Step-by-Step

A guide to implementing the SEA Roadmap
Why?

- The aerospace and defense industry is migrating to high speed production
- This migration changes the requirements for suppliers
- Suppliers can’t afford to solve delivery problems with inventory
- Suppliers can’t afford to solve quality problems with inspection
What?

 › Build a competitive business that delivers 100% on-time, 0 PPM quality, with shorter lead times

 › Build a business that does all that and is very profitable

 › Use that achievement to compete and win more market share, more business, and more profitable business
How?

→ Follow this easy to use step-by-step guide to implementing the SEA Roadmap as hundreds of aerospace suppliers have already done

→ Gain more visibility and more opportunities to compete for new business
The SEA Roadmap

The Roadmap is intended as a framework for guiding and categorizing all continuous improvement efforts. It is primarily owned and improved by the Supplier Advisory Committee of SEA. It is targeted to small and mid-size production suppliers.

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The SEA Roadmap

The left side are the three tracks plus business results. Each track contains a group of one or more processes that you must establish in your company. Each business result is an industry-standard metric used for tracking your progress.

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The SEA Roadmap

- There are three stages across the top. The first, stabilization is the foundation for SEA’s overall intent - to create integrated supply chains. Although you may assign process owners to all of these 15 processes, we recommend that you start and substantially mature the Stage One processes before moving on to Stage Two and Three.

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Stage Two consists of the establishment of an integrated supply chain effort. Working with your suppliers on projects that integrate value streams, reduce lead times and cycle times, reduce cost, and improve overall service to your customer.

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Finally, the Business Results track will have you develop a scorecard that will be used to track your overall improvement efforts and communicate to the outside world that your company is serious about improvement.

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The SEA Roadmap

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<td>Establish high-performance leadership system</td>
<td>Focus on supply chain integration</td>
<td>Focus on new product startup</td>
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<td>Workforce Development</td>
<td>Establish workforce development system</td>
<td>Implement process control</td>
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<td>Operational Excellence</td>
<td>Accelerate sustainable lean performance improvements</td>
<td>Accelerate flow production</td>
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<td>Business Results</td>
<td>Establish industry-standard performance metrics</td>
<td>Show measureable improvement</td>
<td>Demonstrate reduced risk</td>
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Roadmap

Just like anything, a journey of 1,000 miles begins with a single step. So begin this effort by establishing Stage One.

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| Workforce Development | | |
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| 2.1.1 Job Skills & Cross-Training Certification Process | 2.2.1 Continuous Improvement Process |

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| 4.1.4 Parts per Million | | |
## Roadmap

### Leadership & Culture
- 1.1.1 Strategic Vision
- 1.1.2 Leadership Team
- 1.1.3 Organizational Structure
- 1.1.4 Continuous Improvement
- 1.1.5 Workforce Development

### Workforce Development
- 2.1.1 Job Skills & Cross-Training

### Operational Excellence
- 3.1.1 Kaizen
- 3.1.2 6S V
- 3.1.3 Quick Change

### Business Results
- 4.1.1 Inventory
- 4.1.2 Sales/Empl.
- 4.1.3 On-Time Delivery
- 4.1.4 Parts r

### Stage Three: Sustaining
- 1.2.1 Supply Chain Processes
- 2.2.1 Continuous Improvement Process
- 3.2.1 Material Management Process
- 3.2.2 Production Planning Process
- 3.2.3 Development Process
- 4.3.1 Process Maturity
- 4.3.2 Quick Ratio

- Standardize Five Leadership Practices
- Standardize One Workforce Practice
- Standardize Three Operational Processes
- Standardize and Track Four Metrics

Begin to Work on the Supply Chain

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Step One

- Step One
- Visit suppliers who have improved their operations profitably
- The Benchmark Site Visit schedule for SEA is published on SEA’s website [here](#)
- Get your key managers together and develop a vision of your company using what you saw at the suppliers you visited
Example Vision

- We will be the best heat treating company in the industry
- We will provide the best lead times, 100% on-time delivery, and 0 PPM quality performance
- We will provide an excellent place to work
Step Two

- Set your improvement goals
- Focus only on those things that improve your current performance
## Example Improvement Goals

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<th>Near-Term (12 mos.)</th>
<th>Medium-Term (12-24 mos.)</th>
<th>Long-Term (24+ mos.)</th>
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<tr>
<td>1. Achieve 97% on-time delivery for all value streams</td>
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<td>1. Achieve 100% on-time delivery for all value streams</td>
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<td>2. Reduce PPM on all value streams to &lt;2000</td>
<td>2. Reduce PPM on all value streams to &lt;500</td>
<td>2. Reduce PPM on all value streams to &lt;100</td>
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<tr>
<td>4. Reduce lead time through 2 major suppliers to less than 12 weeks</td>
<td>4. Reduce lead time through 4 major suppliers to less than four weeks</td>
<td>4. Reduce lead time through all major value streams to less than two weeks</td>
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- First establish your long-term goals
- Then follow with medium-term goals
- Lastly translate the near-term goals and try to stick to performance related goals that can drive improvement efforts
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Step Three

