









GE APPLIANCES  
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# How to Synchronize Workflows in Product Development

Lean Enterprise Institute Summit  
March 2023

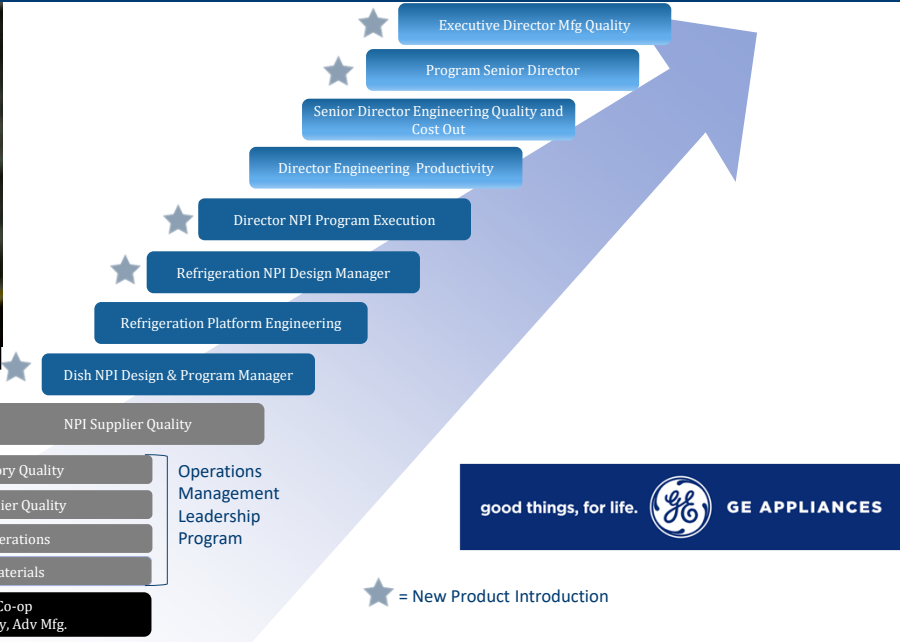


Alison Seward  
Executive Director, Manufacturing Quality  
GE Appliances, a Haier company

 <p>✓ Schedule</p>  <p>✓ Volume</p>	<h2>New Product Introduction Scorecard</h2> 	 <p>✓ Margin</p>  <p>✓ CapEx</p>  <p>✓ Ownership Experience</p>
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# My 22 Year Career *Alison Seward*



UNIVERSITY OF LOUISVILLE  
J.B. SPEED SCHOOL OF ENGINEERING



 <b>GE APPLIANCES</b> <i>a Haier company</i>	 <b>16,500</b> employees across the globe	 Contributing to local economies in <b>46 states</b>	 Our appliances are in <b>half of all U.S. homes</b>
<b>Haier</b> Smart Home	 <b>\$35 Billion</b> in revenue	 <b>104,000</b> employees	 <b>160</b> countries and regions





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## U.S. Footprint

- 4** Air & Water Solutions Training Centers
- 9** Manufacturing Facilities
- 2** Research & Development Centers
- 2** Dispatch Centers
- 6** National & Regional Call Centers
- 13** Area Distribution Centers (ADCs)
- 4** Service Parts Distribution Centers
- 2** Monogram Experience Centers
- 2** Logistics Centers
- 112** Local Delivery Locations



**5**  
Manufacturing Facilities in Louisville, Ky.

## Investing for Growth



**\$2 Billion**  
in investments  
since 2016

**4,000+ New Jobs**  
in the U.S. since 2016

	MILLIONS INVESTED*	NEW JOBS	
LOUISVILLE, KY	<b>\$808M</b>	<b>2185</b>	• New dishwasher, washer, dryer & refrigerator production
SELMER, TN	<b>\$14M</b>	<b>230</b>	• New Zoneline® Production
DECATUR, AL	<b>\$125M</b>	<b>255</b>	• Expanded Refrigerator Production
CAMDEN, SC	<b>\$60M</b>	<b>140</b>	• New Water Heater Production
LAFAYETTE, GA	<b>\$161M</b>	<b>700</b>	• Capacity expansion • New cooking products
CHATSWORTH, GA	<b>\$32M</b>	<b>100</b>	• New Southern Logistics Center
CA, CO, TX, GA, FL	<b>\$205M</b>	<b>270</b>	• Expanded distribution network

