TEOA Transformation Playbook Operations

TEC-406-717

Rev E August 2020

Global Operations

EVERY CONNECTION COUNTS





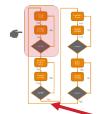


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 - Note* Exit Elements follows each transformation phase.



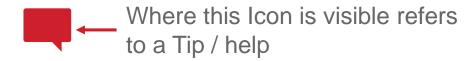


Using the TEOA Playbook – What do the Icons Mean?



Click on the phases to

Where this Icon is visible refers to the section you are currently in.



Where this Icon is visible refers to a special Note on the subject

This Icon refers to a point of information on the subject, linking to additional Playbooks or Training materials for example

This Icon refers to a video on a specific topic

jump to that section HIGHLY ENGAGED EMPLOYEES Balanced Scorecard (KPIs) Operational Excellence **Transformation** Built in Quality (Pro Copportunity to TE Best Sustain Standard Work **BY TEOM** Quick Changeover (EPE Ready to Deploy Projects Workplace Design (Cell Design & 3P) Implement Technical Academies Define Value & Design Future State Create Flow & Pull **Define Strategy and Develop Talent** Create Stability & Culture (EH&S, Quality Foundations, 5S& Visual Management, TPM, PIM)

Click on the agenda icon to return to the agenda for the current phase





Click on the House

Icon to return to the

TEOA – Operations Management System Key =TE The focus of this Star Level Criteria PREMIER PARTNER HIGHLY ENGAGED **EMPLOYEES** Playbook is on SUPERIOR RETURNS Transformational FOR OUR Tool SHAREHOLDERS **Transformation** Balanced Scorecard (KPIs) Operational Excellence **Transformation** Technical Excellence (Lean) (COE) Built in Quality (Problem Opportunity to TE Best Solving MP, QCPC) **Sustain Prepare** Pursue Perfection Strategy Alignment Standard Work Process Excellence Frameworks **TEOA** Quick Changeover (EPEI) Ready to Deploy Everywhere **Projects** Workplace Design (Cell Design & 3P) **Implement** Diagnose & Design $\star\star\star$ Technical Academies Value Stream Management Define Value & Design (Material and Master Planning) Create Flow & Pull Future State \star **Define Strategy and Develop Talent**



Tip: Click on the Phases of Transformation to quickly access the topic

Create Stability & Culture (EH&S, Quality Foundations, 5S& Visual Management, TPM, PIM)

Objective of the Transformation Playbook



- The objective of this playbook is to provide a **practical guide** on how to manage value stream transformation.
- The playbook will **outline** a **structured phased approach** to transforming to high velocity lean value streams in order to make a stronger connection to the customer.
- It details the **overall sequence of steps** needed in each transformation phase, as well as key insights and considerations, including linkages to concepts & definitions, tool playbooks, training materials & best practices.





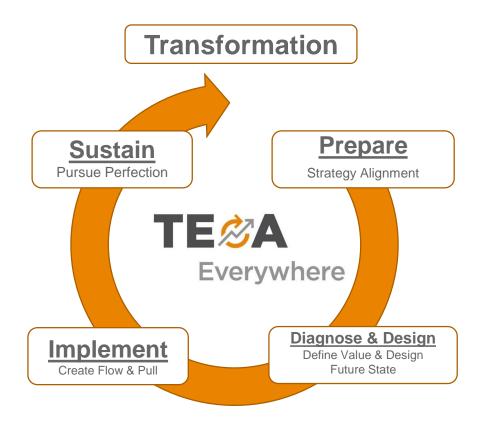
Note: This playbook is **focused on transformation** in manufacturing and logistics operations; although the transformation approach and methodology is similar, this playbook will not address transformation in the business processes. Please refer to the <u>Business Processes Playbook</u> for more detail.



What is Transformation?