- Step Three
- Set improvement targets for the key metrics
Improvement Targets

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<td>Annual Improvement Plan % Complete</td>
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❖ Begin with where you are today and then show what you expect as a result of your improvement efforts
❖ It is unreasonable to invest in a process management system with process owners, kaizen events, and standard work efforts without expecting your metrics to improve
❖ Yes - if you’re not used to measuring these things this could be a lot of work to begin with - but let’s face it, what gets measured gets managed and you can’t grow up as a company without measuring something. This is how our customers measure our performance. Best to begin there.
# Improvement Targets

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**On-Time Delivery “OTD”**
Number of on-time parts delivered divided by total parts delivered expressed as a %.
Uses “promise date” defined as the date the supplier agreed to deliver.

**Inventory Turns**
Annual Cost of Goods Sold (12 month rolling average) divided by
Period-average inventory (average for the most recent month)
Inventory includes raw, WIP, and finished goods.

**Sales per Employee**
Sales revenue for the quarter divided by total number of employees at the end of the quarter (direct and indirect) expressed in dollars.

**Parts Per Million (PPM)**
Refers to the number of defective parts shipped divided by the total number of parts shipped in a period normalized to 1,000,000 parts. This will be calculated using validated customer-reported defects.

**Quick Ratio**
Current Assets minus Inventories divided by Current Liabilities.

**Processes at Level 3 or above**
Count the absolute number of processes at Level 3 or higher in process maturity, including processes on the SEA Roadmap and other processes that you have designated Managed Processes.

See the SEA Definitions at [http://www.seaonline.org/docs/SEADefinitions.pdf](http://www.seaonline.org/docs/SEADefinitions.pdf)
Step Four

- Select the Value Streams that will make the greatest difference in your goals

- **Value Stream** – All the processes required to produce a product or service of value to a customer. The term value stream applies to product families or individual products or services. The value stream includes the flow of materials in production as well as information flow. The customers of a value stream could be internal or external.

- Map the Value Streams you selected
# Value Stream Selection Matrix

<table>
<thead>
<tr>
<th>Your Goals</th>
<th>Value Stream #1</th>
<th>Value Stream #2</th>
<th>Value Stream #3</th>
<th>Value Stream #4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve Lead Time</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Improve On-Time</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Delivery</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improve Quality</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>11</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

5 is high impact on the goal; 1 is low impact - highest total is the value stream that has the most overall impact on the goals
Step Five

- Decide on the areas that represent the greatest bottlenecks
- Schedule the project or Kaizen event for each bottleneck
- Set specific goals for each area of the value stream to be improved

When it comes to facilitating improvement projects, you need to use someone who has experience in conducting a variety of kaizen events. Don’t use someone who is still learning. Remember a Toyota general manager may spend 12-15 years learning to conduct Kaizens. An outside consultant with experience may cost a lot but a successful kaizen can produce 5-10 return on investment. SEA does not require you to use a SEA-certified consultant but the SEA process won’t work unless many Kaizens are scheduled and conducted by competent experts.
# Align Resources to Managed Processes

<table>
<thead>
<tr>
<th>Value Stream</th>
<th>Managed Process #1</th>
<th>Managed Process #2</th>
<th>Managed Process #3</th>
<th>Managed Process #4</th>
<th>Managed Process #5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurable Objective</td>
<td>Improve setup from 2 hours to &lt; 20 minutes</td>
<td>Improve delivery to 100% on-schedule</td>
<td>Improve quality to less than 200 PPM</td>
<td>Reduce lead time from 10 days to &lt;1 day</td>
<td>Improve delivery to 100% on-schedule</td>
</tr>
<tr>
<td>Process Owner</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master Trainer</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>SME</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Set Goals to Guide Improvement Projects

- Improve ABC productivity by 100%
- Standardize XYZ process
- Improve first pass yield to 98%
Step Six

- Step Six
- Assign champions and process owners
SEA Process Architecture

Vision - Mission - Strategic Goals

Process Champions

Leadership & Culture  Workforce Development  Operational Excellence  Value Stream

