AIAG & VDA FMEA Handbook

Sept 13, 2019

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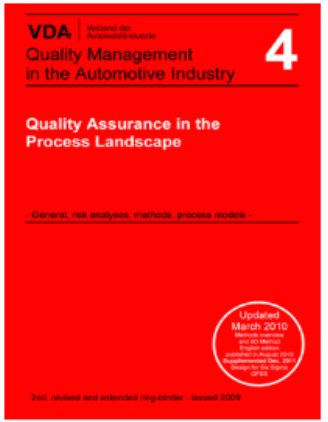
Topics Covered

- Project Objectives
- Highlights of Major Changes
- The Benefits of Robust FMEAs
- OEM Deployment Plans & Timing
- Training Options
- Q & A

AIAG & VDA FMEA - Project Objective



Provide consistent direction, guidance to all automotive suppliers

Update to include:
- Best Practices
- Improved Examples
- Functional Safety

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Importance of New Methods and Tools

- Effective FMEA risk identification - never been more critical
  - Rapid growth in component/system interactions
  - Increasingly specialized technologies
  - No change in legal obligations of producers
- Effective FMEA includes:
  - Cross-functional team contributions
  - Carefully identified system boundaries
  - Thorough documentation of risks and actions

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Highlights of Major Changes

- 7 Step Approach
- New Severity, Occurrence, Detection Tables
- Action Priority (AP) Tables
- Form Sheets and Report Views
- Supplemental FMEA – MSR

More Structured Approach – Leverages Lessons Learned – Prevention Driven

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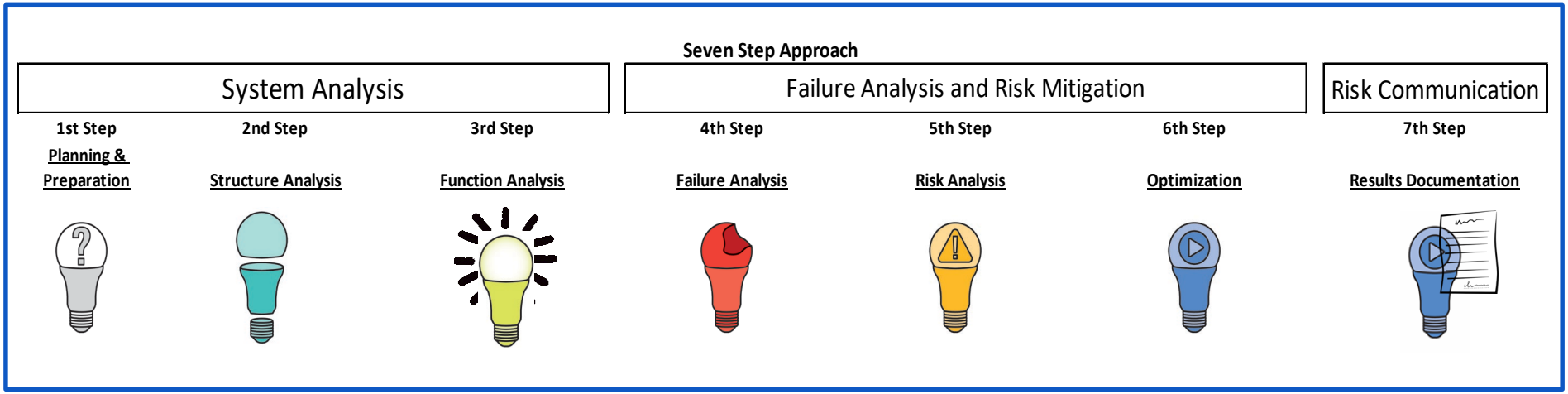
AIAG &VDA FMEA - 7 Step Approach



Applies to DFMEA, Supplemental FMEA – MSR, and PFMEA

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AIAG & VDA FMEA – 7 Step Approach

