AS13100 Deployment
Virtual Supplier Forum
28 April 2022

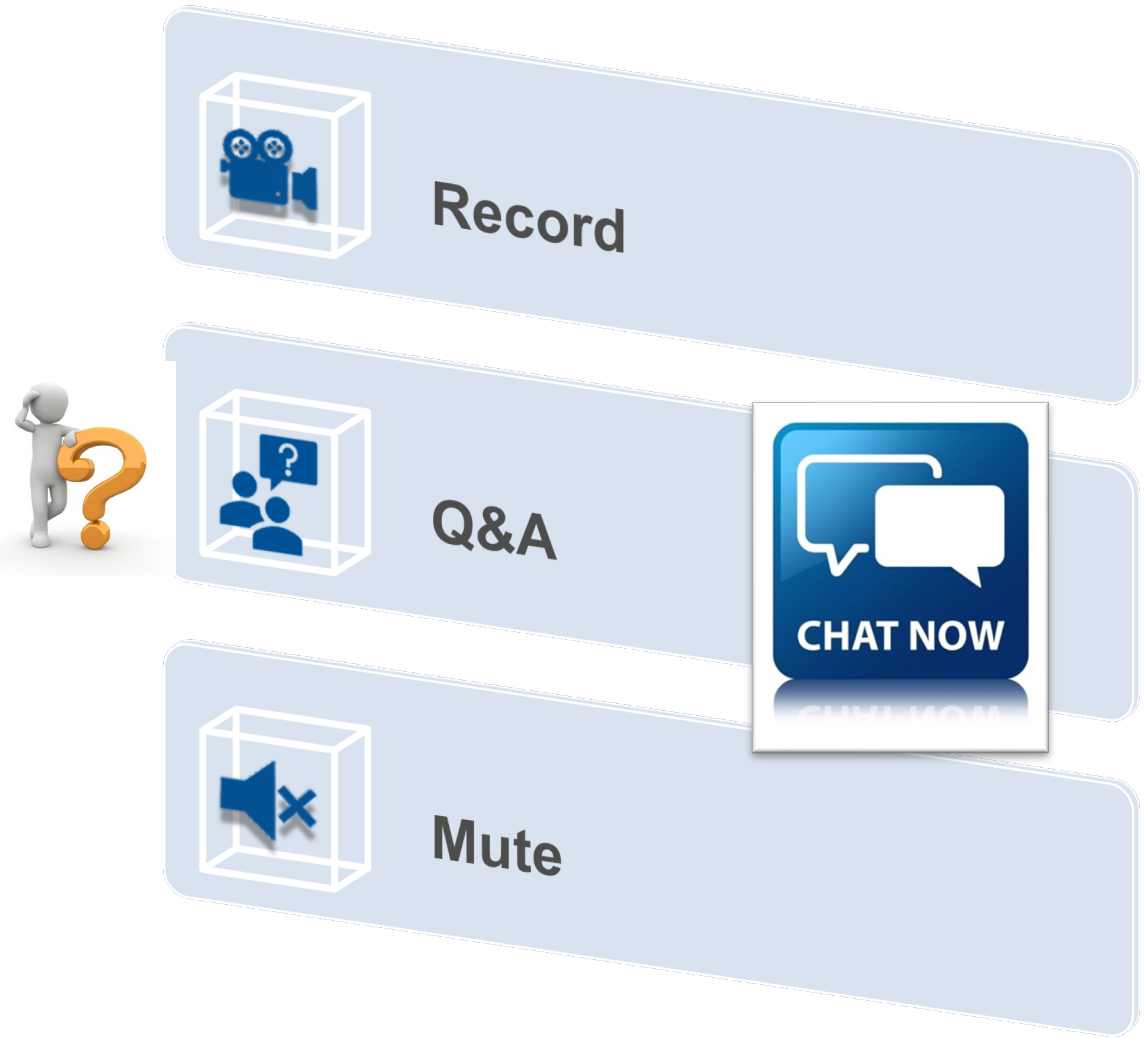
Registration Overview

Webinar Overview

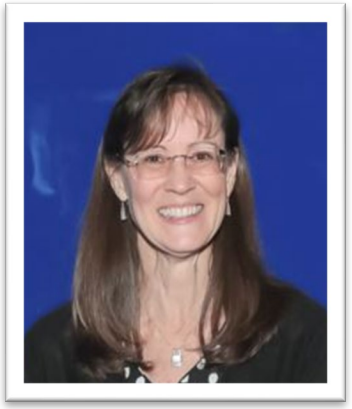
We are **recording** today's webinar and will distribute the video link following the close of the webinar. It will also be posted on the AESQ website for free viewing.

We will take **questions** during today's webinar using the **Chat** feature.

Please remain on Mute during the presentation to prevent background noise. We will also be muting all lines at the start of the session.



How to Contribute



Becky Lemon
Industry Program Manager
SAE ITC

Jim Wilson
Sr Manager, Supplier Quality
& Development
Pratt & Whitney Canada

Please answer the **Survey Questions** when asked (they are anonymous).

Use the **Chat Function** to ask a question at any time, or to make a comment.

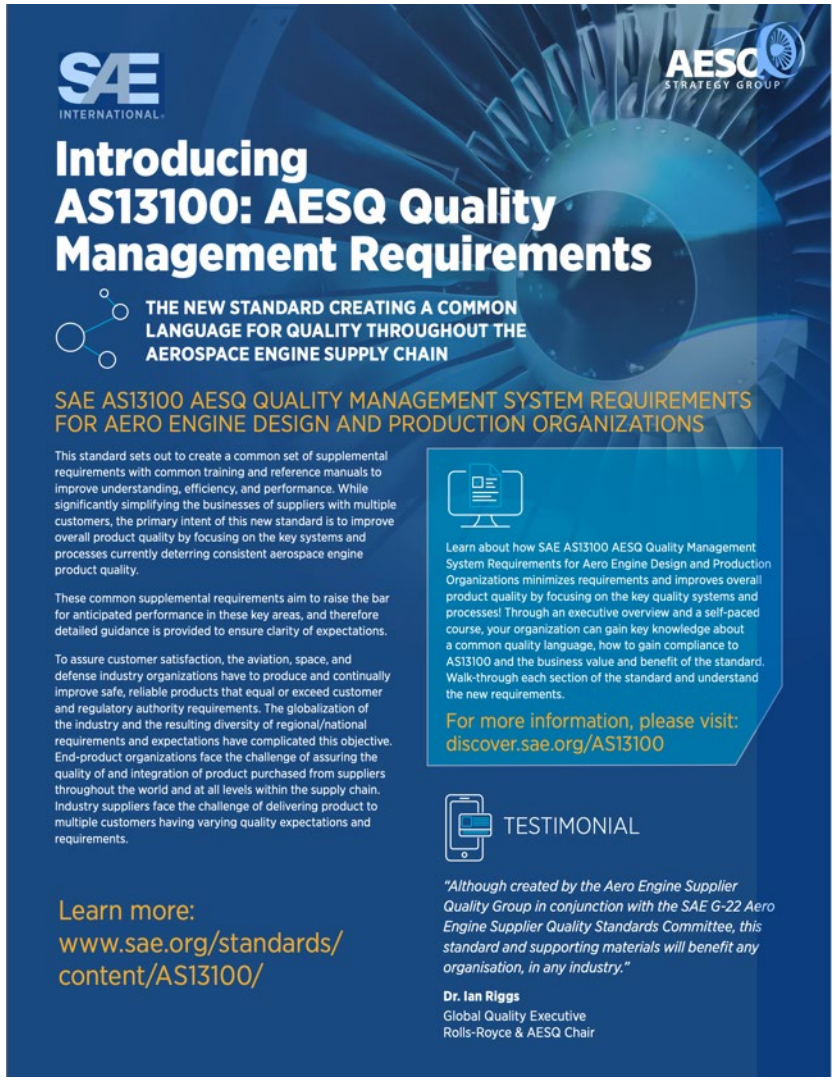
AESQ Supplier Forums

Typically held twice a year, rotating around North America, Europe and Asia

AESQ Supplier Forums provide an opportunity to;

- Provide updates on the work of the AESQ
- Share best practice
- Provide feedback to the AESQ
- Develop a network of practitioners and Subject Matter Experts

AESQ Supplier Forum 2022: Focus on AS13100 Deployment



Agenda

Topic	Presenter
AESQ Overview, Vision & Objectives	Emmanuel Vivier, VP Manufacturing & Supply Chain Deputy, Safran Aircraft Engines
AS13100 Standard Overview	Earl Capozzi, Associate Director, Discipline Chief Quality & Process Engineering, Pratt & Whitney
Deployment Introduction & Milestones	Elizabeth Pace, Supplier Quality Strategy, Associate Director, Raytheon Technologies
Deployment Plans: • IHI • MTU • Safran • Pratt & Whitney	• Hiroshi Yamamoto, General Manager, Quality System Dept., IHI • Michael Mrosewski, Quality Management Programs, MTU • Catherine Catarina-Graca, Supplier Management System Coordinator, Safran Aircraft Engines • Greg Hyatt, Supplier Metallurgical Control Specialist – Japan, Engineering / Supplier Quality, Pratt & Whitney
Deployment Dashboard	Elizabeth Pace, Supplier Quality Strategy, Associate Director, Raytheon Technologies
BREAK – 15 Minutes	**BREAK – 15 Minutes**

Agenda

Topic	Presenter
Deployment Survey Results	Jim Wilson, Sr. Manager, Supplier Quality, & Development, Pratt & Whitney Canada & Elizabeth Pace, Associate Director, Supplier Quality, Raytheon Technologies
Focus on APQP Deployment	Karl Evans, APQP Technical Project Manager, Rolls-Royce
Approach and Advancement Towards AS13100	Mani Rathinam Rajamani, Deputy Manager, Quality Engineering, Tata Advanced Systems Ltd.
AESQ How to Get Involved	Jun Sakai, Chief Engineer, IHI Corporation
Questions	Jim Wilson, Sr. Manager, Supplier Quality, & Development, Pratt & Whitney
Summary & Close	Uzam Khan, Supplier Quality Executive, Rolls-Royce

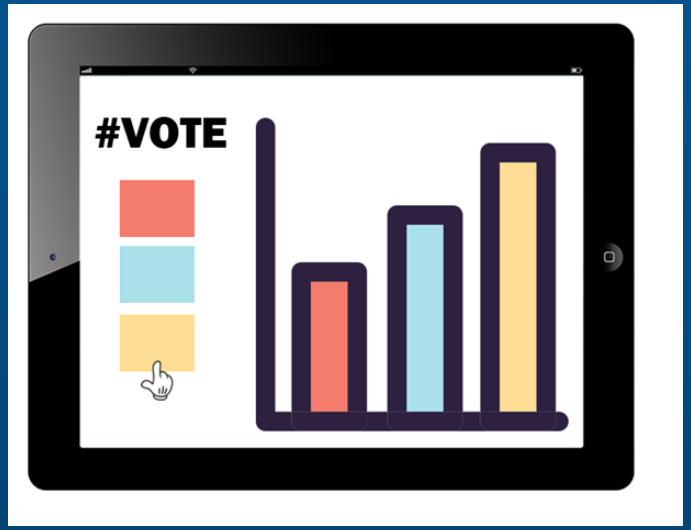
Use the Chat Function to Ask a Question..

… or just make a comment

be kind

POLL QUESTION #1:

What city are your calling in from today?



AERO ENGINE SUPPLIER QUALITY GROUP (AESQ) OVERVIEW

EMMANUEL VIVIER
VP MANUFACTURING & SUPPLY CHAIN DEPUTY
SAFRAN AIRCRAFT ENGINES

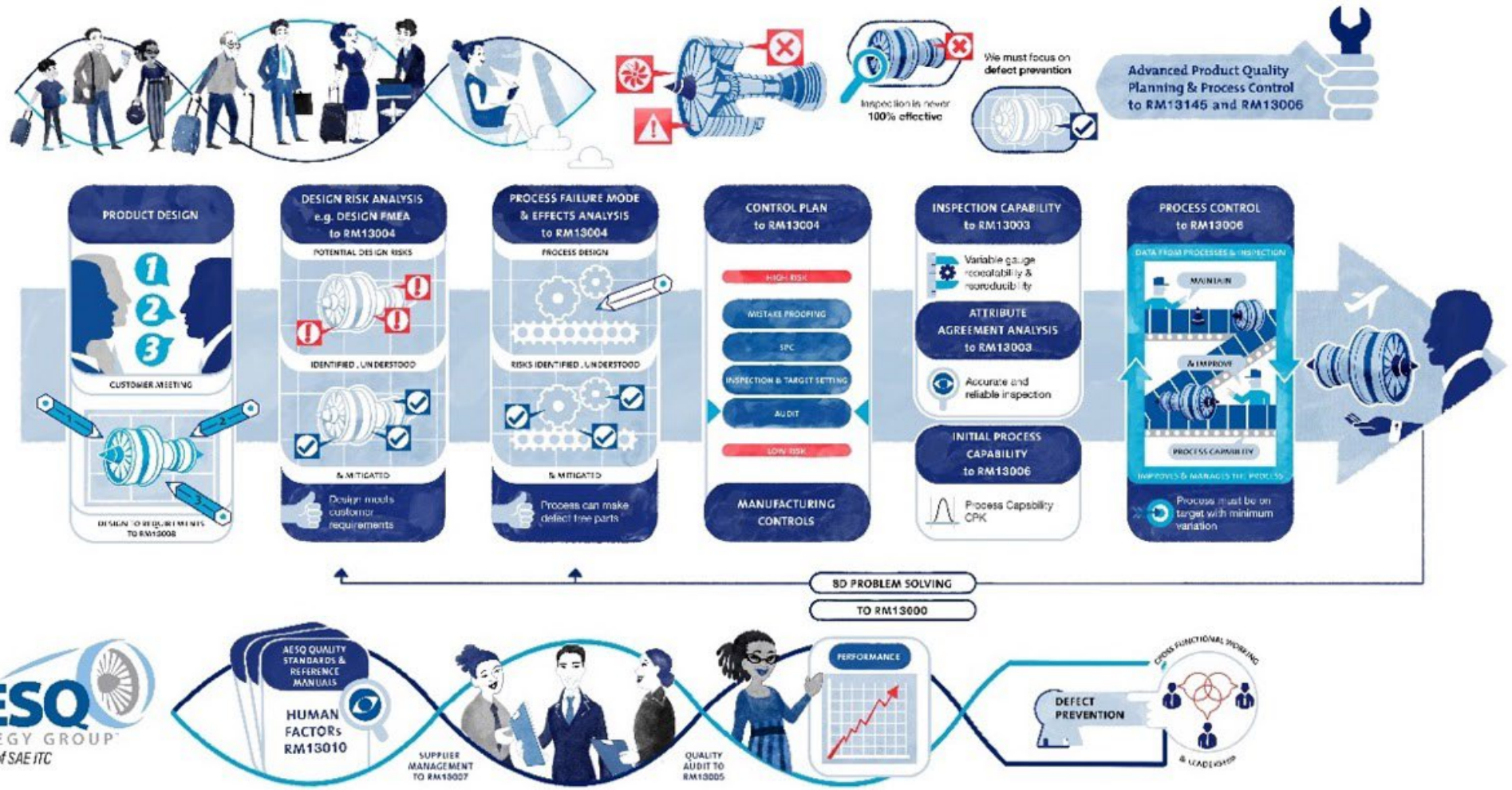
Aero Engine Industry Burning Platform

Aero Engine Manufacturers created a Collaboration working group to address burning platform in 2013 with key Global Suppliers

Used the Automotive example of QS-9000 with Ford, GM and Chrysler as the model

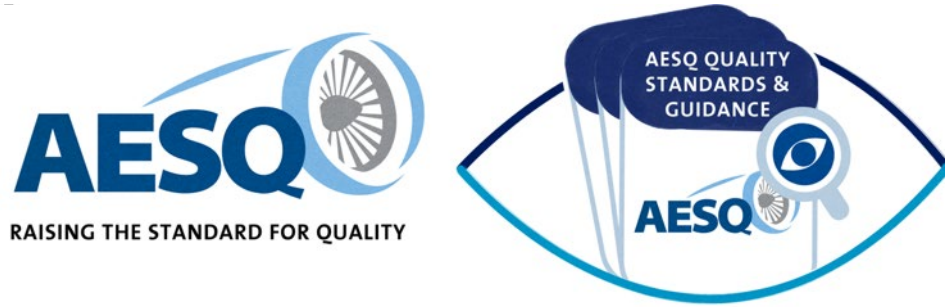
- Airline passengers set to double in size over the next 20 years
- Customers expect Zero Defects
- Increasing level of supplier made engine content
- Global Supplier Footprint
- Large number of common suppliers between engine manufacturers
- Wide range of Aerospace engine supplier businesses, from <$1M to >$2B
- Improving Quality, Cost and Delivery remains a key challenge

Defect Prevention Key Quality Tools for Zero Defects



Defect Prevention Tools Must Work as a System

Aero Engine Supplier Quality Group Principles



- Aero Engine Manufacturers created a Collaboration working group to address burning platform in 2013 with key Global Suppliers
- Used the Automotive example of QS-9000 with Ford, GM and Chrysler as the model
- Purpose is to:
  - Simplify and Standardize Aero Engine supplier requirements through the removal of duplication and waste
  - Create a common language for Quality
  - Build on existing industry standards, where they exist
  - Create Requirements that are simple, prescriptive, and auditable
  - Promote the use of standardized 3rd party training
  - Deliver results with pace
  - Focus on effective deployment and improving the capability of the shared supply chains

AESQ Strategy Group Members

AESQ Members

Cincinnati Thermal Spray
Consolidated Precision Products
Meggitt PLC
Solar Atmospheres

AESQ Strategy Group Members

Barbara Negroe
Executive Sourcing Quality Leader
GE Aviation

Lisa Claveloux
Sr. Director Quality
Raytheon Technology Corp.

Helen Djäknegren
Director Supplier Quality
& Development
GKN Aerospace

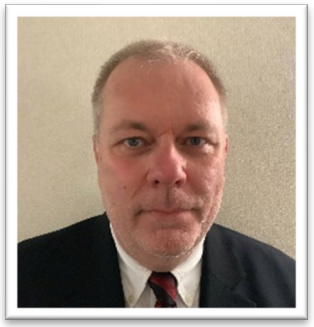
Uzam Khan
Supplier Quality Executive
Rolls-Royce

Emmanuel Vivier
VP Manufacturing & Supply
Chain Deputy
Safran Aircraft Engines

Jun Sakai
Chief Engineer
IHI Corporation

Barrie Hicklin
Sr. Director, Quality Systems
& Regulatory Compliance
Honeywell

Thomas Frank
Senior VP Corporate Quality
MTU Aero Engines



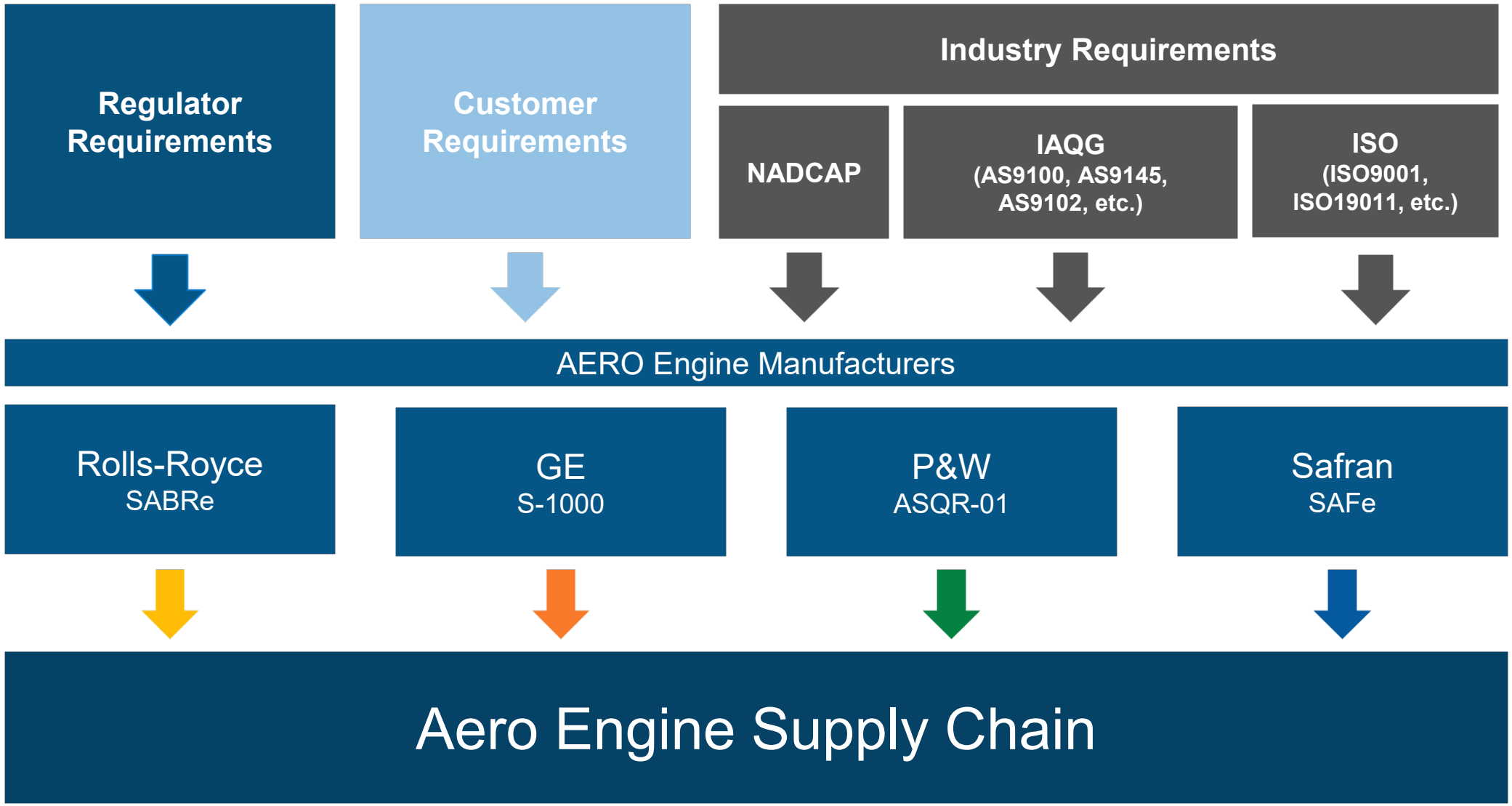
James Clifton
Global Quality Director
Precision Castparts Corp.

Osa Omoruyi
VP Quality
Howmet Engine Systems

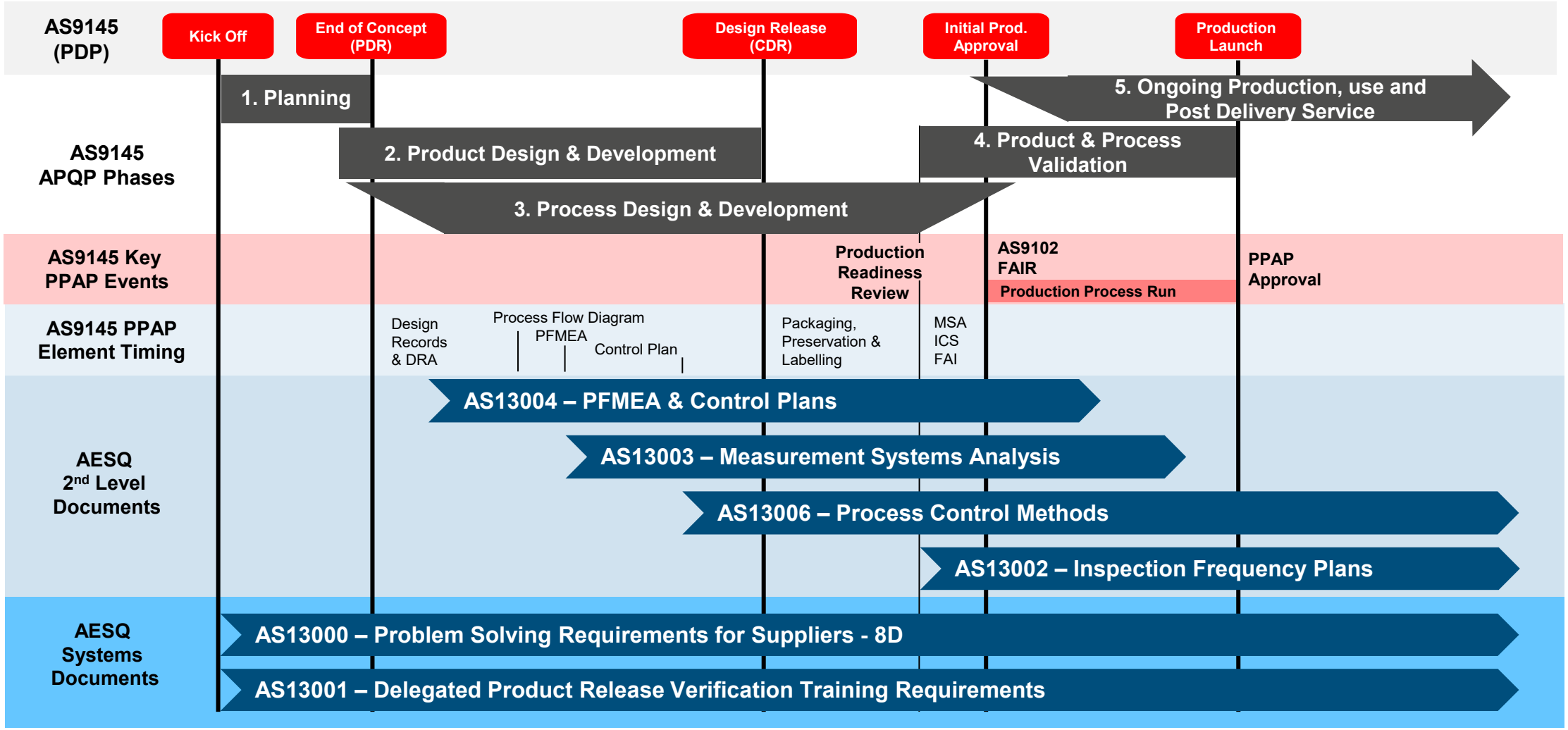
AESQ Vision

To establish and maintain a common set of Quality Requirements that enable the **Global Aero Engine Supply Chain** to be truly competitive through lean, capable processes and a culture of Continuous Improvement.