Processes & Owners

Standard Work Definition, Master Trainers & SMEs
Champion - Senior Manager

- Lead the improvement efforts for value streams and roadmap process groups
- Lead change management activities including increased communication, information sharing, recognition, and feedback
- Assign and hold Process Owners accountable for process maturity and process performance
Process Owner

- Set a goal for process maturity level 3
- Participate as stakeholder in Kaizen and improvement projects
- Lead and facilitate improvement projects
- Compile data and comments for 1.1.4 Continuous Improvement Process
<table>
<thead>
<tr>
<th>Track</th>
<th>Champions</th>
<th>Roadmap Process</th>
<th>Owners</th>
<th>Master Trainer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Leadership &amp; Culture</td>
<td>1.1.1 Strategic Planning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.1.2 Leadership Communication</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.1.3 Organizational Performance Review</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.1.4 Continuous Improvement Management (usually same as Operational Excellence Champion)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.1.5 Workforce Development Integration (usually same as Workforce Development Champion)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.2.1 Supply Chain Integration Process</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.3.1 New Product Startup Process</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source – the SEA Change Plan Format
## Workforce & Operational

<table>
<thead>
<tr>
<th>Track</th>
<th>Champions</th>
<th>Roadmap Process</th>
<th>Owners</th>
<th>Master Trainer</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Workforce Development</td>
<td></td>
<td>2.1.1 Job Skills &amp; Cross Training Certification</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.2.1 Continuous Improvement Process</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Operational Excellence</td>
<td></td>
<td>3.1.1 Kaizen Process</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.1.2 6S Visual Workplace Process</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.1.3 Quick changeover/SMED Process</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.2.1 Material Management Process</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.2.2 Production Planning Process</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.2.3 Development Process</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source – the SEA Change Plan Format
**Managed Processes**

- **Managed Process** – A process selected by senior management for improvement. This process might be selected during strategic planning or other coordinated leadership activities. Managed Processes have a process owner, master trainer, and SME assigned to improve the process. Managed Processes have a team assigned for Kaizen, Six Sigma, or other Process Maturity improvement activities as appropriate.
Select Managed Processes

- Using the value stream maps made earlier, select the Managed Processes in each value stream targeted for improvement and assign a Process Owner.
# Select Managed Processes & Owners

<table>
<thead>
<tr>
<th>Value Stream</th>
<th>Managed Process #1</th>
<th>Managed Process #2</th>
<th>Managed Process #3</th>
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<td>Improve delivery to 100% on-schedule</td>
</tr>
<tr>
<td>Process Owner</td>
<td>Jim</td>
<td>Bart</td>
<td>Carol</td>
<td>Kim</td>
<td>Jeff</td>
</tr>
<tr>
<td>Master Trainer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SME</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Process Owner Training

- Process Owners need to understand the Roadmap and Process Maturity Model

- Process Owners should be skilled to facilitate teams and influence support for process improvement efforts
Process Maturity Model “PMM”

- **Process Maturity Levels**

  5. The process shows continuous positive trends and benchmarks world-class
  4. The process is under process control, is analyzed, and improved using data
  3. The process has certified trainers and is standardized
  2. The process has been documented to the work instruction level
  1. The process has been identified, defined, and has an owner

---

Error rates are shown against process maturity levels. The chart illustrates that as process maturity increases, the error rates decrease, leading to a reduction in the cost of sales.
Select Master Trainers & SMEs

✈ A subject matter expert who works in or is familiar with the work area and is willing to follow a standard process for training and certification of fellow workers

✈ Has the skills to provide training and coaching to others in an informal workplace setting

✈ Has good communication and relationship skills

✈ Must have or acquire computer skills

✈ If you have two SMEs, consider assigning one to support the Master Trainer
# Select Master Trainer & SME

<table>
<thead>
<tr>
<th>Value Stream</th>
<th>Managed Process #1</th>
<th>Managed Process #2</th>
<th>Managed Process #3</th>
<th>Managed Process #4</th>
<th>Managed Process #5</th>
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</tr>
<tr>
<td>Process Owner</td>
<td>Jim</td>
<td>Bart</td>
<td>Carol</td>
<td>Kim</td>
<td>Jeff</td>
</tr>
<tr>
<td>Master Trainer</td>
<td>Betty</td>
<td>Bill</td>
<td>Dave</td>
<td>Lance</td>
<td>Suze</td>
</tr>
<tr>
<td>SME</td>
<td>John</td>
<td>Janie</td>
<td>Carl</td>
<td>Sean</td>
<td>Joe</td>
</tr>
</tbody>
</table>
Source Examples

- Following are examples to provide you with some ideas for the Level 1 process map for your processes.
- These include anything and everything that we have seen used in these processes. This does not mean all these things are required.
- For process requirements, look at the criteria at the bottom of the page. Only what this criteria lists is a requirement of your process.
- To achieve Level 2 maturity, you will have to write work instructions for each of the boxes in this diagram so be careful not to include more than you believe you need.
- To achieve Level 3 maturity, you will need to use the work instructions to train and certify each person who will be a part of the process.
- Please don’t copy these processes. Each company is different and your processes should reflect your own ideas of what works and what doesn’t. The SEA Certification audit asks “How your company accomplishes the aims in the criteria” and that gives you plenty of flexibility for designing a process you like.
1.1.1 Strategic Planning

Purpose: to define and deploy the most important strategic priorities to drive performance improvement.

