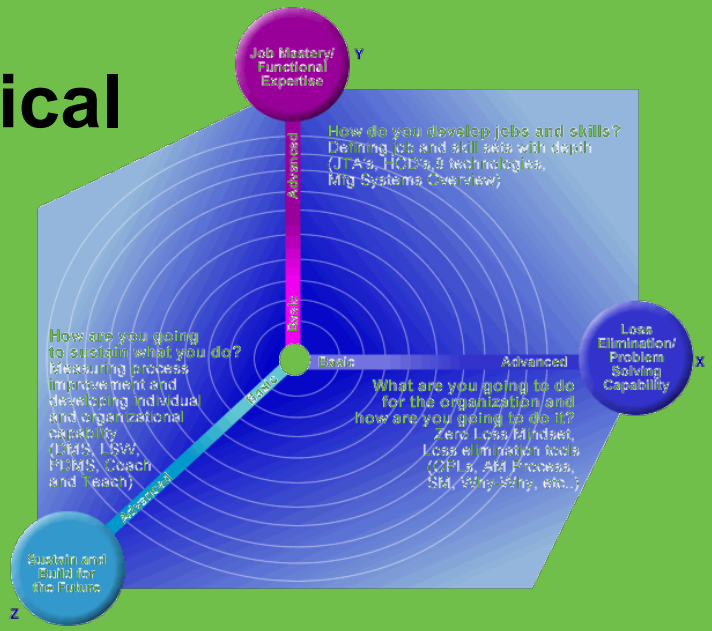
What is a Defect?

- Any condition that is **not the way** it was designed or **intended to be**.
- Creates a **deviation** from base conditions.

Why Defect Handling?

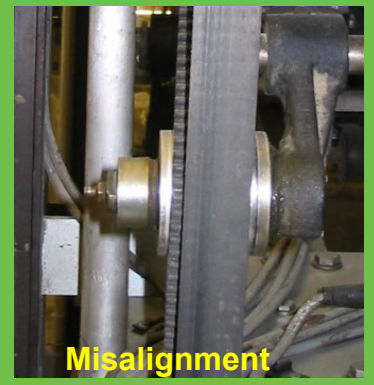
- Develops **deeper inspection skills**

- Ensures **potential causes** of equipment, material and effort losses **are addressed**
- Is a critical component to enable **technical mastery**



Identify Defect Types

1. Minor flaws (defects or deterioration) = D
2. Unfulfilled Basic Conditions = UBC
3. Hard To Access Areas = HTA
4. Source of Contamination =SOC
5. Quality or Food Safety = Q
6. Questionable and Unnecessary Parts = QP
7. Safety Items = SI
8. Administration/Paper Work = A



How you incorporate all three?

Centerline/CIL - SUNDAY

Section	Adjustment	Unit	CL Type	Target	Run Time 1st	2nd	3rd
CIL	Purifiers	Inspect screen and brush condition and note any defects					
	Purifier	Air Set Point	Inspect	In Range			
	8th Floor Filter	Inspect 8th Floor Filters Magnahelics - Verify no chokes					
	6th Floor Filter	Inspect 6th Floor Filters Magnahelics - Verify no chokes					
Centerlines	Mill Rate	Tempered Wheat Scale	Digital	820 CWTS			
	Patent Flour Yield	Patent Flour Scale	Digital	592 CWTS			
	Red Dog	Foss	Inspect	3.0 ash or above			
	Extraction	Milling	Digital	72%			
	Break Release	Break releases are completed on Daily Break Release sheet					
	**Please note any defects found during rounds or any equipment that has recently been Bypassed						

Date: 7/17/2023 — **Hanger Bearing Temp Checks** — Mill: C1 C2 C3 C4 Side: A B

Circle Mill & Side (ignore side for C3/4)

Record temperatures of hanger bearings on classifiers using assigned infrared guns. Temperatures need to be written in Fahrenheit.