- Value stream transformation is an improvement methodology based on a scientific approach to problem solving.
- TE's transformation approach has four phases: Prepare, Diagnose &
 Design, Implement, and Sustain.
- Priorities for transformation are driven by the site strategy which is aligned with the strategic direction of the Business Unit identifying product families that have the most impact.
- The Value stream transformation team will develop a current-state value stream map, and most importantly design a future-state according to the five principles of lean future state design guidelines.
- A detailed **Deployment plan** is developed and the value stream transformation team will be responsible for implementing over the course of 6 to 12 months.
- The full suite of **Operational and Technical Excellence tools** should be implemented **where appropriate** throughout your value stream.



Transformation Roadmap with the five principles of lean for future state design



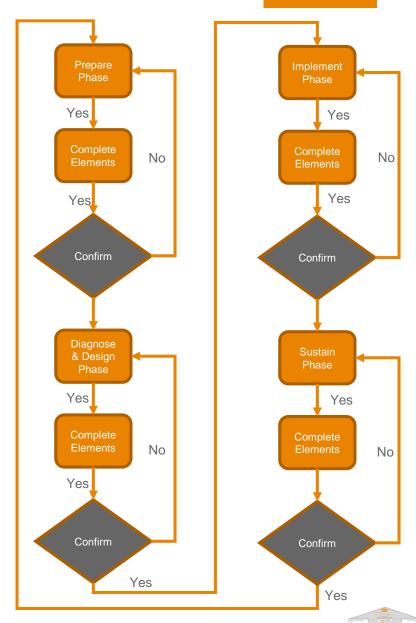
The Four Transformation Phases

connectivity

- 1. The Prepare Phase during which the team is established and readies the site for the upcoming diagnostic.
- 2. The Diagnose and Design Phase where the team understands the current state & identifies improvement opportunities and defines a vision and path for implementation activities towards the future state.
- 3. The Implement Phase during which the team uses the full suite of Operational and Technical Excellence tools to transform the current value stream towards the desired future state.
- 4. The Sustain Phase during which the site continues to leverage opportunities identified through Process Improvement Management (PIM) in order to sustain the changes and to pursue perfection.

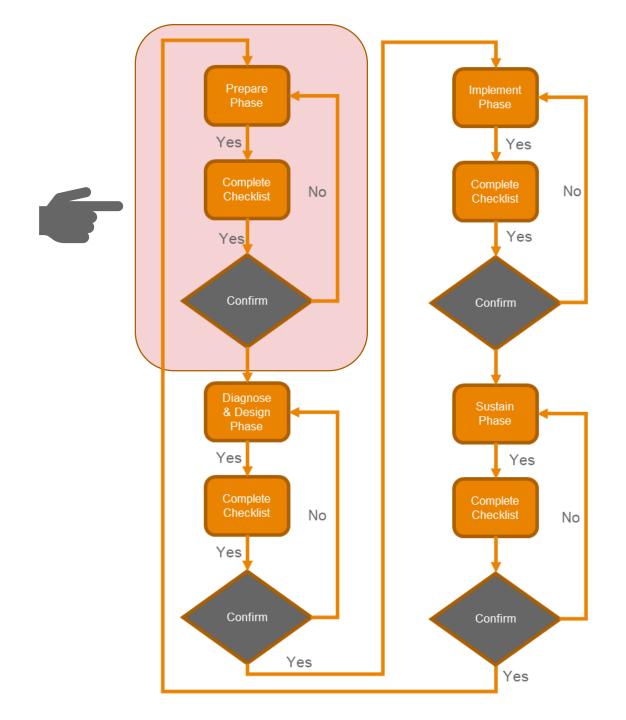


Note: At the end of each phase is a confirmation stage, a set of **elements that must be met** to successfully move to the next Phase.

