Input (Pareto)

- Customer Support
- Engineering
- Sales and Marketing
- OEM (Production, Life-Test, Functional Test, etc).
- Quality
- Far East Team

Team-Based Problem Solving Approach (Based on Ford 8D)

Step 0: Gather sufficient data to determine if the issue actually exists. Perform a FEMA and decide if the full SEAL process is justified, weighing the opportunity costs. If yes, proceed to Step 1. Otherwise, document and store the issue in a searchable database (ex: Bugzilla).

Step 1: Establish a small cross-functional team with the appropriate product and process knowledge. Avoid putting "all hands on deck" if possible or cannibalizing the NPD team. Document the issue in a searchable database. Create a secure war room, preferably covered in whiteboard.

Step 2: Define the problem in measurable terms by identifying who, what, where, when, why, how and how many (5W2H). Gather, save and inspect as many real failed samples as possible. Do not assume anything.

Step 3: Define, verify and implement interim containment actions to isolate the problem from the consumer for product in the field, in transit, in inventory, in WIP and in current production. Document findings and conclusions. Model what-if scenarios for safety, cost (COGS, rework, lost opportunity, shipping, etc), quality, sales, marketing and schedule impact and review options with Sr. Management team.

Step 4: Identify all potential root causes that could explain why the problem occurred. Select likely the causes and verify they were a root cause. Identify and rank possible solutions (Software solutions are preferable). Use Fishbone or 5-Why approach. Also consider what went wrong with the control system that allowed the issue to occur. Document findings and conclusions. Model what-if scenarios for safety, cost (COGS, rework, lost opportunity, shipping, etc), quality, sales, marketing and schedule impact and review options with Sr. Management team.

Step 5: Choose and verify Permanent Corrective Actions (PCA) through pre-production programs to quantitatively confirm that the selected corrective actions will resolve the problem for the customer.

Step 6: Implement and validate the PCAs (functional tests, life tests, etc.).

Step 7: Modify the management systems, operations systems, practices and procedures to prevent recurrence of this and all similar problems in the future.

Step 8: Store the results and knowledge in an internal searchable database that is linked to the CSR and engineering database. Update Lessons-Learned document and take action to prevent reoccurrence on other products.

Problem Solving Techniques

- Six Sigma (DMAIC)
- Problem Statement (What is wrong with what?)
- 5 Why Technique
- Is and Is Not
- Difference and Change Analysis
- Fishbone / Cause and Effects (Ishikawa) Diagram: List effect at "Head". Frame issue in the form of a "why" question. Draw a straight backbone line with projecting ribs for each category (see below). Add to causes and reason why.

Fishbone Categories

Service Industries (4 P's)

- Policies
- Procedures
- People
- Plant/Technology

Manufacturing Industries (6 Ms)

- Machines
- Methods
- Materials
- Measurements
- Mother Nature (Environment)
- Manpower (people)

Process Steps

- Determine Customers
- Advertise Product
- Incent Purchase
- Sell Product
- Ship Product
- Provide Upgrade