# Using Henry Ford's Functional Kaizen to Re-Energize Your Labs Lean Momentum and Accomplish Improvement at the Level of the Work

Jacqueline R. Copeland MT(ASCP$^{cm}$) MSA

# Learning Objectives

- Implementing Kaizen in the current culture of continuous improvement
- How Kaizen creates a funnel for continuous PDCA cycles
- Sustaining improvement after the Kaizen event concludes
- Kaizen failure points and lessons learned over time

# *A Cultural Change to an Empowered Workforce, How Did We Get There?*

1. Our Journey
2. Engagement of the Workforce
3. Kaizen Culture
4. Sustaining Mechanisms

# Henry Ford Production System Influences

## A Blended Continuous Improvement Culture, since 2005

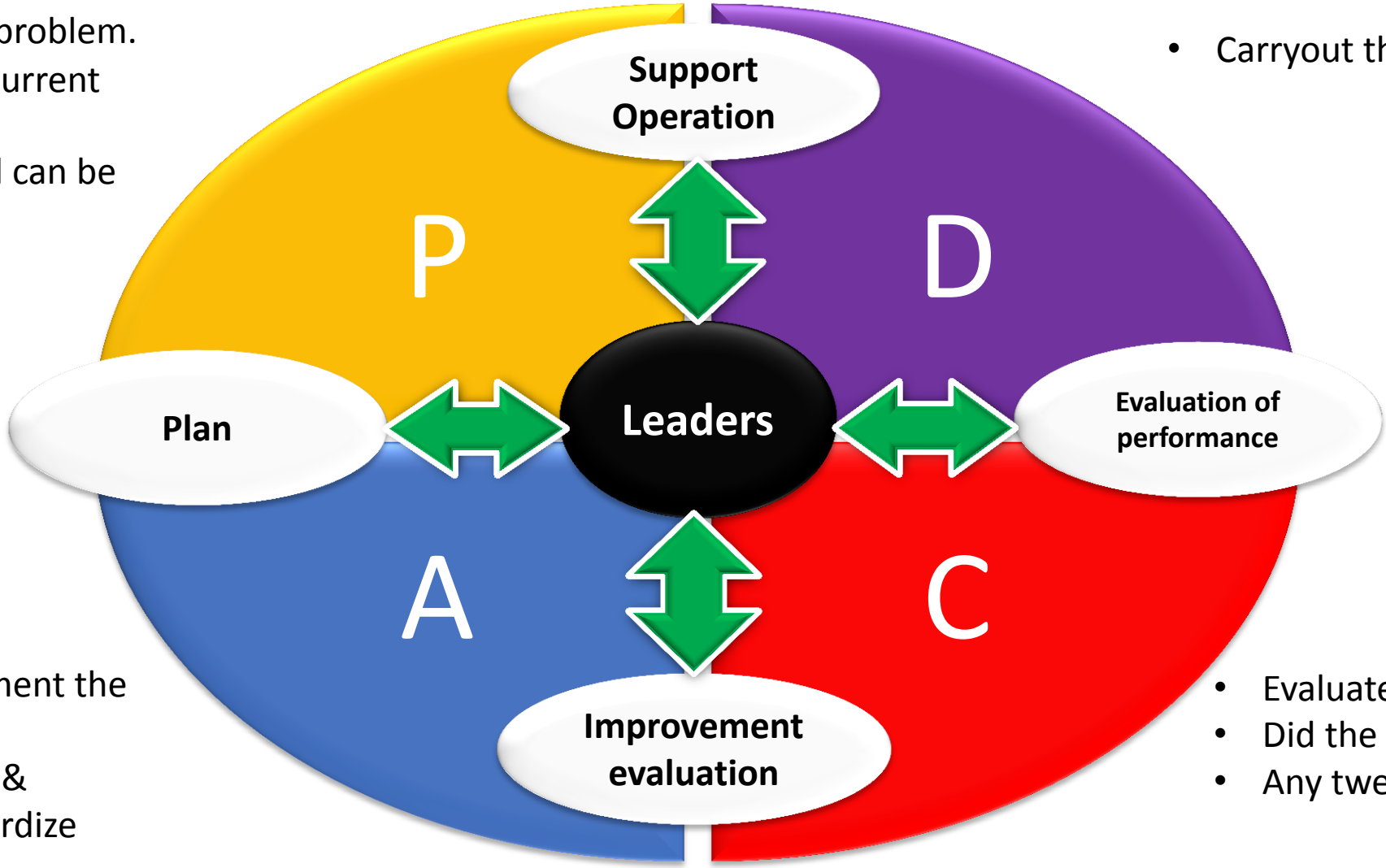



## More Recently:



# To Sustain – First Change Human Behavior

- State the problem.
- Evaluate current condition.
- What goal can be achieved?




- Carryout the plan as a pilot.

- Implement the plan.
- Adjust & Standardize

- Evaluate results.
- Did the plan work?
- Any tweaks?