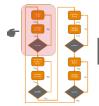


Prepare Phase

The Prepare Phase during which the team is established and readies the site for the upcoming diagnostic







Prepare Phase Overview



In this phase:

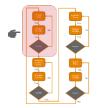
- The most impactful value stream is selected by the site.
- The value stream transformation team will be established.
- Equip all Value Stream employees with the necessary TEOA Knowledge.
- Establish baseline Value Stream Metrics.
- A review of the demand analysis will be completed.
- The Exit Phase Elements will be reviewed and each element will attain a 100% score prior to entering the Diagnose and Design Phase

- 1. Identify the most impactful value stream
- 2. Identify the value stream transformation team
- 3. Equip employees with the necessary TEOA Knowledge.
- 4. Establish Baseline Performance Metrics
- 5. Complete Demand Analysis for Most Impactful Value Stream
- 6. Prepare Phase Exit Elements



Tip: Click on the links above to quickly access the topic





Prepare: Identify the Most Impactful value stream:



- It is up to the discretion of the site and alignment with the BU & Site strategy to determine what is "most impactful".
 - Selection considerations; revenue, gross margin, future business growth, conversion cost, volume, new product introductions, etc.
- Sites should start to see site wide **measurable results** as it relates to Safety, Quality, Delivery & Cost (Productivity, Inventory), once approximately 20% of the "most impactful" value streams have been transformed to the future state.
 - **Star level 3.** This 20% threshold allows the site to show that it has built the necessary capability to perform.
 - **Star level 4.** Once 60% of the "most impactful" value streams have been transformed, the site has proven that it has the ability to rapidly improve.
 - **Star level 5.** At TE, once 90% of all value streams have been truly transformed to lean value streams, this will be considered approaching "world class performance".



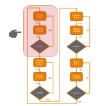
Example of using a heatmap which compares value streams and key measures to determine the most impactful Value Stream.





Note: If SDP 74694 is not used, a similar approach is recommended.





Prepare: Identify the Value Stream Transformation team



- Establish a value stream transformation team which should be comprised of several core members and are able to drive change throughout the entire value stream.
- These professionals typically include the TEOA lead, Materials manager, and Value stream manager, Manufacturing Engineer & members of the Technical Excellence community.
 - Other members from supporting functions can be brought in on an as needed basis.
- It is absolutely critical that the transformation team is a group of motivated change-agents that have the ability to influence the stakeholders within their value stream.



It is the responsibility of this transformation team to make sure the **implementation plan** stays on schedule and **achieves the desired future state**.



Tip: Use a Project Charter to capture team members, the scope and to baseline the transformation



	Name		Signature		Contact Details	
Sponsor						
Process Owner						
Kaizen Facilitator						
Event Team Leader						
Event Team Members						
Business Unit			Site / Location			
Event Dates			Charter Rev Date			
Element	Description		Details			
1. Event Name	Unique identifier for event					
2. Process Description	Description of process purpose, locations etcetera					
3. Event Objective	What improvement is targeted?					
4. Event Scope	Start and end points of target process. (Any boundaries, for example: geographic, product, functional, demographic.)					
Benefits of improving the process	What benefits would be brought to the business by improving the process?					
	Baseline metrics and targets so that					
6. Process Metrics	Metric		Baseline		Target	
Approval Signatures for Project Initiation	Sponsor	Sponsor		Da	ate:	
	Process Owner		Dat		te:	
	Event Team Leader		Date:		te:	
	Finance			Da	te:	

Example of Project Charter Template





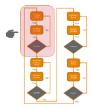
Prepare: Employee TEOA Knowledge (Training)



		Operational Excellence	Technical Excellence
TEOA Lead		Introduction to TEOA + 5 Day LEAN Foundations + Training on the playbook + LEAN Essentials or VSM&D + LEGO / Flashlight & QCO Games	Knowledge of the technical components + CoE Overview Training + Awareness of Site Process Technical Leaders.
Kaizen Fa	cilitators	Introduction to TEOA + 2 day Kaizen Facilitator Training + Training on the playbook + LEGO / Flashlight Game	Knowledge of the technical components + CoE Overview Training + CoE Training on specific tools.
Site & Function	al Leadership	Introduction to TEOA + TEOA For Leaders + Training on the playbook + Pen Game	Knowledge of the technical components + CoE Training on specific tools.
Opera	tors	Shop floor SF101 & 102 training modules + Pen Game	CoE Training on specific tools.