- Step 1 – Planning and Preparation
  - Definition of 5T's
    - InTent, Timing, Team, Task, Tools
  - Question raised during Stakeholder Review
    - The new methodology can be executed with either spreadsheets or FMEA Software
    - No recommendation or mandate to use specialized software
    - Handbook supports both:
      - Spreadsheets – Form Sheets
      - FMEA Software – Report Views

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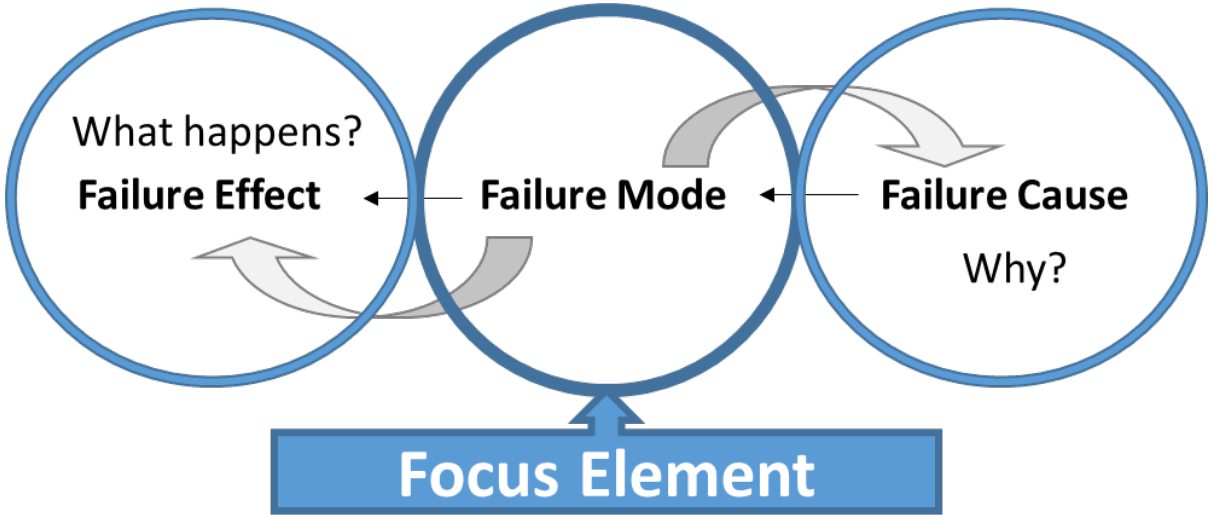
AIAG & VDA FMEA – 7 Step Approach