# Where Does Improvement Initiate From

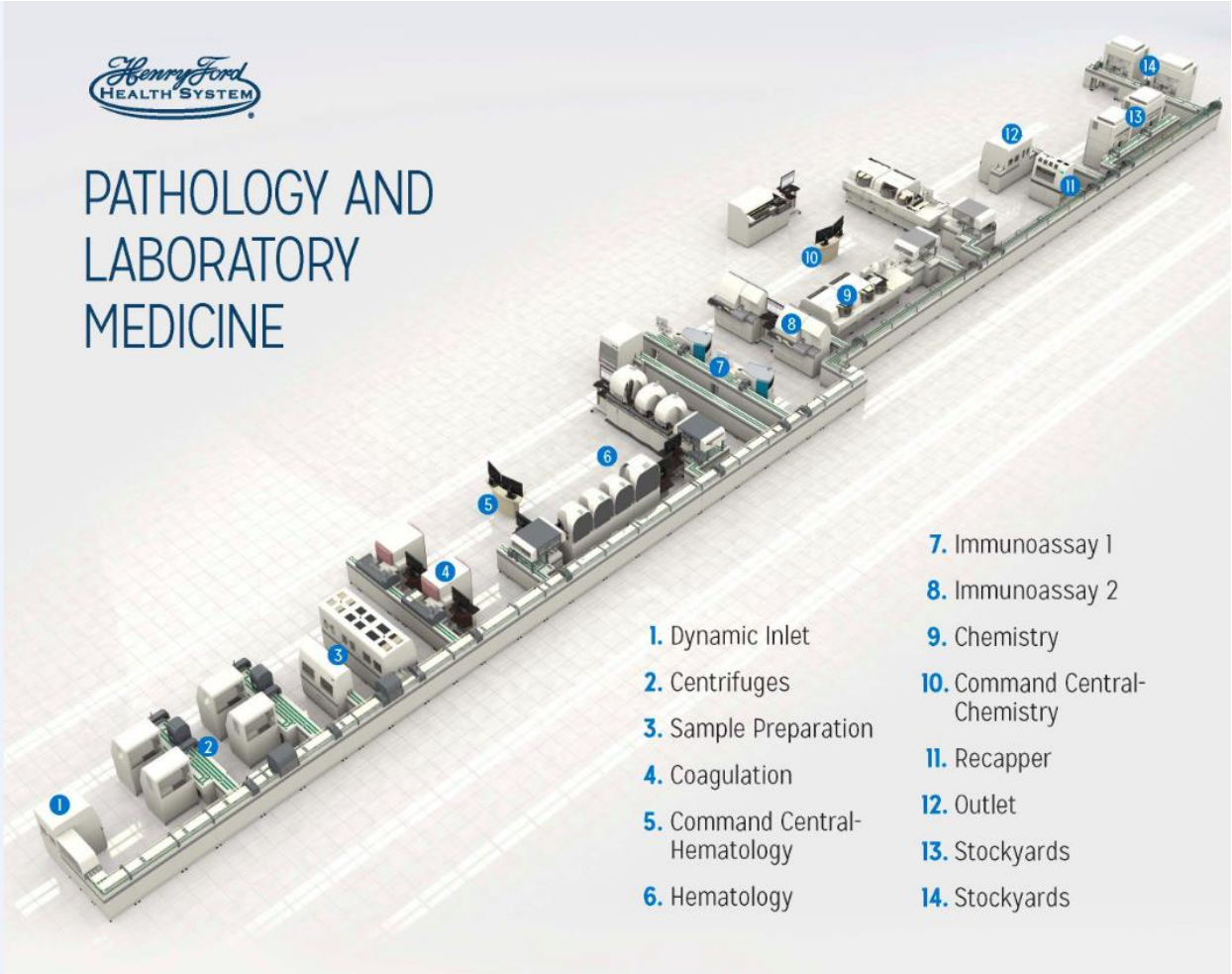

**Staff Suggestions**

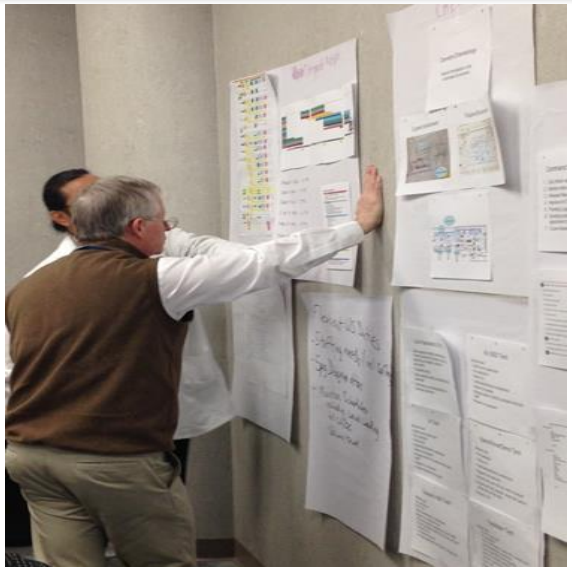

**Customer Complaints**

**Daily, Weekly or Monthly Metrics**

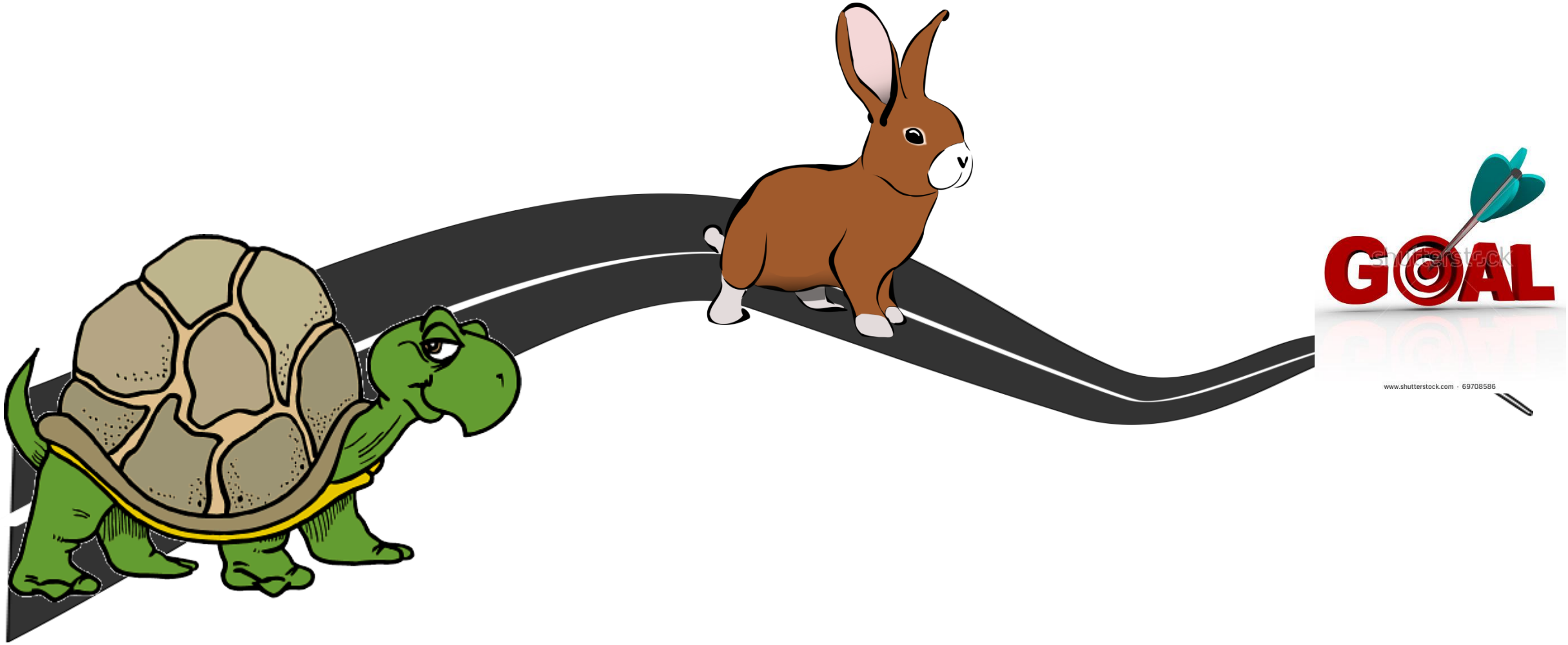
**Leadership Initiative**

# New Technology



# How Does Improvement Move in Your Area of Work?

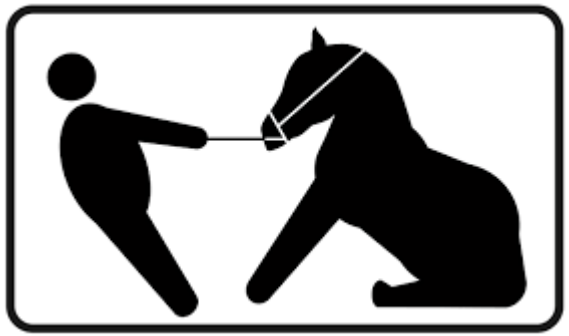


# Bottlenecks to Fast Improvement

- No time off the bench for front line staff
- IT or department freeze
- Not all team members available
- Constantly pushing improvement off because the right person could not attend the improvement meeting
- No data to support improvement
- No defined goal
- Team member resistance

# Why Do Team Members Resist

- The Negative 10% tail – you say YES, I say NO!
- The Disengaged, Actively Disengaged, Late Adopters
- The fearful of you – a lack of trust
- The fearful of change – satisfied with status quo



- Lack of clarity of vision – why am I doing this?
- Lack of educated know how – what do you want me to do and how)
- Lack of comfort with the unknowns of a new work system
- Lack of comfort calling out peers (blameless culture)

# Why Do Team Members Engage

- Peer pressure – I don't want to stick out or disappoint my coworkers
- Job (in)security – I don't want to take a chance…
- I have prior experience with an authoritarian work environ

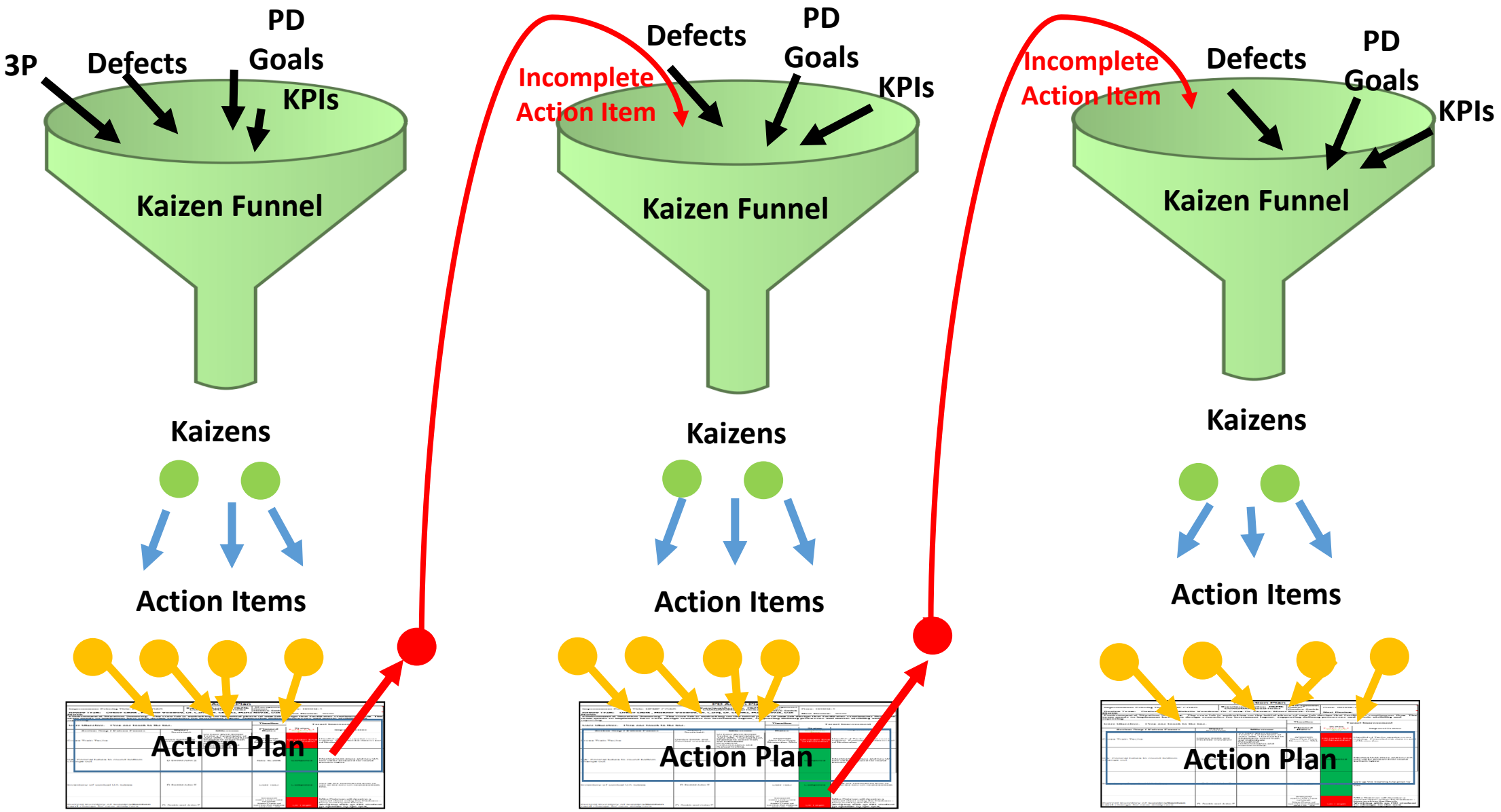
- This trusting, empowered work style resonates with me
- With low staffing levels – I benefit from increased process efficiency
- I like and trust my manager – I'm all in!
- My performance appraisal includes participation and contribution
- I want opportunities for professional development or team leader

# Why a Kaizen?


https://acuityinstitute.com/why-kaizen/

- **Kaizen** - a Japanese term, for ongoing, continuous improvement strategy in all functions of an organization
- **Kaizen** focuses on creative solutions instead of capital expenditures
- Expedited planned improvement (1-5 consecutive days)