The pyramid on the above depicts the various roles on site, the knowledge level expectations including recommended training materials & events





Prepare: Establish Value Stream Baseline Performance Metrics



- In order to assess performance and determine success it is necessary to establish a set of performance metrics or KPIs.
- These measurements should;
 - Reflect the **business strategy** of the company at every level.
 - Have **clear line of sight** to the Site level metrics.
 - Easily obtained.
 - **Drive improvements** that lead to future business growth.
 - **Motivate people** to continue lean improvements



Although it is up to the value stream transformation team to establish their own relevant metrics, here are some lean value stream metrics that will help get you started:

- Safety
- Quality Rolled Throughput Yield (RTY)
- Cycle time
- Work In Progress

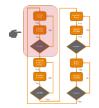
- Throughput
- **Productivity**
- Leadtime
- Uptime
- Changeover



Example of Metric tracking & display. This could also be digitally displayed.

Data trends can be monitored

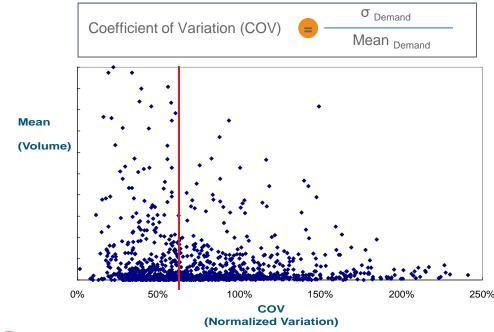
Red / Green banding on chart show clear winning /Losing



Prepare: Demand analysis for Most Impactful VS



- Gain an understanding of the relative extent of variation (stability) in demand by part within a product family.
- Demand Analysis categorizes individual part numbers or product families into four groups.
 - 1. High volume/low variability.
 - 2. Low volume/low variability.
 - 3. Low volume/high variability.
 - 4. Outliers.
- This will help to determine the Value Stream Design & implications on execution such as;
 - Make to Stock.
 - Assemble to Order.
 - · Make to Order.

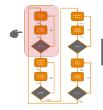


For more information regarding Demand analysis, refer to Demand analysis (TEOA – 05 Demand Analysis) training materials.



What is the **impact of NPI or Product Transfers** on the Value Stream?





Prepare Phase Exit Elements



- ✓ The fundamental elements in Star level 2 are fully implemented.
- ✓ The most impactful value stream/s have been identified with supporting business cases and linkage to the sites strategy as defined in the prepare phase.
- ✓ The value stream transformation team is established.
- ✓ The most impactful value stream/s baseline **Performance Metrics** (Quality, Leadtime, Uptime etc...) are established.
- ✓ The **Demand Analysis** is completed on the most impactful value stream/s and verified by Supply chain planning and site leadership.
- ✓ The most impactful value stream has been assessed for planned New Product Introductions (NPI) and product line transfers. These will be considered as part of any future state design.



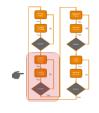
Diagnose & Design Phase

The Diagnose & Design Phase during which the team identifies improvement opportunities and defines a vision and path for implementation activities towards the future state design

Prepare Phase Phase Yes Yes No No Yes Yes Confirm Confirm & Design Phase Phase Yes Yes Checklist No No Yes Confirm Confirm Yes Yes







Diagnose & Design Phase Overview



In this phase:

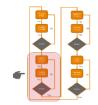
- The Current State for the most impactful VS is created.
- The Future State Design will be established.
- The Deployment Plan will be developed for the Future State value stream.
- The Exit Phase Elements will be reviewed and each element will attain a 100% score prior to entering the Implementation phase.