Aero Industry Requirements Flowdown 2012



Product Life Cycle & Current AESQ Document Interaction



Example Best Practice Stories

Sam Suzhou make Engine Mounts

16 Part Specific FMEAs using AS13004 created in 3 months

PFMEA led to the Introduction of error proofing and prevention controls

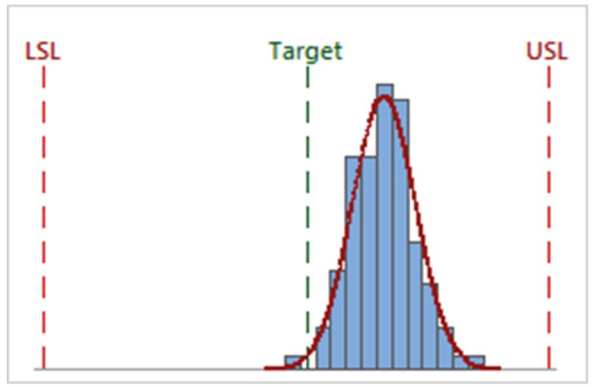
Defect Free since September 2017

Fan Case Delivered Defect Free at PPAP after applying AS13004, AS13003 and AS13006

70 consecutive parts now delivered Defect Free

Manufactured by GKN, Newington

PPAP completed in 6 months instead of the usual 18 months



IPT Turbine Blade machining using AS13006 Real Time SPC

98% of features Cpk >2, the other 2% Cpk >1.67

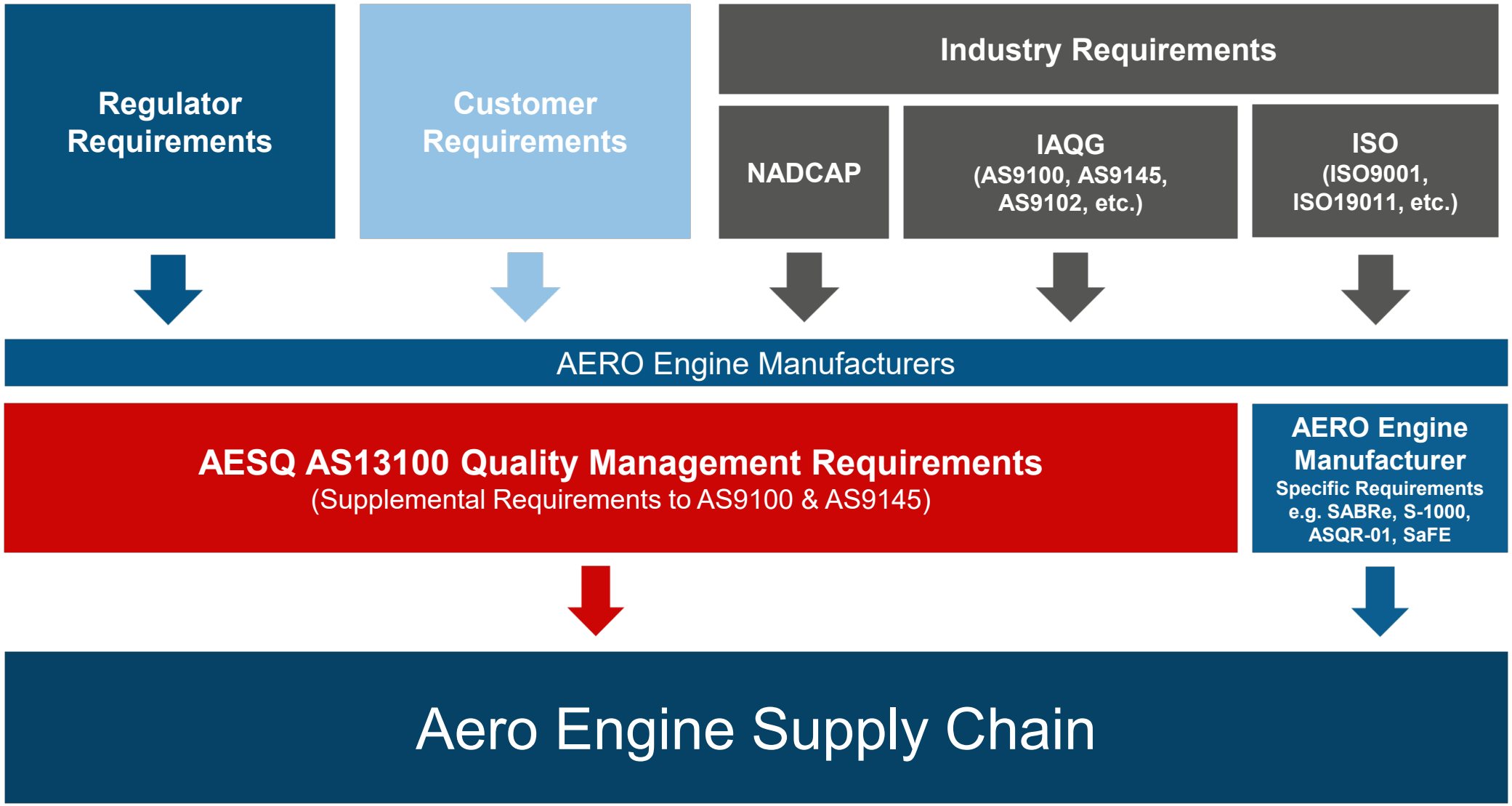
Zero Defect standard met since production start (5,000 blades)

AS13100 OVERVIEW

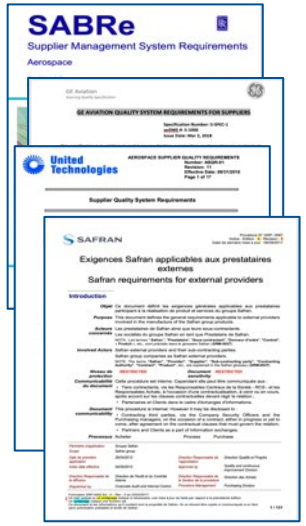
STRUCTURE & KEY HIGHLIGHTS

EARL CAPOZZI
ASSOCIATE DIRECTOR, DISCIPLINE CHIEF
QUALITY & PROCESS ENGINEERING
PRATT & WHITNEYSUPPLY CHAIN DIVISION

Aero Industry Requirements Future Vision



AS13100 Creation Process



Starting Point
September 2018

OEM Unique Requirements

Existing Engine Maker
Supplier Requirements

Harmonized Requirements

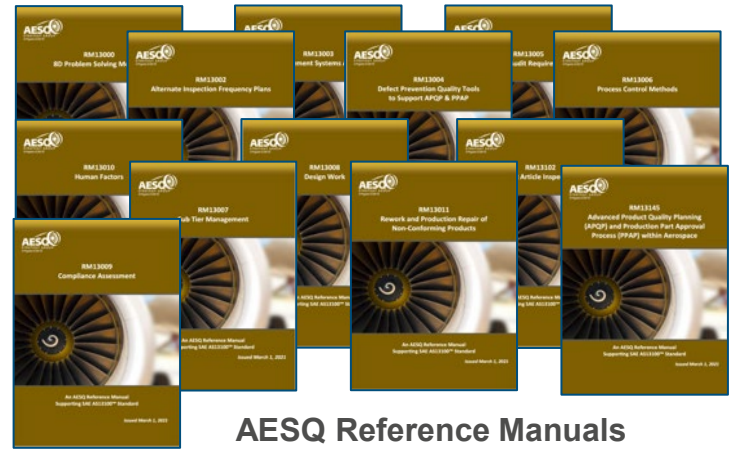
Future Engine Maker
Supplier Requirements

Overall Number of Requirements
reduced by >50%

Requirements

Existing & WIP
AESQ Standards

Supporting Guidance & Best Practice Material



AESQ Reference Manuals

AS13100 Structure

AS13100 Requirements	Chapter A AS9100 Rev D Supplemental Requirements										Chapter B APQP & PPAP AS9145 Supplemental Requirements						Chapter C Defect Prevention Quality Tools to Support APQP & PPAP							
Clause Number	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	DFMEA	Product KCs	Process Flow Diag.	PFMEA	Process KCs	Control Plan	MSA	Process Capability

Example Extract

9.3 Management Review

9.3.1 General Reference 9100D:09/2016 requirements.

9.3.2 Reference 9100D:09/2016 requirements.

9.3.2.1 Management Review Inputs - Supplemental Requirements

Management Reviews shall be conducted at least annually and consider the following performance topics:

- **Cost of Poor Quality (COPQ).**
- **Manufacturing / Assembly Right First Time / First Pass Yield.**
- **Customer scorecards (where available).**
- **Human Factors reporting.**

AS13100 Customer Specific Requirements

Designed to Include Customer Specific requirements that could not be harmonized within AS13100.

These documents shall:

- Require Compliance to AS13100
- Signpost to Customer Specific Documents (where required)
- Definition of customer specific acceptance thresholds called out in AS13100 e.g., Cpk, GR&R scope, etc.
- Additional Customer Specific requirements not defined within AS13100
- Defines company specific key roles and accountabilities for approvals
- Includes specific IT interface requirements

AS13100 Requirement Highlights

POLL QUESTION #2: Which organization type best describes your organization?

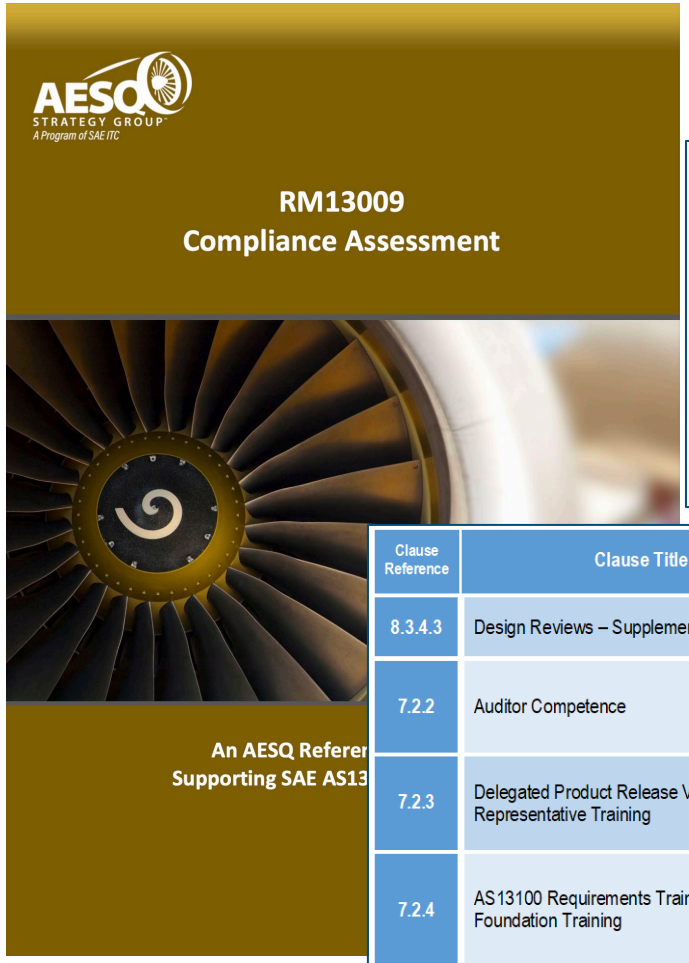
AS13100 PARAGRAPH REFERENCE	ORGANIZATION TYPE					
	TYPE 1: MAKE TO PRINT	TYPE 2A: DESIGN AND MANUFACTURE	TYPE 2B: DESIGN ONLY	TYPE 3: DISTRIBUTOR	TYPE 4: SPECIAL PROCESS	TYPE 5: RAW MATERIAL
4.3.1	X	X	X	X	X	X
4.3.2	X	X	X			
4.3.3	X	X	X	X	X	X
4.3.4	X	X	X	X	X	X
4.3.5	X	X	X	X	X	X
4.4.3	X	X	X	X	X	X
5.1.1.1	X	X	X	X	X	X
5.2.1.1	X	X	X	X	X	X
5.3.1	X	X	X	X	X	X
6.1.3	X	X	X	X	X	X
7.1.3.1	X	X	X	X	X	X
7.1.5.1.1	X	X			X	
7.1.5.1.2	X	X			X	
7.1.5.1.3	X	X			X	

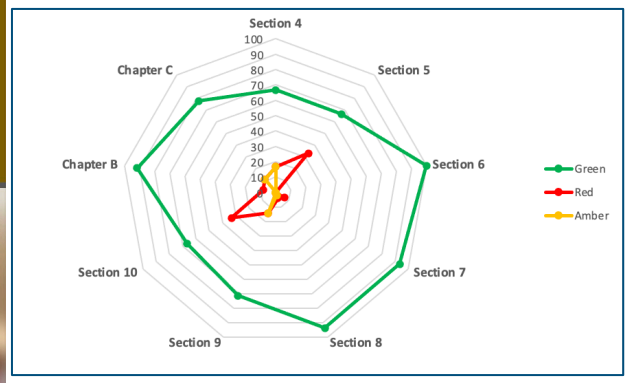
Table 1 provides a guide to the applicability of AS13100 Sections to Organization scope.

ORGANIZATION TYPE	QMS APPROVAL (MINIMUM REQUIREMENT)
Type 1: Make to Print and Type 2A: Design and Manufacture. **Manufacture, inspect, test, and certify the conformance of semi-finished and/or finished products (installed on aerospace engines or a component of such a product) to proprietary engineering drawings whether customer design, or organization design.**	9100 registration.
Type 2B: Design only. **Contracted Design Responsible Organization / Partner / Supplier tasks Organizations.**	As defined by Customer's requirements.
Type 3: Distributor.	9120 registration.
Type 4: Special Process (2.3). **As part of an Organizations manufacturing scope and/or Special Process Houses.**	Nadcap or Customer's requirements.
Type 5: Raw Material. **Manufacture, inspect, test, and certify the conformance of Raw Material to proprietary engineering specifications.**	ISO9001 registration.
Production Shop Assist Only. **Offload of planned manufacturing operations.**	Per Organizations Requirements based upon scope of work, unless specified by the customer.
External Calibration or Laboratory Service Provider.	ISO / IEC 17025 or National Equivalent, e.g., UKAS, COFRAC, NIST.
Industry Standard Part or Industry Standard Raw Material Manufacture.	ISO9001 registration.
Castings and Forgings produced to a proprietary design.	9100 registration.

Table 2 defines an agreed set of Certification Requirements, matched to the scope of the supplier's activities.

AS13100 Requirement Highlights





Clause Reference	Clause Title / Subject	Organization Process Reference (or comment)	Compliance Status
8.3.4.3	Design Reviews – Supplemental Planning	Not a Design responsible supplier	N/A
7.2.2	Auditor Competence	Auditor competence requirements are defined in our QMS in procedure number QP005, Rev D. This procedure fully complies with the requirements of AS13100 clause 7.2.2.	G
7.2.3	Delegated Product Release Verification (DPRV) Representative Training	All relevant inspection personnel are trained in accordance with this requirement. It is defined in our QMS in procedure number QP009, Rev B.	G
7.2.4	AS13100 Requirements Training & AESQ Quality Foundation Training	We have identified five personnel within the business that require this training. Their training plans / job profiles have been updated to reflect this as a mandated training. Training is scheduled for July (in 3 months time).	A
7.3.1	Human Factors Awareness	We do not have a Human Factors program at this time. The organization's leadership team are currently reviewing our future approach to HF.	R

Section 4.3.5 requires the organization to conduct a **Compliance Assessment** of their QMS to ensure that it captures all of the requirements of AS13100 and customer specific requirements.

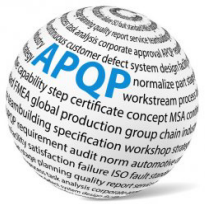
The results of this review are to be provided to the customer upon request.

Any compliance gaps must be highlighted to the individual customer and a resolution agreed.

Reference Manual RM13009 provides information to support this requirement.

AS13100 Requirement Highlights

AS13100 Section 8.3 includes common Requirements for **Design & Development.** Key Supplemental Requirements include;



Specifies AS9145 APQP & PPAP for Managing New / Changed Product Designs

Defines Design FMEA approach to meet Design Risk Analysis requirement

Requires the use of Cross Functional Teams for Design & Development Activities

Defines requirements for Design for 'X'

(Manufacture, Assembly, Servicing, Disposal)

Specifies the use of AS9116 to manage Design Changes

Reference Manual RM13008 Provides Guidance for Design Work

AS13100 Requirement Highlights

AS13100 Section 8.4.1, 8.4.2 and 8.4.3 define the additional requirements for Supplier Evaluation, Selection, Control and Performance Monitoring.

Engineering & Manufacturing Capability

Quality Control Capabilities

Purchasing, Planning & Capacity

Commercial, Legal & Environmental

Supplier Register Maintenance

Product Acceptance

Supplier Surveillance

Supplier Performance Monitoring

Reference Manual RM13007 Provides Guidance for Supplier Management

AS13100 Benefits

1. **Single AESQ Standard aligned to AS9100 / ISO9001**
   - Less Requirements for the Supplier (>50% less)
   - Lower cost (suppliers do not need to buy multiple standards)
2. **Supported by Free Issue Reference Manual Guides**
3. **Will minimise the content of OEM Supplier Requirement Standards (SABRe, S-1000, ASQR-01 and SAFe)**
4. **Creates a common language for Quality, OEMs have adopted standard approaches within their own operations.**
5. **Aligns to relevant existing industry standards (ISO, AS9xxx, Nadcap, etc)**
6. **Supported by global approved training resources**
7. **Enables the AESQ OEMs to provide a harmonised approach to Supplier Development**
8. **Supplier Compliance continues to be assessed through Customer Audit**
9. **Allows AESQ to focus on Supply Chain Capability Development**

AS13100 Core Writing Team: Thank you for sticking with it, every Wednesday, for two & a half years, even during the pandemic, to get it published.

Dr Ian Riggs
Rolls-Royce
Writing Team Leader

Larry Bennett
GE Aviation
Writing Team Deputy Leader

Elizabeth Pace
Raytheon

Earl Capozzi
Pratt & Whitney

Jim Wilson
Pratt & Whitney Canada

Catherine Catarina-Graca
Safran Aircraft Engines

Paula Adkins
Rolls-Royce

Peter Amsden
Pratt & Whitney

Thank you to the 99 Subject Matter Experts who created the Reference Manuals

Aaron Stahl
Adam Rogers
Ake Winkvist
Andrew Stout
Anil Oenuer
Barrie Hicklin
Benoit Gottie
Björkälv Håkan
Brian Murphy
Carrie Sharkey
Catherine Belgacem
Catherine Catarina-Graca
Charles Barry
Chip Svoboda
Chris Bishop
Chris Craig
Dave Goldberg
Earl Capozzi
Ed Briggs
Erika Grimm
Frederic Vetil
Grant Braun
Helen Djäknegren
Hector Mata-Collado
Helmut Weitmann
Herelio Munoz-Morales
Ian Bentley
Ian Riggs
Inger Henström
James Kelly
Jim Barge
Jim Nelson
Jim Wilson
Jonas Nickel
John Calder
Jule Hegwood
Jun Sakai
Jun Teshima
Karen Scavotto
Karl Evans
Kristin Gantz
Larry Bennett
Lars Brander
Laura Hill
Lena Wendel Eckerbom
Lise Brox
Ludovic Chevet
Marc Boursicot
Marie Partridge
Marnie Ham
Mattias Eriksson
Maura Callahan
Melanie Deroo
Melanie Renault
Michael Cera
Michael Cosenza
Michael Fuehner
Michael Gerhmann
Michael Stock
Mike Cosenza
Nathalie Noblet
Nick Watling
Nicolas Reignier
Olivier Castets
Patrice Richen
Paul Gorg
Paul Hacker
Perr Rendell
Pete Bilbie
Pete Teti
Peter Papadopoulos
Phil Bamforth
Rebecca Lemon
Ricardo Banuelas
Rich DeMary
Richard Baker
Richard Bolingbrook
Rob Farndon
Robert Starcke
Roger Persson
Rudi Braunrieder
Simon Gough-Rundle
Song Gao
Stefan Gehring
Stefan Lund
Steve Christensen
Steven Finup
Susie Neal
Sverker Johnson
Thomas Herter
Thomas Schmitt
Tobias Kranz
Todd Angus
Tony Pailing
Vince Miller
Ward Baun
Wilibald Schoder
Wolfgang Wagner
Yvonne Mansson

AS13100 Supporting Reference Manuals

AS13100 Standard defines mandated requirements.

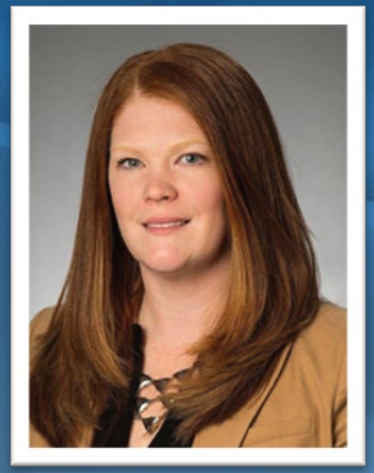
The Standard is supported by free issue Reference Manuals from the AESQ Website:

→ https://aesq.sae-itc.com/content/aesq-documents

Reference Manuals provide industry best practice guidance and case study material on how to deploy quality tools effectively.

Reference Manuals are maintained and updated by the **AESQ Subject Matter Interest Groups** and may be updated at any time when new or revised information becomes available

AS13100 DEPLOYMENT INTRODUCTION & MILESTONES



ELIZABETH PACE
ASSOCIATE DIRECTOR, SUPPLIER QUALITY
RAYTHEON TECHNOLOGIES

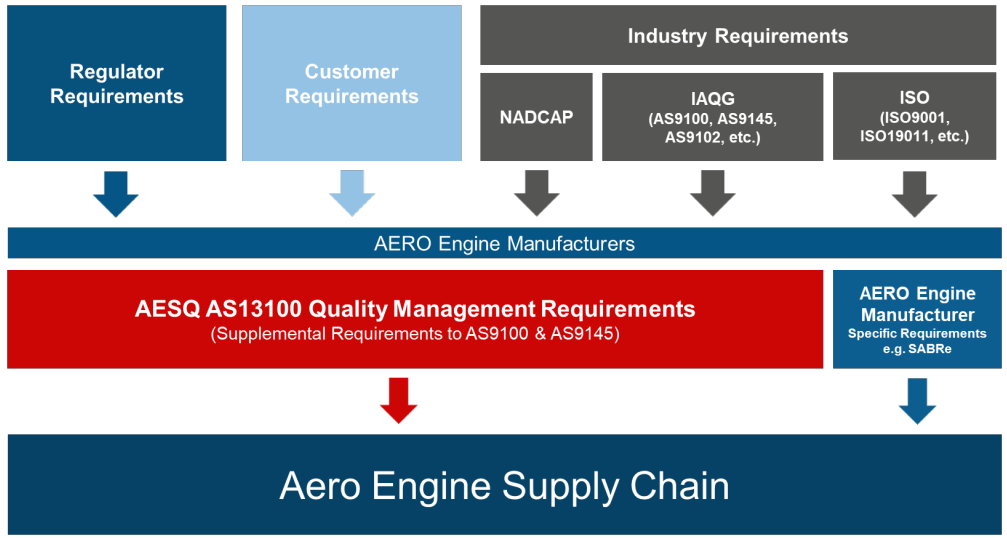
AESQ Released AS13100

A standard establishing supplemental requirements for 9100 and 9145 and applying to any organization receiving it as part of a Purchase Order or other contractual document

Released March 1, 2021 with a compliance date of December 31, 2022

AS13100 leverages the Reference Materials (RM13xxx) developed by the SAE G-22 AESQ committee over the last few years

Benefits of collaboration



Create a common language for Quality in the Aero Engine Supply Chain

Simplification of standards

a) Removal of duplicate / redundant requirements

b) Builds on existing Aerospace Industry Standards where appropriate

Setting higher standards for Quality

a) Adopt best practice from across industry

b) Standards written by industry practitioners

c) Challenging current acceptance thresholds – "raising the bar of quality performance'

Acceleration of Supplier Quality Capability Improvement

a) Aligned Supplier Development activities using Common Quality Tools

b) Availability of Global training and consultancy providers aligned to AESQ requirements

Committed to AS13100 Compliance on December 31, 2022

AESQ STRATEGY GROUP
A Program of SAE ITC

GE Aviation

Pratt & Whitney
A United Technologies Company

ROLLS ROYCE

SAFRAN
AIRCRAFT ENGINES

Honeywell
Aerospace

MTU
Aero Engines

GKN AEROSPACE

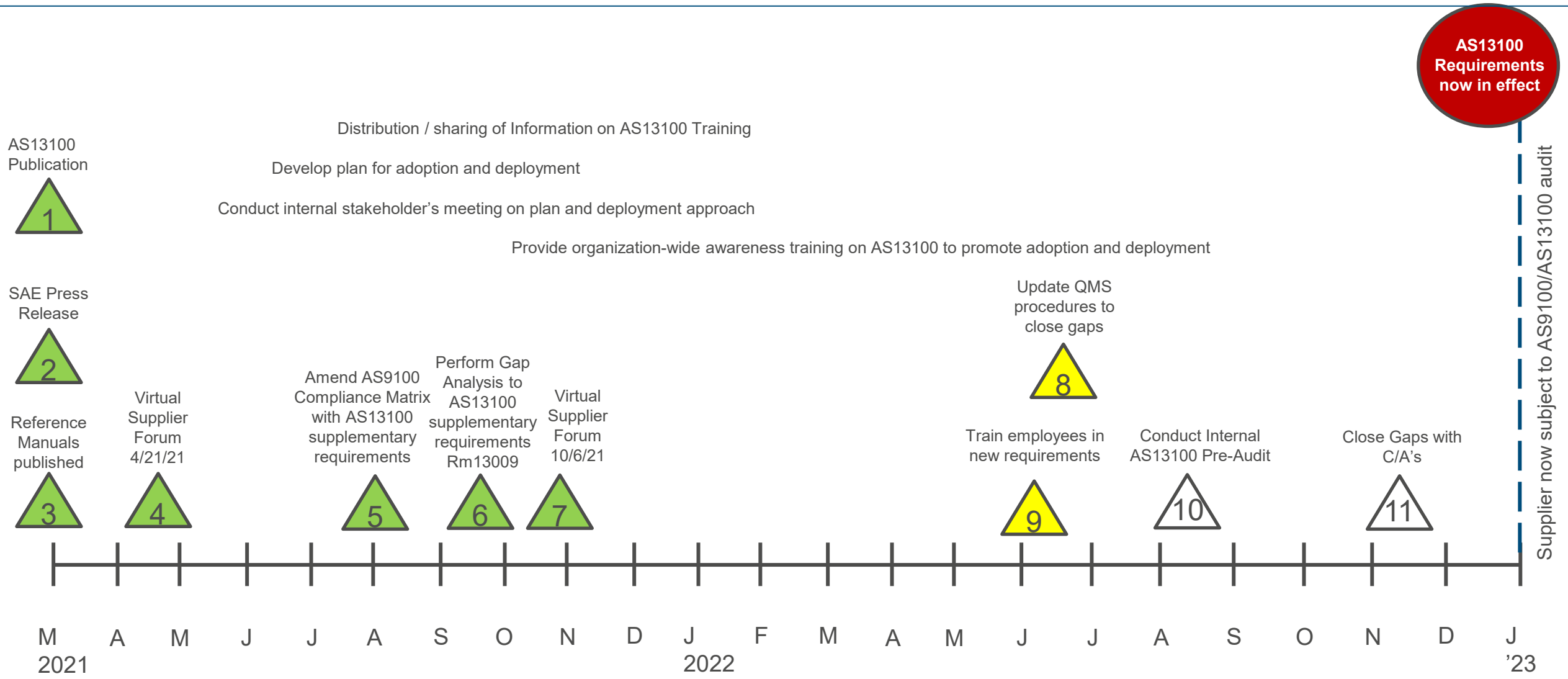
PCC Structurals, Inc.

HOWMET AEROSPACE

IHI

AS13100 Supplier Preparation Milestone Plan

Key milestones to achieve compliance to AS13100 by 12/31/2022



IHI DEPLOYMENT

HIROSHI YAMAMOTO
GENERAL MANAGER, QUALITY SYSTEM DEPT.
IHI CORP.

1. Company profile of IHI Corporation

Year of establishment
1853

Number of employees (consolidated)
29,149

Overseas representative offices
14

Capital
107.1 billion yen
(8.3 million dollars converted to 115 yen per dollar)

Works
6

Affiliated companies in Japan
63
[Subsidiaries: 46 Affiliates: 17]

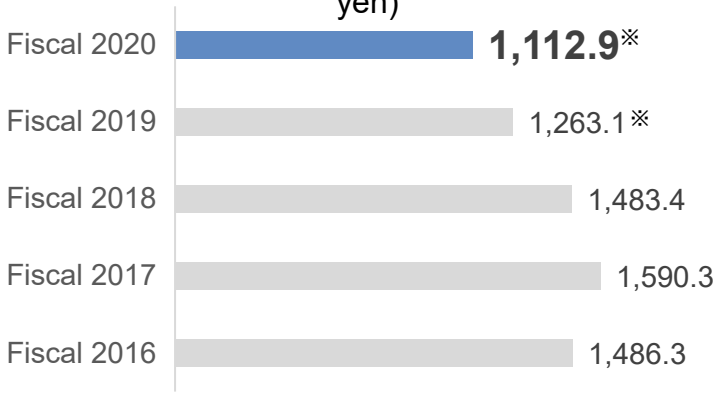
Revenue(Consolidated)
1,112.9 billion yen
(fiscal 2020)
(8.6 billion dollars converted to 115 yen per dollar)

Branches in Japan
8

Overseas affiliates
143
[Subsidiaries: 121 Affiliates: 22]

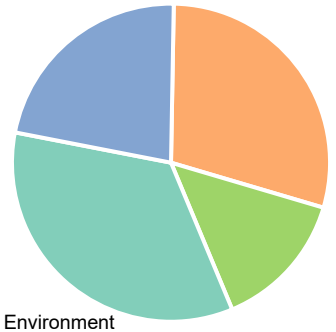
Net sales/Revenue

Consolidated net sales/sales revenue (billions of yen)



※ IHI adopted International Financial Reporting Standards (IFRS) from fiscal 2020, showing sales based on those sales from fiscal 2019.

Revenue Compostitions by business areas (Consolidated/fiscal 2020)



Resources, Energy & Environment	29%
Social Infrastructure & Offshore Facilities	14%
Industrial Systems and General-Purpose Machinery	34%
Aero Engine, Space & Defense	22%

Note : The total may not be 100% owing to the exclusion of "Other" and "Adjustments".