# Kaizen Funnel Process



# Kaizen Pre-work

## 1. Goal and Scope of Kaizen

| | | | |
|---|---|---|---|
| KICK-OFF DATE: | 27-Jun-17 | REPORT OUT DATE: | 29-Jun-17 |
| PD / KPI OWNER: | Dr. Carey | | |
| GEMBA: Core Lab | | TEAM Dr. Cook | |
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| [ In scope] | Integrated Receipt | [Out of scope] | Specimen processing in Micro, AP, Cyto, TRM, HLA, SERO |
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| | Pre-Analytic Phase (Courier drop off to inlet) | | |
| | Critical Value Reporting | | |

| KEY DELIVERABLES [GOALS] | |
|---|---|
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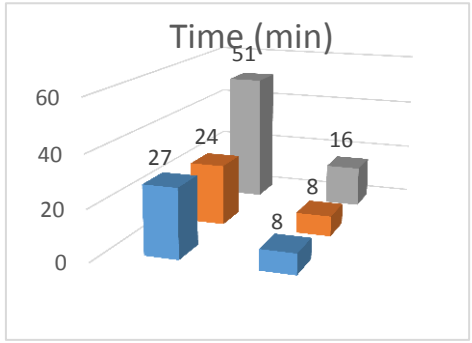
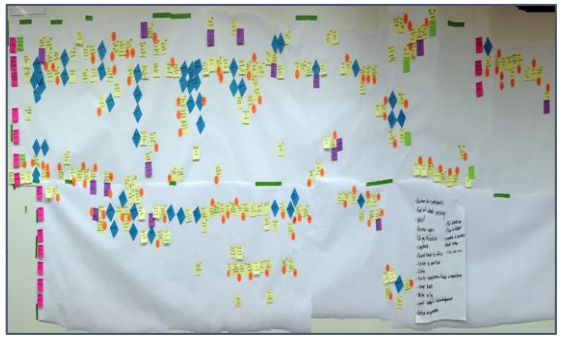
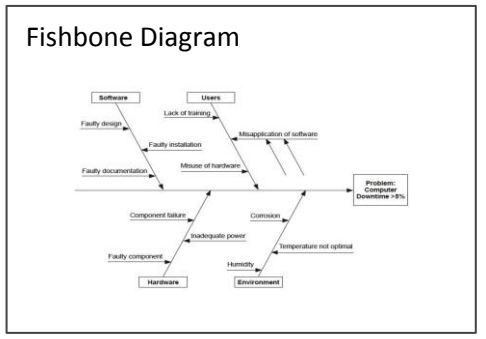
## 2. Data Collection



Fishbone Diagram




## 3. Charter Actions Based on Pre- Work Data

| ACTIONS to achieve GOALS [actions prioritized in order of importance as they relates to meeting the goals of | |
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| 3 | Observe the pre-analytic automation process for COAG and CENTAUR specimens. Identify opportunities to improve sample flow, reduce defects and improve customer satisfaction through TAT improvement. |
| 4 | Observe and Improve the Critical Value flow, identify opportunity to improve communication within 60 min and identify a way to measure this process flow. |

KAIZEN TEAM MEMBERS

| | Name | Role | | Name | Role |
|---|---|---|---|---|---|
| 1 | Denise Smith | Core Lab Team Member | 8 | | |
| 2 | Dr. Cook | Team Leader | 9 | | |
| 3 | John Zajechowski (Part Time Action | Core Lab Team Member | 10 | | |
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TARGETS and SUSTAINMENT

# Kaizen Process

**Orientation, Charter Review**

**Owner & Team Leader**

**Current State to be improved**

**Kaizen boundaries**

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**In Scope**

**Not in Scope**

**Deliverables**

**Action Items**

**Team**

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| TARGETS and SUSTAINMENT | | | | | |

**Additional staff on standby**

# Kaizen Process

**Orientation, Charter Review**

**Current Condition and Data Review**

**Future State Design**

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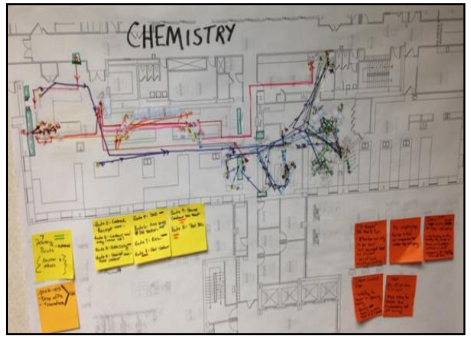
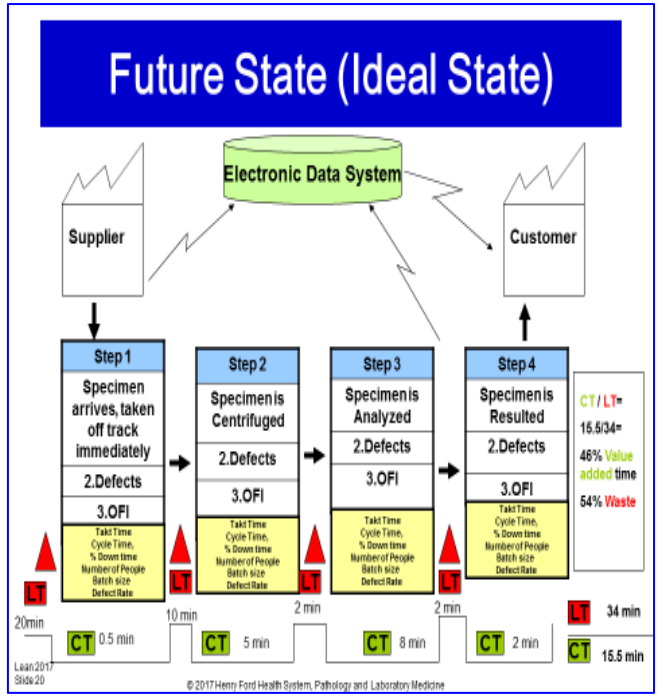
TARGETS and SUSTAINMENT

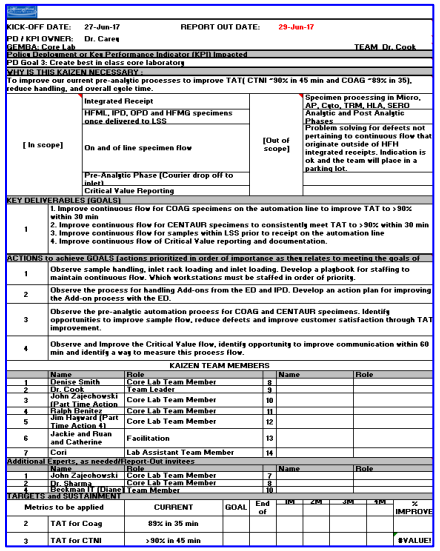
| | Metrics to be applied | CURRENT | GOAL | End of | 1M | 2M | 3M | 4M | % IMPROVE |
|---|---|---|---|---|---|---|---|---|---|
| 2 | TAT for Coag | 89% in 35 min | | | | | | | |
| 3 | TAT for CTNI | >90% in 45 min | | | | | | | #VALUE! |



# Kaizen Process

**Orientation, Charter Review** → **Current Condition and Data Review** → **Future State Design** → **Report out** → **Sustain mechanism**



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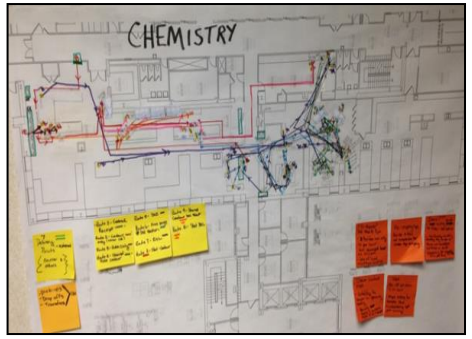
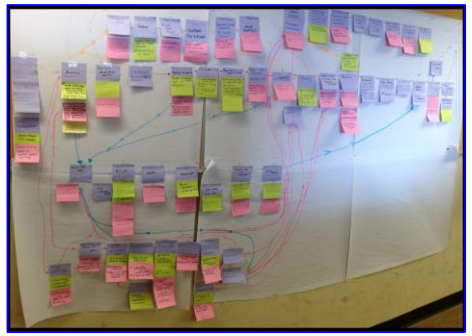
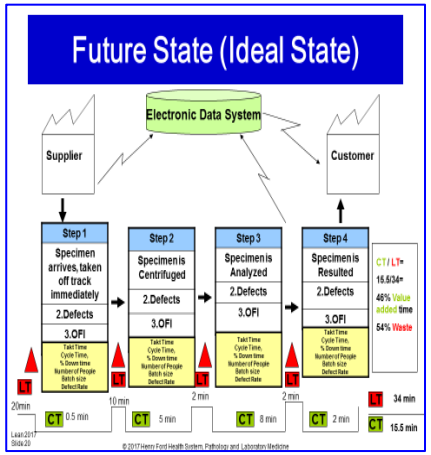
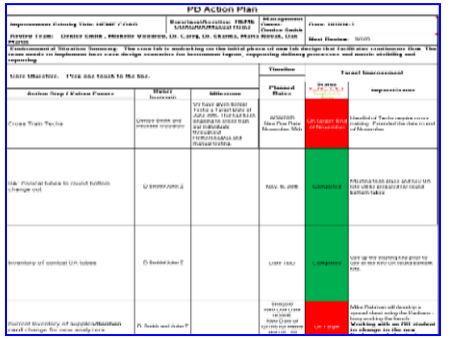