\*Publicly announced



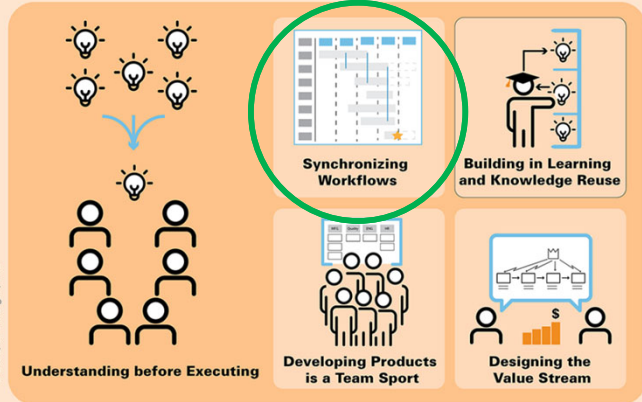
# Synchronizing Workflows

Organizing and managing the work concurrently to maximize the utility of incomplete yet stable data enables you to achieve flow across the enterprise and reduce time to market.

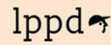
## Lean Product & Process Development Guiding Principles



Putting People First

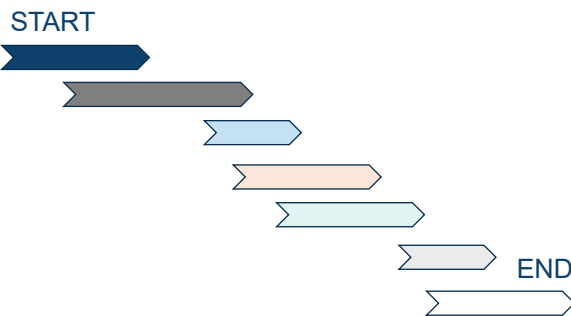
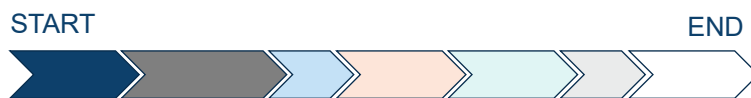


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Learn more about Lean Product & Process Development at [lean.org/lppd](http://lean.org/lppd)

## Workflow Reality Check



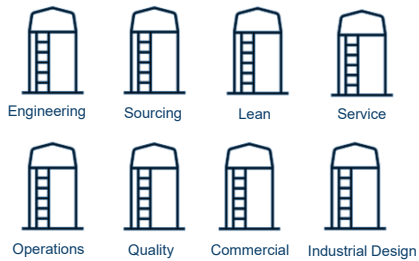
## Setting the Stage



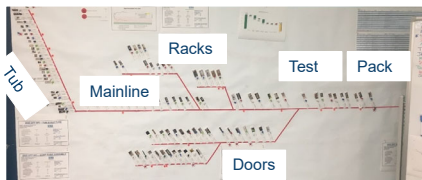
<<Video>>

## Transforming the Team

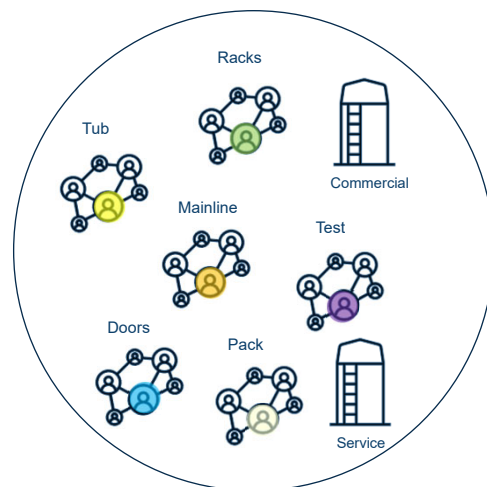
Team primarily aligned by function.  
Each function had a 'core team' representative.



Fishbone visualizes how the product will flow in the factory.



Realigned team by fishbone area.  
Each function assigned team member(s) to an area.  
Each fishbone had a 'core team' coach.



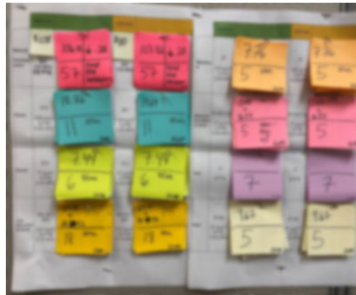
# Goal Flow Down and Expectations

Program level targets established for costs

- High level
- Not actionable
- Team cannot influence all of them
- Unclear how to make trade-offs



Fishbone team targets



- Lowest level – by fishbone
- Actionable due to granularity
- Influenceable by the team
- Enables trade-off discussions on material \$, sumT/FTE, quality, owner expectations