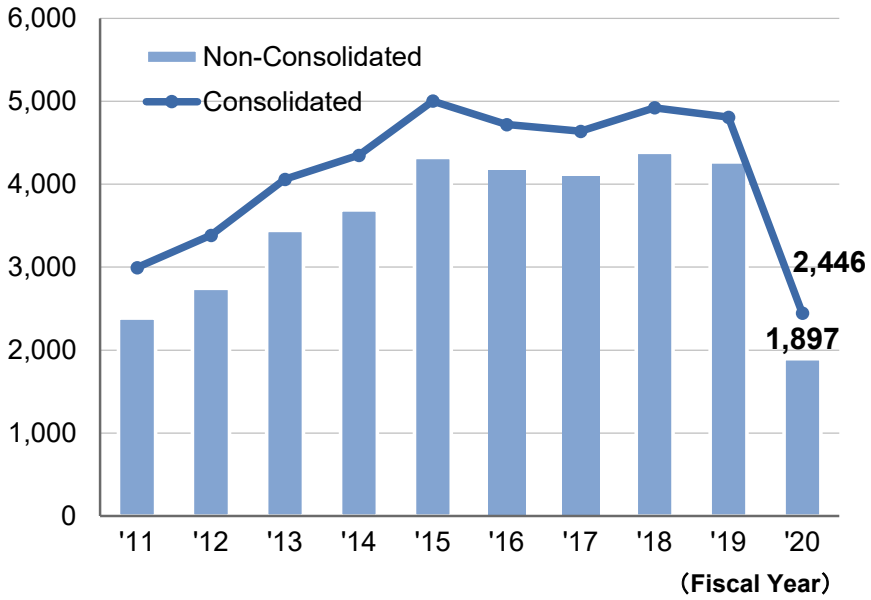
2. Profile of Aero-Engine, Space & Defense Business Area

President of Business Area		**Hideo Morita** **Managing Executive Officer**
Employees (as of March 31, 2021)	**(consolidated)**	6,765
	(non-consolidated)	4,212

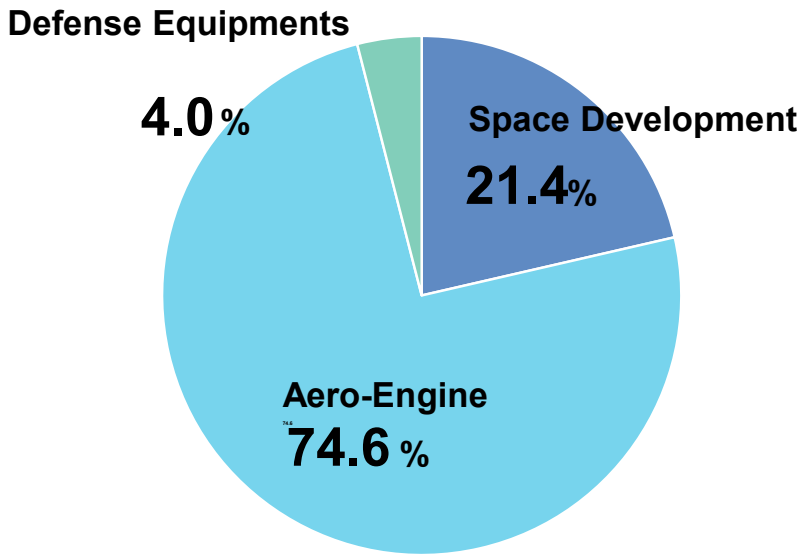
Operation divisions	● Defense Systems Div. ● Civil Aero-Engine Div. ● Space Development Dept. ● Research & Engineering Div. ● Manufacturing Div. ● Life Cycle Solution Div.

Annual Sales (Unit：100 million yen)

(780 thousand dollars converted to 115 yen per dollar)

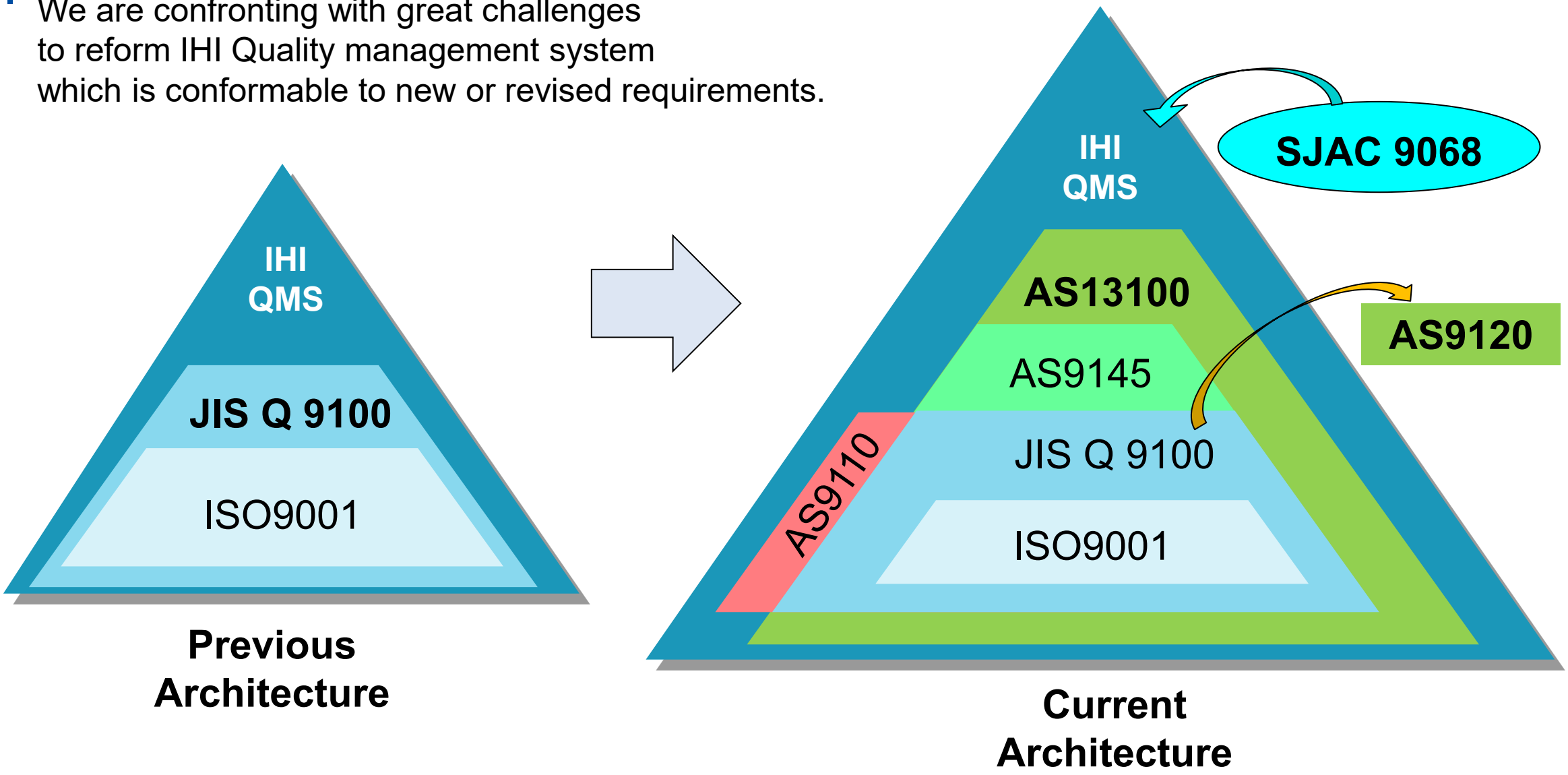


Consolidated Sales Ratio (In fiscal 2020)



3. IHI Quality Management System Architecture

We are confronting with great challenges
to reform IHI Quality management system
which is conformable to new or revised requirements.

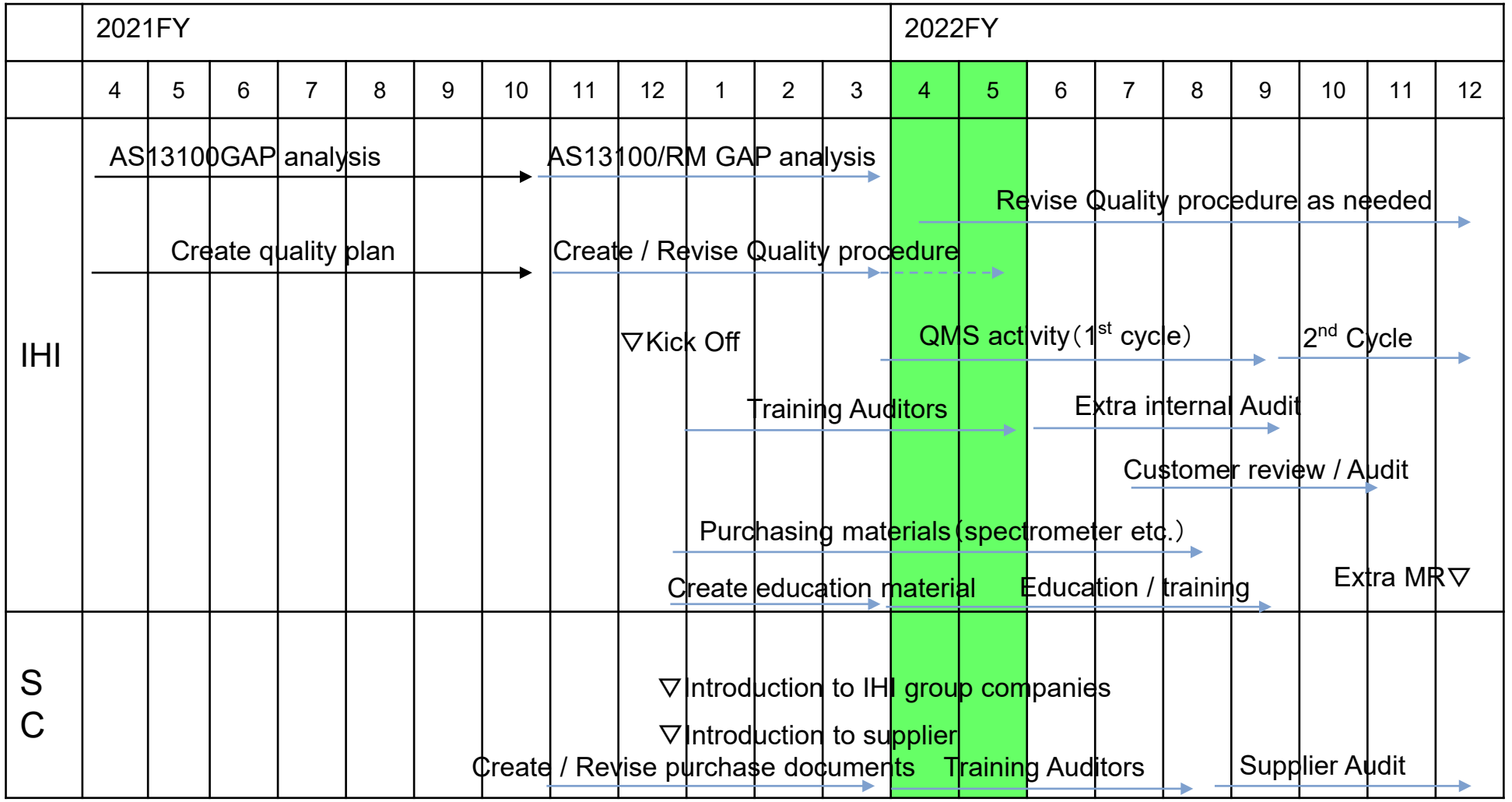


4. Deployment Strategy Group dashboard

Milestones
Milestone 7: AS13100 compliance by supply base
Milestone 6: Training plan executed to supply base
Milestone 5: Training plan executed internally
Milestone 4b: Flow down of the Standard to the supply base.
Milestone 4: Communication plan executed to supply base.
Milestone 3: Communication plan executed internally.
Milestone 2: Project Plan Identified and Approved by Member Executive. (All have committed to deployment of Dec 2022 but plan to get there can vary.)
Milestone 1: GAP analysis being conducted. Member company committed to deployment by Dec 2022.

We have reached Milestone 4 so far.
We are aiming for completing remaining milestones by the end of this year.

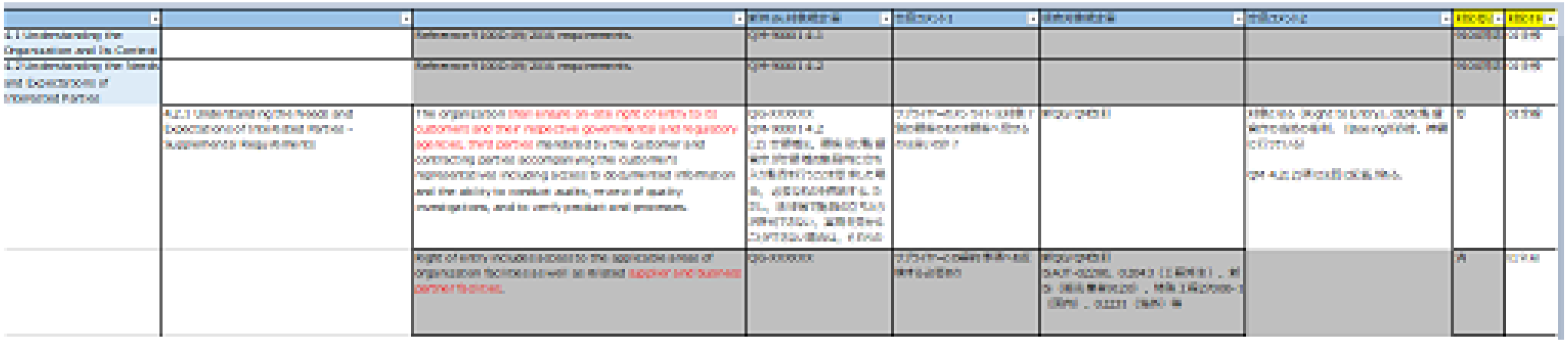
5. AS13100 Deployment schedule



We plan AS13100 deployment schedule for internal and supplier, respectively.

6. AS13100 Gap analysis

(Excerpt of AS13100 Gap analysis)



(AS13100 Requirement)

(Primary Gap analysis)

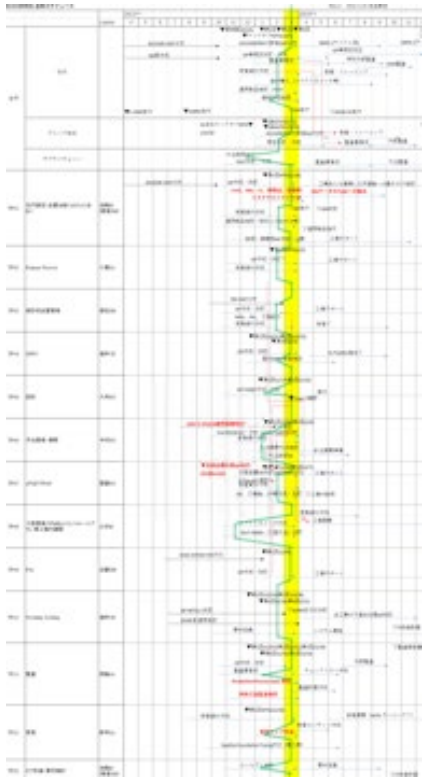
(To be verified by each task team to clarify what kind of action we have)

The result of AS13100 Gap analysis has been verified by each task team in order to revise or create internal procedures related to AS13100.

7. AS13100 Deployment strategy

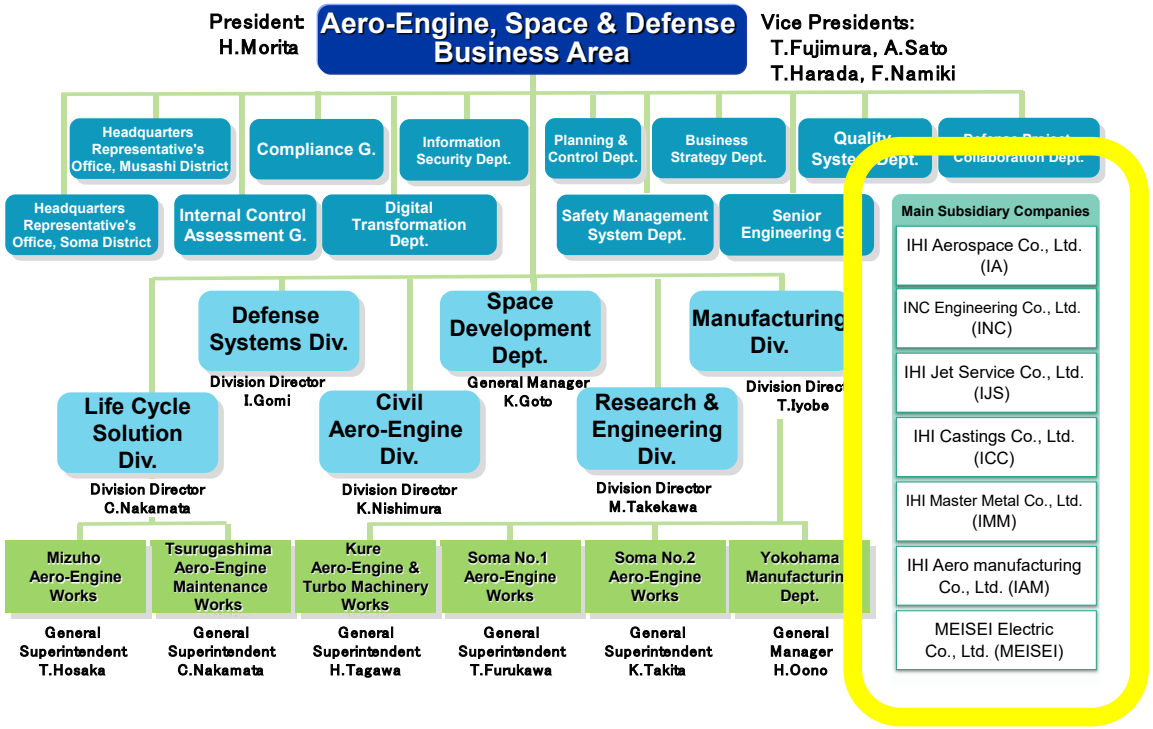
We are organizing a team and promoting the creation of IHI quality management system based on AS13100 Requirement.

Team No.	Role
TF01	General, Internal procedure
TF02	Human factors
TF03	Statistical quality control
TF04	DPRV
TF05	Design
TF06	Supplier control
TF07	APQP/PPAP
TF08	Process control / PFMEA / control plan
TF09	FAI
TF10	Problem solving
TF11	Audit
TF21	Education
TF22	Information and communication technology



Each progress
has been Monitored monthly

8. AS13100 requirement flow down



Introduction to IHI group companies

Applicability Table 1 and Gap analysis

Regular contacts with IHI group companies

We have been communicating with main subsidiary companies about AS13100 deployment status each other regularly.

IHI

Realize your dreams

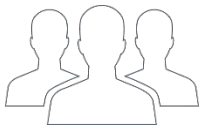
MTU DEPLOYMENT

MICHAEL MROSEWSKI
QUALITY MANAGEMENT PROGRAMS
MTU AERO ENGINES

AS13100 Implementation Plan @ MTU

MTU AERO ENGINES AG – Michael Mrosewski

AS13100 Implementation Project Organization



Steering Committee

Every 2 Months

Quality (Systems, Inhouse production, supply chain)

Extended: Engineering, Quality inspection, Production

Project leader

Quality

Every 2 Weeks

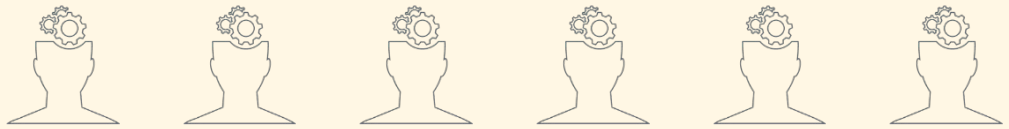
Core Team Members

Design, Procurement, Production, Program office, …

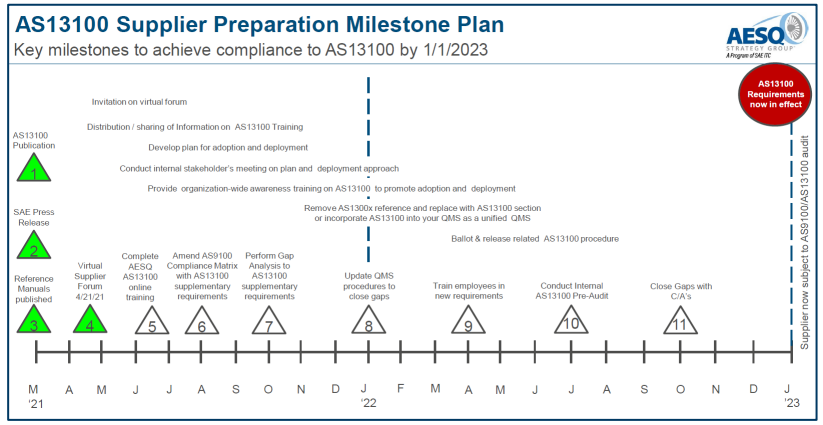
➔ Core team is extended where needed, depending on the relevant topics.

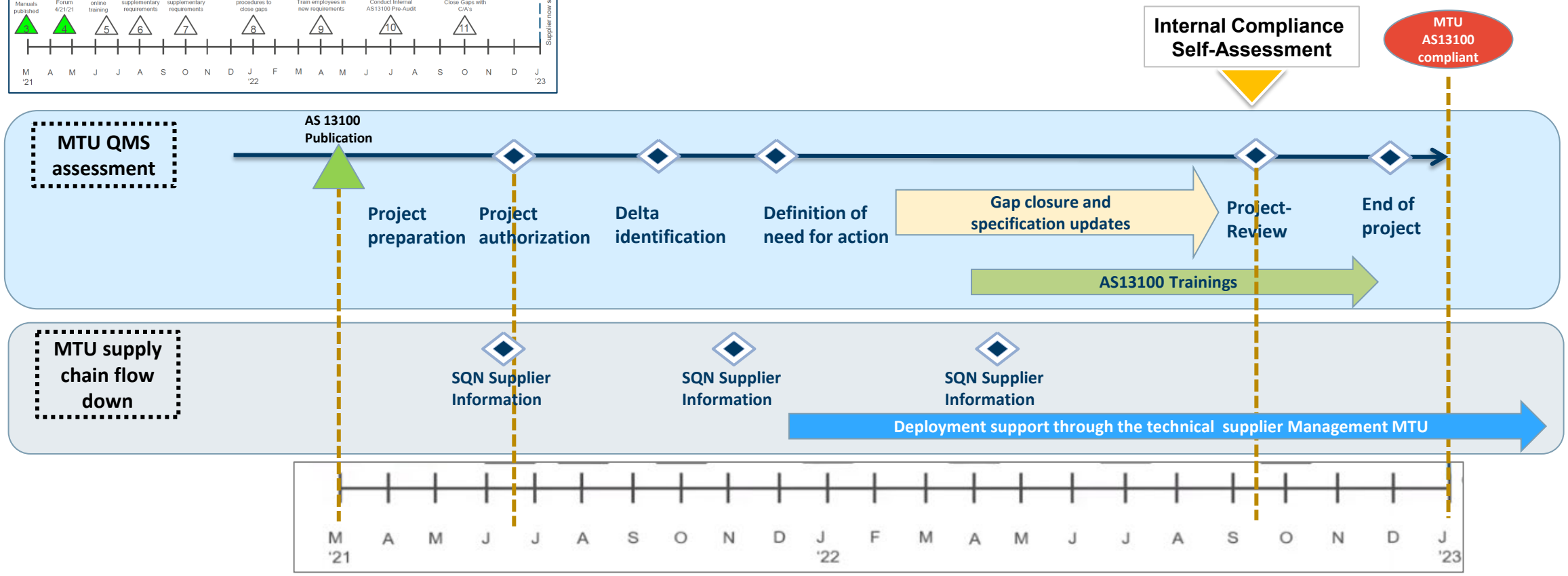
Core team

Experts in Content Core Team is supported by experts in content as required



Project plan to achieve AS13100 compliance by January 1st 2023





MTU Assessment of the AS13100 requirements

RM13009

AS13100 Compliance Self Assessment Chapter A

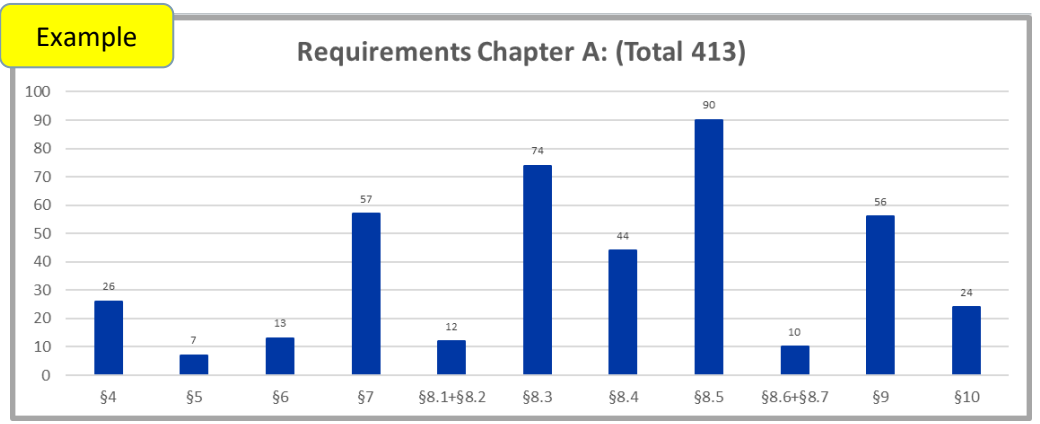
Organization Name:	MTU Aero Engines	Date:	
Completed By:		Version:	

Self Assessment Compliance Status Key

- Not Complaint with the requirement. No Plan in place to resolve.
- Not compliant but there is a plan in place with a scheduled completion date
- Fully compliant to all points identified under each clause and referenced in the Management System
- Not applicable to the scope of activity carried out.

Clause	Clause Title	Organization Process Reference (or comment)	Compliance Status
Chapter A - Quality Management System Requirements			
4	CONTEXT OF THE ORGANISATION		
4.2.1	Understanding the needs and expectations of Interested Parties - Supplemental Requirements		
4.3.1	Determining the scope of the quality management system - Supplemental Requirements		

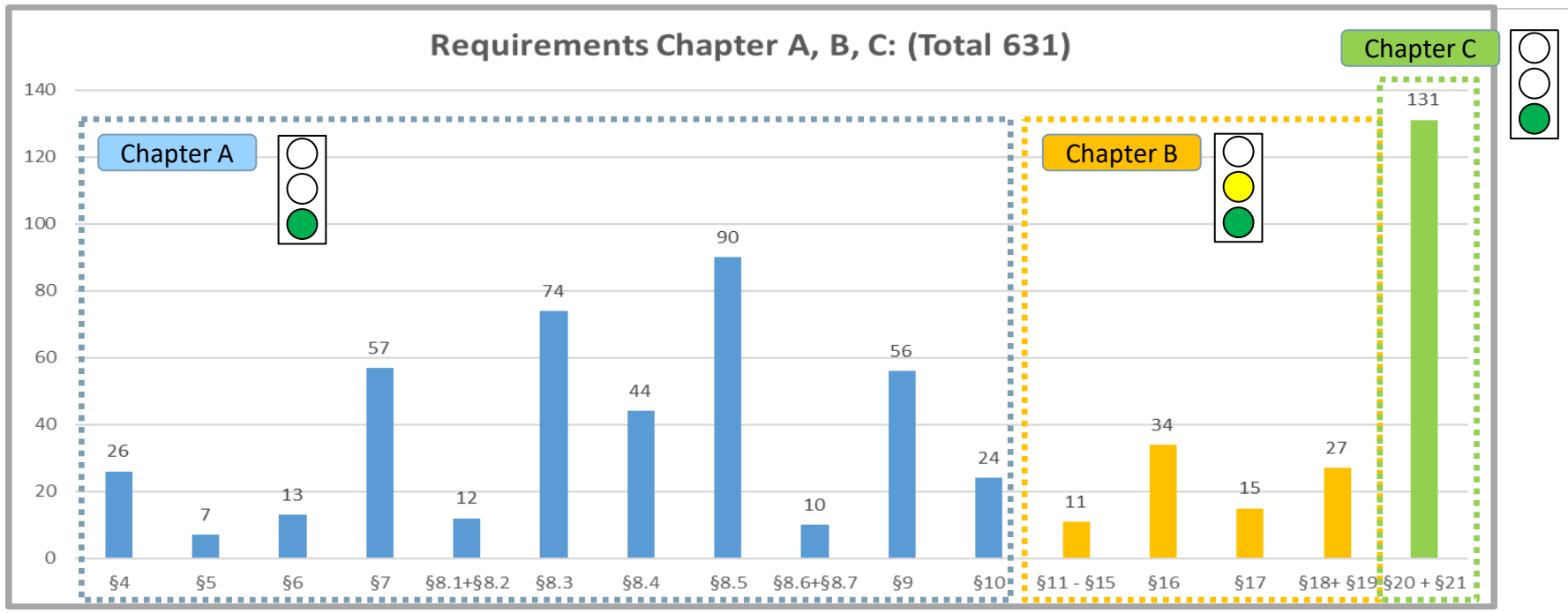
Example



Example

AS13100 Requirement	Responsible Project Key Account	Responsible Expert	MTU Standard	PROJECT START AS13100 fulfilled? (yes/partly/no)	Necessary Action	Responsible Person	Due date	PROJECT END AS13100 fulfilled? (yes/no)
4. CONTEXT OF ORGANIZATION			N/A					
4.2.1 Understanding the Needs and Expectations of Interested Parties - Supplemental Requirements			N/A					
The organization shall ensure on-site right of entry to its customers and their respective governmental and regulatory agencies, third parties mandated by the customer and contracting parties accompanying the customer's representatives including access to documented information and the ability to conduct audits, review of quality investigations, and to verify product and processes.				**yes**				**yes**
Right of entry includes access to the applicable areas of organization facilities as well as related supplier and business partner facilities.				**yes**				**yes**

Implementation Status and next steps



Achievements and Challenges

- Chapter A & C: Requirements allocated to MTU standards and processes. Actions are defined.
- Chapter B: APQP implementation requires definition and transfer into new processes.
- Supplier Flow Down established and communication about the implementation status

Next steps

- Complete action plan as defined
- AS13100 training of the MTU organization to establish the new standard
- Close contact to the supply base to support deployment and evaluation of the implementation status

SAFRAN AIRCRAFT ENGINES DEPLOYMENT

CATHERINE CATARINA-GRACA
SUPPLIER MANAGEMENT SYSTEM COORDINATOR
SAFRAN AIRCRAFT ENGINES

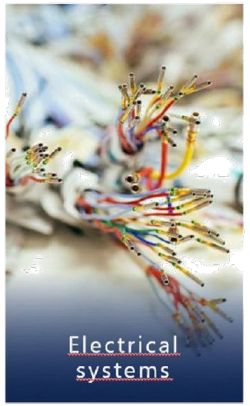
Safran, a world leader in aerospace

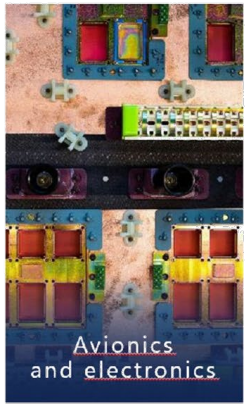
SAFRAN

SAFRAN GROUP Activities

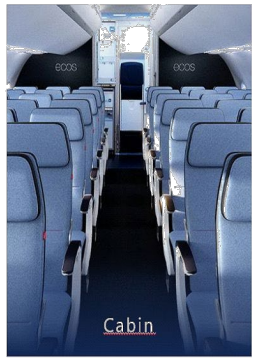
Aircraft propulsion: proven innovation and reliability to support aircraft manufacturers and airlines

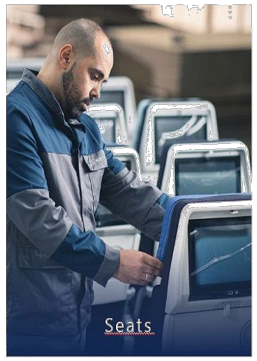
Aircraft equipment: a complete range of products and services





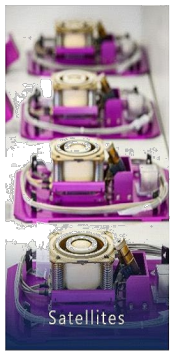
Aircraft interiors: an extended range for all types of aircraft to enhance passenger comfort





Defense: protecting citizens through technology

Space: state-of-the-art technologies to drive progress



* through ArianeGroup, a 50/50 joint company between Safran and Airbus, and its Arianespace subsidiary

SAFRAN

SAFe : A Safran Project

SAFe = A « ONE SAFRAN » project

ONE AMBITION
ONE BRAND
ONE PERFORMANCE
One Safran

SAFe = 3 main documents

- ❑ SAFe 2020 issued Dec 2020
- ❑ One Safran Company leads the deployment for the whole group

GRP-0087
Procedure of quality requirements for external providers including CSR charter

GRM-0123
Provider Handbook

GRF-0033
Compliance matrix to requirements

- ❑ Activity Sector
- ❑ Activity Type

Code	Activity Sector label
S1	Civil & Military engines
S2	Civil & Military aviation and space equipment and systems Unmanned aerial vehicles (UAVs)
S3	Cabin / Seats
S4	Non-aeronautical defense
S5	Automotive / Railway
S6	Other sectors

Code	Activity type label
A	Build-to-print Provider
B	Build-to-spec Provider
C	Dealer, Stockist, distributor,
D	Aeronautical maintenance service Provider
E	Non production service Provider
F	Production Interoperations Service Provider
G	Manufacturer of catalog parts, Standard, Standardized (COTS)

SAFRAN

Statements

AS13100 issued March 2021

AS13100 will be flown down **to Only S1 Suppliers**.