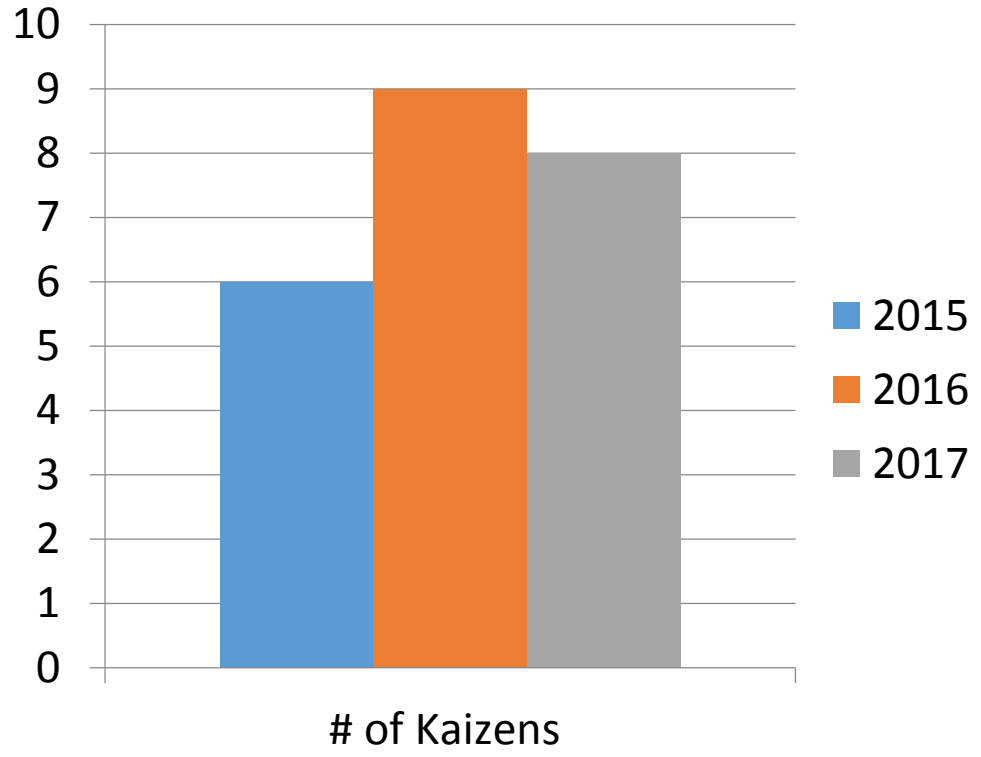





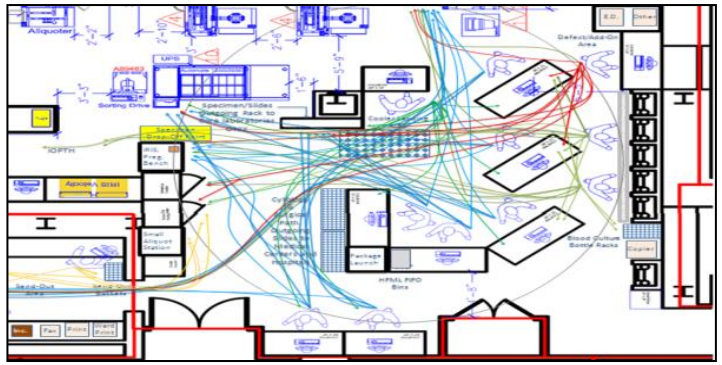
# What Did This Look Like For Henry Ford Pathology?

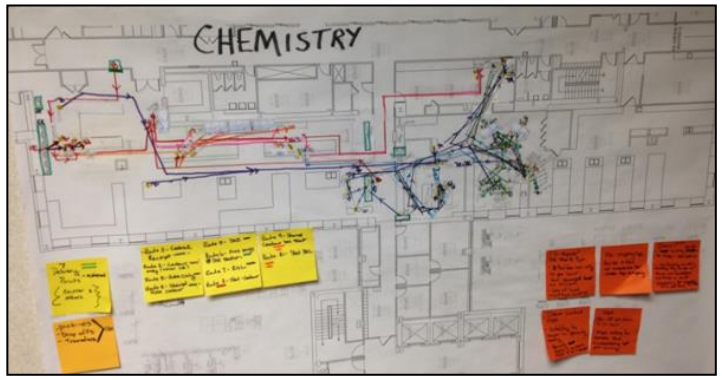
- On average 1 major Kaizen every 6 weeks
- 3 weeks to prep for a Kaizen
  - Pre-work, charter creation, arranging team members
- 1 week dedicated to the Kaizen
- Weekly meeting following each kaizen to ensure action plan follow through

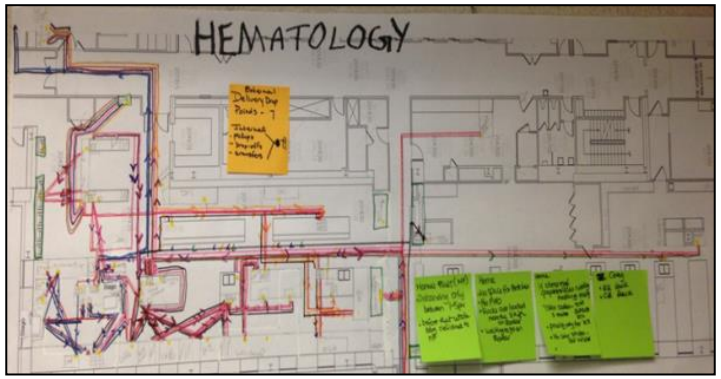


# Kaizen

"…breakthrough or transformational changes in production process using unique problem solving approaches." -*Shingijutsu USA*

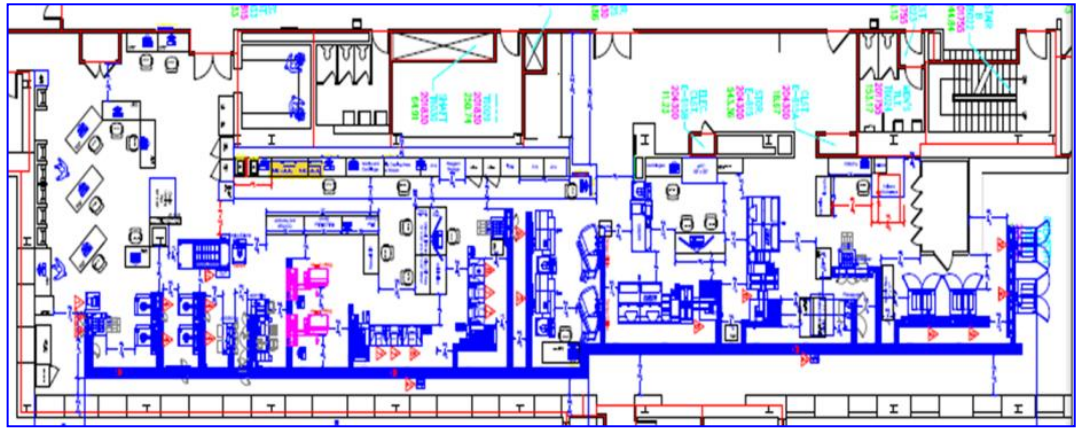





Benefits of 3P

- Cross functional team approach
- Rapid testing of ideas
- Uses multiple Lean manufacturing principles in both the process and product design



# Automation Line: Waste Reduction 2015-2016

**GOAL = One-touch to the line**

- **Integrate specimen receiving to one location**
- **Design new process from the level of the work**
- **Connect all automated disciplines Hematology, Coagulation and Chemistry**