1.1.1 Strategic Planning Process – How do your senior leaders accomplish strategic planning? What are the key process steps and who are the participants? How do you ensure that the process addresses strengths, weaknesses, opportunities, and threats; major shifts in technology, markets, and competition? What are your key strategic goals, measureable targets, and timetables? How are goals and metrics deployed throughout the organization?
# 1.1.1 Process Worksheet

<table>
<thead>
<tr>
<th>Suppliers</th>
<th>Inputs</th>
<th>Process</th>
<th>Outputs</th>
<th>Customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suppliers</td>
<td>Customer Interviews/Surveys, Employee Interviews/Surveys, Supplier Interviews/Surveys</td>
<td>SWOT</td>
<td></td>
<td>Planning Team</td>
</tr>
<tr>
<td>Owners</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planning Team</td>
<td>Strategic Plan</td>
<td>Deployment</td>
<td>Employee Meetings, Supplier Meetings, Customer Meetings, Department &amp; Individual Goals, Reward, Recognition, Communication</td>
<td>Employees, Suppliers, Customers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## 1.1.1 Work Instructions

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Process</th>
<th>Instructions</th>
<th>Outputs</th>
<th>Customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Analysis</td>
<td>Preparation</td>
<td>A member of the planning team will be assigned to produce a report on each of the inputs listed to be distributed one week prior to the planning session.</td>
<td>PowerPoint Reports</td>
<td>Planning Team</td>
</tr>
<tr>
<td>Operations Analysis</td>
<td></td>
<td></td>
<td>Financial Analysis</td>
<td></td>
</tr>
<tr>
<td>Technology Analysis</td>
<td></td>
<td></td>
<td>Operations Analysis</td>
<td></td>
</tr>
<tr>
<td>Markets Analysis</td>
<td></td>
<td></td>
<td>Technology Analysis</td>
<td></td>
</tr>
<tr>
<td>Competitive Analysis</td>
<td></td>
<td></td>
<td>Markets Analysis</td>
<td></td>
</tr>
<tr>
<td>Standards – AS9100, SEA</td>
<td></td>
<td></td>
<td>Competitive Analysis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Standards – AS9100, SEA</td>
<td></td>
</tr>
<tr>
<td>Customer Interviews/Surveys</td>
<td>SWOT</td>
<td>Surveys will be conducted with each input audience to determine strengths, weaknesses, opportunities, and threats report to be distributed to planning team one week prior to planning session.</td>
<td>Planning Team</td>
<td></td>
</tr>
<tr>
<td>Employee Interviews/Surveys</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplier Interviews/Surveys</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SWOT</td>
<td>Planning Session</td>
<td>Planning Team meets in accordance with defined schedule and agenda</td>
<td>Vision, Mission Goals &amp; Timetables Scorecard</td>
<td>Planning Team</td>
</tr>
<tr>
<td>Report Outs</td>
<td></td>
<td></td>
<td>Annual Improvement Plan</td>
<td></td>
</tr>
<tr>
<td>SWOT</td>
<td>Planning Session</td>
<td></td>
<td>Value Streams</td>
<td></td>
</tr>
<tr>
<td>Strategic Plan</td>
<td>Deployment</td>
<td>Sessions are scheduled with each function and department to present strategic plan and to review key performance requirements for each in accordance with roadmap processes 1.1.2-5.</td>
<td>Employee Meetings Supplier Meetings Customer Meetings Department &amp; Individual Goals Reward Recognition Communication</td>
<td>Employees Suppliers Customers</td>
</tr>
</tbody>
</table>
### 1.1.1 Training Record