Few Safran companies are concerned :
mainly **Safran Aircraft Engines**

SAFe won't Be modified before 2024 to prevent mixing messages -> Supply Chain

On Going Project since June 2021

Safran Aircraft Engines Deployment

Milestones

Milestone 1: GAP analysis being conducted. Member company committed to deployment by Dec 2022.

Milestone 2: Project Plan Identified and Approved by Member Executive.

Milestone 3:Communication plan executed internally

Milestone 4: Communication plan executed to supply base.

Milestone 5: Training plan executed internally

Milestone 6: Training plan executed to supply base

Milestone 7: AS13100 Flowed to supply base in accordance with Company plan

Safran Aircraft Engines Deployment - **MILESTONE 1**

1.GAP Aircraft Engines

- **Review RM13009 for SAFRAN Aircraft Engines : Internally**
- **Answer as supplier**
- **Review main difficulties**
- **AS13100 learning curves for those involved in GAP analysis**

2.GAP with SAFe

- **Identify Supplemental requirements SAFe→ RM13009**
- **Identify Supplemental Requirements RM13009 → SAFe**

3. Gap with suppl. Rqt with Aircraft Engines

- **Identify Safran Aircraft Engines specific supplemental requirements → RM13009**

Safran Aircraft Engines - **MILESTONE 1 –** GAP with SAFe

C2 - Restricted

Measure GRP-0087 vs AS13100 – CHAPTER A

This page show AS13100 additional requirements not in SAFe :

Example 1 :

7.1.3.1	The organization shall use a cross-functional approach to develop project plans when implementing new plant, facilities, or equipment.	MORE AS13100

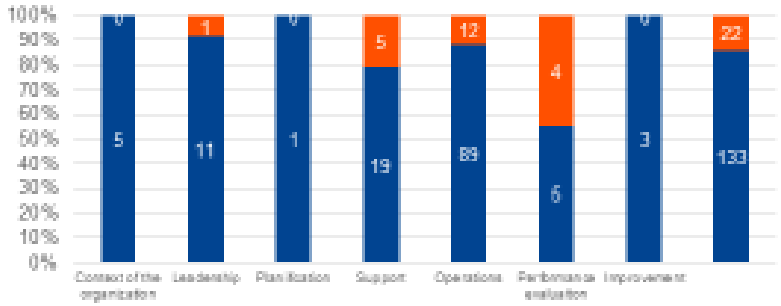
Example 2 :

8.3.2.3	The organization shall configure and plan Design Reviews appropriate to the project considering magnitude, complexity, novelty, risk, etc., (8.3.4.3) and include those milestone dates in the design and development plan.	MORE AS13100 (some elements in §8.3.2a + Chapter 12 GRP-0087 + GRM-0123)

Strictly More AS13100
Fuller in AS13100

133 SAFe requirements common

22 AS13100 additional requirements (to be reviewed)



SAFRAN

Chapter B :

APQP: Few GAPS
Action Plan launched and finalized

Measure GRP-0087 vs AS13100 - CHAPTER A

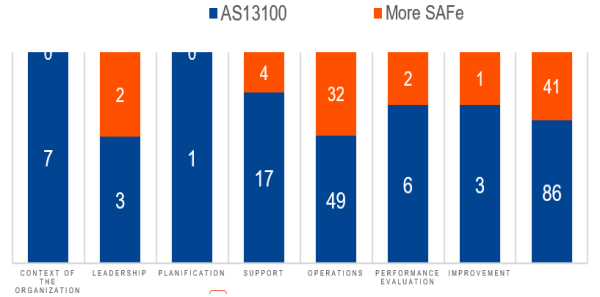
This page show SAFe additional requirements that are not included in AS13100 :

Example :

5.1.1e	The Provider's commitment on these two items shall be formalized through the signing of Safran's Charter for Responsible Purchasing (document available onto Safran's Website under the reference GRF-0164). The Provider shall also initiate the invoices dematerialization to eliminate paper invoices. It shall use a structured format such as "Electronic Data Interexchange" (EDI).	A	MORE SAFe

86 common AS13100 requirements (represented by " AS13100"

41 additional SAFe requirements (represented by " More SAFe"



SAFRAN

MILESTONE 1 – GAP with SAFe - EXAMPLES

Section 7.2.1 Requires organizations to provide **On the Job Training** that includes;

- customer requirements,
- Internal requirements
- regulatory requirements

This requirement also applies to contract and agency personnel.

Persons whose work can directly affect quality shall be informed about the consequences on nonconformance to the customer.

Section 7.2.2 defines the **Auditor Competence Requirements** including;

- Qualifications
- Experience
- Maintenance (Ongoing professional development)

RM13005 will provide further details.

Section 7.2.4 requires the organization to ensure that Quality Leaders attend the AS13100 Requirements on-line course and the AESQ **Quality Foundation Training Course**. The course includes training in;

- Applicable Regulations
- Customer Requirements
- APQP & Process Control Quality Tools

This course is also recommended for other key personnel.

AS13100 defines the requirements for **Supplier Evaluation, Selection, Control** and **Performance Monitoring.**

(Section 8.4.1)

NEW

The organization shall verify that the correct metallic raw material is used e.g. through the use of **hand held spectrometry.**

(Section 8.5.1.4.1)

Safran Aircraft Engines - **MILESTONE 1 – SAME AS SAFE**- EXAMPLES

Organization's are required to include **Human Factors** within the scope of their QMS

(Section 4.4.3, 5.1.1.1, 5.2.1.1 and 7.3.1)

Chapter B

APQP

PPAP

Defines the use of **8D Problem Solving** for customer escapes.

Compliance to **AS9146 FOD Prevention**

Safran Aircraft Engines – **MILESTONE 1 TO MILESTONE 4**

Section 4.3.5 requires the organization to conduct a **Compliance Assessment** of their QMS to ensure that it captures all of the requirements of AS13100 and customer specific requirements.

The results of this review are to be provided to the customer upon request.

Any compliance gaps must be highlighted to the individual customer and a resolution agreed.

Reference Manual RM13009 provides information to support this requirement.

GRF-0033
Compliance matrix to SAFe requirements

SAFe Compliance Matrix already exists:

Part of communication kit is : comparison of these 2 excel files:

- **If SAFe Matrix is completed → Excel file with missing requirements to fullfill AS13100**
- **If RM13009 is completed → Excel file with missing requirements to fullfill SAFe**

Safran Aircraft Engines Deployment - **MILESTONE 2 ; 3 AND 4**

Milestone 2
Project Plan…Member Executive.

- Approved June 29th 2021

Milestone 3:
Comm. plan internally

- In process For **main actors**; Communication preparation in process for whole « players » / all company → **OBJ 3rd Trimester 2022**
- Communication / training has been launched with main actors

Milestone 4:
Commun. Plan to supply base

- Communication preparation In Process : Few GAPs with our requirements – Training / Tools / communication KITs done for SAFe are common to AS13100 messages - Finishing Gaps with other Safran Aircraft Engines requirements -- > **OBJ Second Trimester**

Safran Aircraft Engines Deployment - **MILESTONE 5 ; 6 AND 7**

Milestone 5
Training plan executed internally

- Allready started with main Actors but will be extanded during Summer 2022

Milestone 6:
Training plan executed to supply base

- Starts September 2022

Milestone 7:
AS13100 flow down to supply chain

- Will be flown down Summer 2022 with communication Kit and equivalences with SAFe / Safran Aircraft Engines specific requirements → Saves Time

PRATT & WHITNEY DEPLOYMENT

GREG HYATT
SUPPLIER METALLURGICAL CONTROL SPECIALIST - JAPAN
ENGINEERING / SUPPLIER QUALITY
PRATT & WHITNEY

TRANSITION OF ASQR-01 -> AS130XX

ASQR JOURNEY HAS PROGRESSED, AND NOW IF INFLUENCED BY AS13100

ASQR-01 Rev 9, 2/2/2015
AS13000 – Problem Solving Requirements for Suppliers - 8D

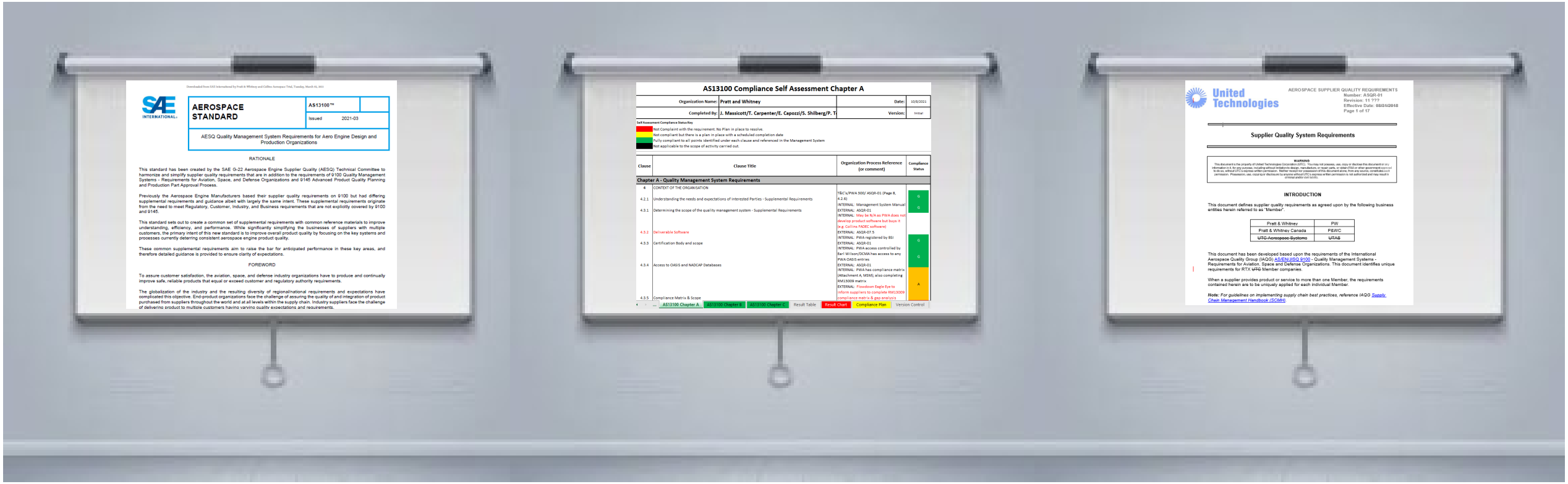
ASQR-01 Rev 10, 11/1/2016
AS13001 – Delegated Product Release Verification Training Requirements
AS13002 – Inspection Frequency Plans
AS13003 – Measurement Systems Analysis

UTCQR 09.1 Rev 6, 2/19/2019
AS13004 – PFMEA & Control Plans
AS13006 – Process Control Methods

ASQR-9.2 Rev 2, 1/28/2019 (Formatted based on AS9145)
AS9145 – Requirements for Advanced Product Quality Planning and Production Part Approval Process

AS13100 GAP ASSESSMENT

UNITIZED RM13009 AND THE ASQR-01 NEW SUPPLIER CHECKLIST



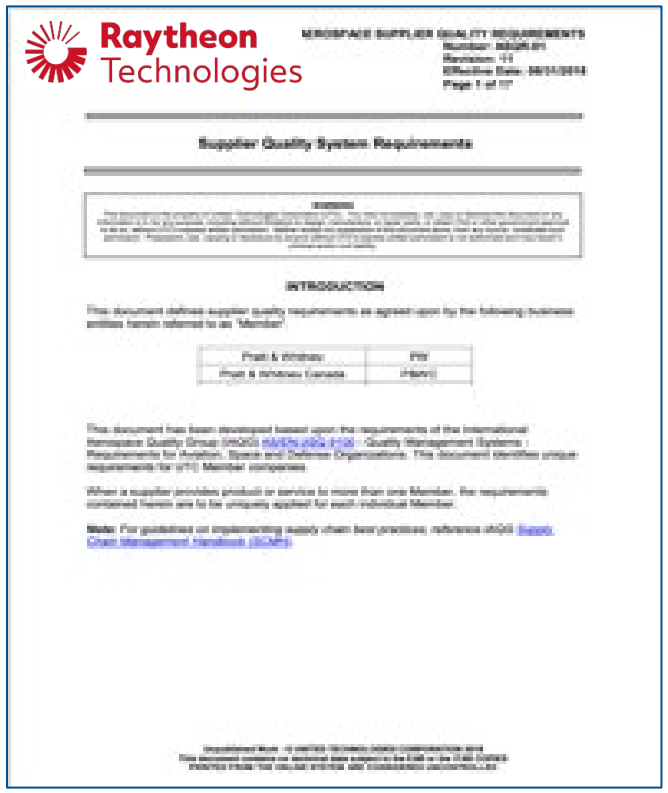
AS13100

RM131009

ASQR-01

TRANSITION OF ASQR-01 -> AS13100

ASQR JOURNEY HAS PROGRESSED, AND NOW IF INFLUENCED BY AS13100

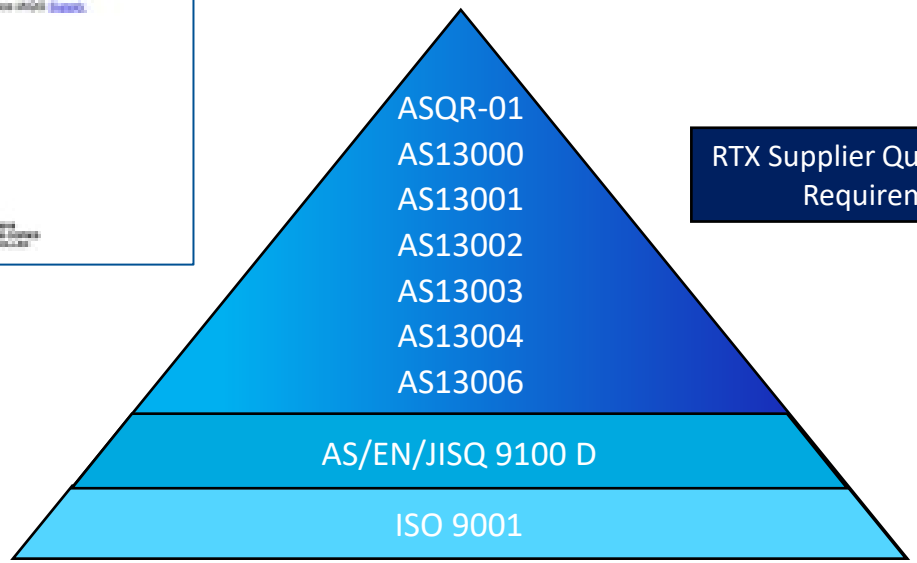


AS1300X

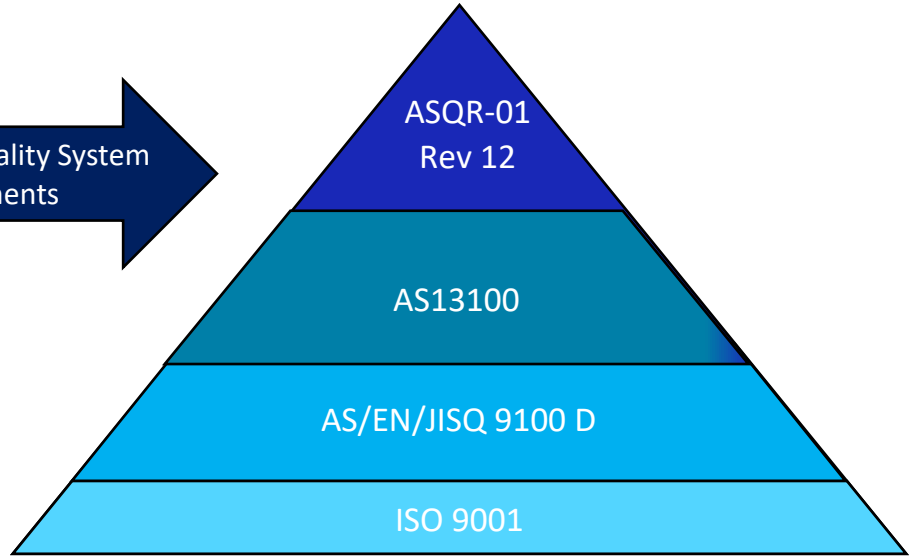
ASQR-01 Rev 11
RTX Supplier Quality System Requirements

AS13100

ASQR-01 Rev 12
P&W SUPPLEMENT TO AS13100



RTX Supplier Quality System Requirements



TRANSITION OF ASQR-01 -> AS13100

ASQR JOURNEY HAS PROGRESSED, AND NOW IF INFLUENCED BY AS13100

ASQR-01 Revision 12

Current requirements of ASQR-01 Rev 11 at**174** pages forecast to drop to **102 pages,** a 41% reduction.

"**Shalls**" forecasted to be reduced by more than **23%**

ASQR-01, Revision 12 based now on International Aerospace Standard **AS13100**

With the addition of:

- ✓ Human Factors
- ✓ Sub-tier Management
- ✓ Internal Audit and Auditor Competencies
- ✓ Design and Development

TRANSITION OF ASQR-01 -> FUTURE STATE

ENSURING PW SPECIFIC NEEDS ARE CAPTURED

ASQR-01 Rev. 12

Formatting will align with AS9100, AS9145, & A13100 paragraph sections

Will apply to PWA & PWC

Target release Q2

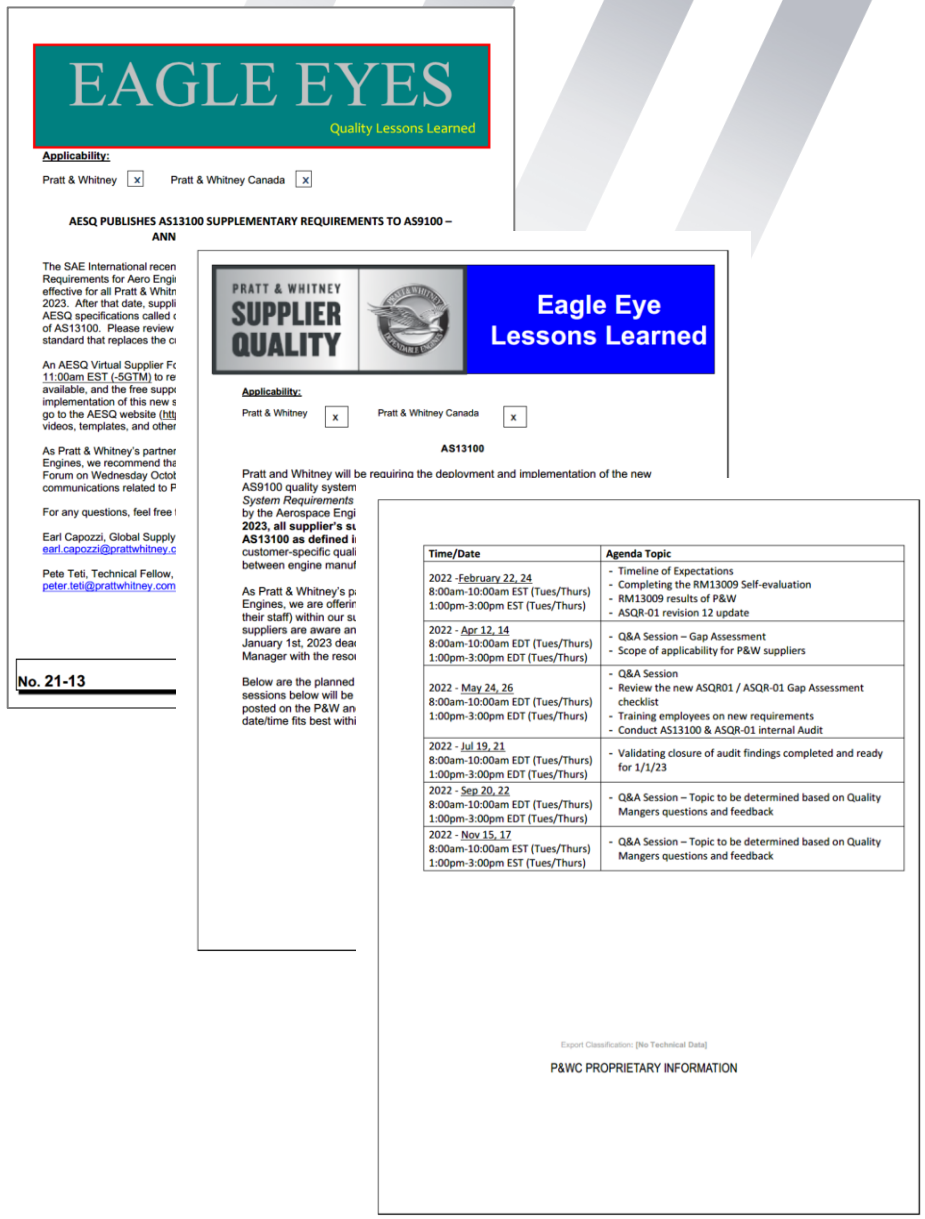
ASQR-01 / AS13100 COMMUNICATIONS

STANDARD AND HOSTED COMMUNICATIONS ARE BEING DEPLOYED

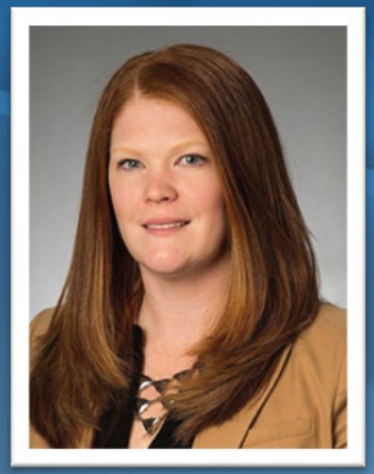
PW conducting multiple events to facilitate adoption of AS13100

Linkage to FAQs on AS13100 and ASQR-01 communicated

Material is hosted on the PW and PWC Supplier Portal.



AS13100
DEPLOYMENT DASHBOARD



ELIZABETH PACE
ASSOCIATE DIRECTOR, SUPPLIER QUALITY
RAYTHEON TECHNOLOGIES

Deployment Strategy Group Dashboard

Company	Milestone 1	Milestone 2	Milestone 3	Milestone 4	Milestone 4b	Milestone 5	Milestone 6	Milestone 7
GE Aviation								
GKN Aerospace								
Honeywell								
Howmet								
IHI								
MTU								
PCC								
Pratt and Whitney								
Rolls Royce								
Safran								

December 31, 2022

Milestones
Milestone 7: AS13100 compliance by supply base
Milestone 6: Training plan executed to supply base
Milestone 5: Training plan executed internally
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Milestone 4: Communication plan executed to supply base.
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Milestone 2: Project Plan Identified and Approved by Member Executive. (All have committed to deployment of Dec 2022 but plan to get there can vary.)
Milestone 1: GAP analysis being conducted. Member company committed to deployment by Dec 2022.