How we work

### We will operate as a TEAM

No functional silos  
The full team owns the success of the program  
Make the best 'big picture' decision and support team decisions  
Use healthy debate when necessary  
Respect other perspectives, appreciate thought diversity

### Communicate, communicate, communicate

Don't assume everyone knows  
Ask! If you are wondering, someone else is too

### Product and Process are designed together

Use fishbone, PFMEA, 9 step, process at a glance, 7 Ways and other tools to enable co-development  
Use DFMA principles and software to analyze new parts, assemblies and costs  
Use MODAPTS to estimate big T early, even before parts are available

### Find problems early, simulate often

It's ok to be 'red' but it's not ok to stay 'red'  
Find issues, offer solutions and resolve efficiently (PDCA)

### No Red ergo items remaining at Pilot

Rev 0 release for tooling / equipment release  
Cross functional review of drawings required before release

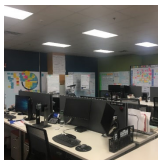
### Treat confirmation and pre-pilot builds like production

Standardized Work at Confirmation build  
Full Manufacturing BOM complete by Pre Pilot  
Job instructions complete by Pre Pilot

### IP2 is commitment, changes after require RSC

IDO Spec and Product Plan released / locked  
Product Tech Spec released / locked  
Pre pilot date doesn't move

## Key Practices



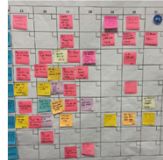
### Obeya

Communicate, communicate, communicate



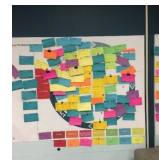
### Mock-ups

Simulate often



### Schedule

'It's ok to be red, it's not ok to stay red'



### PDCA

Find issues, offer solutions, resolve efficiently



### Decisions

Make the best 'big picture' decision and support team decisions

# Obeya

## For the Team

If it didn't matter to the team, it didn't get posted

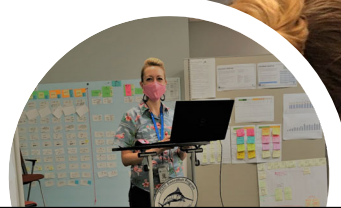
Common gathering place

Core team sat in the Obeya

## Cadence and Escalation

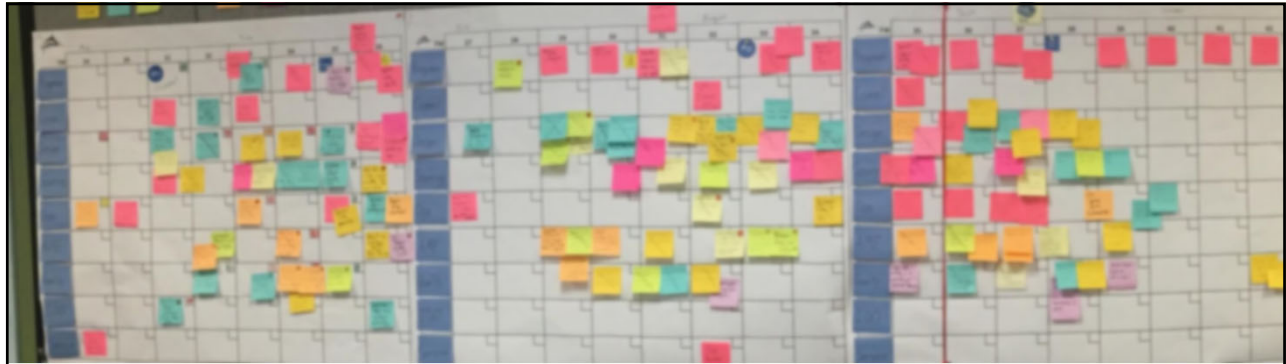
Specific topics each day

Defined escalation timing and participants



# Mock-ups....Practice How We Want to Play





## Schedule

Key actions posted with milestone date

Color-coded by fishbone and posted in functional swim lane

Pulsed with full team every Monday

Candid discussions on late actions, recovery plans established

## PDCA Plan, Do, Check, Act

.....

Issues are a treasure

Propose solutions

Empower the team to make trade offs

Evolve the practice

In the **Plan** stage, analyze the problem and make plans to implement the improvement.

In the **Act** stage, make the action permanent so the gains of improvement can be shared to other areas.



In the **Do** stage, schedule plans and put the idea in place.

In the **Check** stage, watch the process to ensure the idea provided the expected results. If not, start over at the plan stage.