<table>
<thead>
<tr>
<th>Process</th>
<th>Participants</th>
<th>Certified Trainer</th>
<th>Training Date</th>
<th>Certification Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation</td>
<td>Planning Team</td>
<td>Jones</td>
<td>3/10/1999</td>
<td>4/10/1999</td>
</tr>
<tr>
<td></td>
<td>Planning Staff Support</td>
<td></td>
<td>3/10/1999</td>
<td></td>
</tr>
<tr>
<td>SWOT</td>
<td>Planning Team</td>
<td>Jones</td>
<td>3/11/1999</td>
<td>4/10/1999</td>
</tr>
<tr>
<td></td>
<td>Planning Staff Support</td>
<td></td>
<td>3/11/1999</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Department Heads</td>
<td></td>
<td>3/11/1999</td>
<td></td>
</tr>
<tr>
<td>Planning</td>
<td>Planning Team</td>
<td>Jones</td>
<td>3/14/1999</td>
<td>3/14/1999</td>
</tr>
<tr>
<td>Session</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Deployment</td>
<td>Planning Team</td>
<td>Smith</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Department Heads</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Functional Heads</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Cell Leaders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Team Leaders</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Most companies already have formats for work instructions and training records. These are intended as illustrations and not formats.
1.1.2 Leadership Communication

Purpose: to ensure understanding, buy-in, and ownership at all levels of the organization to drive performance improvement.

LEADERSHIP COMMUNICATION

- Preparation
- Collect Data
- Communicate
- Feedback

Areas Addressed

- Audiences: Employees, Suppliers, Customers
- Compile information to be communicated
  - Performance metrics
  - Market information
  - Employee feedback
  - Supplier Feedback
  - Customer feedback
- Conduct communication sessions
  - All hands meetings
  - Standup meetings
  - Senior manager breakfasts
  - New hire orientation
  - Newsletter
  - Supplier briefings
  - Customer presentations
  - Reward and recognition
- Collect feedback on communication process
  - Process feedback and improve process

1.1.2 Leadership Communication Process – How do senior leaders communicate and reinforce company direction and expectations (vision, goals, mission, and values) to all employees, customers, and key suppliers/partners? What are the key process steps and who are the participants? How do senior leaders encourage frank, two-way communication throughout the organization? How do senior leaders create and re-enforce a high-performance work culture that embraces standard work, process maturity, and lean production techniques? How do senior leaders involve themselves in reward and recognition that re-enforces a high-performance work culture?
1.1.3 Organizational Performance Review

Purpose: to ensure focus on and accountability for targeted performance improvements at all levels of the organization.

1.1.3 Organizational Performance Review Process - How do senior leaders review organizational performance to assess organizational success, competitive performance, and progress relative to strategic goals and action plans? How do senior leaders select, organize, and assess key performance metrics and measurable goals? How do senior leaders translate organizational performance review findings into priorities for continuous improvement?
1.1.4 Continuous Improvement Management

Purpose: to prioritize and drive improvement efforts, as well as allocate necessary resources.

CONTINUOUS IMPROVEMENT MANAGEMENT

- Preparation
  - Prepare the Annual Improvement Plan in 1.1.1
  - Prepare the Quarterly Report Feedback
- Collect Data
  - Compile data for each review – secure SEA Quarterly Reporting process feedback
  - Compile process owners and master trainer reports
  - Compile Kaizen and project report outs
- Reviews
  - Conduct reviews and develop action plans
  - Champion reports
  - Process Owner reports
  - Master Trainer reports
- Feedback
  - Collect feedback and improve process

1.1.5 Quarter Report Action Plans
- Prioritized Kaizen Schedule
- Updated Process Owner Listing

Areas Addressed

1.1.4 Continuous Improvement Management Process – How does your organization select improvement priorities and review progress on improvement initiatives? How are process owners, master trainers, and strategic champions included in this process? How are improvement projects and teams selected and given direction? How is a standard problem-solving model deployed throughout the organization? How are recognition and sharing of key learning accomplished? How are process improvement ideas solicited, reviewed, approved, and implemented? How is a high level of workforce participation ensured? How are improvement suggestions recognized? How are suggestions made visible in work areas?
1.1.5 Workforce Development Integration Process

Purpose: to ensure that management sets priorities and allocates resources to workforce development.

WORKFORCE DEVELOPMENT INTEGRATION

- Preparation
- Collect Data
- Reviews
- Feedback

Areas Addressed

- Annually prepare workforce development plan
- Strategic Plan
- Training records
- Job skills certification records
- Training needs assessment
- Annual Improvement Plan

- Compile data for review
- Compile training needs assessment
- Benchmarks

- Conduct senior management reviews and develop action plans and updated Training Objectives Matrix
- Senior management review
- Cell & work area reviews
- Strategic Plan review
- Training Objectives review
- Annual Improvement Plan Review