Complete In Work At Risk Off Plan

Member companies in process of rolling out new flow downs

All member companies are working on flow downs over next few months (COMPLIANCE IS ALIGNED)

All members companies committed to AS13100 standard compliance December 31, 2022

Company specific requirements will be reduced

AS13100 is supported by free issue reference manual guides, LinkedIn Communities of Practice and Webinars

Common training requirements are being provided by 3rd party professionals and is available globally

Subject Matter Interest Groups Status

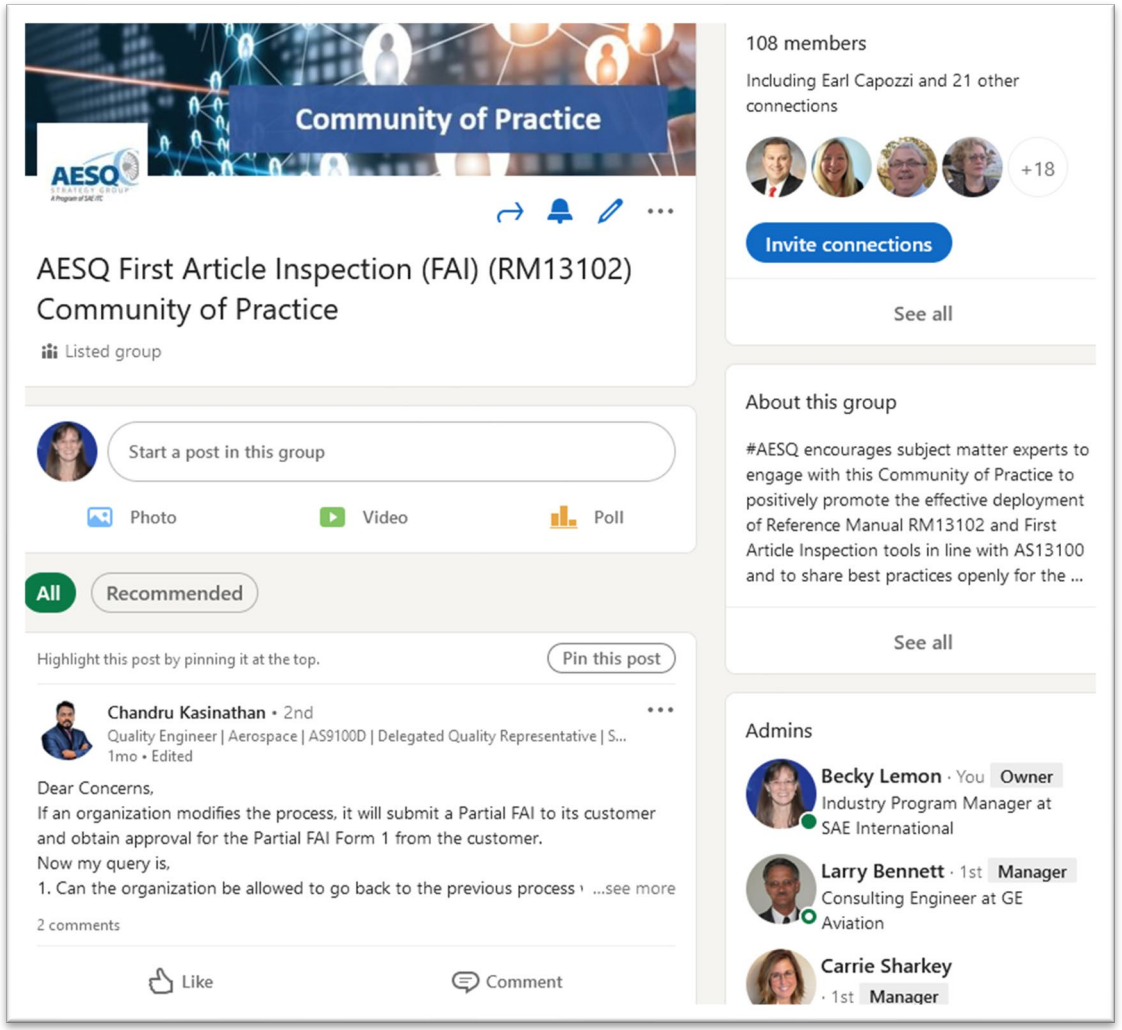
Completed
In Work
Not Started

Subject Matter Interest Group	Team Leader	Deputy Team Leader	Team Size	Charter	Regular Meetings	Activity Schedule	Web Page	Linkedin/ COP Page	Events
Problem Solving Methods (RM13000)	Marnie Ham (GE)								
DPRV Training (AS13001)	Earl Capozzi (P&W)								
Process Control (incl. Inspection Frequency) (RM13002 & RM13006)	Pete Teti (P&W)								
MSA (RM13003)	Simon Gough-Rundle (RR)								
Defect Prevention Quality Tools (RM13004)	Ian Riggs (RR)								
Quality Audit Methods (RM13005)	Tony Pailing (RR)								
Sub-tier Management (RM13007)	Vince Miller (Howmet)								
Design Methods (RM13008)	Lena Eckerbom Wendel (GKN)								
Human Factors (RM13010)	Catherine Catarina-Graca (Safran)								
First Article Inspection (RM13102)	Carrie Sharkey (RR)								
APQP & PPAP (RM13145)	Karl Evans (RR)								

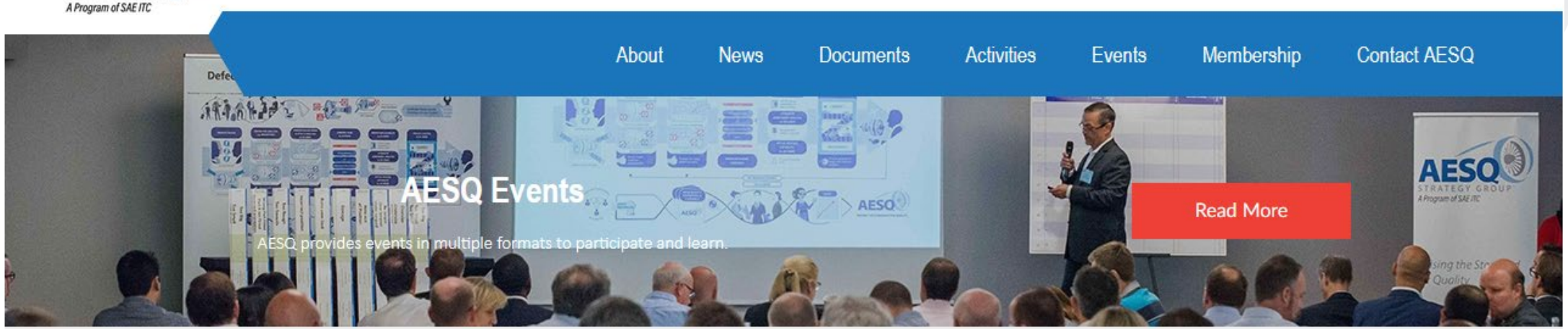
11 Communities of Practice (CoP) Launched - 1,532 Members Collectively (as of April 25)

AESQ STRATEGY GROUP
A Program of SAE ITC

- AESQ Sub-Tier Management (RM13007) Community of Practice — Owner — 120 members
- AESQ Quality Audit Methods (RM13005) Community of Practice — Owner — 187 members
- AESQ First Article Inspection (FAI) (RM13102) Community of Practice — Owner — 176 members
- AESQ Process Control Methods (RM13006) Community of Practice — Owner — 4 members
- AESQ Defect Prevention Tools for APQP (RM13004) Community of Practice — Owner — 259 members
- AESQ Design Work & Production Repair/Rework (RM13008 & RM13011) Community of Practice — 104 members
- AESQ Measurement Systems Analysis (MSA) (RM13003) Community of Practice — Owner — 121 members
- AESQ Human Factors (RM13010) Community of Practice — Owner — 60 members
- AESQ Problem Solving Methods (RM13000) Community of Practice — Owner — 185 members
- AESQ APQP & PPAP (RM13145) Community of Practice — Owner — 215 members
- Aerospace DPRV — Owner — 101 members



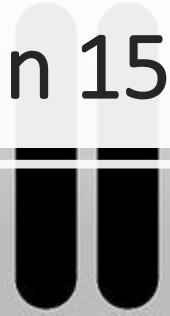
AESQ UPCOMING EVENTS



AEROSPACE	AESQ RM13000 Problem Solving Supplier Feedback Webinar	Virtual	April 20, 2022
AEROSPACE	AESQ Virtual Supplier Forum – April 28	Virtual	April 28, 2022
AEROSPACE	AESQ Virtual Supplier Forum - May 4, 2022	Virtual	May 4, 2022
AEROSPACE	AESQ RM13000 – Webinar: What Makes a Good 8D?	Virtual	May 25, 2022
AEROSPACE	AESQ AS13100 & RM13004 Key Requirements for Design FMEA Webinar – Part 1	Virtual	June 22, 2022
AEROSPACE	AESQ AS13100 & RM13004 Key Requirements for Design FMEA Webinar – Part 2	Virtual	June 23, 2022

Pause

Return in 15 Minutes



Pause

Return in 14 Minutes

Pause

Return in 13 Minutes

Pause

Return in 12 Minutes

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Return in 11 Minutes

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Return in 10 Minutes

Pause

Return in 9 Minutes

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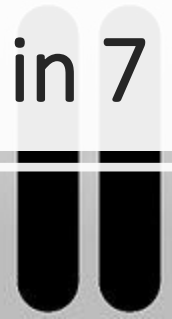
Return in 8 Minutes

Pause

Return in 7 Minutes



Pause

Return in 6 Minutes

Pause

Return in 5 Minutes

Pause

Return in 4 Minutes

Pause

Return in 3 Minutes

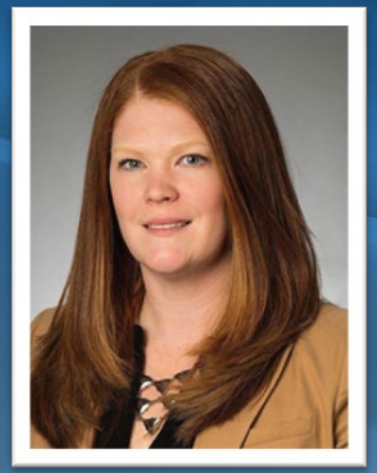
Pause

Return in 2 Minutes

Pause

Return in 1 Minute

AS13100
DEPLOYMENT SURVEY RESULTS



ELIZABETH PACE
ASSOCIATE DIRECTOR, SUPPLIER QUALITY
RAYTHEON TECHNOLOGIES

JIM WILSON
SR MANAGER, SUPPLIER QUALITY & DEVELOPMENT
PRATT & WHITNEY CANADA

Feedback and Survey Overview

August 2021: First survey of suppliers on the general knowledge of AS13100 and the AESQ

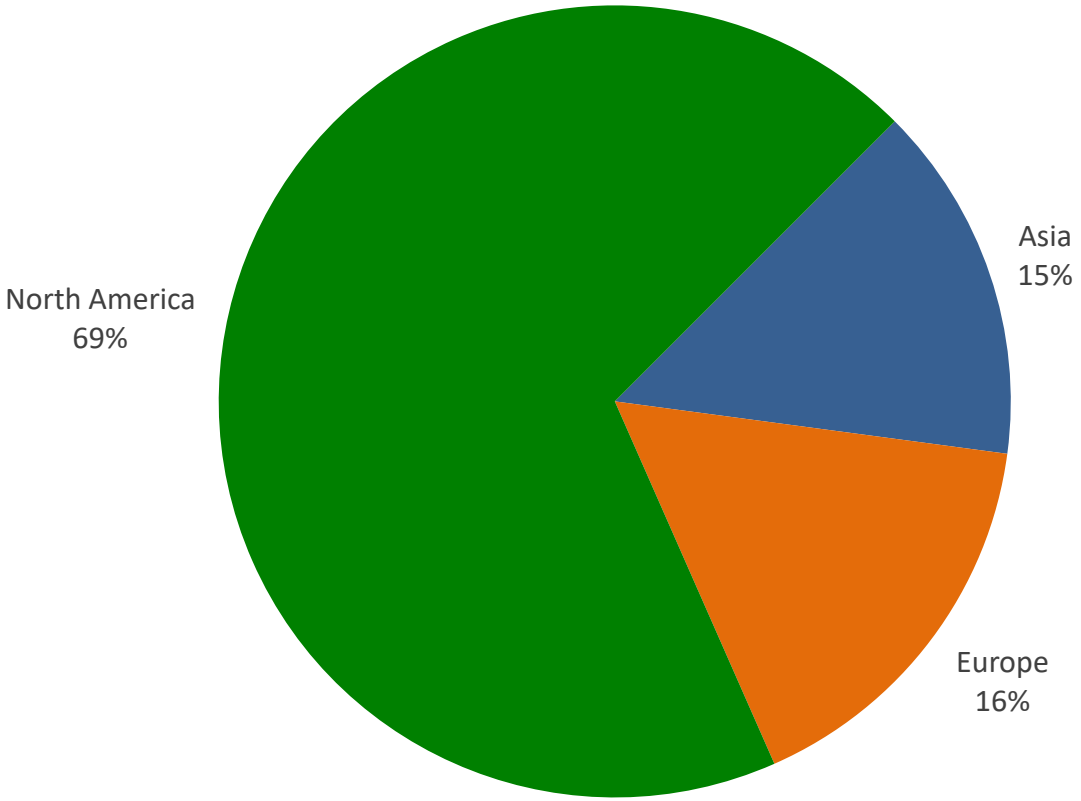
- 158 respondents
- Familiar with AESQ for existing AS13XXX documents
- Create a baseline for deployment well before the deadline
- Basic AS13100 familiarity
- Collected feedback to drive actions

April 2022: Follow up survey targeted to better understand the aero-engine supply base's AS13100 implementation status

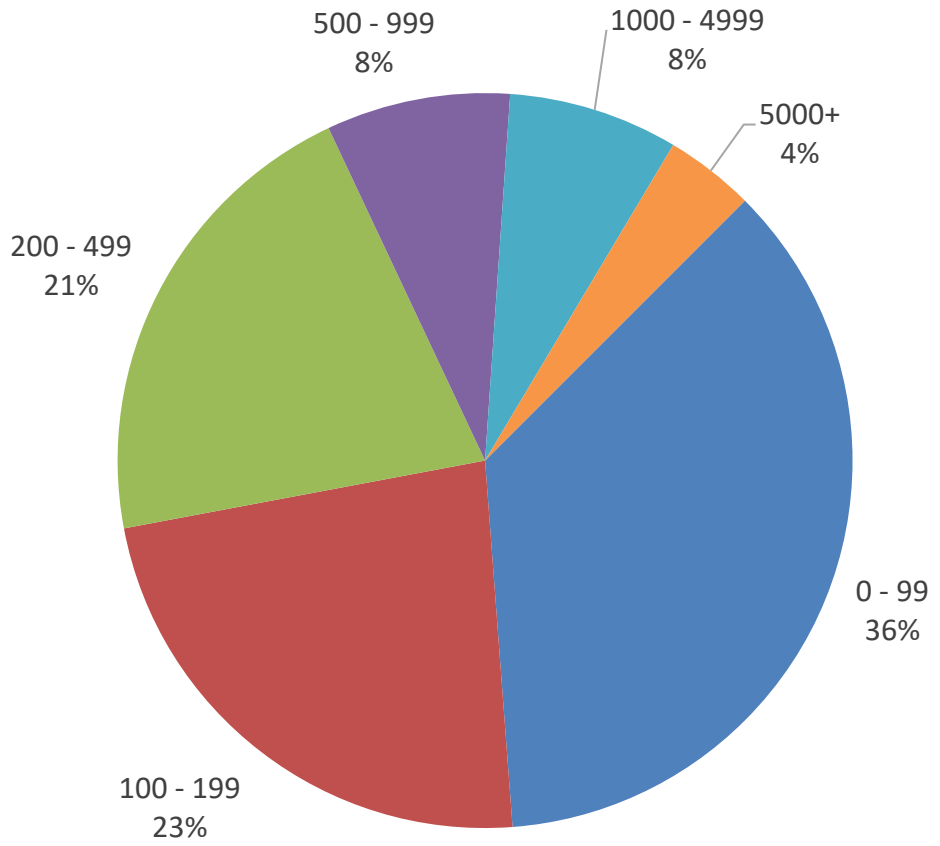
- 13 questions, both objective and open-ended
- 482 respondents to date
- 608 comments and suggestions being analyzed for actions

Respondent Demographics

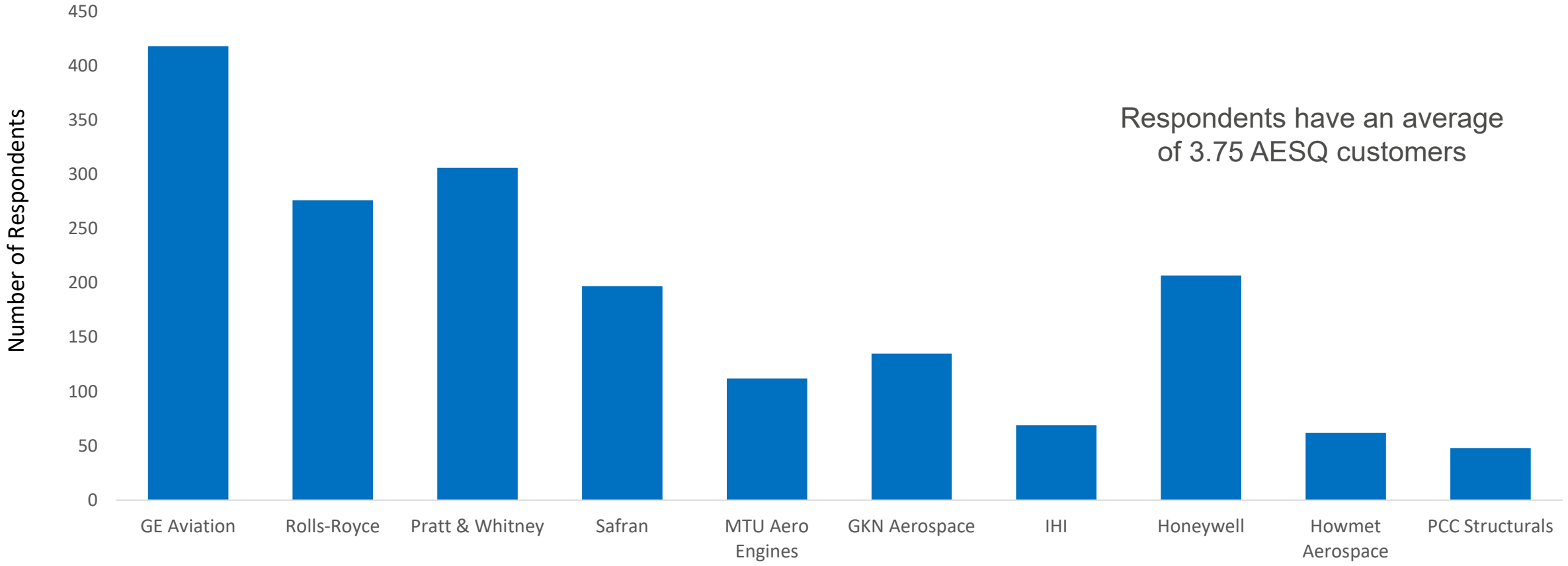
Respondent Location



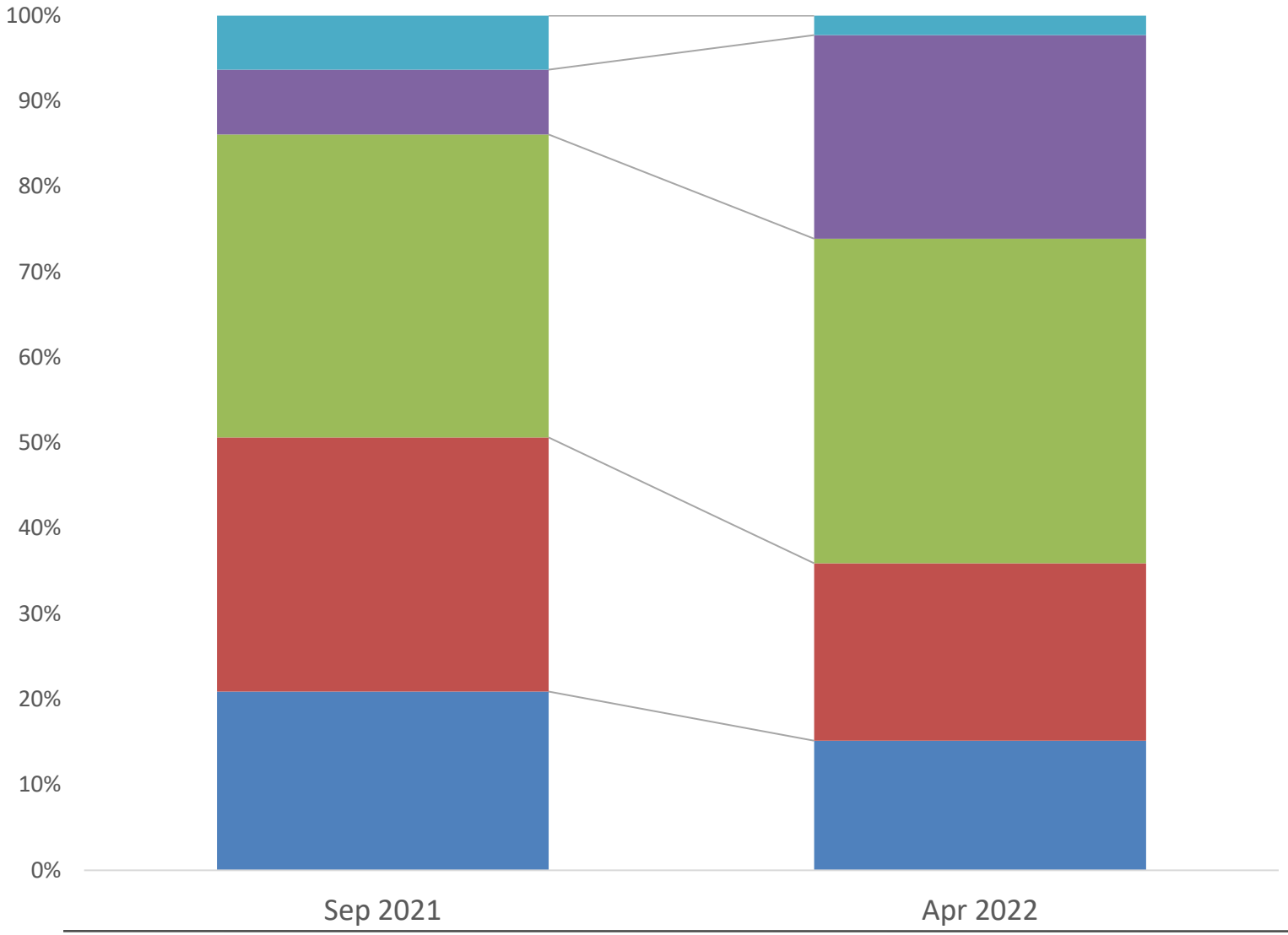
Respondent Company Size



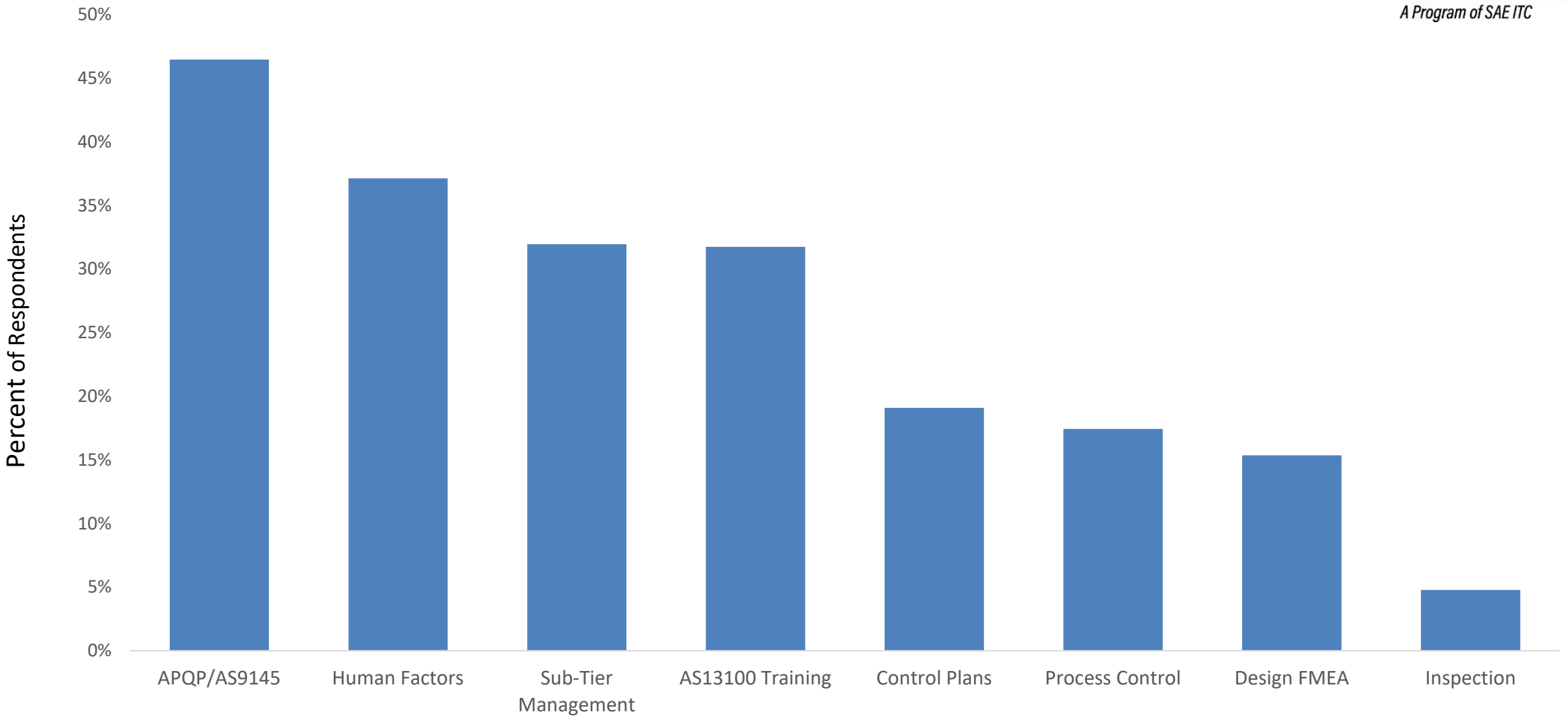
Respondents Supply to Multiple AESQ Members



Evolution of Implementation Status



Where Can We Help?



Learning Opportunities Offered by the AESQ

Recorded Past Events

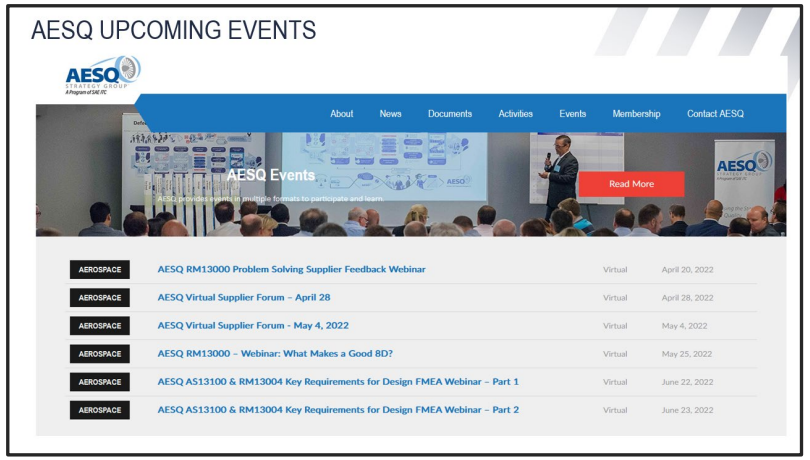
AESQ RM13000 Problem Solving Methods Supplier Feedback Webinar presented April 20, 2022
RM13000 Problem Solving Methods Supplier Feedback Video

AESQ First Article Inspection (FAI) RM13102 Webinar presented April 13, 2022
First Article Inspection Presentation
First Article Inspection Video

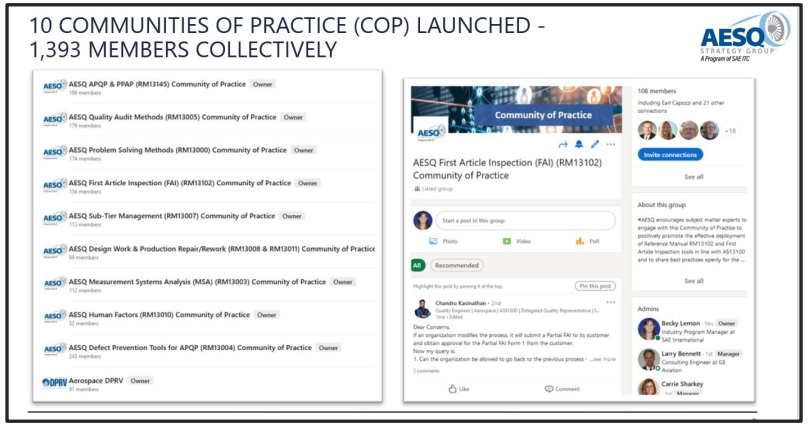
AESQ Human Factors Webinar presented January 12, 2022
Human Factors Webinar Presentation
Human Factors Webinar Video

AESQ™ Human Factors Webinar presented November 30, 2021
Human Factors Webinar Video
Human Factors Webinar Presentation
Human Factors Question & Answers

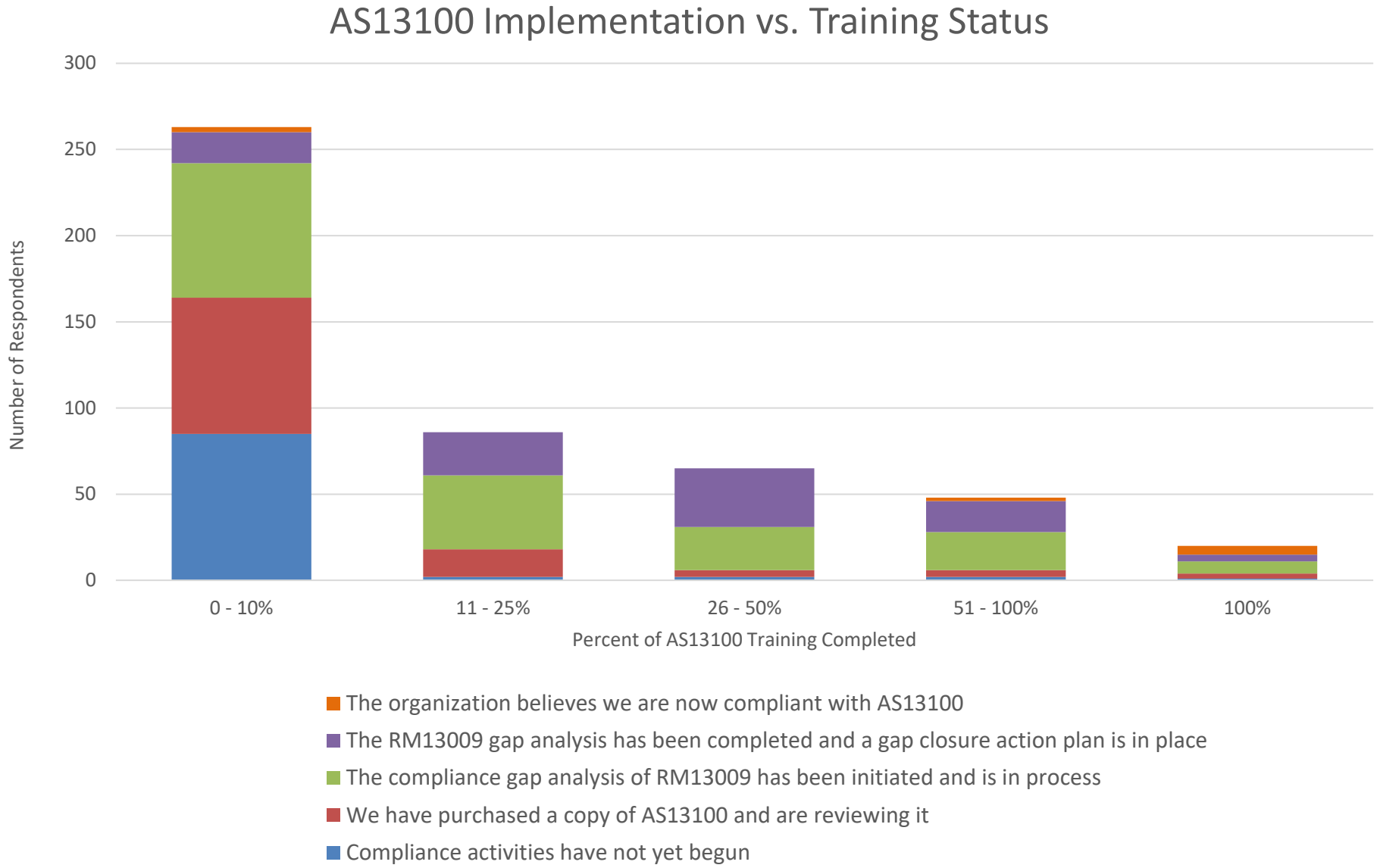
Upcoming Webinars



LinkedIn: Communities of Practice



What You Told Us



Launch Your Company Into a Good Position for Compliance

UNDERSTAND YOUR POSITION

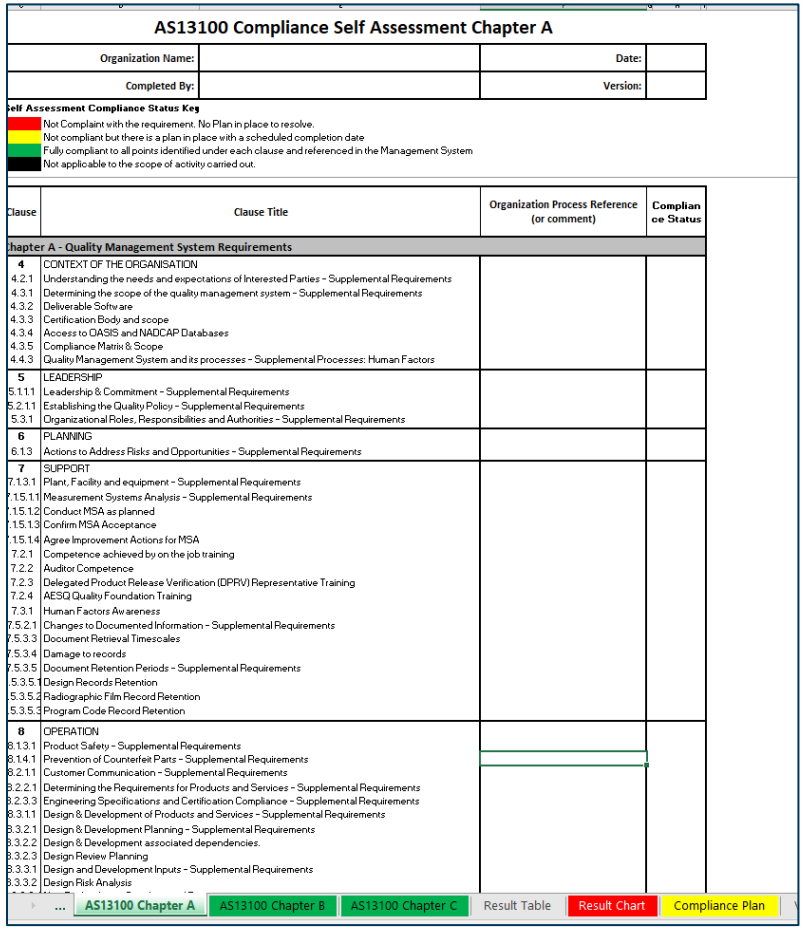
Complete GAP Analysis and Document closure plan

GET INVOLVED

Sign up for webinars and communities of practice

FURTHER YOUR KNOWLEDGE

Reach out for training opportunities



AS13100 Compliance Self Assessment Chapter A

Organization Name:		Date:	
Completed By:		Version:	

Self Assessment Compliance Status Key
- Not Complaint with the requirement. No Plan in place to resolve.
- Not compliant but there is a plan in place with a scheduled completion date
- Fully compliant to all points identified under each clause and referenced in the Management System
- Not applicable to the scope of activity carried out.