- 1. Current State Value Stream Mapping
- 2. Future State Value Stream Mapping
- 3. Create a Deployment Plan
- 4. <u>Diagnose & Design Phase Exit Elements</u>



Note: Click on the links above to quickly access the topic



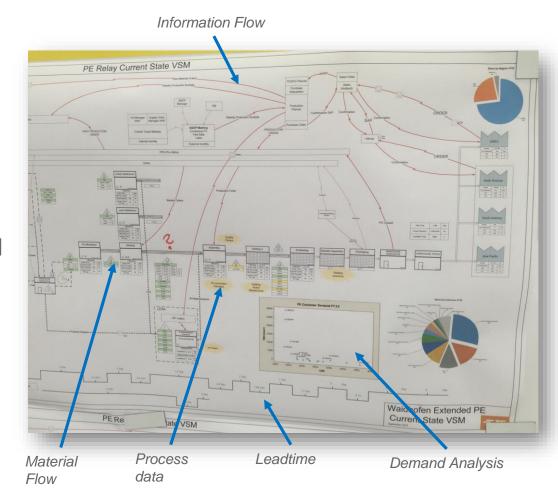


Diagnose & Design: Current State Value Stream Mapping



- Create a visual end to end map of the current material and information flow at the product family level.
- Identify all the value add and non-value added activities from raw material through to finished goods.
- Include critical elements such as;
 - customer requirements, process steps, process data, inventory data, flow of materials & Information and lead time.
- Highlight flow discontinuities.
- Create a **baseline** for quantifying performance improvement opportunities.
- Refer to the Value Stream Management tool for more details on *implementation steps* for Current State Value Stream Mapping.

Example from Industrial Waidhofen Site Austria







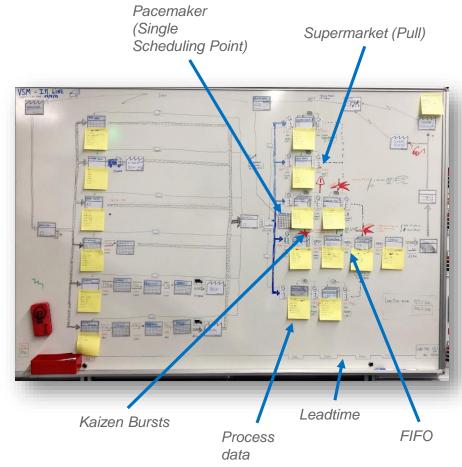
Diagnose & Design: 2. Future State Value Stream Mapping



- Create a visual map illustrating the desired post-transformation material and information flow at the product family level.
- Follow the **8 questions** outlined in **Learning to See** from the **Lean Enterprise Institute.** See next page.
- The emphasis is on creating continuous flow where possible, and where you cannot flow, establishing pull from upstream processes in the value stream.
- Highlight key performance improvement projects that need to be completed in the implementation phase for the value stream to flow as designed.
- It will also give direction to **Operational and Technical Excellence** tool deployment.
- A future state design should have significant reductions in inventory and lead time while simultaneously improving quality and delivery performance.

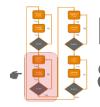


Refer to the Value Stream Management tool for more details on implementation steps for Future State Value Stream Mapping.



Example from Industrial Evora Site Portugal Future State created on white board.





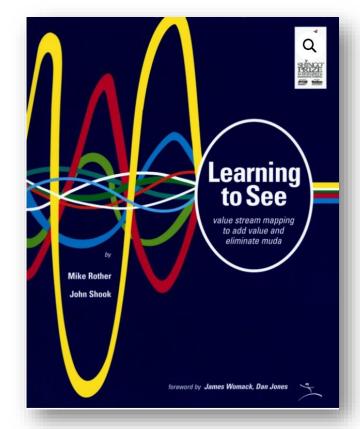
Diagnose & Design: Future State Design 8 Question Analysis



- 1. What is the Takt Time?
- 2. Will you build to **finished good** supermarket or directly to shipping?
- 3. Where can you use **continuous flow** processing?
- 4. Where will you need to use supermarket **pull systems** to control production of upstream processes?
- 5. At what single point in the production chain (the "Pacemaker process") will you schedule production?
- 6. How will you **level the production** mix at the pacemaker process?
- 7. What **increment of work** will you consistently release and take away at the pacemaker process?
- 8. What **process improvements** will be necessary for the value stream to flow as your future state design specifies?