- Collect feedback and improve process

1.1.5 Workforce Development Process – How do senior leaders evaluate the need for workforce development and select topics for each level and function? How does the selection of training topics integrate with strategic goals and process improvement needs? How is the workforce-training plan prepared and monitored? How does your organization ensure continuous learning from improvement projects, customers, and suppliers? How does your organization integrate benchmarking into the learning process? How does your organization integrate such learning into on-going employee education, training, and development?
1.2.1 Supply Chain Integration Process

Purpose: to integrate customer and supplier efforts to increase performance and reduce cost for the entire supply chain

SUPPLY CHAIN INTEGRATION

Planning

Prepare annual supply chain integration plan including goals and action plans (included in 1.1.1 Strategic Planning)
Create target list of supply chain projects linked to Annual Improvement Plan Goals
(The Process Owner for Supply Chain Integration is sometimes called the Supply Chain Director or Manager)

Involve Customers & Suppliers

Prepare presentations for customer and supplier meetings
Gain commitment to improvement projects and schedule
Gain commitment to customer involvement in SEA
Gain commitment to supplier involvement in SEA

Value Stream Map

Assemble joint customer-supplier teams
Value stream map entire process
Identify key metrics
Create action plans, kaizen schedules, training and certification schedules

Implement

Implement planned Kaizen events
Implement Kitting
Implement supplier Kan-Bans, pull signals
Implement supplier certifications and scorecards
Implement planned training and certification of suppliers on standard work methods
Document before and after

Areas Addressed

1.2.1 Supply Chain Integration Process – How do senior leaders select supply chain improvement projects? How does your organization integrate its customers and suppliers into its improvement strategies? How do you qualify suppliers in quality, delivery and ability to respond to pull signals? How do you integrate suppliers into your lean strategies such as in supplier-managed inventory, min-max, consumption-based ordering, pull signals? How does your organization make use of teaming agreements to drive alliances that improve supply chain performance?
1.3.1 New Product Startup Process – How does your organization contribute to the immediate success of customer startup operations including first article and early production efforts? How are processes like Advanced Product Quality Planning “APQP” and Production Preparation Process “3P” used to pro-actively ensure value for customers? How are customers needs for reduced lead time and high levels of initial quality considered in the startup process?
Workforce Development
2.1.1 Job Skills & Cross-Training Certification Process

The purpose of the job skills & cross-training certification process is to maintain and expand the training and job skills certification effort.

**Areas Addressed**
- Annually prepare workforce development plan in 1.1.5
- Job Skills Objectives Matrix
- Training records
- Job skills certification records
- Training needs assessment
- Champions
- Process Owners
- Master Trainers

**JOB SKILLS & CROSS TRAINING CERTIFICATION**

- Preparation
- Collect Data
- Reviews
- Feedback

- Collect feedback and improve process
- Review training, cross-training, and certification progress and feedback
- Review master trainer team status
- Review Training Objectives Matrix and link to training activities
- Review process analysis and process owner feedback

2.1.1 Job Skills & Cross-Training Certification Process - How is job skills training and certification accomplished? How does your organization ensure that processes selected are linked to key priorities for improvement? How is cross-training accomplished? How is the team of master trainers maintained and expanded? How is the training and cross-training program reviewed?
2.2.1 Work Areas Continuous Improvement Process

The purpose of the work area continuous improvement process is to establish a self-management system for cells and work areas.

**WORK AREA CONTINUOUS IMPROVEMENT**

- **Preparation**
- **Planning**
- **Implement**
- **Feedback**

Areas Addressed:
- Work area team secures the following:
  - Annual Improvement Plan
  - Work Area Goals
  - Company Scorecard
- Work area team prepares:
  - Work area goals and targets
  - Work area dashboard
  - Work area 6S schedule
  - Work area Kaizen schedule

Work area team prepares:
- Assignments:
  - Improvement projects list
  - Job skills/cross-training matrix
  - 6S
  - Kaizen
  - Dashboard
  - SPC
  - PDCA

Conduct weekly and monthly meetings
- Provide management report outs
- Update dashboard

Collect feedback and improve process

2.2.1 Work Area Continuous Improvement Process – How is continuous improvement supported in all work areas? How are improvement projects linked to work area goals? How does the work area integrate continuous improvement into their daily operations? How are problem-solving and corrective action methods standardized in all workgroup processes? How are work areas and cells reviewed by senior management? How are statistical methods integrated into the standard work for appropriate managed processes? How are process control plans developed and implemented? How are statistical methods reviewed and their application improved?
Operational Excellence
3.1.1 Kaizen Process

The purpose of the Kaizen Process is to accelerate and create breakthroughs in work-area process performance.