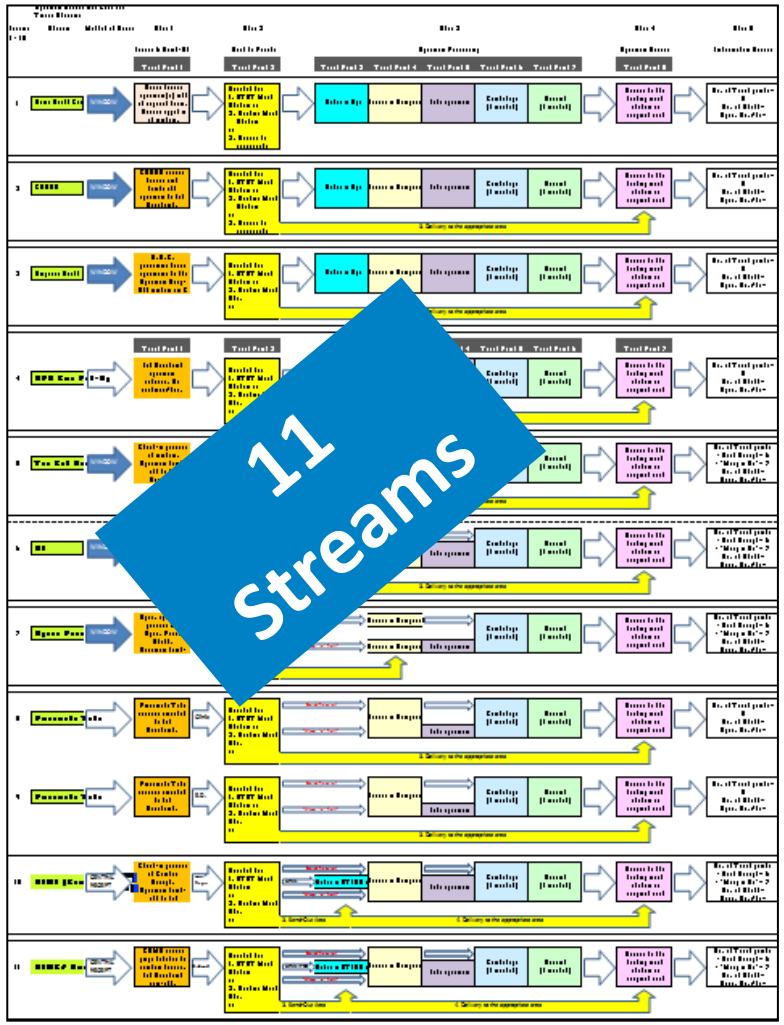
**26 miles of motion saved**

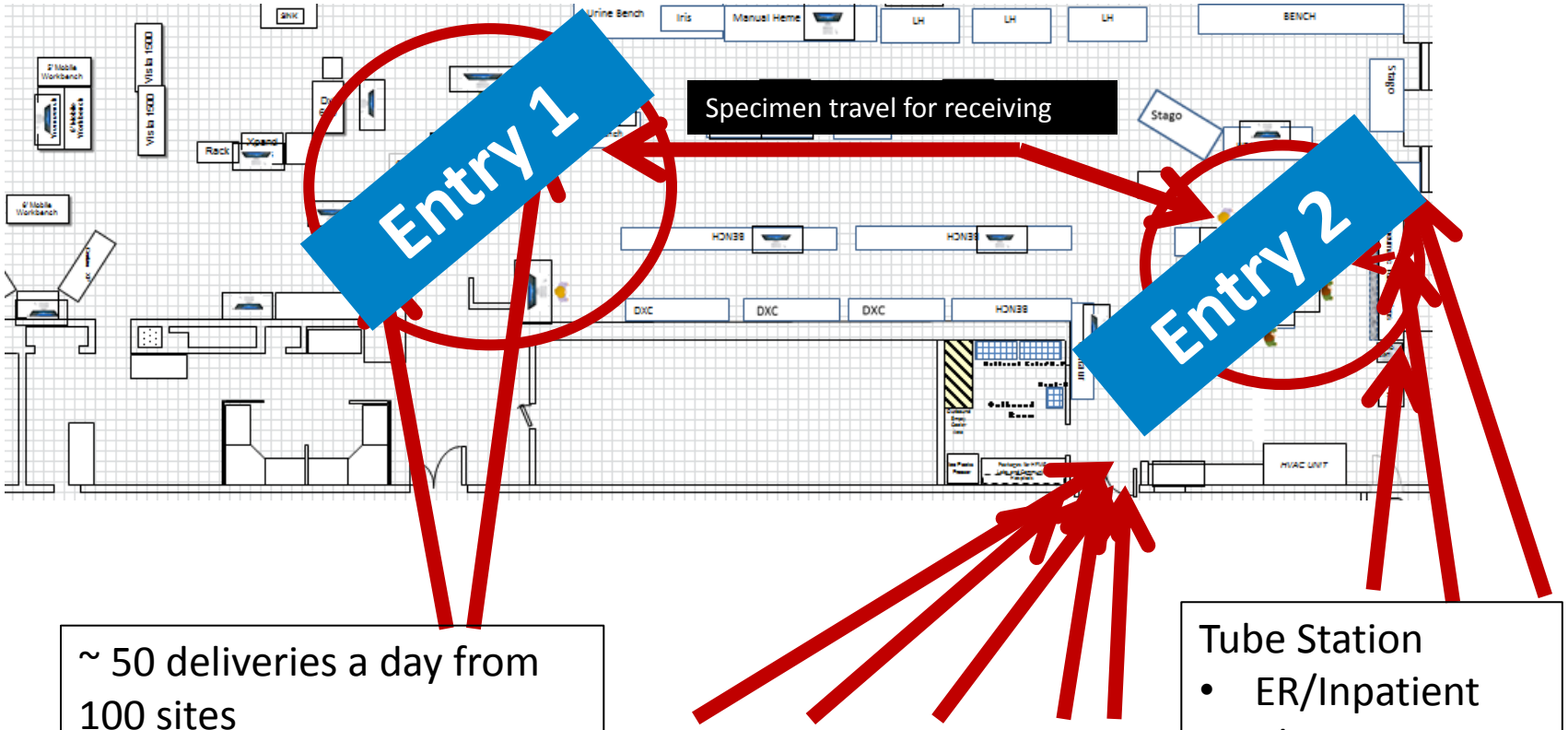
**Automation**

**~90% reduction tube**

**People & Process**

# Original Specimen Receiving Condition
# 2 points of receipt & 11 processing streams




~ 50 deliveries a day from 100 sites

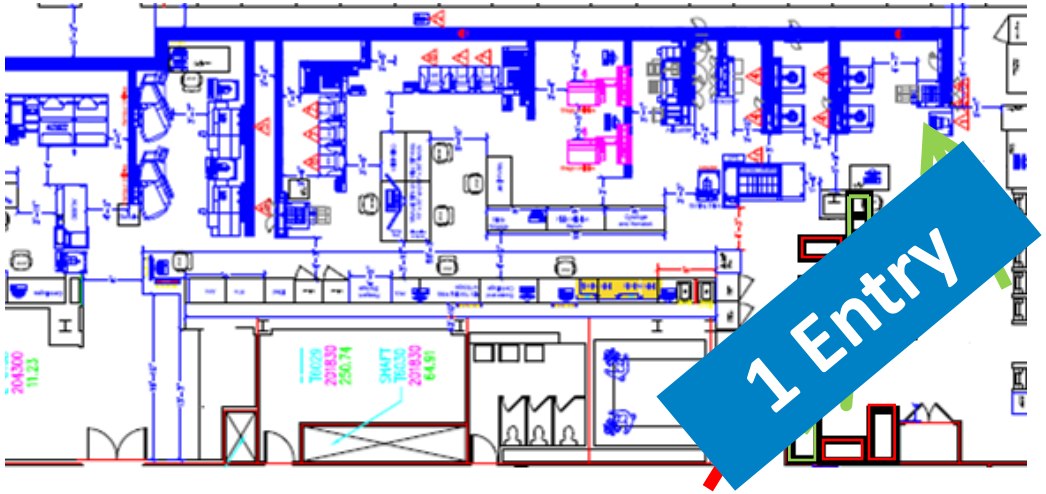
- 26 medical centers,
- 4 community hospitals
- Outreach

- Inpatient drop off
- Clinic drop off
- Cab drop off
- Employee health
- Home Healthcare

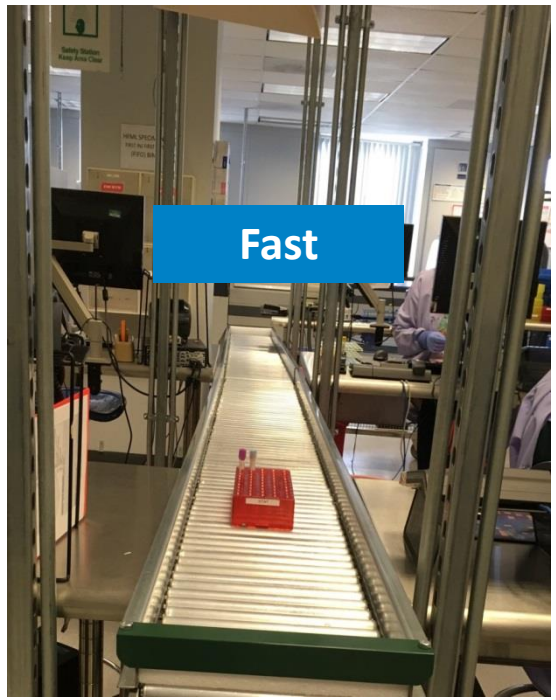
Tube Station

- ER/Inpatient
- Clinic
- Phlebotomy

# Newly Designed Specimen Receiving
# 1 point of receipt & 2 processing streams






2 Streams

**Slow**

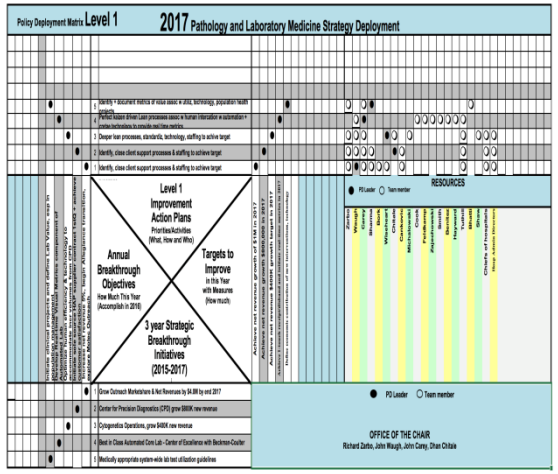
- Clinic drop off
- Clinic Collect medical centers
- 2 Outreach sites
- Clinic drop off
- Cab drop off
- Employee health
- Home Healthcare

**Fast**

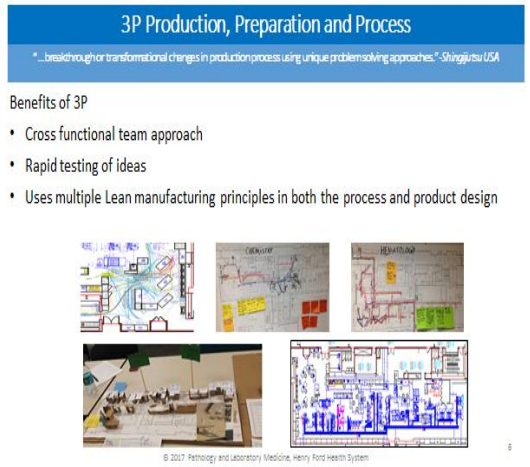
- Collect medical
- nters
- Community hospitals
- Labeled Out reach
- Inpatient drop off
- Tube Station
- ER/Inpatient
- Phlebotomy