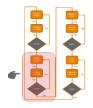
When answering the **8 questions** consider **Operational and Technical Excellence tools** are needed to realise the future state?





Reference: Current State Value Stream example taken from "Learning to See" by Mike Rother & John Shook Links to Tools, Videos & Resources on the next page





Diagnose & Design: Additional Resources



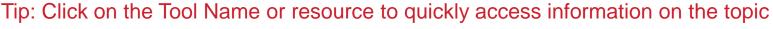
Below is a suite of **tools and resources** which can be used as part of designing the **Future state value stream**



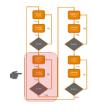








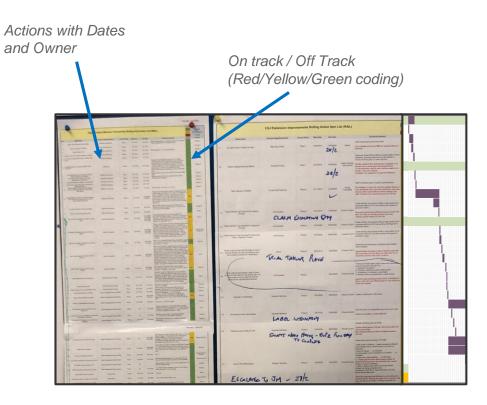


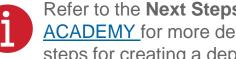


Diagnose & Design: 3. Create a Transformation Plan



- The deployment plan will;
 - Serve as the mechanism to **track progress** towards achieving the desired future state.
 - Consist of Kaizen activities / improvement projects & Technical RTD's spanning over the course of 6-12 months that will help a value stream transformation team move towards the future state.
 - Be a result of asking the 8 questions from designing the future state.
 - Ensure priorities and resources are managed and scoped properly.
 - There should be a regular cadence of reviews of the deployment plan with the site implementation team.
- The value stream transformation team defines the best format / mechanism for managing the deployment plan, but a simple project tracker / timeline, or Gantt chart is recommended.

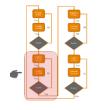






Refer to the **Next Steps** Module in the **TEOA ACADEMY** for more details on implementation steps for creating a deployment plan.





Diagnose & Design Phase Exit Elements



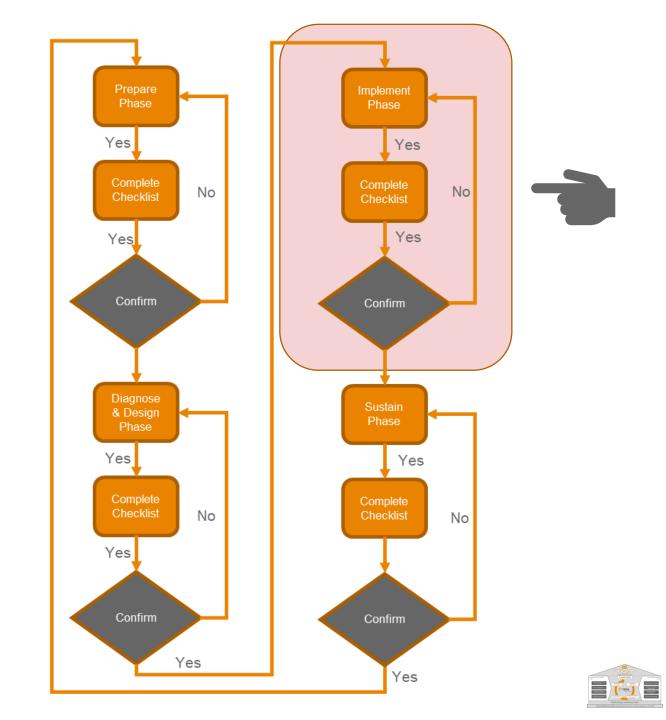
- ✓ The most impactful value stream has a Current State Value Stream Map clearly identifying material and information flow.
- ✓ The Future State Value Stream Map for the most impactful value stream/s is published and answers the 8 Questions of "Learning to See"
- ✓ The Future state design will accommodate any planned New Product Introductions and Product line transfers as identified in the Prepare Phase.
- ✓ Improvement opportunities have been identified and appropriate Operational Excellence tools and Technical Excellence RTDs have been selected for implementation.
- ✓ A deployment plan & timeline for the Value Stream/s transformation capturing Kaizen events & RTD projects is approved by the Site leadership team