- Step 4 – Failure Analysis



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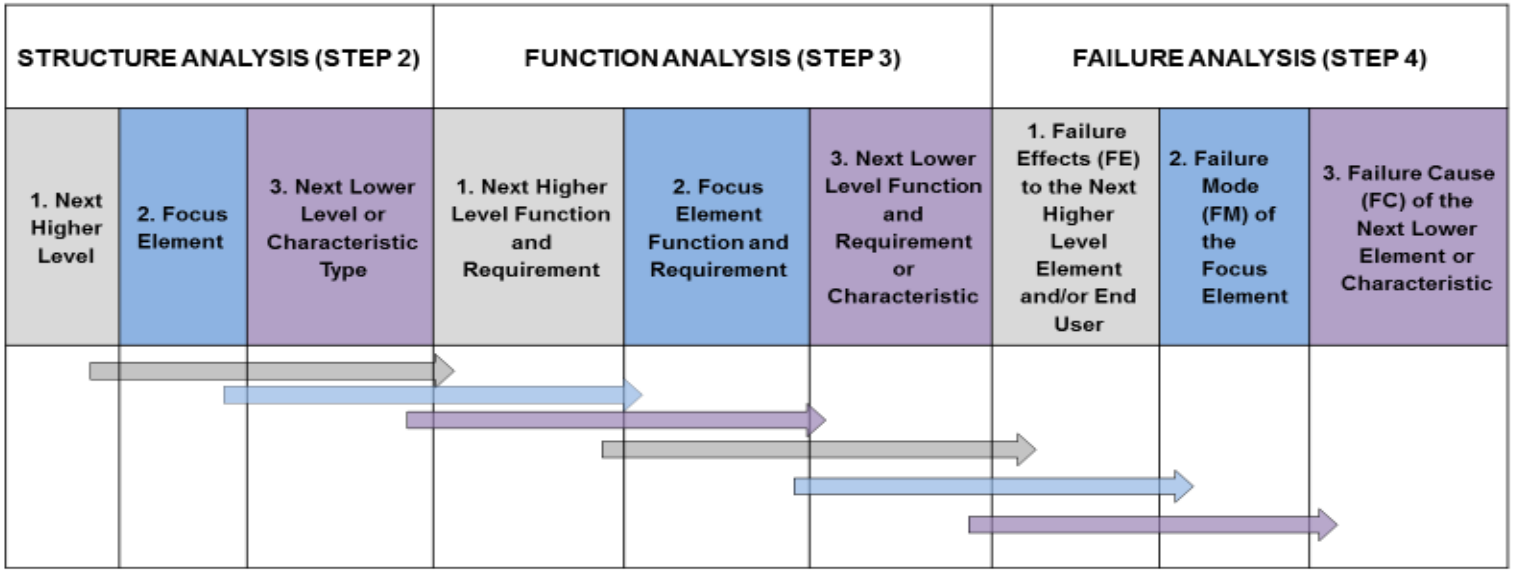
AIAG & VDA FMEA – 7 Step Approach



The new process and methodology guides the practitioner to align information between steps to ensure accuracy and completeness of the FMEA

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AIAG & VDA FMEA – 7 Step Approach

- Step 6 – Optimization
  - Identify and assign actions to reduce risk
  - Commitment to take specific, measurable, and achievable actions
    - Lower likelihood of Occurrence
    - Increase robustness of Detection
  - Keeps track of original S, O, D values
  - Collaboration between the FMEA team, management, customers and suppliers

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New Severity, Occurrence, and Detection Tables

- New Severity, Occurrence and Detection Tables
  - DFMEA, PFMEA, FMEA – MSR
- Severity (of Effect) Table
  - Rated from Very High (10) to Very Low (1)
- Occurrence (Prediction of Failure Cause Occurring) Table
  - Rated from Extremely High (10) to Extremely Low (1)
  - Alternate Occurrence Tables
    - Incidents per Thousand Items/Vehicles
    - Time Based Failure Prediction Values
- Detection (Ability to Detect) Table
  - Rated from Very Low (10) to Very High (1)

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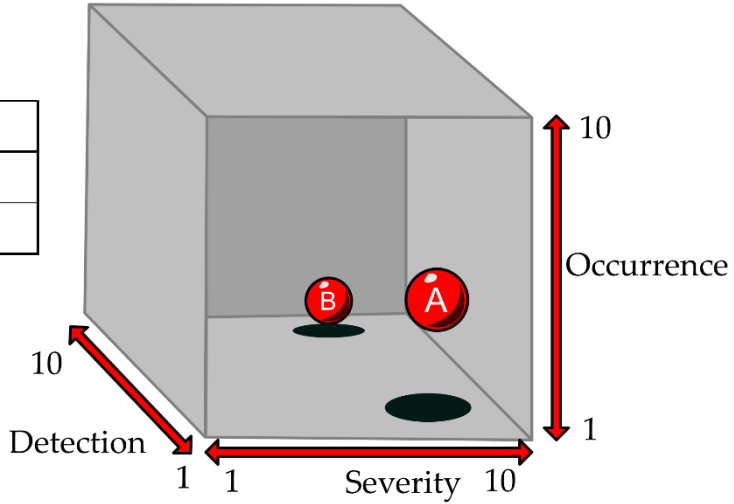
Action Priority Replaces RPN

- Risk Priority Number (RPN):
  - The product of Severity x Occurrence x Detection
  - Weights each factor equally.