# Management Systems for Continuous Improvement

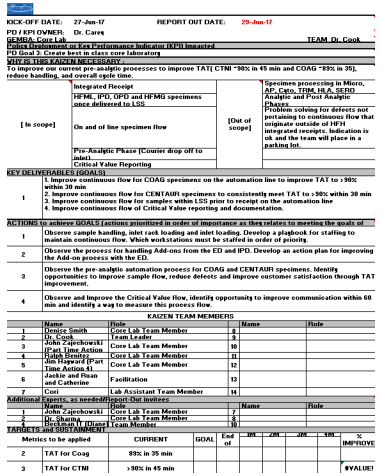
## PD

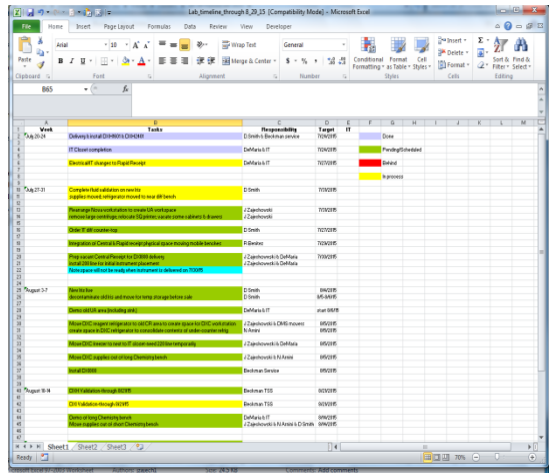



## 3P




## Kaizens, Weekly Meetings and Project Planning



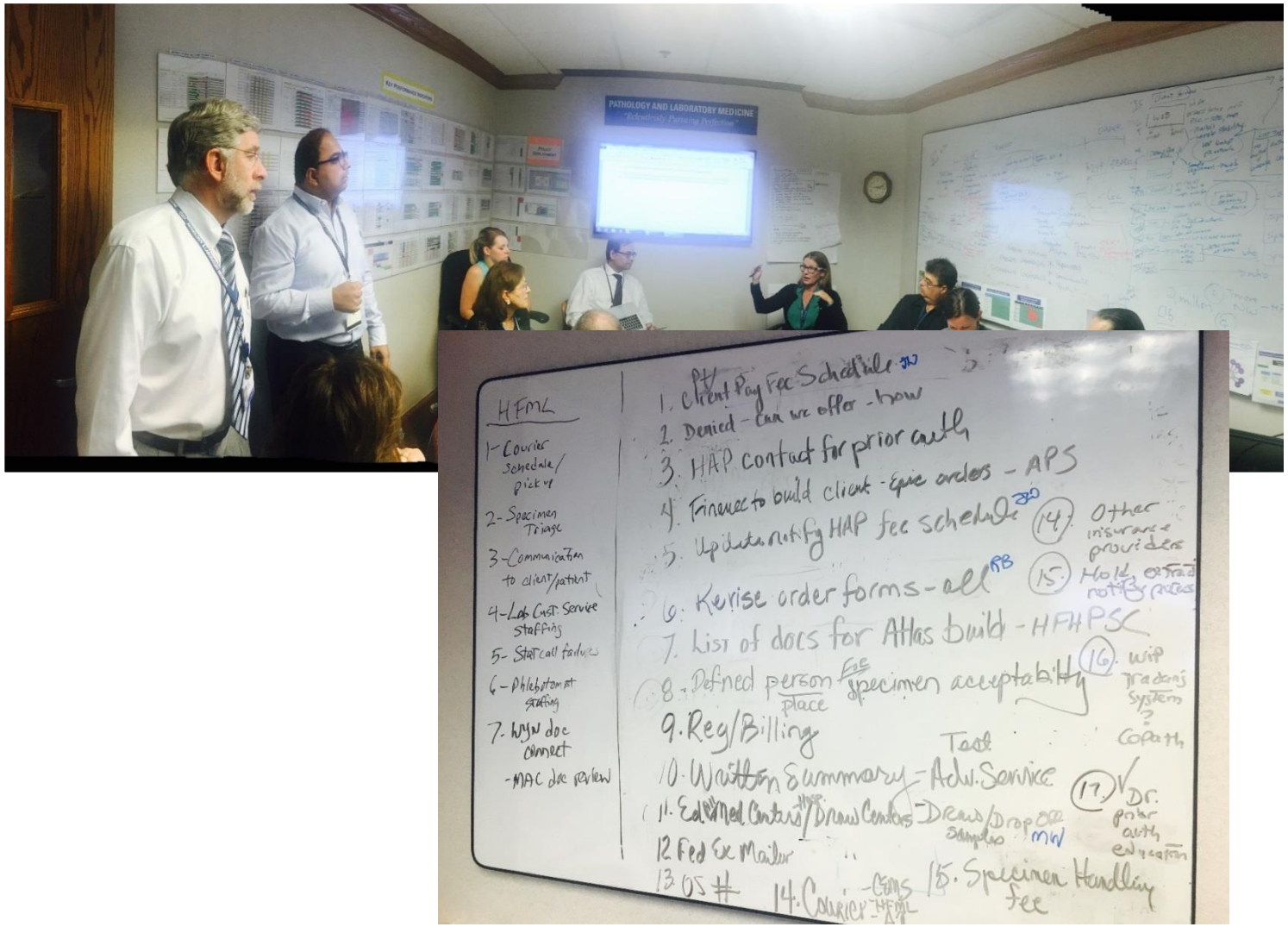



## = TRANSFORMATION

# Weekly Cadence Meeting

**The process of turning a Strategic Vision from a plan to actionable tasks**

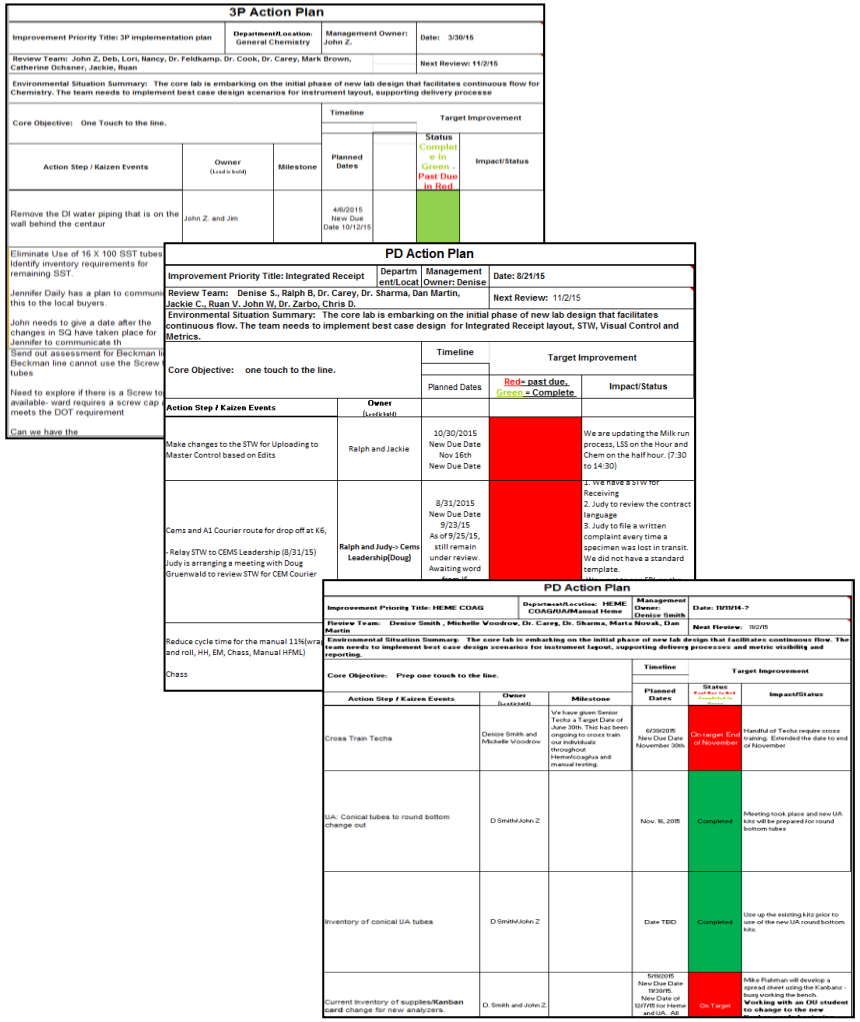
- **Through Action Plan refinement**
- **Multidisciplinary team engagement**
- **Continual process improvements and execution from the level of the work**



# Action Plan Tracker

## Why weekly meetings to review open action items?

- Keep the cadence to close action items
- Discuss progress and obstacles
- Document progress and process changes
- Identify new resources that are needed
- Recalibrate when due date needs to change
- Develop new action items to overcome obstacles
- Identify the next Kaizen opportunity



3P Action Plan

| Improvement Priority Title: 3P implementation plan | Department/Location: General Chemistry | Management Owner: John Z. | Date: 3/30/15 |
|---|---|---|---|
| Review Team: John Z, Deb, Lori, Nancy, Dr. Feldkamp. Dr. Cook, Dr. Carey, Mark Brown, Catherine Ochsner, Jackie, Ruan. | | | Next Review: 11/2/15 |

Environmental Situation Summary: The core lab is embarking on the initial phase of new lab design that facilitates continuous flow for Chemistry. The team needs to implement best case design scenarios for instrument layout, supporting delivery processe

Core Objective: One Touch to the line.

| Action Step / Kaizen Events | Owner (Lead is bold) | Milestone | Timeline: Planned Dates | | Target Improvement: Status (Complete in Green - Past Due in Red) | Impact/Status |
|---|---|---|---|---|---|---|
| Remove the DI water piping that is on the wall behind the centaur | John Z. and Jim | | 4/6/2015 New Due Date 10/12/15 | | | |
| Eliminate Use of 16 X 100 SST tubes | | | | | | |
| Identify inventory requirements for remaining SST. | | | | | | |
| Jennifer Daily has a plan to communic this to the local buyers. | | | | | | |
| John needs to give a date after the changes in SQ have taken place for Jennifer to communicate th | | | | | | |
| Send out assessment for Beckman li Beckman line cannot use the Screw tubes | | | | | | |
| Need to explore if there is a Screw to available- ward requires a screw cap meets the DOT requirement | | | | | | |
| Can we have the | | | | | | |

PD Action Plan

| Improvement Priority Title: Integrated Receipt | Departm ent/Locat | Management Owner: Denise | Date: 8/21/15 |
|---|---|---|---|
| Review Team: Denise S., Ralph B, Dr. Carey, Dr. Sharma, Dan Martin, Jackie C., Ruan V. John W, Dr. Zarbo, Chris D. | | | Next Review: 11/2/15 |

Environmental Situation Summary: The core lab is embarking on the initial phase of new lab design that facilitates continuous flow. The team needs to implement best case design for Integrated Receipt layout, STW, Visual Control and Metrics.