Clause	Clause Title	Organization Process Reference (or comment)	Compliance Status
Chapter A - Quality Management System Requirements			
4	CONTEXT OF THE ORGANISATION		
4.2.1	Understanding the needs and expectations of Interested Parties - Supplemental Requirements		
4.3.1	Determining the scope of the quality management system - Supplemental Requirements		
4.3.2	Deliverable Software		
4.3.3	Certification Body and scope		
4.3.4	Access to OASIS and NADCAP Databases		
4.3.5	Compliance Matrix & Scope		
4.4.3	Quality Management System and its processes - Supplemental Processes: Human Factors		
5	LEADERSHIP		
5.1.1.1	Leadership & Commitment - Supplemental Requirements		
5.2.1.1	Establishing the Quality Policy - Supplemental Requirements		
5.3.1	Organizational Roles, Responsibilities and Authorities - Supplemental Requirements		
6	PLANNING		
6.1.3	Actions to Address Risks and Opportunities - Supplemental Requirements		
7	SUPPORT		
7.1.3.1	Plant, Facility and equipment - Supplemental Requirements		
7.1.5.1.1	Measurement Systems Analysis - Supplemental Requirements		
7.1.5.1.2	Conduct MSA as planned		
7.1.5.1.3	Confirm MSA Acceptance		
7.1.5.1.4	Agree Improvement Actions for MSA		
7.2.1	Competence achieved by on the job training		
7.2.2	Auditor Competence		
7.2.3	Delegated Product Release Verification (DPRV) Representative Training		
7.2.4	AESQ Quality Foundation Training		
7.3.1	Human Factors Awareness		
7.5.2.1	Changes to Documented Information - Supplemental Requirements		
7.5.3.3	Document Retrieval Timescales		
7.5.3.4	Damage to records		
7.5.3.5	Document Retention Periods - Supplemental Requirements		
7.5.3.5.1	Design Records Retention		
7.5.3.5.2	Radiographic Film Record Retention		
7.5.3.5.3	Program Code Record Retention		
8	OPERATION		
8.1.3.1	Product Safety - Supplemental Requirements		
8.1.4.1	Prevention of Counterfeit Parts - Supplemental Requirements		
8.2.1.1	Customer Communication - Supplemental Requirements		
8.2.2.1	Determining the Requirements for Products and Services - Supplemental Requirements		
8.2.3.3	Engineering Specifications and Certification Compliance - Supplemental Requirements		
8.3.1.1	Design & Development of Products and Services - Supplemental Requirements		
8.3.2.1	Design & Development Planning - Supplemental Requirements		
8.3.2.2	Design & Development associated dependencies.		
8.3.2.3	Design Review Planning		
8.3.3.1	Design and Development Inputs - Supplemental Requirements		
8.3.3.2	Design Risk Analysis		

... AS13100 Chapter A | AS13100 Chapter B | AS13100 Chapter C | Result Table | Result Chart | Compliance Plan

APQP DEPLOYMENT

KARL EVANS
APQP TECHNICAL PROJECT MANAGER
ROLLS-ROYCE

AS13100/9145 APQP and PPAP

Higher quality is synonymous with **increased product safety**.

The primary objective is to **improve quality and reduce cost**.

A common process up and down the supply chain removing wasted effort and mis-communications.

Products reach faster maturity with fewer engineering changes and defects in the early stages of production and product use.

Proactive toolbox to focus cross-functional teams on risk identification and mitigation early in the process.

Provides a foundation for successful ongoing change management

– design modification, works transfers, changes to manufacturing method

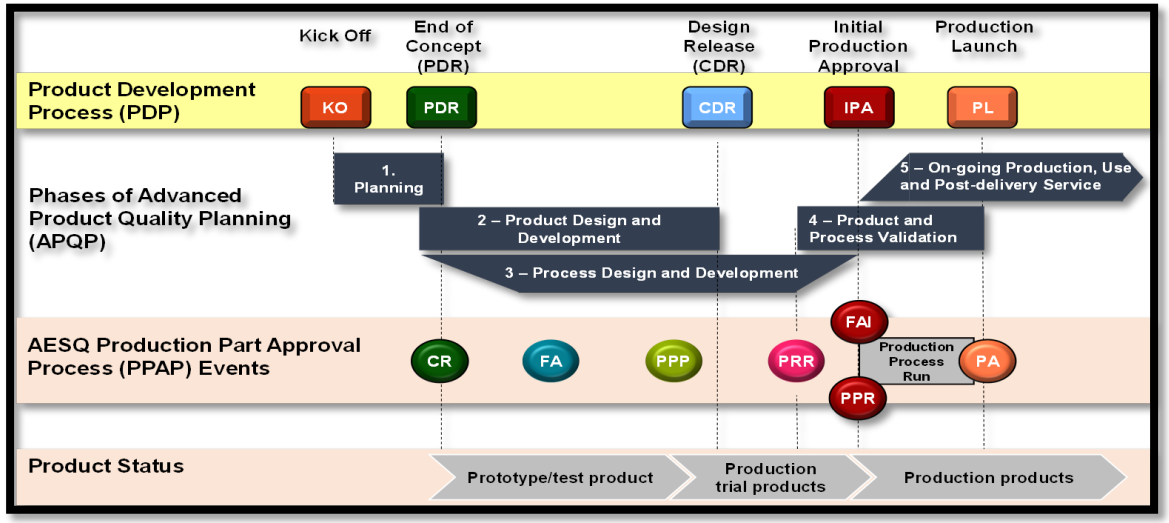
Application within Rolls-Royce of AS13100/9145 APQP and PPAP

Ourselves…Rolls-Royce Civil Aerospace is fully committed to APQP, PPAP and Cross functional working.

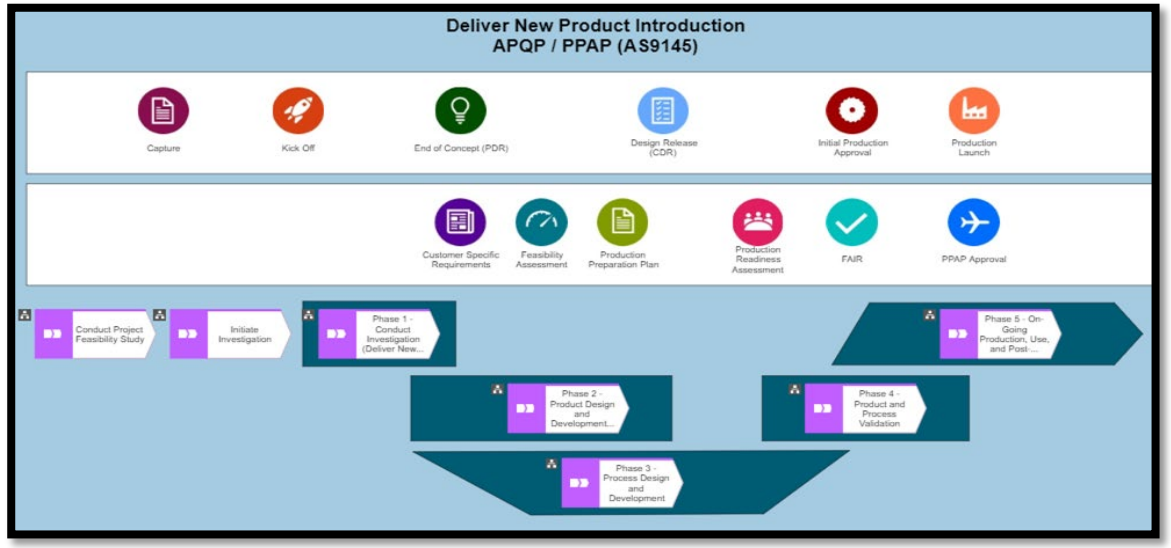
Our Customers…they are asking for this.

Our Suppliers…AS13100 APQP and PPAP means we have significantly reduced our Customer Specific Requirements.

AS13100 APQP & PPAP Timing Chart



Rolls-Royce Management System



Our Journey to APQP

AESQ STRATEGY GROUP
A Program of SAE ITC

2010 2017 2021 2022

Quality Improvement drivers

Build in Quality

Zero Defects

Quality Management Processes

PPAP IPPR

APQP Early trials

APQP and PPAP

Quality Planning Activities

Adoption of Industry Standards

SPC CCF > KCF PFMEA DFMEA KPC/CI

SABRe

#1	#2	#3	#4
• NPI Requirements • No industry std • RR Specifics (extensive)	• APQP & PPAP • No industry std • RR Specifics (lots)	• APQP & PPAP • AS9145 • RR Specifics (fewer)	• APQP & PPAP • AS13100/ AS9145 • RR Specifics (min.)

Adoption of Industry Standards

Self reflection on our APQP implementation

Pillars of success:

1. **Leadership** engagement, organisational commitment and management support
2. **Cross-functional teams** – it's a team sport of more than one function/department
3. **Effective project planning and Managing** the project to ensure on-time completion of defined deliverables and outputs

Leadership

- Senior Sponsorship & engagement in concepts
- Business Plan Deployment alignment
- Novel learning practices:
  - APQP Games & simulations
  - Video bite size learning

Cross Functional Teams

- Launch framework
- Define RACI for activities and Elements
- Building "User Case" value streams (network diagram)
- Functional coaches (DE, ME, PM, Purchase)
- Adopting AS13100 (RM13145) tools:
  - APQP / PPAP Timing Plan
  - Application Matrix

Project Planning & Management

- Alignment of APQP and PPAP Events to business change management decisions
- RAPID Decision making for Events
- Visual Management / Kanban Boards for the teams.

Foundations

Sponsor (right shadow), Champions (remove barriers), Function Leaders (develop their people) and Core Team (right practices & tools)

Your Winning Cards – Steps to Successful Deployment

AESQ STRATEGY GROUP
A Program of SAE ITC

Project Planning & Management

Confirm decision makers – RAPID for each APQP & PPAP Event.

Define practices for concern management

It's a Team Sport

Clear cross functional accountability – RACI for each Planning Deliverable and APQP Element.

People Process

Availability of capable people – Maintain Training plan and people planning process

Develop Leaders of Change

Est. Deployment Champion(s) – to remove barriers to success.
Est. Functional Leads – to develop their people capability.
Est. Core team – to ensure the right practices and tools are available.

Each time you start

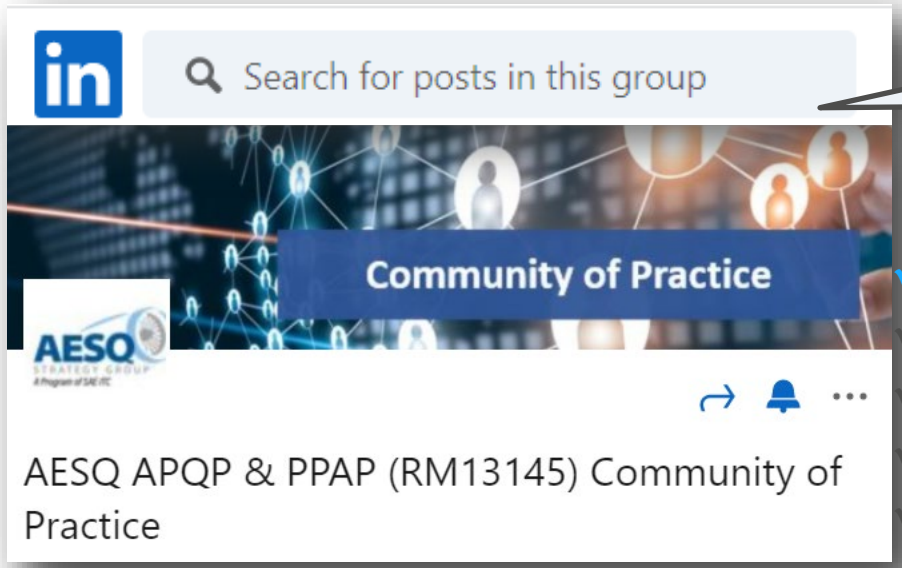
Upfront requirements capture – Establish and confirm these as early as possible with Customers & stakeholders

Progress with a Plan

Utilise RM13145 – Applications matrix act as your menu… Events, deliverables & Elements

APQP & PPAP Timing Plan gives you a Planning template.

Let's Grow our Community



Search LinkedIn **"AESQ Community of Practice"**

- ✓ **APQP & PPAP**
- ✓ Zero Defects Tools
- ✓ Measurement System Analysis
- ✓ Problem Solving
- ✓ Human Factors
- ✓ Etc

Raise questions, share ideas & good practices

Use "RM13145" it contains a volume of good practices

APPROACH AND ADVANCEMENT TOWARDS AS13100

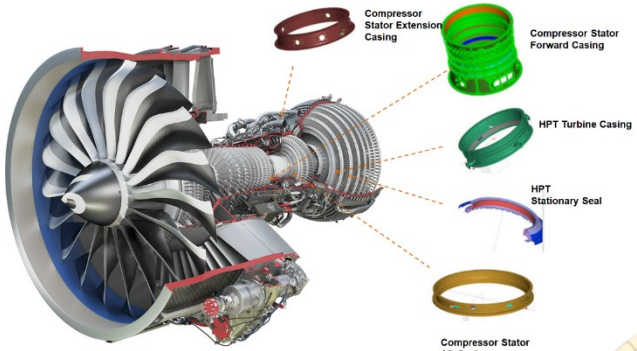
MANI RATHINAM RAJAMANI
DEPUTY MANAGER – QUALITY ENGINEERING
TATA ADVANCED SYSTEMS LIMITED

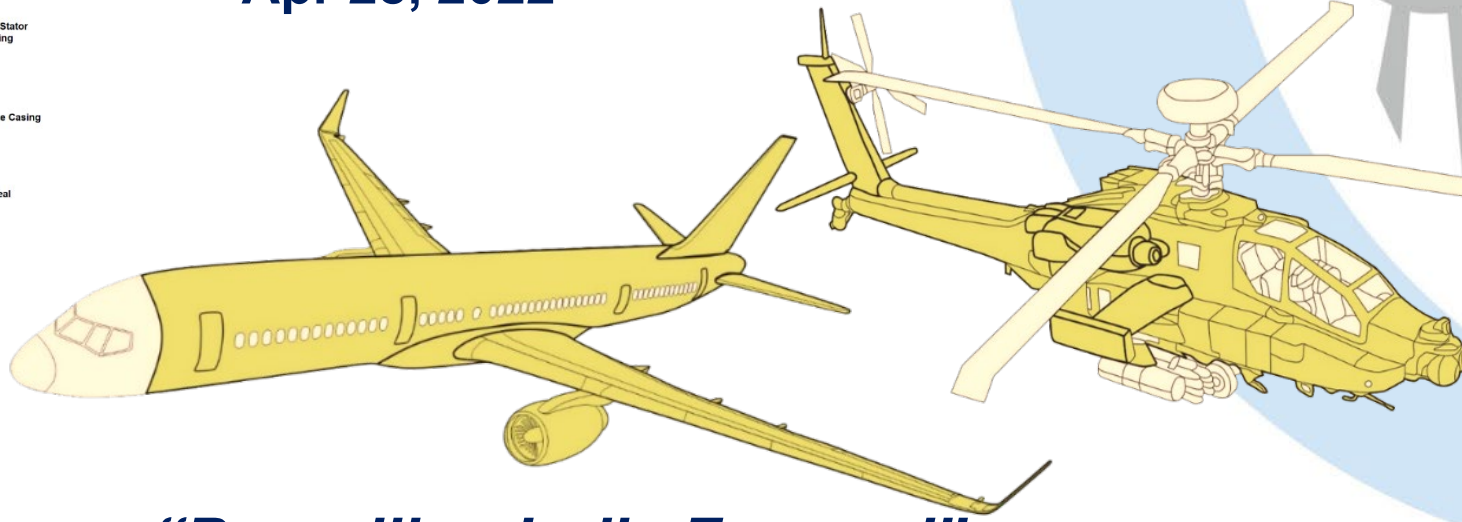
AESQ
STRATEGY GROUP

TATA
TATA ADVANCED SYSTEMS

APPROACH AND ADVANCEMENT TOWARDS AS13100

Apr 28, 2022





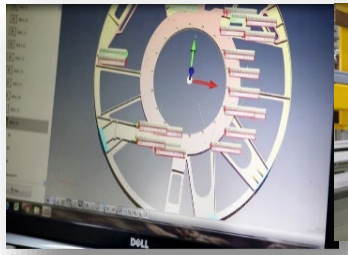
"Propelling India Forward"

CONTENT

- TASL INTRODUCTION.
- TASL JOURNEY WITH AESQ™ TEAM.
- TASL AS13100 TRANSITION & DEPLOYMENT FRAMEWORK
- AS13100 TASL TRANSITION MILESTONE PLAN
- TRANSITION COMMON QUESTIONS/CHALLENGES AND THEIR MITIGATIONS.
- AESQ™ AS13100 REQUIREMENTS STRUCTURE.
- AS13100 DEPLOYMENT - QMS STRATEGY, GAP-ANALYSIS & CALLOUTS STUDY.
- AS13100 vs CUSTOMER SPECIFIC REQUIREMENTS SUPPLIER UNDERSTANDNG.
- APPROACH TO INTEGRATION OF APQP AND APQP CORE TOOLS.
- AS13100 DEPLOYMENT SUPPORT AT SUB-TIER SUPPLIERS.
- AS13100 PRACTITIONER & APQP CFT TRAININGS.
- TOOLS FOR EFFECTIVE IMPLEMENTATION OF AS13100.
- POTENTIAL BENEFITS OF IMPLEMENTING AS13100
- AS13100 TRANSITION BEST PRACTICES & LESSONS LEARNT

TATA ADVANCED SYSTEMS LIMITED (TASL)

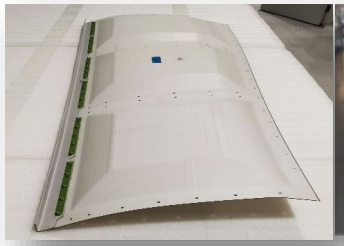
Who are We & What We Do?



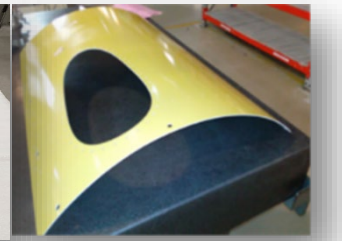
ENGINEERING SERVICES

SPECIAL PROCESSES

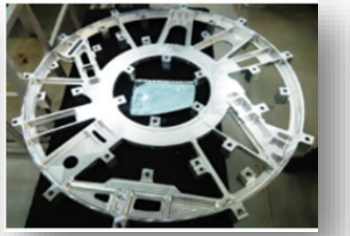
TOOL DESIGN & FABRICATION



SHEET METAL FORMING



COMPOSITE STRUCTURES



METAL MACHINING

MAJOR ASSEMBLIES & AIRFRAMES

AERO-ENGINE COMPONENTS MANUFACTURING, SPECIAL PROCESS & ASSEMBLY

TATA

TATA ADVANCED SYSTEMS

NAGPUR
TASL - N
Metallic & Composite COE Facility

HYDERABAD
TASL and JV's (TSAL, TLMAL, TBAL)
Metallic, Assembly & Aero-engines COE Facility

BENGALURU
TASL – B
Composite COE Facility

TASL JOURNEY WITH AESQ™ TEAM

TATA ADVANCED SYSTEMS

JAN-2014

Qualify as an Aero-Engine Detail Parts Supplier.

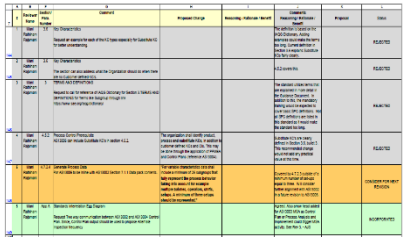
GE Aviation ROLLS ROYCE

NOV-2014 & 2015

First Aero-Engine Projects Qualification & Contract

OCT,2017

Apply and Join G-22 Aero-Engine Supplier Quality (AESQ™) as a Liaison Member.

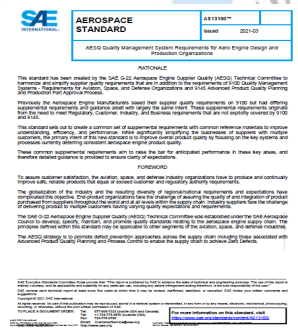


MAY,2018

Participation in Aero-Engine AS13006 Standard Feedback Review

JUL & DEC,2020

Participation in Aero-Engine AS13100 Standard and Reference Manual Review and Feedback



APR,2021

Transition to AS13100 Standard and Reference Manual requirements by Dec, 2022.

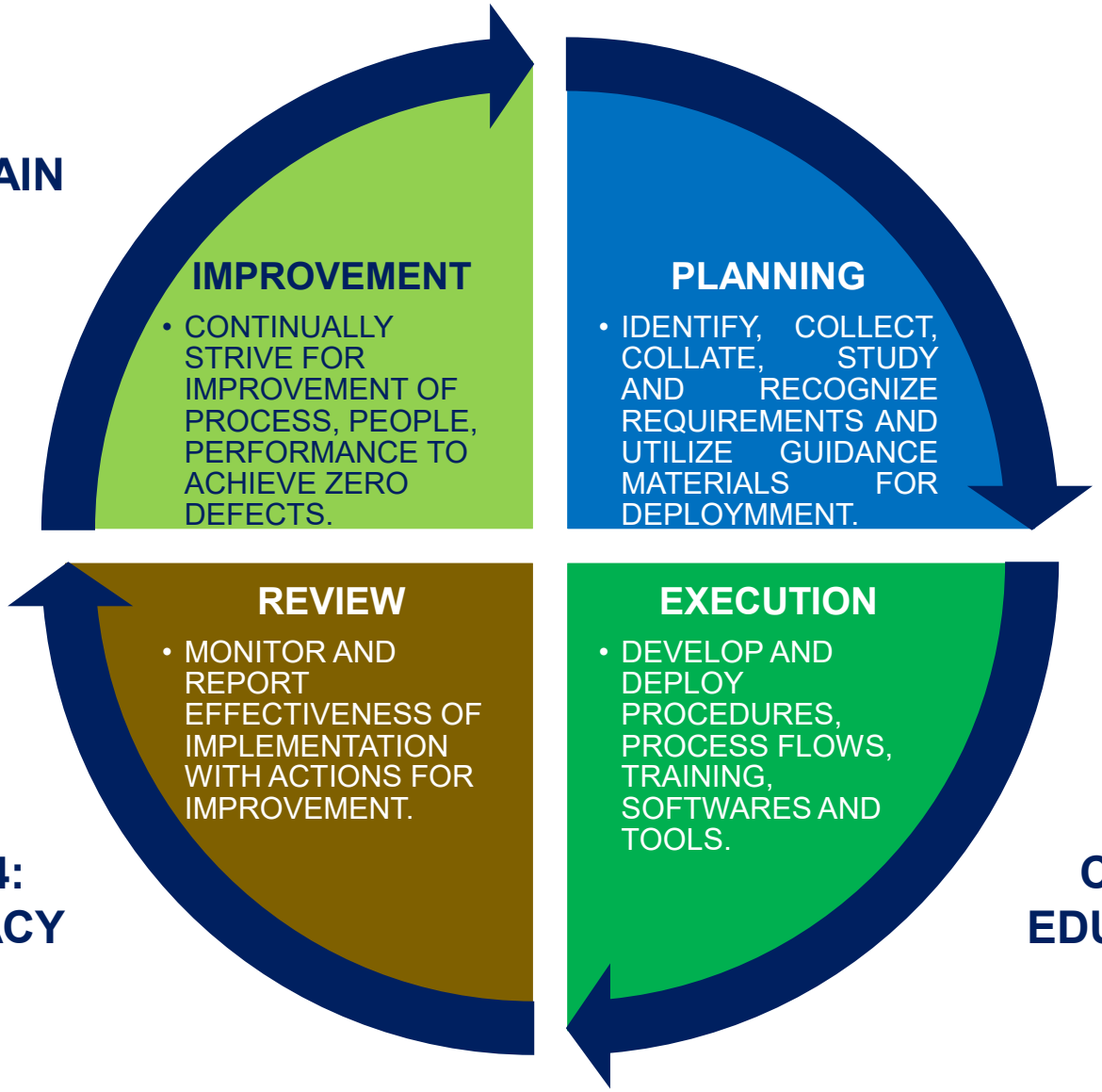
TASL AS13100 TRANSITION & DEPLOYMENT FRAMEWORK