Break Stack				Sizings Stack				Midds Reduction			
1st BRK East		1st BRK West		1 Siz East		1 Siz West		Tailings Re		5 Midds	
N. Temp	S. Temp	N. Temp	S. Temp	N. Temp	S. Temp	N. Temp	S. Temp	N. Temp	S. Temp	N. Temp	S. Temp
1st BRK RE East		1st BRK RE West		2 Siz East		2 Siz West		3 Midds Top		Mid Re 1	
N. Temp	S. Temp	N. Temp	S. Temp	N. Temp	S. Temp	N. Temp	S. Temp	N. Temp	S. Temp	N. Temp	S. Temp
2nd BRK East		2nd BRK West		2 Midds East		2 Midds West		1 Tail		6 Midds	
N. Temp	S. Temp	N. Temp	S. Temp	N. Temp	S. Temp	N. Temp	S. Temp	N. Temp	S. Temp	N. Temp	S. Temp

Miller Shift Handoff Template

(to be filled out 30 min prior to next shift)

Human & Food Safety Callouts

Quality Callouts

Schedule	GRADE	BIN	Hours left/needed
Current run			
Next run			

Any bins on hold? Y/N

If Y - which bin

Any equipment bypassed Y/N

If Y - equip name

Top Loss on shift

Current Mill rate

A Mill target 565

C Mill target 150

Outoging Miller

Incoming Miller

Date

* 1st shift Miller- bring 3 handoff sheets to DDS

- Are your PCL's & CIL's targeting your top losses?

- Does your process evolve every 60-120 days?

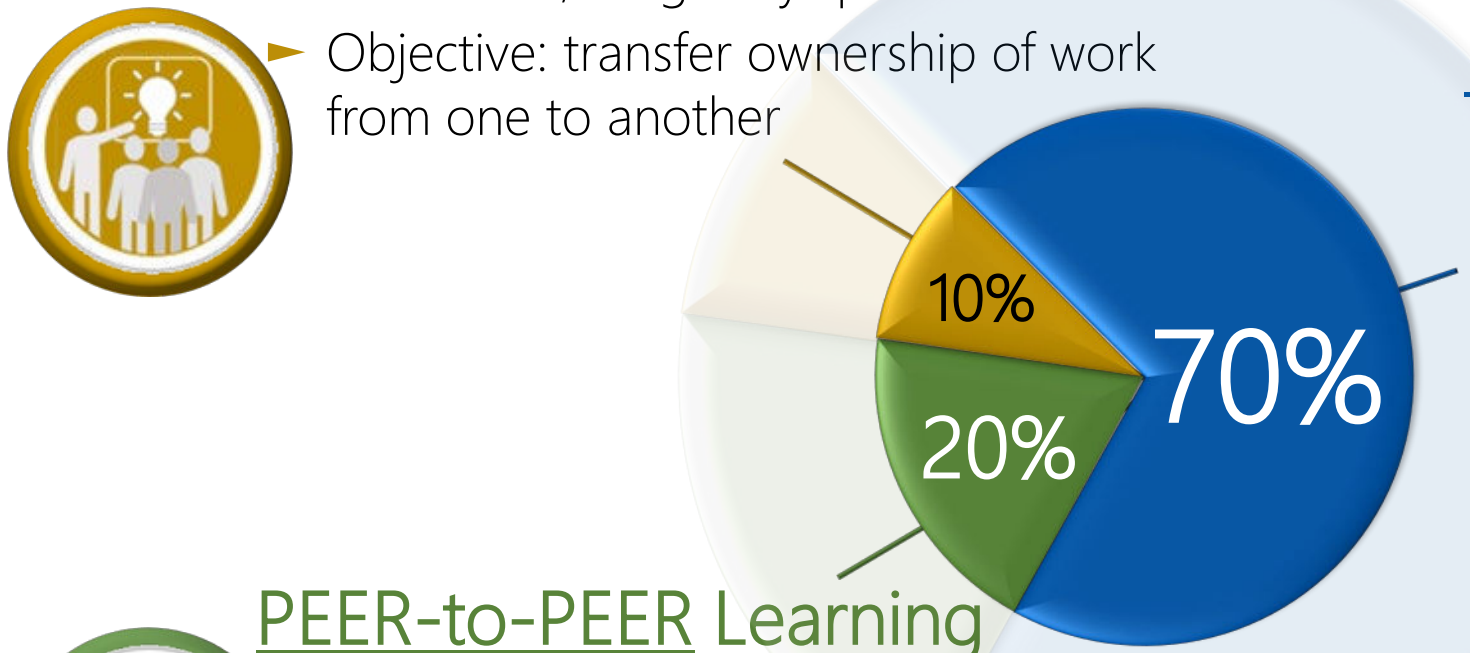
A & C Mills - Miller Centerline/CIL — Date: / / — Run Time/Shift