<u>Idea/Problem</u>	OVERALL	<u>Date</u>
<u>Proposed Solution</u>		
<u>Originator/Owner</u>	<u>Date Complete</u>	





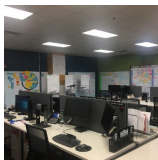
# Critical Decision Mapping

- Identify key decisions
- Define timing
- Create a method
- Ensure communication
- Avoid the 'snowplow'



Date	Owner	Date Needed	Critical Decision Summary			
Title			Team Members			
Decision(s) to be made:			Evaluation of Options			
Impacts/Risks/Dependencies			Plan to Decision		Who	When
Inputs/Trade-Offs/Tradeoffs/Dependencies						
Data Location:			Requirements Affected from Machine Requirements document			
			Recommendation and Final Decision			
			Decision Made(s)		Signature	Date Completed

## Key Practices



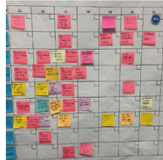
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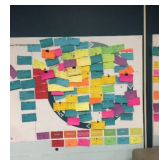
### Mock-ups

Simulate often



### Schedule

'It's ok to be red, it's not ok to stay red'



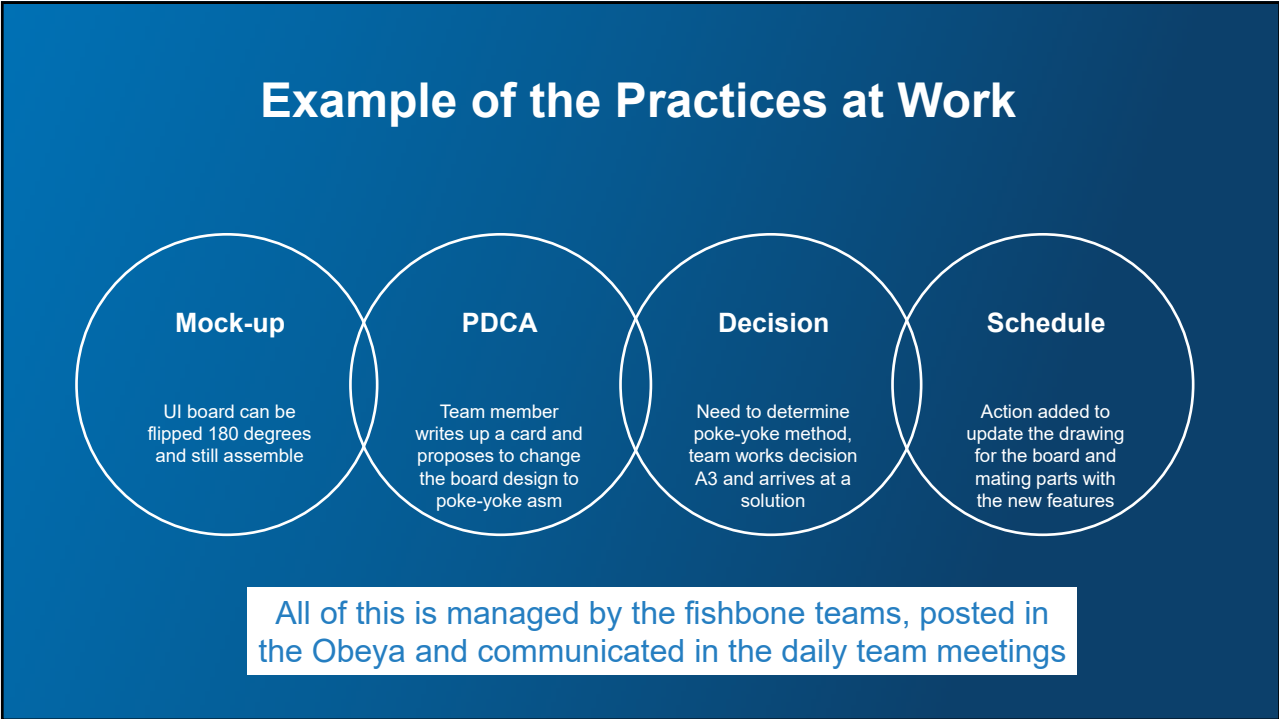
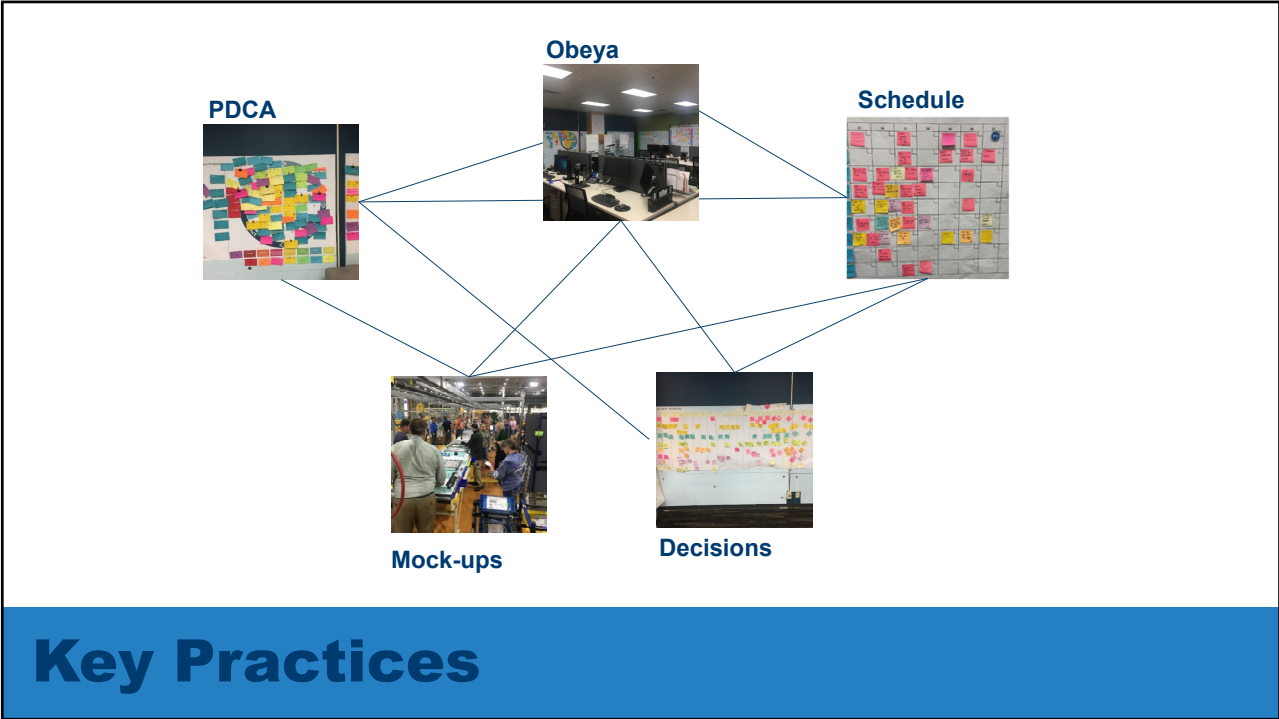
### PDCA