CY 2021: PLANNING

CY 2022 Q1 & Q2: EDUCATE & EXECUTE

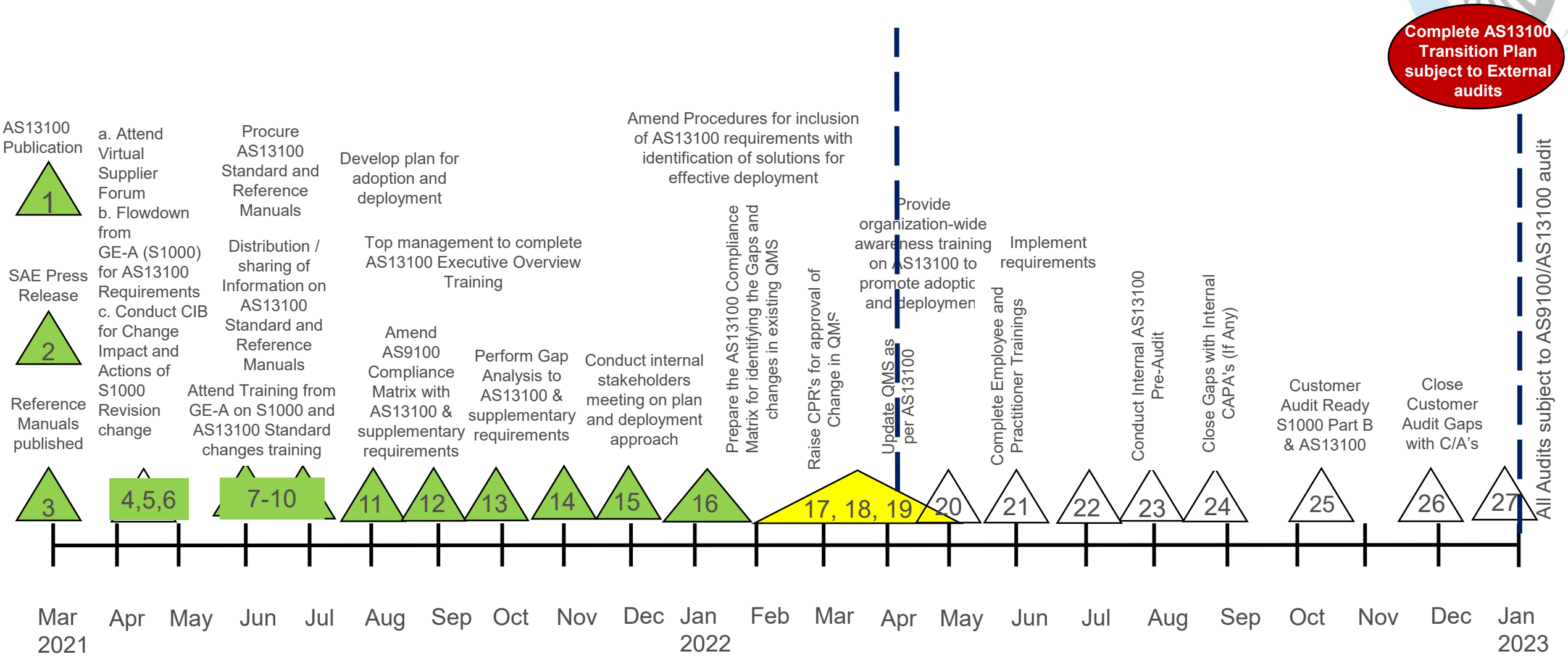
CY 2022 Q3 & Q4: REVIEW & EFFICACY

CY 2023: IMPROVE & SUSTAIN

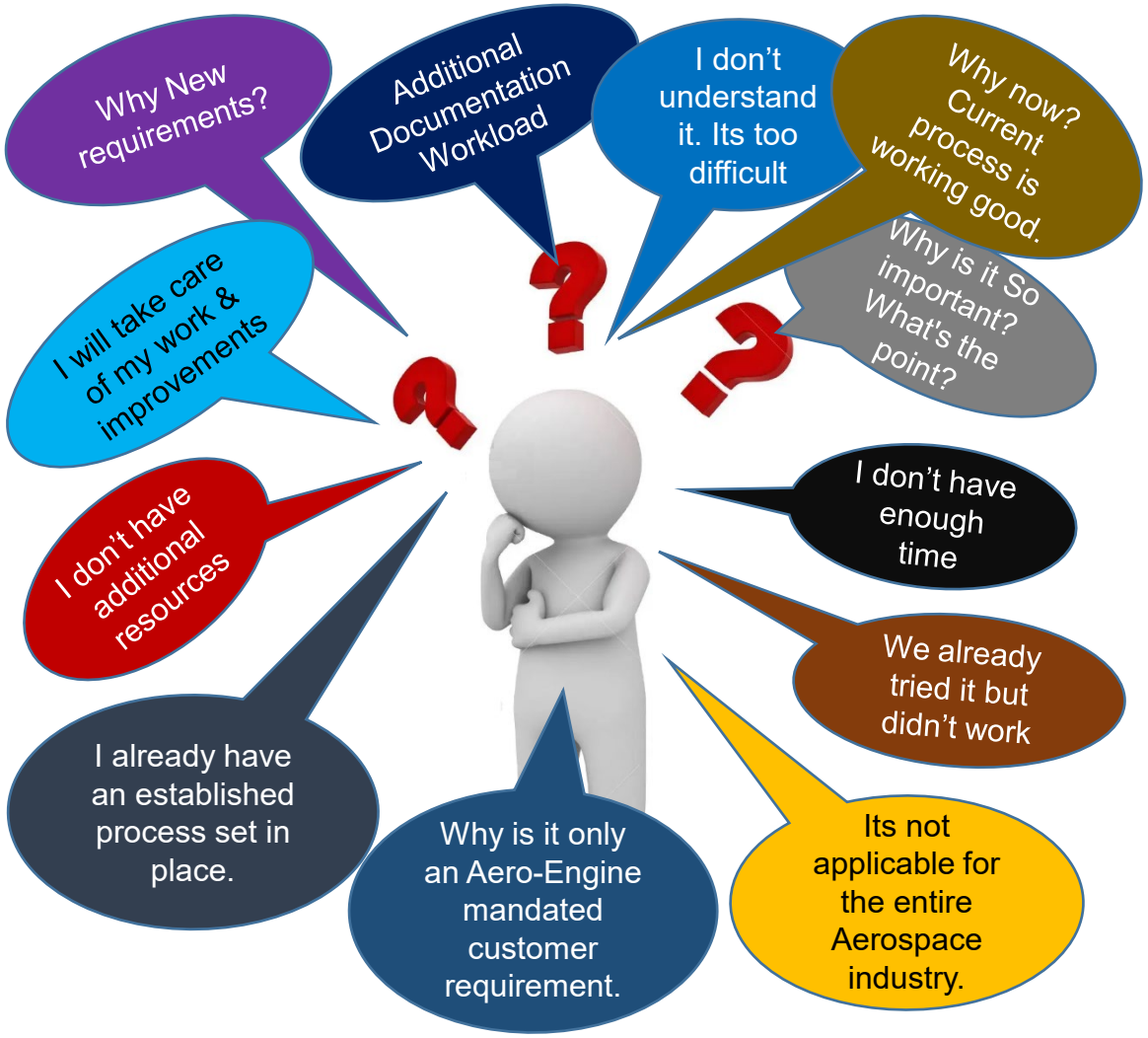


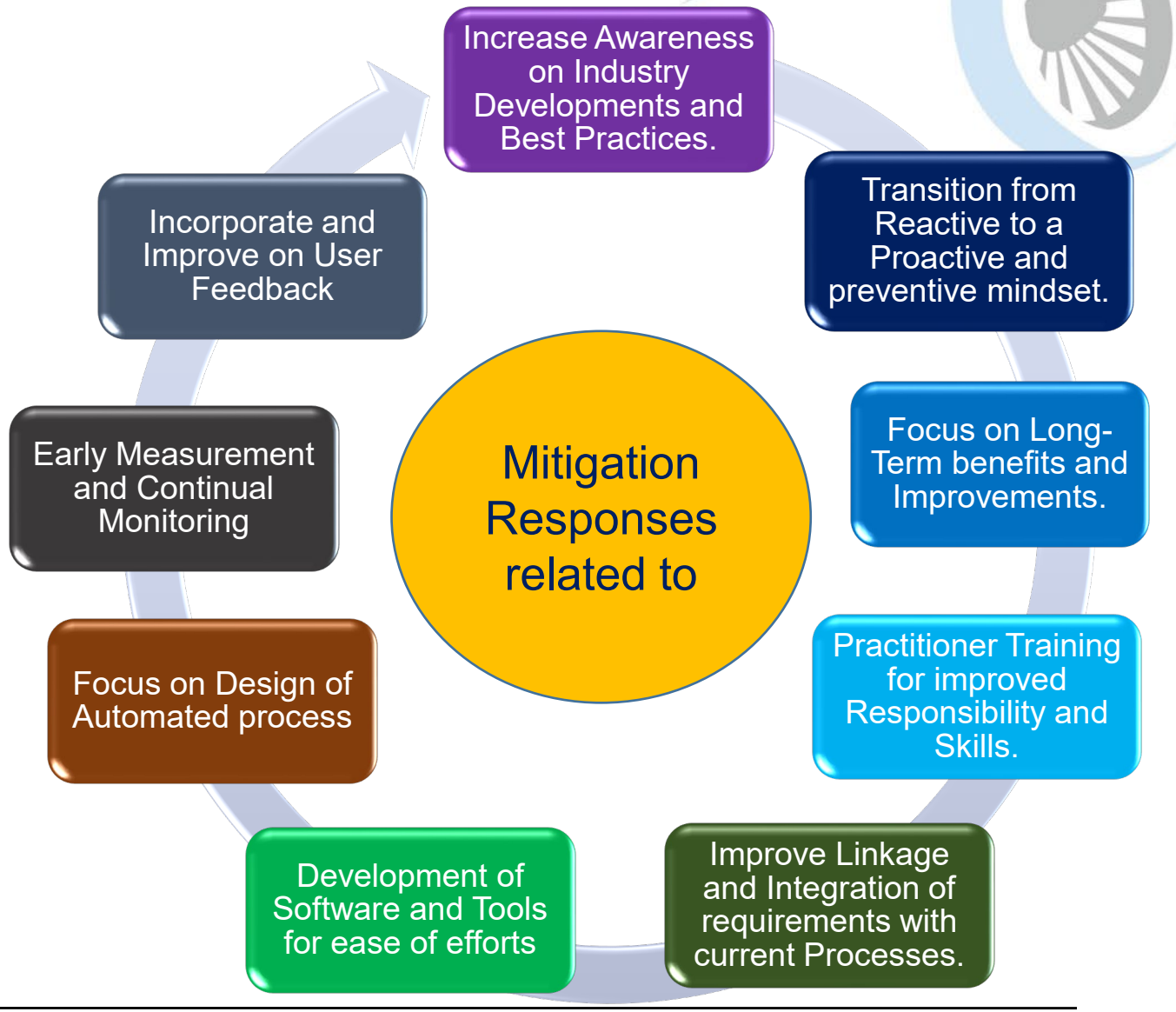
AS13100 TASL TRANSITION MILESTONE PLAN

TASL to achieve Key milestones compliance to AS13100 requirements by 12/31/2022



COMMON QUESTIONS/CHALLENGES AND THEIR MITIGATIONS





AESQ™ AS13100 REQUIREMENTS STRUCTURE

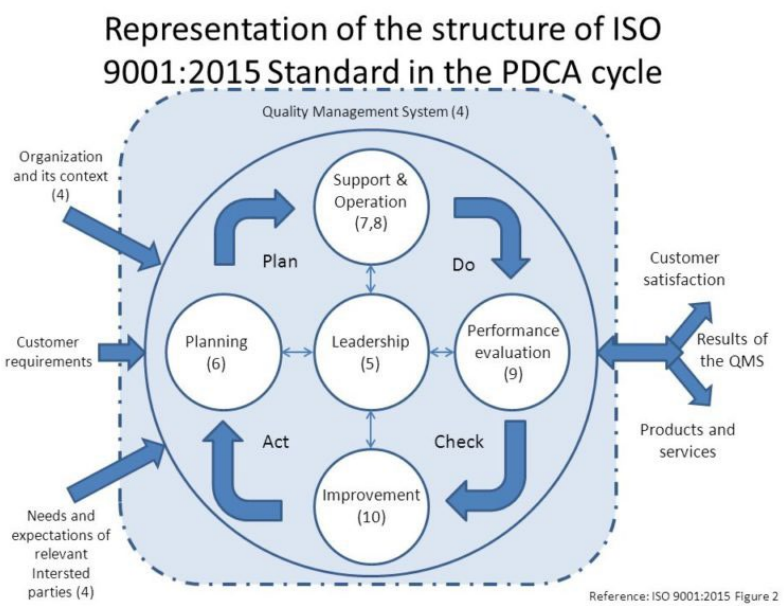
Chapter A
9100 QMS

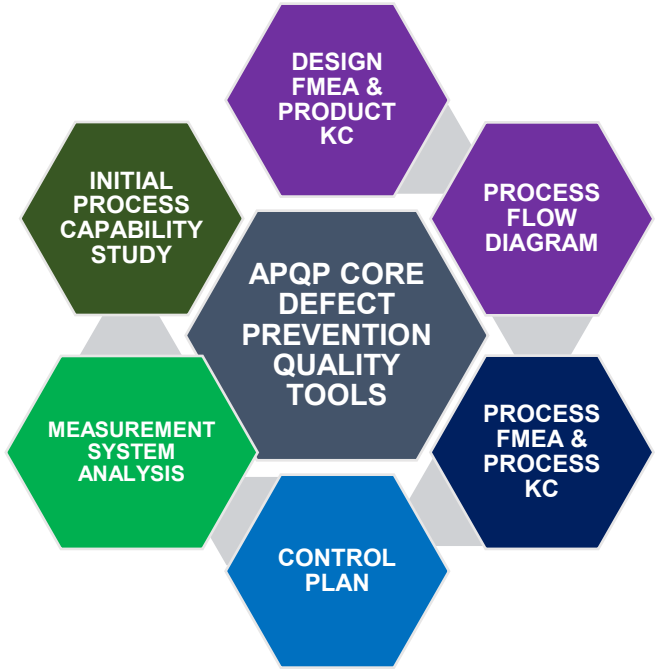
+

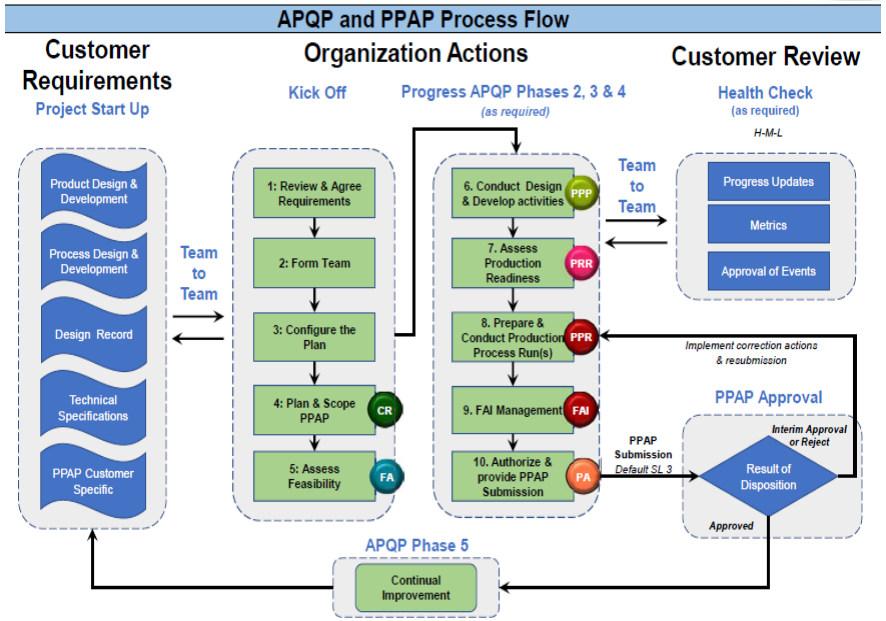
Chapter C
CORE DEFECT PREVENTION TOOLS

+

Chapter B
9145 APQP/PPAP







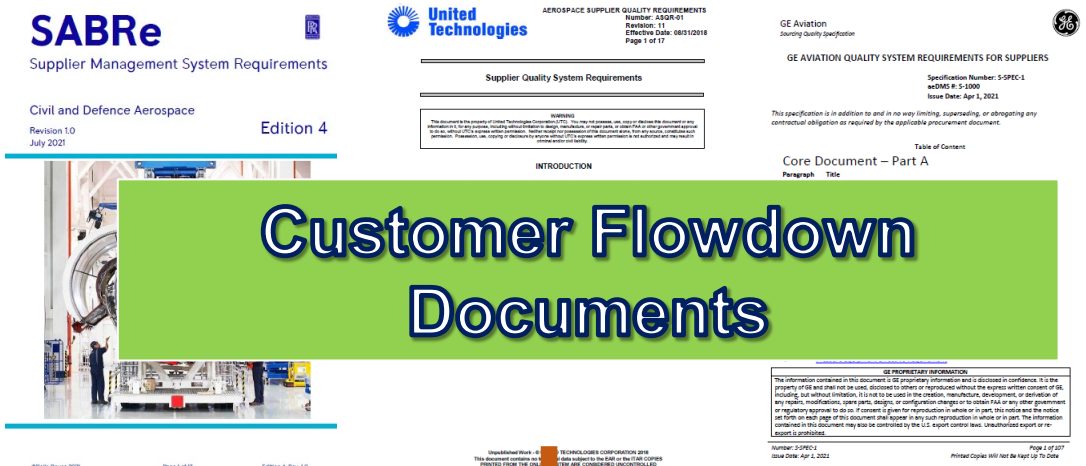
9100 SUPPLEMENTAL REQUIREMENTS TRANSITION OF AS1300x STANDARDS

DEPLOYMENT OF APQP METHODOLOGY

+ **13 REFERENCE MANUALS** **GUIDANCE FOR REQUIREMENTS DEPLOYMENT**

INTEGRATED CHAPTER A, B AND C WITH NEW PRODUCT INDUSTRIALIZATION

AS13100 QMS DEPLOYMENT STRATEGY
(QMS VS STANDARD VS CUSTOMER REQUIREMENTS STUDY)



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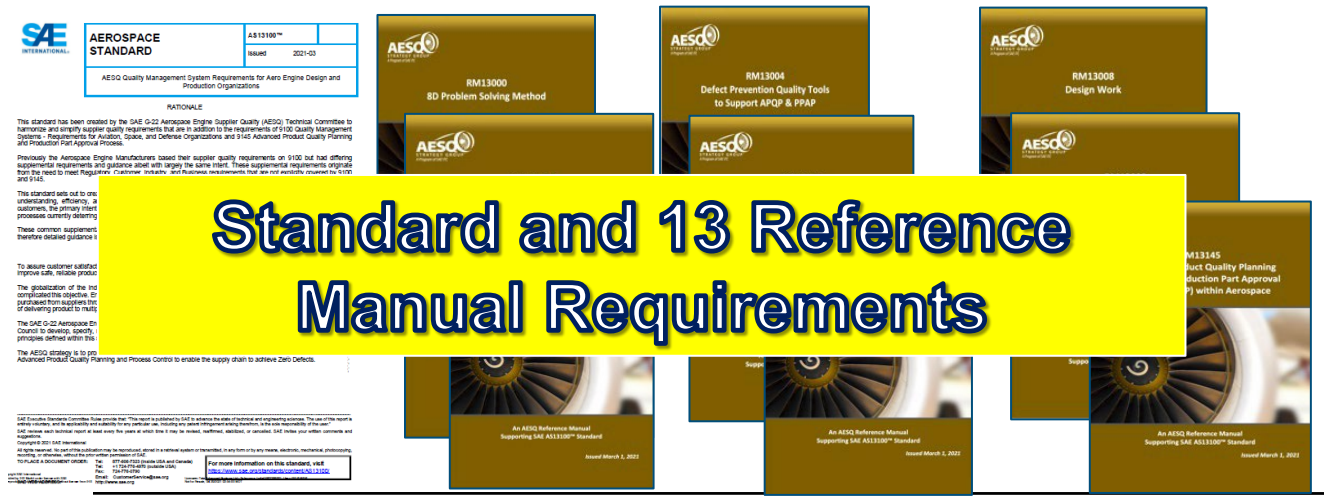

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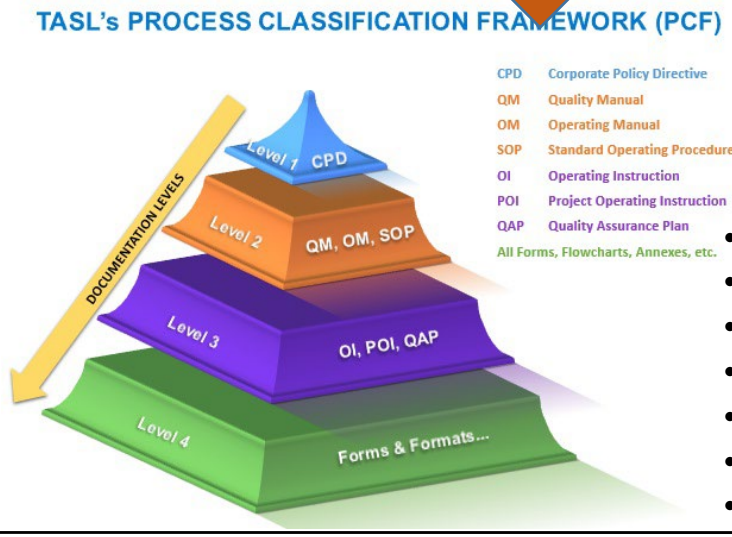
Perform Gap Analysis (RM13009) for	
Applicable Sites	**OEM Programs of**
TASL Hyderabad	GE-A
TSAL Hyderabad	GE-A & RR
TASL Bangalore	GE-A, RR and P&W
TASL Nagpur	RR



Update QMS Documentation for Customer Specific and Standard requirements.

- **QM** – No Update
- **AEOM** – Create
- **QAP** - Update
- **SOP** – Update
- **POI** – Create
- **Software** - Update
- **Templates** - Create

AS13100 GAP-ANALYSIS APPROACH USING RM13009

Revision Date : 16-04-2022

AS13100 Compliance Plan

Clause	Clause title	Organization's Process Reference (or comment)	Action	Owner	Completion Due Date	% Completion	Date Closed	Status (Auto Field)

Call-out Type	Customer Documents (S1000, SABRe4, ASQR01,etc.)	AS13100 Standard	Supplier understanding	Recommended Action
	Shall	Shall	Shall Requirement	Incorporate requirements in existing QMS Process.
	Shall	Should, May, Can	Shall Requirement	Customer and Applicable statutory, regulatory requirements supersedes, hence incorporate requirements in existing QMS Process.
	Should, May, Can	Shall	Supplier should discuss and follow Voice of Customer (VOC) for implementation	Mutually agree on Applicability for incorporation or exclusion.
	Should, May, Can	Should, May, Can	Supplier should discuss and follow Voice of Customer (VOC) for implementation	Mutually agree on Applicability for incorporation or exclusion.
	No Flowdown	Shall Requirements	Supplier shall follow AS13100 Standard	Incorporate requirements in existing QMS Process.
	Shall Requirements	No Flowdown	Supplier shall follow Customer Flowdown document	Customer and Applicable statutory, regulatory requirements supersedes, hence incorporate requirements in existing QMS Process.

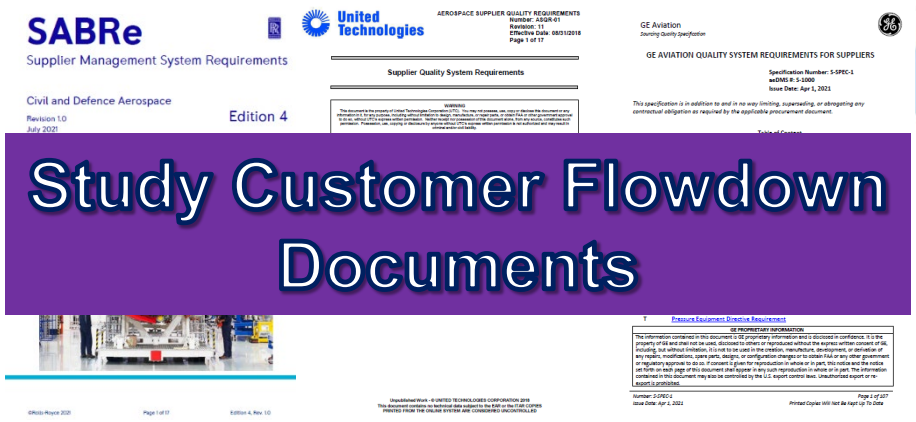
AS13100 STANDARD AND REFERENCE MANUALS REQUIREMENTS STUDY AND REVIEW

S.No	Chapter	Clause Number	Clause Name	Shall	Should	May	Can	See	Note
1	INTRODUCTION	1	APPLICABLE DOCUMENTS	0	1	1	3	0	0
1	INTRODUCTION	2	APPLICABLE DOCUMENTS	2	0	2	0	0	2
2	INTRODUCTION	3	TERMS AND DEFINITIONS	5	1	4	14	0	14
3	AS13100 - Chapter A	4	CONTEXT OF ORGANIZATION	15	1	0	2	2	1
4	AS13100 - Chapter A	5	LEADERSHIP	5	0	0	0	1	0
5	AS13100 - Chapter A	6	PLANNING	2	0	1	0	0	0
6	AS13100 - Chapter A	7	SUPPORT	44	4	5	3	9	5
7	AS13100 - Chapter A	8.1	Operational Planning and Control	3	0	0	1	0	0
8	AS13100 - Chapter A	8.2	Requirements for Products and Services	8	0	0	0	0	0
9	AS13100 - Chapter A	8.3	Design and Development of Products and Services	39	0	0	2	6	1
10	AS13100 - Chapter A	8.4	Control of Externally Provided Processes, Products, and Services	30	1	1	3	3	3
11	AS13100 - Chapter A	8.5	Production and Service Provision	21	0	6	5	2	1
12	AS13100 - Chapter A	8.6	Release of Products and Services	4	0	0	0	0	0
13	AS13100 - Chapter A	8.7	Control of Nonconforming Outputs	3	1	0	0	1	0
14	AS13100 - Chapter A	9	PERFORMANCE EVALUATION	39	2	5	4	8	6
15	AS13100 - Chapter A	10	IMPROVEMENT	17	1	1	1	9	2
16	AS13100 - Chapter B	11-19	9145 - APQP and PPAP - AESQ™ Supplemental Requirements	14	1	7	7	25	16
17	AS13100 - Chapter C	20-21	Core Defect Prevention Quality Tools to Support APQP and PPAP - Supplemental Requirements	62	14	13	10	15	15
18	APPENDIX A	APPENDIX A	STANDARD RELATIONSHIPS	0	0	0	0	0	0
19	APPENDIX B	APPENDIX B	AS13100 REQUIREMENTS APPLICABILITY MATRIX - ORGANIZATION TYPES AND FLOWCHARTS DEFINING TO WHOM THEY APPLY	1	0	0	2	0	1
			TOTAL	314	27	46	57	81	67

For Applicable Clauses, brainstorm with process owners on incorporation steps of

- Standard and Customer requirements.
- suggested RM Guidance process.
- Process flow and Steps.
- Implementation Timeline.
- Change Requests.
- Procedure Updates.
- Trainings.
- Tools and Software.
- Audit reporting and results review.