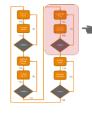


Implement Phase

The Implement Phase during which the team uses TEOA tools to transform the current value stream towards the desired future state focusing on creating continuous flow and establishing level pull to true customer demand across the entire value stream

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Implementation Phase Overview



In this phase:

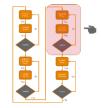
- Deployment plan execution through the use of Kaizen methodology
- How to establish Transformation Progress reviews
- The Exit Phase Elements will be reviewed and each element will attain a 100% score prior to entering the Sustain Phase

- 1. Kaizen Deployment Plan Execution
- 2. Establish Progress Reviews
- 3. Implement Phase Exit Elements



Note: Click on the links above to quickly access the topic





Implement: Kaizen – Deployment Plan Execution



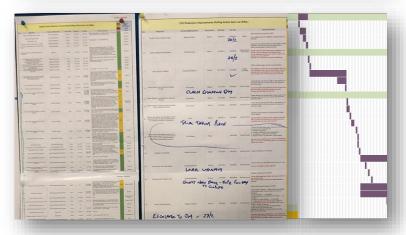


Kaizen, Japanese for "improvement", or "change for the better" refers to the philosophy or practices to continuously improve processes.

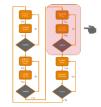
- Kaizen is the methodology;
 - To execute the Deployment plan.
 - To prioritise the improvement activities which need to be actioned.
 - To create a **culture** where employees throughout the organisation are engaged in continuous improvement.

Refer to <u>TEOA 120 Kaizen</u>
<u>Methodology</u> Training Materials for additional information









Implement: Establish Progress Reviews

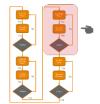


- Regular cadence of review is established to provide progress updates to the deployment plan.
 - This could be for example minimum monthly, max weekly timeframe.
- It is recommended this is led by the Value Stream Leader and should be attended by;
 - Plant Manager.
 - Value Stream Transformation Team.
 - Site Implementation Team.
 - TEOA Site Leader.
 - Members of the leadership team as appropriate.
 - The Kaizen owners.
 - Technical Excellence.
- The deployment plan is updated.
- Clear actions identified for items which are off track.
 - Green / Red coding is used to identify on track / off track.









Implement Phase Exit Elements



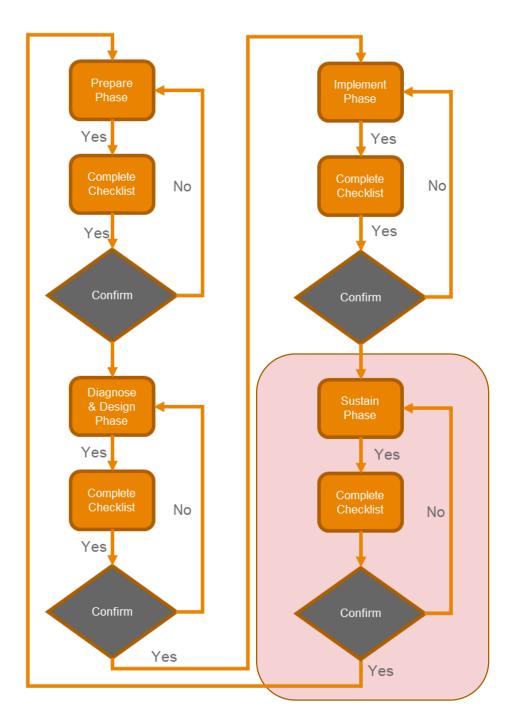
- ✓ The relevant Operational and Technical Excellence tools identified in the Diagnose & Design Phase are deployed.
- ✓ The fundamental Stability tools of EH&S, Quality Foundations, 5S Visual Management, TPM & PIM continue to evolve as outlined in their respected Playbooks.
- ✓ The 8 question process has been followed and implemented.
- ✓ All Kaizens identified on the future state map have been implemented. If not, provide evidence of deviation from the deployment plan.