Find issues, offer solutions, resolve efficiently



### Decisions

Make the best 'big picture' decision and support team decisions



## Keys for Leading the Transformation



### Don't be the bottleneck

Push problem solving and decision making down to the people closest to the work



### Overcome resistance

Your ability to coach and mentor will be more important than your process or product knowledge



### Create advocates

Find your 'fans' early and empower them to take up the mantle



### Have some fun

You will struggle together, make sure you celebrate together

# Time to apply the learning!

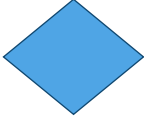
## Decision Flow Mapping



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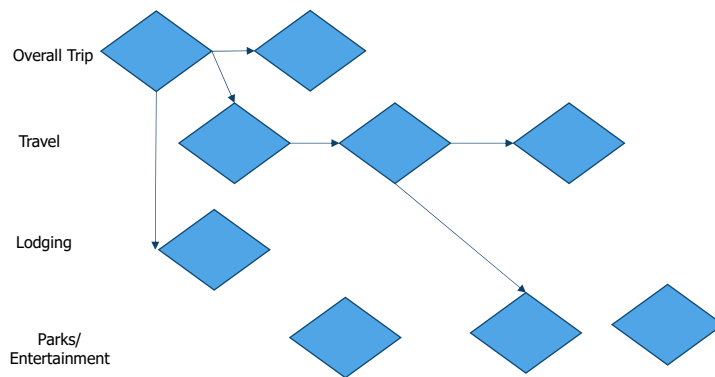


## Exercise: Planning a Vacation

- Brainstorm the list of decisions that need to be made to ensure the family has a great vacation!
- Write each decision on a Sticky Note 
- Sort them into categories: e.g. travel, lodging,...
- Sequence decisions and draw lines to show any dependencies

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### Decision Flow Sketch: Planning a Trip



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## Group Reflection

- What stood out most to you about the exercise?
- What challenges were there in completing the exercise?
  - How did you overcome them?
- What was valuable for you about the exercise?
- How could you apply this (or any of the other practices) 'on Monday'?



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# Thank You



Alison Seward  
Executive Director Manufacturing Quality  
GE Appliances, a Haier company