Core Objective: one touch to the line.

| Action Step / Kaizen Events | Owner (Lead is bold) | Timeline: Planned Dates | Target Improvement: Red= past due, Green = Complete. | Impact/Status |
|---|---|---|---|---|
| Make changes to the STW for Uploading to Master Control based on Edits | Ralph and Jackie | 10/30/2015 New Due Date Nov 16th New Due Date | | We are updating the Milk run process, LSS on the Hour and Chem on the half hour. (7:30 to 14:30) |
| Cems and A1 Courier route for drop off at K6, - Relay STW to CEMS Leadership (8/31/15) Judy is arranging a meeting with Doug Gruenwald to review STW for CEM Courier | Ralph and Judy-> Cems Leadership(Doug) | 8/31/2015 New Due Date 9/23/15 As of 9/25/15, still remain under review. Awaiting word from it | | 1. We have a STW for Receiving 2. Judy to review the contract language 3. Judy to file a written complaint every time a specimen was lost in transit. We did not have a standard template. |
| Reduce cycle time for the manual 11%(wra and roll, HH, EM, Chass, Manual HFML) | | | | |
| Chass | | | | |

PD Action Plan

| Improvement Priority Title: HEME COAG | Department/Location: HEME COAG/UA/Manual Heme | Management Owner: Denise Smith | Date: 11/11/14-? |
|---|---|---|---|
| Review Team: Denise Smith , Michelle Woodrow, Dr. Carey, Dr. Sharma, Marta Novak, Dan Martin | | | Next Review: 11/2/15 |

Environmental Situation Summary: The core lab is embarking on the initial phase of new lab design that facilitates continuous flow. The team needs to implement best case design scenarios for instrument layout, supporting delivery processes and metric visibility and reporting.

Core Objective: Prep one touch to the line.

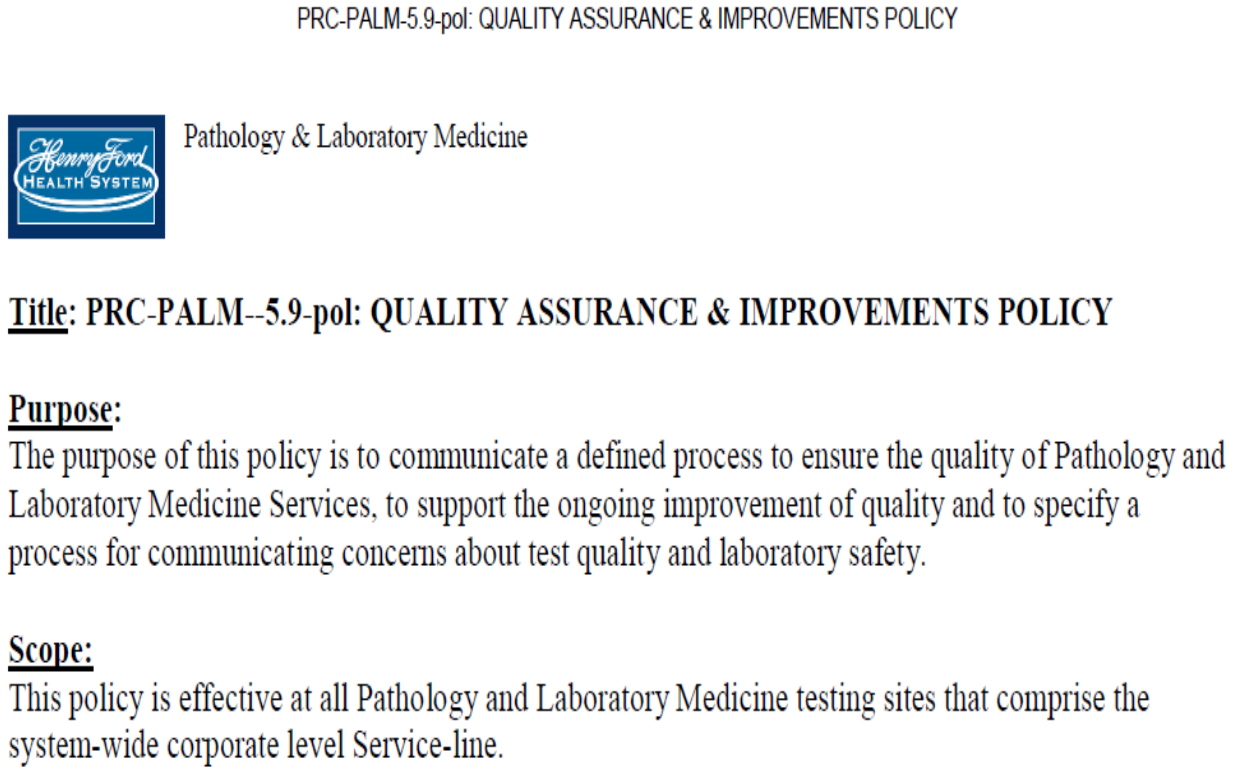
| Action Step / Kaizen Events | Owner (Lead is bold) | Milestone | Timeline: Planned Dates | Target Improvement: Status (Red Box in Red Completed in Green) | Impact/Status |
|---|---|---|---|---|---|
| Cross Train Techs | Denise Smith and Michelle Woodrow | We have given Senior Techs a Target Date of June 30th. This had been ongoing to cross train our individuals throughout Hemelocaphia and manual testing. | 6/30/2015 New Due Date November 30th | On target End of November | Handful of Techs require cross training. Extended the date to end of November |
| UA: Conical tubes to round bottom change out | D Smith/John Z | | Nov. 16, 2015 | Completed | Meeting took place and new UA kits will be prepared for round bottom tubes |
| Inventory of conical UA tubes | D Smith/John Z | | Date TBD | Completed | Use up the existing kits prior to use of the new UA round bottom kits. |
| Current Inventory of supplies/Kanban card change for new analyzers. | D. Smith and John Z. | | 5/11/2015 New Due Date 10/30/15. New Date of 12/7/15 for Heme and UA. All | On Target | Mike Flahman will develop a spread sheet using the Kanbano - busy working the bench. Working with an OU student to change to the new |

# To Sustain – First Change Human Behavior

Framework of processes and procedures

- Ensure that people do the right and expected thing in performing tasks consistently

    1. Fulfill or exceed customer expectations
    2. Fulfill or exceed regulatory standards
    3. Driving toward action plan
    4. Continually seek improvements



PRC-PALM-5.9-pol: QUALITY ASSURANCE & IMPROVEMENTS POLICY

Pathology & Laboratory Medicine

**Title: PRC-PALM--5.9-pol: QUALITY ASSURANCE & IMPROVEMENTS POLICY**

**Purpose:**
The purpose of this policy is to communicate a defined process to ensure the quality of Pathology and Laboratory Medicine Services, to support the ongoing improvement of quality and to specify a process for communicating concerns about test quality and laboratory safety.

**Scope:**
This policy is effective at all Pathology and Laboratory Medicine testing sites that comprise the system-wide corporate level Service-line.

# Action Plan Follow Through

## Why daily huddles to review progress?

- Visual, at-a-glance status assessments
- Involves staff at the level of the work
  - Is standard work being followed?
  - Are we tracking toward goals?
  - When should we take new action?
  - What new action should we take?