	Severity	Occurrence	Detection	RPN
Scenario A	8	5	2	**80**
Scenario B	5	2	8	**80**

RPN is insufficient to differentiate between all possible SOD combinations where RPN = 80



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Action Priority (AP) Tables

- Action Priority
  - Severity, Occurrence, and Detection considered at the same time, while weighting Severity highest, then Occurrence, then Detection
    - All 1000 points are codified into a single table
  - Determines “Priority of Action”
    - Rated as High, Medium, or Low

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Form Sheets and Report Views

- Appendix A includes:
  - "Standard" and "Alternate" Form Sheets
    - DFMEA, PFMEA, and FMEA - MSR
  - Software "Views" – Potential Report Layouts
    - DFMEA, PFMEA, and FMEA - MSR
- Appendix B includes:
  - "Hints" on how the form sheet would look when updated following examples from the Handbook

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Supplemental FMEA - MSR

- FMEA MSR = Monitoring and System Response
  - Supplemental approach for Design FMEA
  - Addresses Risk Analysis of “Mechatronic Systems”
    - Not previously addressed in AIAG 4th Edition FMEA
  - Describes linkages between Design FMEA and Functional Safety (ISO 26262) concepts and analyses
  - Severity Table common with DFMEA
  - Unique Frequency (F), Monitoring (M) and Action Priority (AP) Rating Tables

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The Essential Link Between COQ and FMEA

- Leverage FMEA to Improve Cost of Quality Results
  - You can leverage a robust FMEA to make sure COQ / COPQ improvement targets are met;
  - You will need actual COQ / COPQ results on similar products or processes to make sure the FMEA risk evaluation of the new product or process is realistic

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Adoption / Deployment Timing

- Expect “rolling change” as deployment model globally
  - No expectation for “rework” of existing FMEAs
- Transition actions and adoption timing
  1. Allow several months for OEM, supplier, and auditor training
  2. OEM’s will update CSR’s to refer to AIAG & VDA FMEA Handbook
     A. Start with acceptance of new methods, rating tables, form sheets on supplier FMEA’s
     B. Then shift to requirement for selected new products /processes
     C. Then evolve to standard requirement for all new FMEA’s
  3. IATF will define when 3rd party auditors start auditing for utilization and compliance
     1. IATF (IAOB) to update the Auditor Development Program (ADP) system
     2. IATF will define the requirements and timing to confirm auditor competency on the new FMEA
- Expect timing for adoption / deployment from N.A. OEM’s to be communicated at AIAG Quality Summit on October 2nd, 2019

AIAG & VDA FMEA Handbook

- Translations
  - AIAG announcing availability of the Chinese translation
    - Pre-orders can be placed now
    - Hardcopy deliveries to occur in by end of September
    - To assure you have an official translation, only accept Handbooks with the official Chinese ISBN #
  - Spanish, Portuguese, Japanese, Korean coming soon
  - VDA is translating into other European languages

New FMEA Training Courses

Course Title	Length	Prerequisites	Format
Transitioning - DFMEA	**2 days**	**Yes**	**Classroom**
Transitioning - PFMEA	**2 days**	**Yes**	**Classroom**
Essentials for Transitioning	**2-3 Hours**	**No**	**eLearning**
Implementing and Understanding - DFMEA	2 days	No	Classroom
Implementing and Understanding – PFMEA and Control Plan	2 days	No	Classroom
Implementing and Understanding – DFMEA plus Supplemental FMEA for Monitoring and System Response	3 days	Yes	Classroom
Design FMEA for Moderators/Facilitators	2 days	Yes	Classroom
Process FMEA for Moderators/Facilitators	2 days	Yes	Classroom
The AIAG & VDA FMEA for Automotive Auditors eLearning	2-3 Hours	Yes	eLearning
AIAG & VDA FMEA – Manager's Workshop	1 Day	No	Classroom

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