**KAIZEN PROCESS**

- **Setup**
- **Preparation**
- **Event**
- **Post Event**
- **Feedback**

**Areas Addressed**

- Value Stream Maps
- Kaizen Splash Plans
- Annual Improvement Plan
- Kaizen Team Leader appointed from work area
- Kaizen Objectives set and linked to Annual Improvement Plan

**Value Stream Maps**

- Kaizen Leader collects data from work area related to upcoming Kaizen event
- Kaizen Leader confirms objectives with Process Owner and Champion
- Resources are approved by Champion – standby resource confirmed
- Kaizen event schedule is set with specific daily action plans

**Conduct training**

- Assign action plans
- Daily report outs
- Pilot run if applicable
- Create new standard work and training
- Prepare report out
- Present results

**Manage event follow-up**

- Share results and learning with other teams/work areas
- Collect feedback and improve process

3.1.1 Kaizen Process – How does your organization set and review priorities for Kaizen events? How are Kaizen events conducted? How is recognition for team members provided and are senior managers and the workforce involved? How are lessons learned shared with others who can benefit? How are process improvements documented and deployed to others using the same or similar processes? How are internal Kaizen leaders developed and deployed? How are goals set for Kaizen leadership and how is progress monitored?
3.1.2 6S Visual Workplace Process

The purpose of the 6S visual workplace process is to place ongoing and continuous focus on workplace organization and effectiveness.

### 6S VISUAL WORKPLACE PROCESS

- **Setup**
- **Preparation**
- **Implement**
- **Audit**
- **Feedback**

#### Areas Addressed

- Develop Annual 6S Implementation Plan and schedule
- Communicate 6S plan
- 6S Audit results
- Create incentive program
- Repeat annually

- Train all work areas in the 6S process
- Provide coaching and assistance
- Establish 6S scorecards in each work area
- Repeat regularly

- Work areas schedule and implement 6S in a series of scheduled work events

- Weekly audit results go on the work area scorecard

- Collect feedback and improve process

**PPT report**

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3.1.2 6S Visual Workplace Process – How does your organization ensure effective deployment of 6S Visual Workplace strategies for workplace organization? How are the 6S status, process flow, production status, employee training status, and continuous improvement effort clearly displayed and visible in the office and factory floor? How does your organization ensure that work areas are kept consistently free of dirt and clutter? How are improvements reviewed and recognized?
3.1.3 Quick Changeover/SMED Process

The purpose of the quick changeover process is to place focus on the reduction of changeover times in order to achieve faster flow of product.

QUICK CHANGEOVER/SMED PROCESS

Setup > Preparation > Implement > Audit > Feedback

Areas Addressed

- Develop Annual Changeover Reduction Implementation Plan and schedule
- Communicate Changeover plan
- Changeover results
- Create incentive program
- Repeat annually

- Train all work areas in the changeover process
- Provide coaching and assistance
- Establish changeover scorecards in each work area
- Repeat regularly

- Work areas schedule and implement changeover in a series of scheduled work events
- Changeover results go on the work area scorecard
- Collect feedback and improve process

3.1.3 Quick Changeover/SMED Process – How does your organization continually reduce changeover and setup times? How are changeover and setup times tracked and displayed on the factory floor? Have machine operators been formally trained in SMED methods? How is progress reviewed and recognized? What metrics are monitored?
3.2.1 Materials Management Process

The purpose of the material management process is to enable, support, and improve material support for the lean enterprise.

3.2.1 Material Management Process – How does your organization ensure the effectiveness of material management processes in support of its lean and flow manufacturing objectives? How does your organization maintain a high level of inventory accuracy? How do you maintain a high level of 6S in material storage areas? How are levels of obsolete, slow-moving and expedited material maintained at a minimum? How are material handlers, material planners and supervisors formally trained in material management methods? How does your organization integrate the requirements of a flow-based material process? How are “pull” methods such as material Kanbans, consumption-based ordering and min-max utilized? How are Kanban supermarkets integrated into factory floor operations?
3.2.1 Materials Management Process

The purpose of the material management process is to enable, support, and improve material management for the lean enterprise.

Areas Addressed
- Prepare annual material flow improvement plan
- Set targets
  - Objectives
  - Metrics
- Select strategies
  - Kitting
  - Super Market
  - Kanban
  - Consumption-based pull
  - 6S
- Conduct regularly scheduled meetings
- Conduct training and implement material flow improvement plan activities
- Weekly audit results go on materials scorecard
- Collect feedback and improve process

3.2.1 Material Management Process – How does your organization ensure the effectiveness of material management processes in support of its lean and flow manufacturing objectives? How does your organization maintain a high level of inventory accuracy? How do you maintain a high level of 6S in material storage areas? How are levels of obsolete, slow-moving and expedited material maintained at a minimum? How are material handlers, material planners and supervisors formally trained in material management methods? How does your organization integrate the requirements of a flow-based material process? How are “pull” methods such as material Kanbans, consumption-based ordering and min-max utilized? How are Kanban supermarkets integrated into factory floor operations?
3.2.2 Production Planning Process

The purpose of the production planning process is to enable, support, and improve production support for the lean enterprise.