Sustain Phase

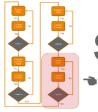
The Sustain Phase during which the site continues to leverage opportunities identified through Process Improvement Management (PIM) in order to sustain the changes and to pursue perfection

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Sustain Phase Overview



In this phase:

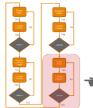
- Create Production Tension
- Continued deployment of Process Improvement Management (PIM)
- The Exit Phase Elements will be reviewed and each element will attain a 100% score prior to entering the Sustain Phase

- 1. Create Production Tension
- 2. Process Improvement Management (PIM)
- 3. Sustain Phase Exit Elements



Note: Click on the links above to quickly access the topic





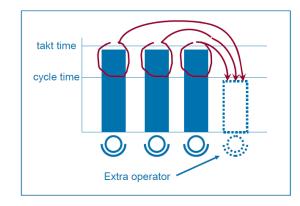
Sustain Phase: Create Production Tension

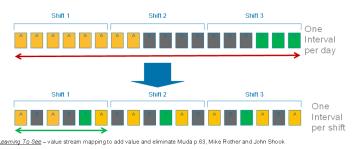


Production tension is the practice of keeping the lean value stream under stress.

- It ensures that;
 - Problems get noticed quickly and receive fast responses.
 - It forces and accelerates the **pursuit of perfection** by exposing the "truly next best" kaizen opportunities in the value stream.
 - **Removing** inventory buffers, balancing to takt time, reducing replenishment lead times, decreasing production intervals, adding more products into the production interval, etc.
 - The **ultimate goal** is to be able to produce any part, any time, in any quantity requested by the customer in the shortest interval possible.
- This flexibility will lead to improved delivery performance, reduced lead time, reduced lot sizes, reduced inventory levels, and many other significant benefits to the business.



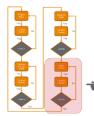






Refer to the **2A MMP Production Tension**video for more in depth explanation





Sustain: Process Improvement Management (PIM)

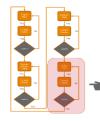


- PIM will continue to serve as the management mechanism to continuously improve the process and ensure the processes are running as designed.
- The four critical elements (Leader Standard Work, Visual Controls, Tiered Accountability, and Discipline) will continue to identify opportunities and allow value streams to sustain success.
- By leveraging and empowering employees to identify opportunities and provide solutions PIM will provide the value stream transformation team with a high probability of sustaining improvements.
- A well deployed lean management system is one of, if not the most important aspect of sustaining lean improvements.



- Refer to the <u>PIM Materials</u> in the <u>TEOA</u>
 <u>ACADEMY</u> for more details & the <u>PIM</u>
 <u>Playbook</u>
- Refer to the "4 Elements of PIM" video.







Sustain Phase Exit Elements

- ✓ The relevant improvement actions are creating value and delivering expected returns.
- ✓ Multiple examples of increasing the **production tension** are available in the transformed value stream/s.
- ✓ Employees are empowered to identify abnormalities, leverage problem solving techniques and utilize improvement methodologies to drive continuous improvement activities.
- ✓ All Management layers are involved in layered process audits for the value streams under transformation.
- ✓ Stability elements are continuing to mature in parallel with the sites transformational improvements.



ANY CONNECTION CAN CHANGE THE WORLD