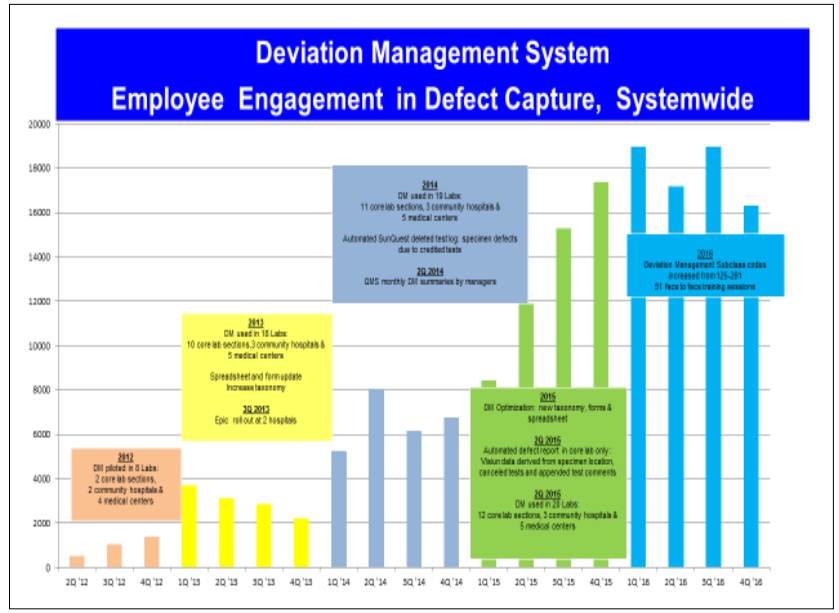
# Automation Implementation Action Items

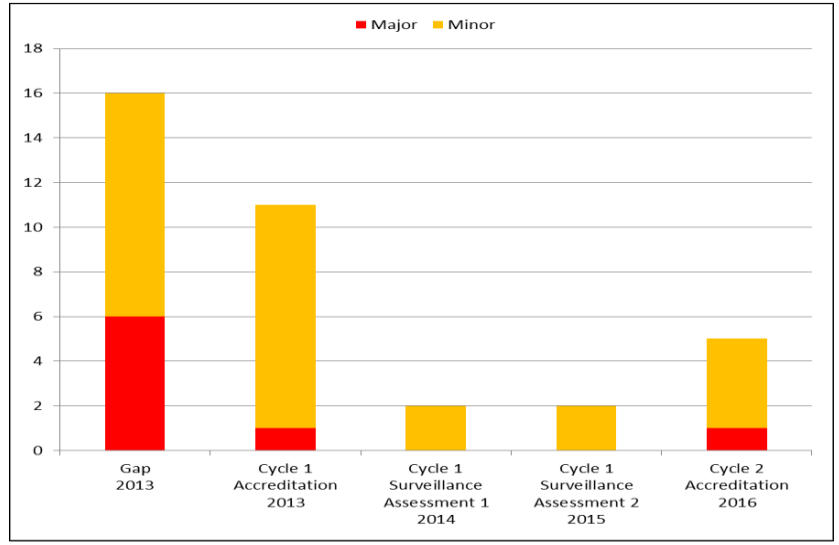
- October 2014 – September 2017
- 220 action items
- 197 complete (90%)
- 23 open
  - 9 open (past due)
  - 14 upcoming due date

# Annual Refresher (Re-)Training

**>50 face to face training sessions annually**

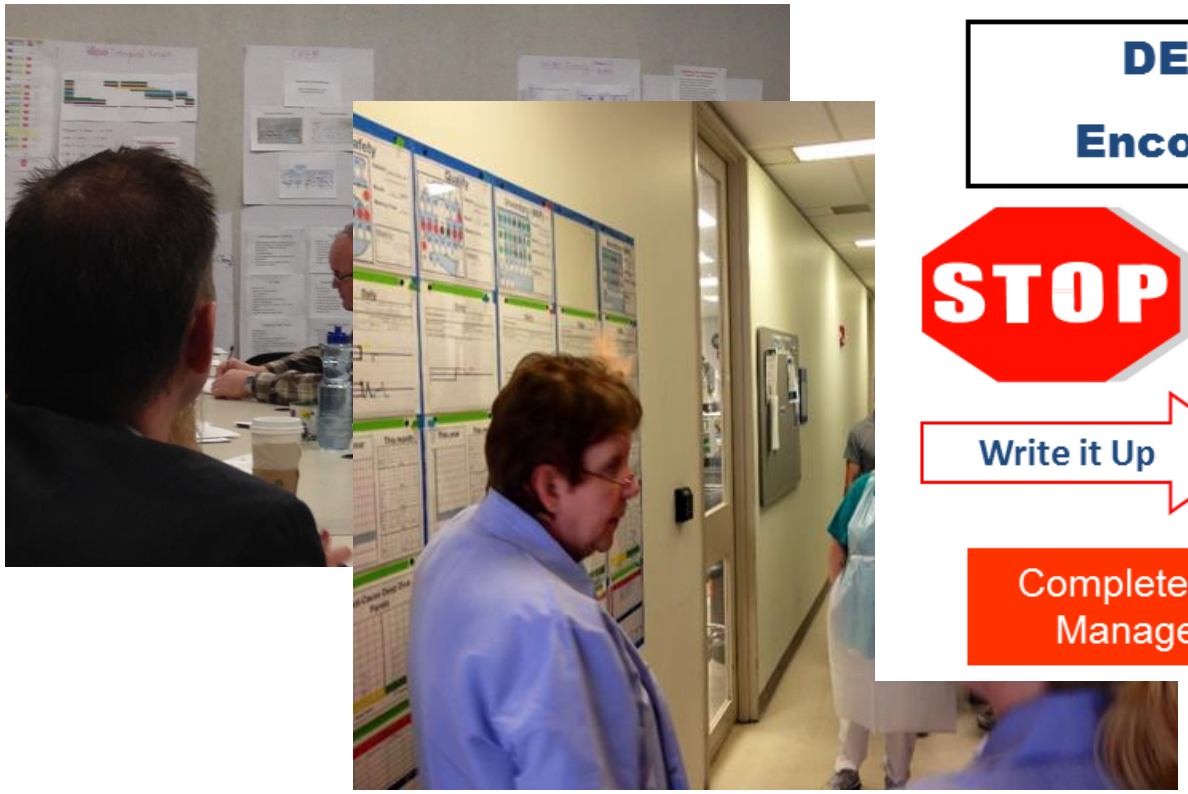
- Continual staff engagement
- Consistent empowerment culture
- Defect management documented
- Participation with root cause and corrective action
- Standard work compliance
- Regulatory compliance
- Staff engagement in process improvement (A3)
- Front line involvement in “Share the Gain”



# Summary – Tools to Sustain

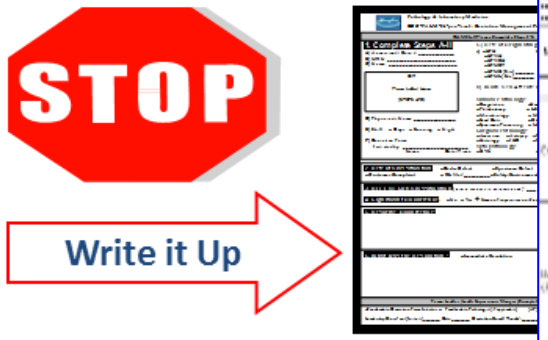
Training → Daily Management → Dev. Management → Action Plan → 5S





DEFECT

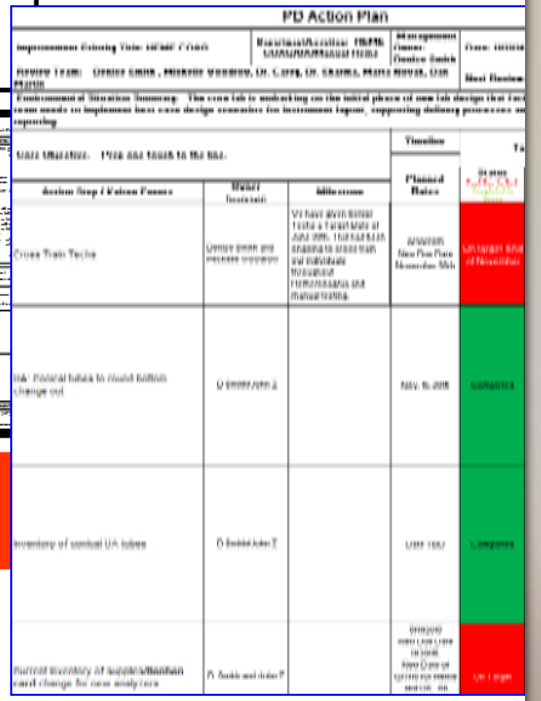
Encountered




Write it Up

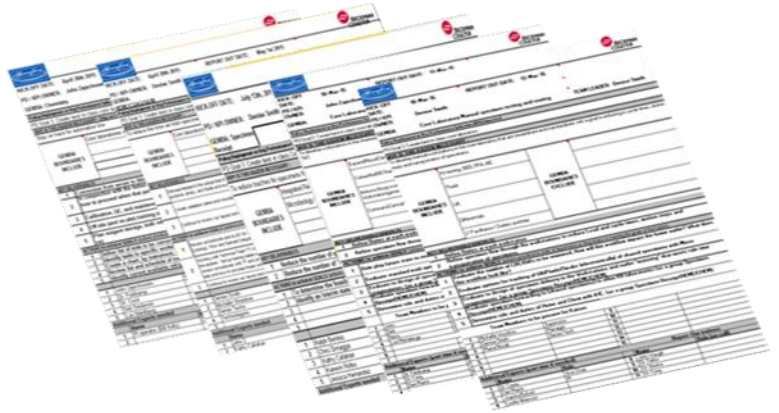
Complete the Deviation Management Form






# Lessons Learned

- Must have leadership support
- Have the right people (those who do the work)
- Full participation needed from each team member
- Interruptions (meetings, phone calls, etc.) hinder progress
- Stick to the scope of the process improvement project
- Team must have data to move forward
- "No" is not an option – be open minded, try-storm how to overcome the obstacle
- Try something new and try it right away in a monitored environment – look for data-driven process changes



# Take Home Messages

**Our Goal: Best-in-Class Laboratory and Center of Excellence**

- Lean Culture driven from the level of the work
- Implementing tools to sustain the management systems
- Continually innovating new tools and systems to our quality management systems led to our continued success
- Sustaining tools for surveillance and constant improvements

**“Relentlessly Pursuing Perfection”**