Section	Adjustment	Unit	CL Type	Target	1st (initial)	2nd (initial)	3rd (initial)
A Mill CIL	5th Floor Filters	Inspect North High Pressure Dust Collector and South High Pressure Dust Collector - verify magnehelics are in range (Green)					
	4th Floor Filters	Inspect 1st/2nd BK Collector Dust Collector and 1st/2nd BK Splitter Dust Collector - verify magnehelics are in range (Green)					
A Mill Centerlines	Patent Flour Yield	Patent Flour Scale	Digital	416 CWTS (verified)			
	Mill Rate	Tempered Wheat Scale	Digital	565 CWTS (if not at rate leave notes in the comments section)			
	Break Release	Break releases to be completed at beginning of each shift/grade changes					
C Mill CIL	5th Floor Filter	Inspect High Pressure Dust Collector - verify magnahelic in range (Green)					
	3rd Floor Filter	Inspect Purifier Dust Collector - verify magnehelic in range (Green)					
C Mill Centerlines	Patent Flour Yield	Patent Flour Scale	Digital	100 CWTS			
	Mill Rate	Tempered Wheat Scale	Digital	147 CWTS (if not at rate leave notes in the comments section)			
	Break Release	Break releases to be completed at beginning of each shift/grade changes					
Comments/ Deviations	All identified defects entered into Maximo? Y/N (circle) Any equipment recently bypassed? Y/N (circle) All downtime greater than 30 minutes entered into MQIS? Y/N (circle) Any Bins on Hold? Y/N (circle) *If you deviated from the schedule-inform TL or Planner* *If you have 1 hour < of downtime - contact TL* Comments:						

Skill Building: The Work is the Learning

CLASSROOM Learning

- Intentional, taught by qualified trainer
- Objective: transfer ownership of work from one to another



PEER-to-PEER Learning

- Assign work based on capabilities needed as well as who is currently capable
- Pair up a skilled technician with a technician who needs to develop that skill

HANDS-ON Learning

Work to be done is an opportunity for learning

- Problem-solving activities
- Loss-elimination efforts
- Fulfilling your responsibilities as a system owner
- AM work that is done every day
- Using OPLs or other work instructions
- CREATING OPLs or work instructions and references
- Being coached toward higher levels of effectiveness

“Technician” and “Multi-Skills” Defined

Equipment Owner: Owning one or more units of operation and using the autonomous maintenance systems and processes to maintain equipment at basic conditions and deliver results.