**Areas Addressed**

- Prepare annual production planning improvement plan
- Set targets
  - Objectives
  - Metrics
- Select strategies
  - Flow/Mixed Model
  - Changeover
  - Cells
- Conduct regularly scheduled meetings to validate demand forecast
  - Sales forecast
  - ERP
  - Industry outlook
- Create master schedule
  - Capacity forecast
- Weekly audit results go on production scorecard
- Collect feedback and improve process

3.2.2 Production Planning Process – How does your organization ensure the effectiveness of production planning processes in support of its lean and flow manufacturing objectives? How often are production requirements updated and communicated to the factory floor? How are production schedules communicated to different work centers? How are pull methods such as FIFO lanes and supermarkets used to replace the need for detailed production schedules? How are production planners trained in production planning methods? How does your organization integrate mixed model cell/line design into its operations throughout the enterprise? How are production and industrial engineers, production managers and supervisors, and material management personnel trained in the lean mixed model line design methods? How are major processes linked and balanced into a continuous flow? How are pull methods such as In Process Kanbans, FIFO lanes and Kanban supermarkets integrated into the production flow? How are operators cross-trained for multiple workstations?
3.2.2 Production Planning Process

The purpose of the production planning process is to enable, support, and improve production management for the lean enterprise.

PRODUCTION PLANNING PROCESS

- Preparation
- Communicate
- Implement
- Audit
- Feedback

Areas Addressed

- Prepare annual production improvement plan
- Set targets
  - Objectives
  - Metrics
- Select strategies
  - Flow/Mixed Model
  - Changeover
  - Cells
- Conduct regularly scheduled meetings
  - Communicate status
  - Communicate results
  - Provide recognition
  - Solicit feedback
- Conduct training and implement production improvement plan activities
- Weekly audit results go on production scorecard
- Collect feedback and improve process

3.2.2 Production Planning Process – How does your organization ensure the effectiveness of production planning processes in support of its lean and flow manufacturing objectives? How often are production requirements updated and communicated to the factory floor? How are production schedules communicated to different work centers? How are pull methods such as FIFO lanes and supermarkets used to replace the need for detailed production schedules? How are production planners trained in production planning methods? How does your organization integrate mixed model cell/line design into its operations throughout the enterprise? How are production and industrial engineers, production managers and supervisors, and material management personnel trained in the lean mixed model line design methods? How are major processes linked and balanced into a continuous flow? How are pull methods such as In Process Kanbans, FIFO lanes and Kanban supermarkets integrated into the production flow? How are operators cross-trained for multiple workstations?
3.2.3 Development Process

The purpose of the development process is to provide and continuously improve engineering services for the lean enterprise.

Areas Addressed:
- Secure Information
  - Customer Requirements
  - Customer Drawings & Specs
  - Research
  - Feasibility Studies
  - Design Requirements

- Alternative Disciplines
  - Design to Cost
  - Design for Manufacturability
  - Design for Six Sigma
  - Design for Environmental

- Involve
  - Customers
  - Suppliers
  - All Functions

- Gates
  - Preliminary Design
  - Prototype
  - Final Design
  - Prototype
  - Final

- Review
  - Annual Improvement Plan
  - Sales Forecast
  - Development Schedule
  - Process Feedback

- Follow production transfer process
- Collect feedback and improve process

3.2.3 Development Process – How does your organization design and develop new products or services? How are advanced techniques such as Six Sigma, Design of Experiments, Design to Cost, Design for Manufacturability integrated into your operations? How are customers and suppliers integrated into your development process? How is the development process reviewed and improved?
Reading Materials

- The Industrial Trainer by Gary Griffith
- Aerospace Flow by Richard Rahn

These are both available on Amazon.

The SEA website has webcast workshops free to members that give specific information about various aspects of implementing the SEA Roadmap. Got to http://seaonline.org/Briefings/webcasts.html
SEA Suppliers that continually strive to improve themselves participate in the Quarterly Performance Review process and are listed on the SEA Supplier Registry used by buyers and purchasing agents across the industry. As your company results improve, you’ll be invited to participate in the SEA Keynote process and your company’s visibility for increase.

SEA is the best way in our industry to avoid the additional costs of sales and business development while ensuring that your performance is increasingly more competitive. Do the work, reap the rewards!