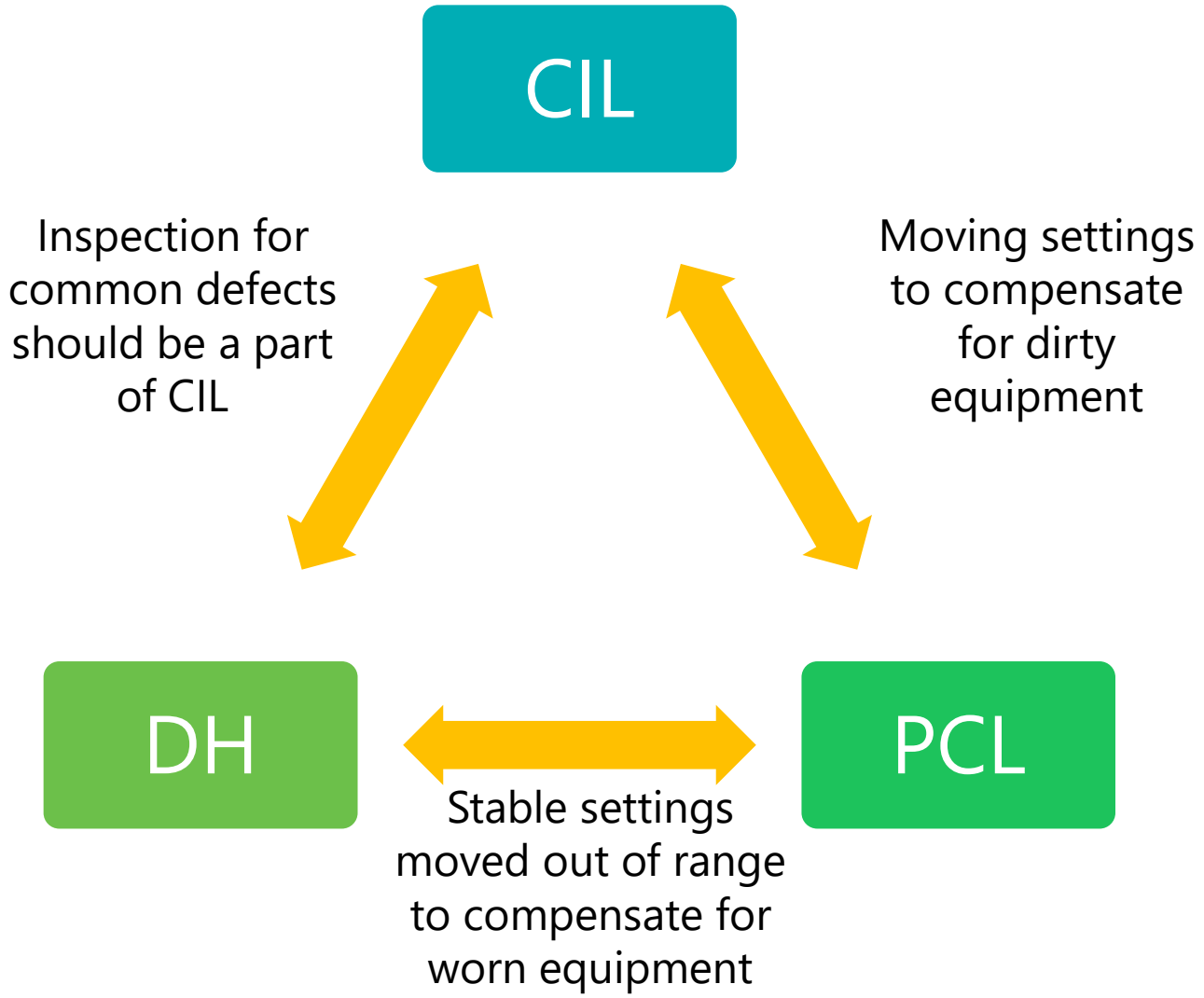
System Owner: Owner and subject matter expert of a targeted system (e.g. Defect Handling) to enable team autonomy and deliver results.

Team Member to Leader: Key member of a team building towards self-sufficient autonomy to run the day-to-day performance of their shift.

= Multi-Skilled

Bringing it Home

- Process needs to drive differential training
- How our teams learn has drastically changed
- Leaders need to acknowledge and act to give their teams the needed tools to be successful
- Iterative engagement drives long term retention



How our teams felt about the journey ahead?