For Not Applicable Clauses Record Rationale in Documented Information



Study Customer Flowdown Documents

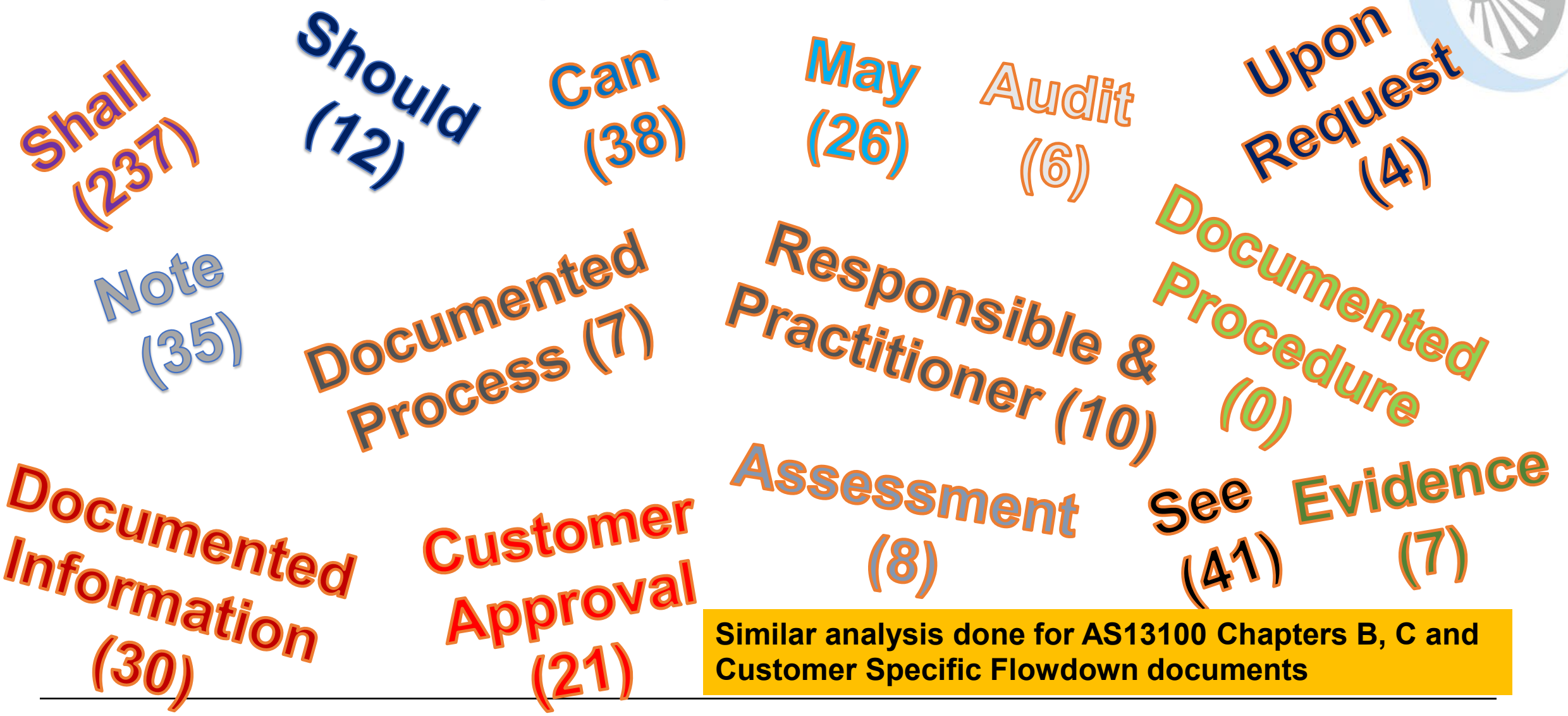
S.No	RM Number	RM Name	RR SABRE4 Clause	RR SABRE4 Clause Requirement	RR SABRE4 Call out	GE S1000 & S1002 Clause	GE S1000 & S1002 Clause Requirement	GE S1000 & S1002 Requirement Call out	AS13100 Clause	AS13100 Clause Requirement	AS13100 Requirement Call out
1	RM 13009	Compliance Assessment		all requirements.						standard, see RM13009 for recommendations on how to complete a compliance self-assessment	Shall

Compare Customer and Standard documents for Superseding requirements

Clause Requirement		Plants
The organization shall conduct an A assessment to ensure that the scope includes the full scope of this standa recommendations on how to comple assessment	2. AEOM should also call-out the AS13100 self-assessment as detailed in RM13009	ASL-N SL-B

Action Plan for Implementation of superseding requirement

AS13100 CHAPTER A (QMS) CALLOUTS



Similar analysis done for AS13100 Chapters B, C and Customer Specific Flowdown documents

SUPERSEDING REQUIREMENTS UNDERSTANDING METHODOLOGY

	Customer Documents (S1000, SABRe4, ASQR01,etc.)	AS13100 Standard	Understanding	Recommended Actions
Call-out Type	Shall	Shall	Shall Requirement	Incorporate requirements in existing QMS Process.
	Shall	Should, May, Can	Shall Requirement	Customer and Applicable statutory, regulatory requirements supersedes, hence incorporate requirements in existing QMS Process.
	Should, May, Can	Shall	Supplier should discuss and follow Voice of Customer (VOC) for implementation	Mutually agree on Applicability for incorporation or exclusion.
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	No Flowdown	Shall Requirements	Supplier shall follow AS13100 Standard	Incorporate requirements in existing QMS Process.
	Shall Requirements	No Flowdown	Supplier shall follow Customer Flowdown document	Customer and Applicable statutory, regulatory requirements supersedes, hence incorporate requirements in existing QMS Process.
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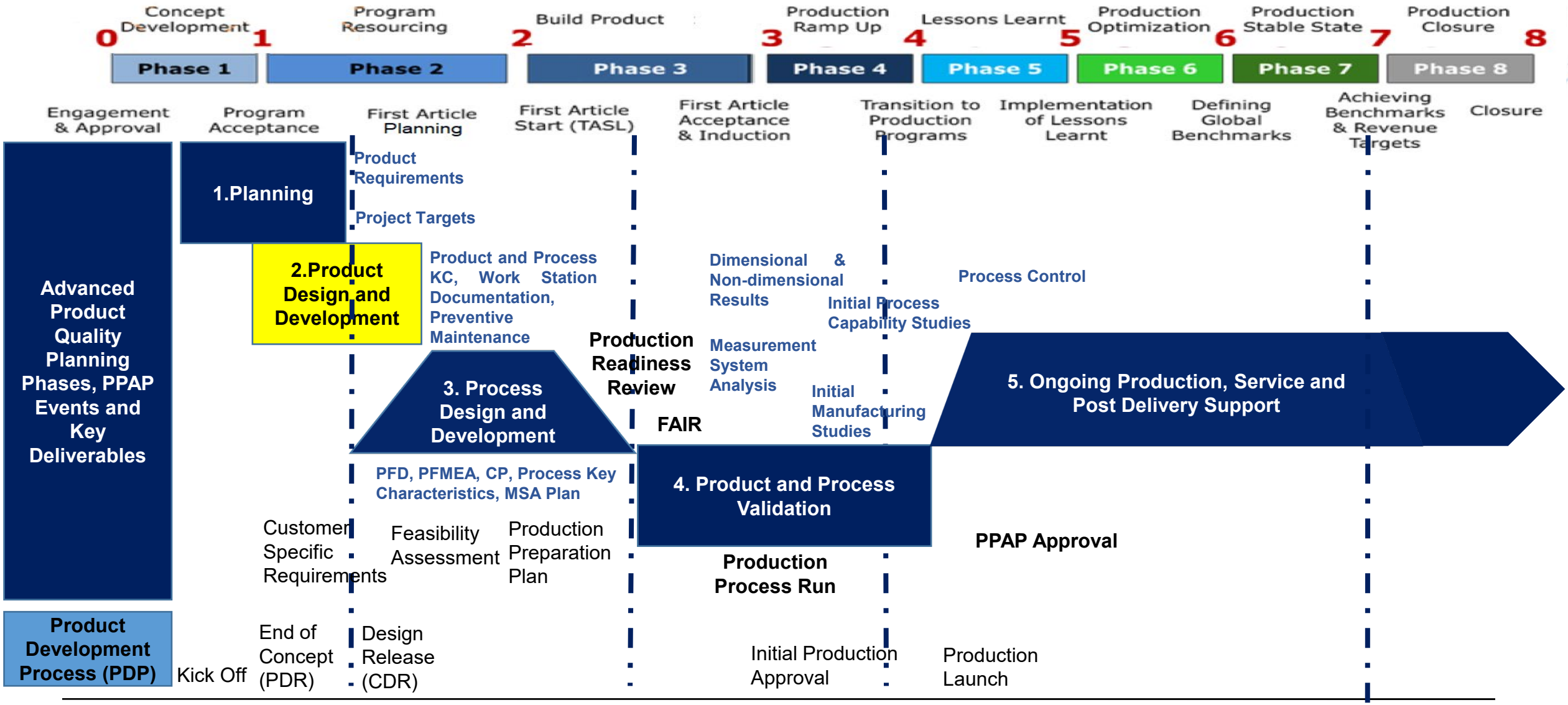
	NOTE	No Flowdown	Supplier shall follow Customer Flowdown document	Customer and Applicable statutory, regulatory requirements supersedes, hence incorporate requirements in existing QMS Process.
	No Flowdown	NOTE	Supplier shall follow AS13100 Standard	Incorporate requirements in existing QMS Process.
	NOTE	NOTE	Supplier should discuss and follow Voice of Customer (VOC) for implementation	Mutually agree on Applicability for incorporation or exclusion.
	See RM13--- Documents	See RM13---	Review the associated statement for determining the applicability	Review the associated statement for determining the applicability.

APPROACH ON INTEGRATION OF APQP AND PROGRAM GATES



APPROACH ON INTEGRATION OF APQP CORE TOOLS

Customer Design Documentation

PROCESS FLOW DIAGRAM

Input Significant / Fixed Process Substantiation Process Steps

PROCESS FMEA

Determine and Record Product, Process KC, Mitigation Actions, Prevention and Detection Controls

CONTROL PLAN

Process Control Methods Implementation

MSA STUDY

Measurement System Adequacy & Capability Analysis

INITIAL PROCESS CAPABILITY STUDY

Process Capability & Performance Analysis

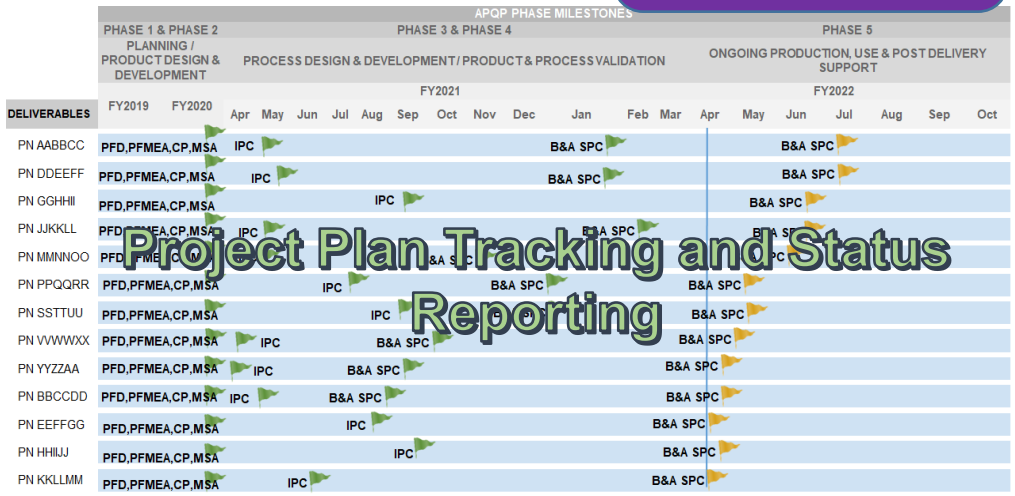
BEFORE & AFTER SPC STUDY

Process Stability and Continual Improvement

Product Realization and Acceptance

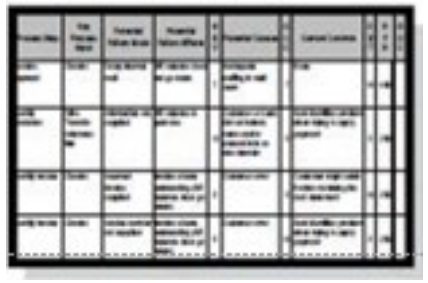
Post FAI - Product & Process Validation

Pre-Production - Process Design



Project Plan Tracking and Status Reporting

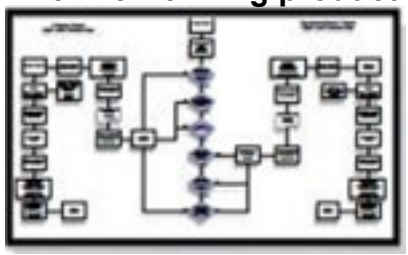
PROCESS FMEA AS PROACTIVE RISK ANALYSIS TOOL



DFMEA

Customer Inputs: Severity, Design Failure Modes and Product KC's

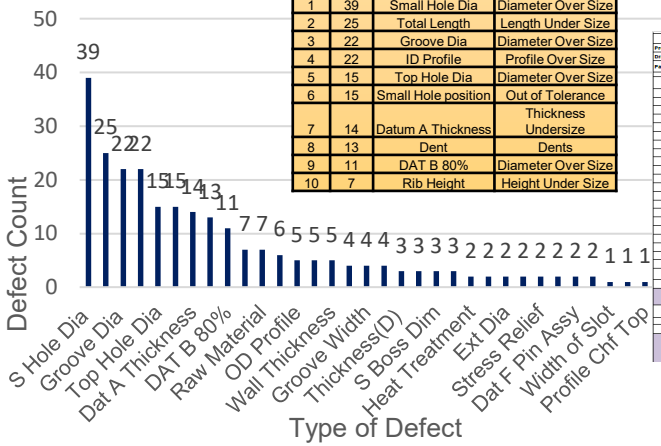
Material Release to Shipment of Conforming product



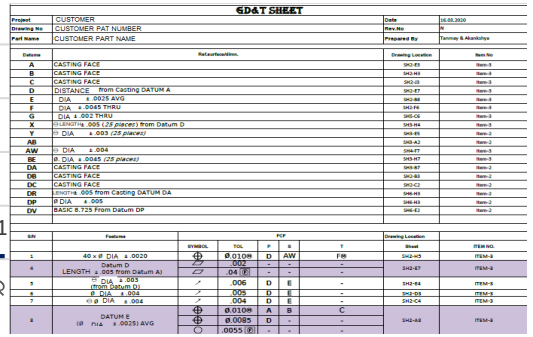
Process Flow

Process Steps , Product KCs &CIs

Past MRB Pareto Chart			
S.No	Count	Feature Type	Possible Defect
1	39	Small Hole Dia	Diameter Over Size
2	25	Total Length	Length Under Size
3	22	Groove Dia	Diameter Over Size
4	22	ID Profile	Profile Over Size
5	15	Top Hole Dia	Diameter Over Size
6	15	Small Hole position	Out of Tolerance
7	14	Datum A Thickness	Thickness Undersize
8	13	Dent	Dents
9	11	DAT B 80%	Diameter Over Size
10	7	Rib Height	Height Under Size



Past MRB's Inputs from Customer

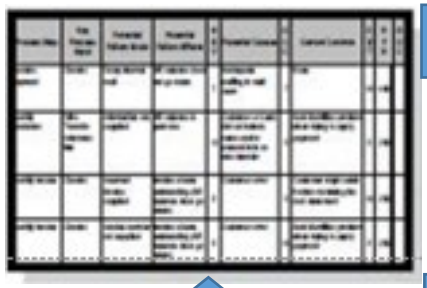


GD&T SHEET

CPD's and Product KC's (Critical, Major and CPD)

Process Risk Analysis (PRA)

Part PFMEA



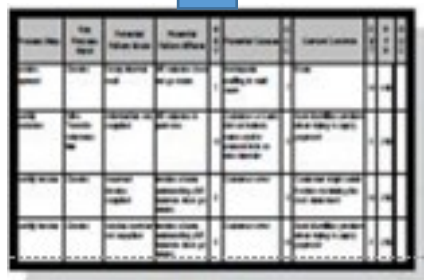
PFMEA Output

RPN – As per RM13004

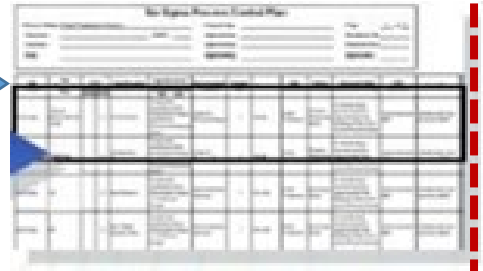
Process KCs & Product KCs, CIs that require monitoring

- PFMEA Action Plan with Resp. and Estimated Date of Completion and Revised RPN Number.
- Explore New Processes for Defect Prevention and Detection Controls

Standardized Best practice



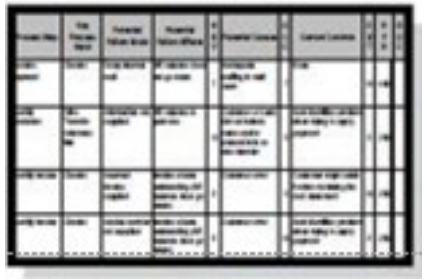
Baseline / Reference Process PFMEA



Control Plan

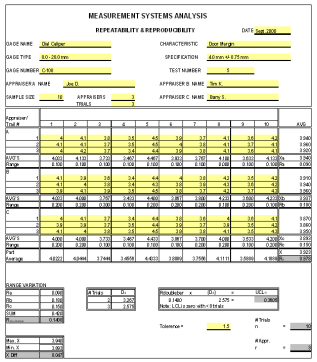
Functional Owner : Manufacturing Engineering
Functional Team Members : Customer Representatives (Design, MAE, PQE, Sourcing), Quality, Production, Supply Chain.

CONTROL PLAN AS PROCESS CONTROL TOOL



PFMEA

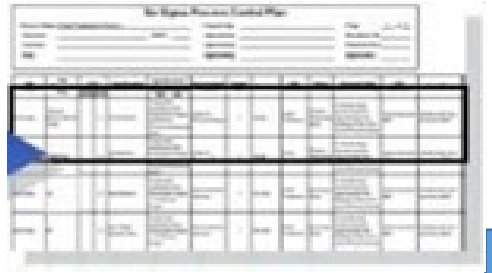
Process KCs , Product KCs &CIs that require monitoring



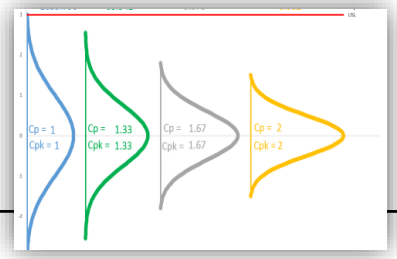
MSA Studies

Proper measurement device and technique

Process Variation Controls

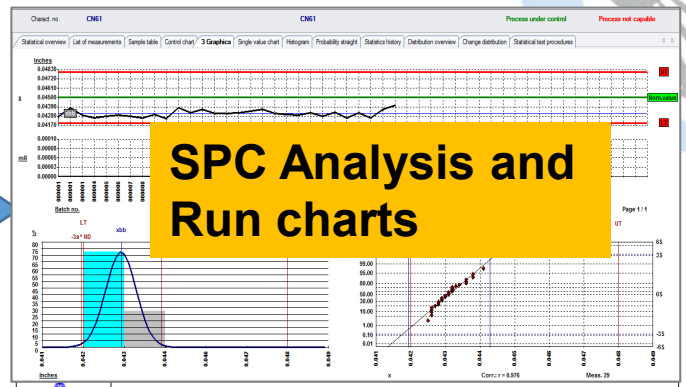


Control Plan



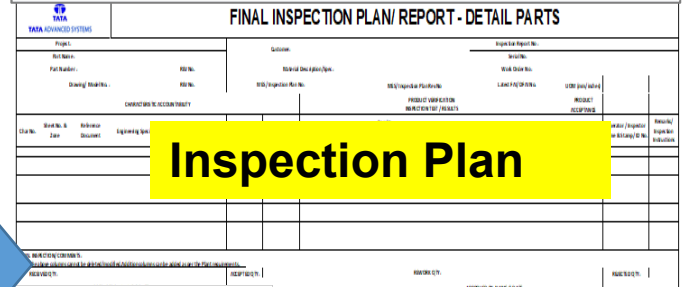
Assurance of Process capability

Process Control Methods

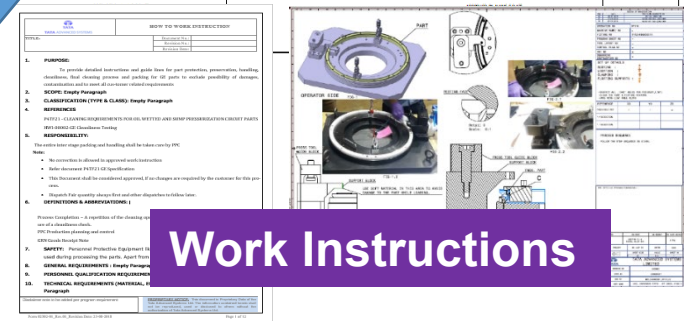


SPC Analysis and Run charts

Specific Instructions for measuring & monitoring - Controls and reaction plans



Inspection Plan



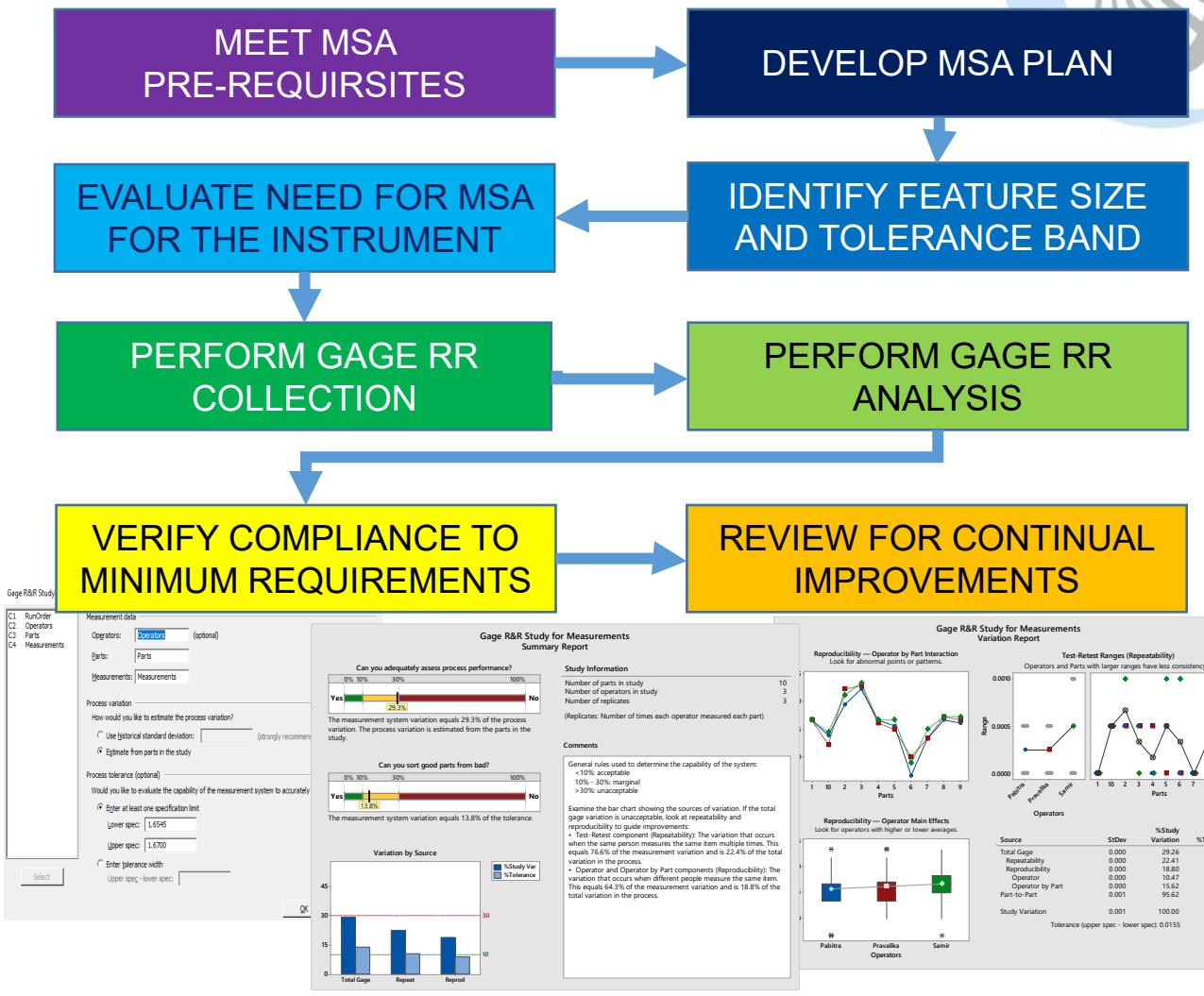
Work Instructions

Functional Owner : Manufacturing and Quality Engineering
Functional Team Members : Customer Representatives (Design, MAE, PQE, Sourcing), Quality, Production, Supply Chain.

MSA STUDY FOR MEASUREMENT CAPABILITY CONTROL

- Template Development for MSA Plan and Gage RR
- Mutually Agreed Selection of Characteristics for MSA Study like
  - Product-Process KC's, Critical and Major Characteristics.
  - Characteristics with Past MRB and Tighter Tolerances.
- Selection of Instruments based on Feature Size, Tolerance, Feature Type and measurement system capability.
- MSA commonly Applied when
  - New measurement instruments used,
  - Change in Design tolerances implemented,
  - External Turnbacks/escapes occur, etc.
- Analyze Failure modes of Inspection process.
- Determine Need for Type 1 Gage study, when applicable.
- Collect Data from production parts for Gage RR analysis and Review for Improvements.

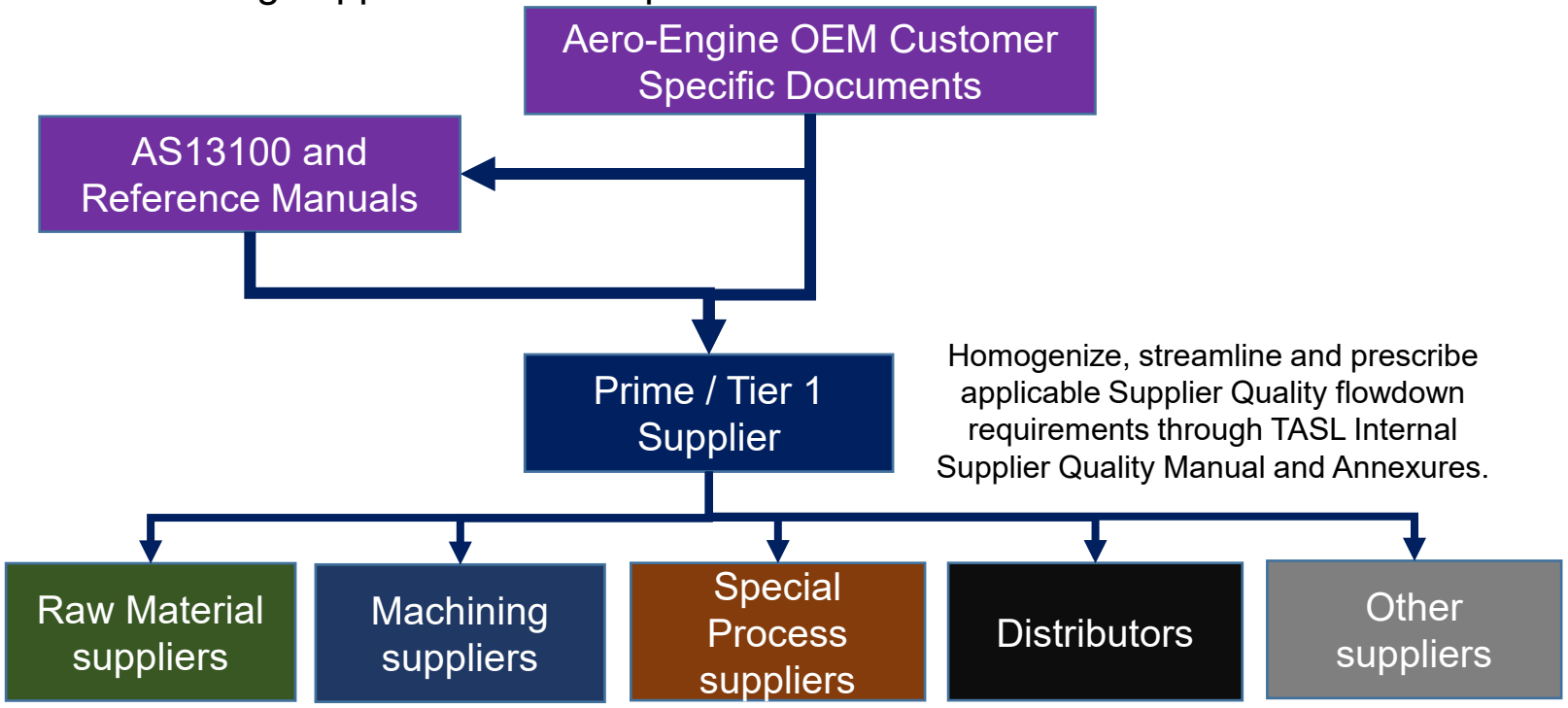
Measurement system variation	Status
<10%	ACCEPTABLE
10% - 30%	MARGINAL
>30%	UNACCEPTABLE



AS13100 DEPLOYMENT SUPPORT AT SUB-TIER SUPPLIERS

Supporting Activities :

- Standardize and simplify the supplier quality flowdown requirements.
- Trainings to Sub-tier Cross Functional Teams for deployment.
- Support suppliers to improve current QMS processes.
- Periodic reviews on supplier performance and improvements.
- Integrate supplier surveillance audits to check effectiveness of implementation.
- Rewarding suppliers with best performance.



AS13100 PRACTITIONER & APQP CFT TRAININGS

***For FY 2022**
AESQ™ Quality Foundation Training for Quality Leaders = QF204 and Equivalent Trainings.

***AESQ™ Quality Executive Overview** — Leadership — **9100 Clause 5**

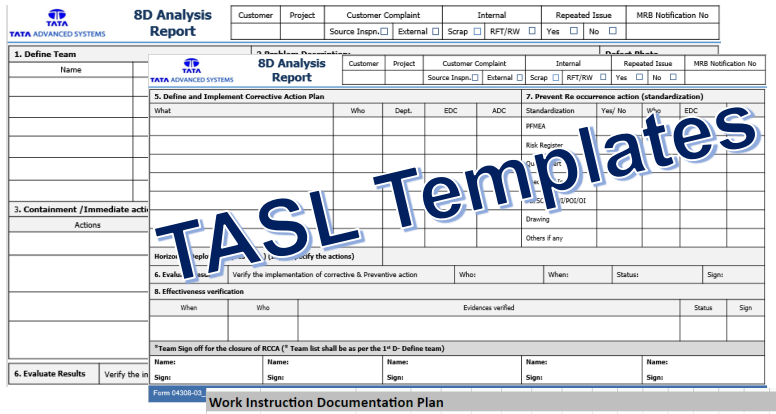
Clause 6, 8.1 & 8.2 APQP Project Plan — Program Management — Supply Chain Management — **Clause 8.4 Supply Chain Risk**

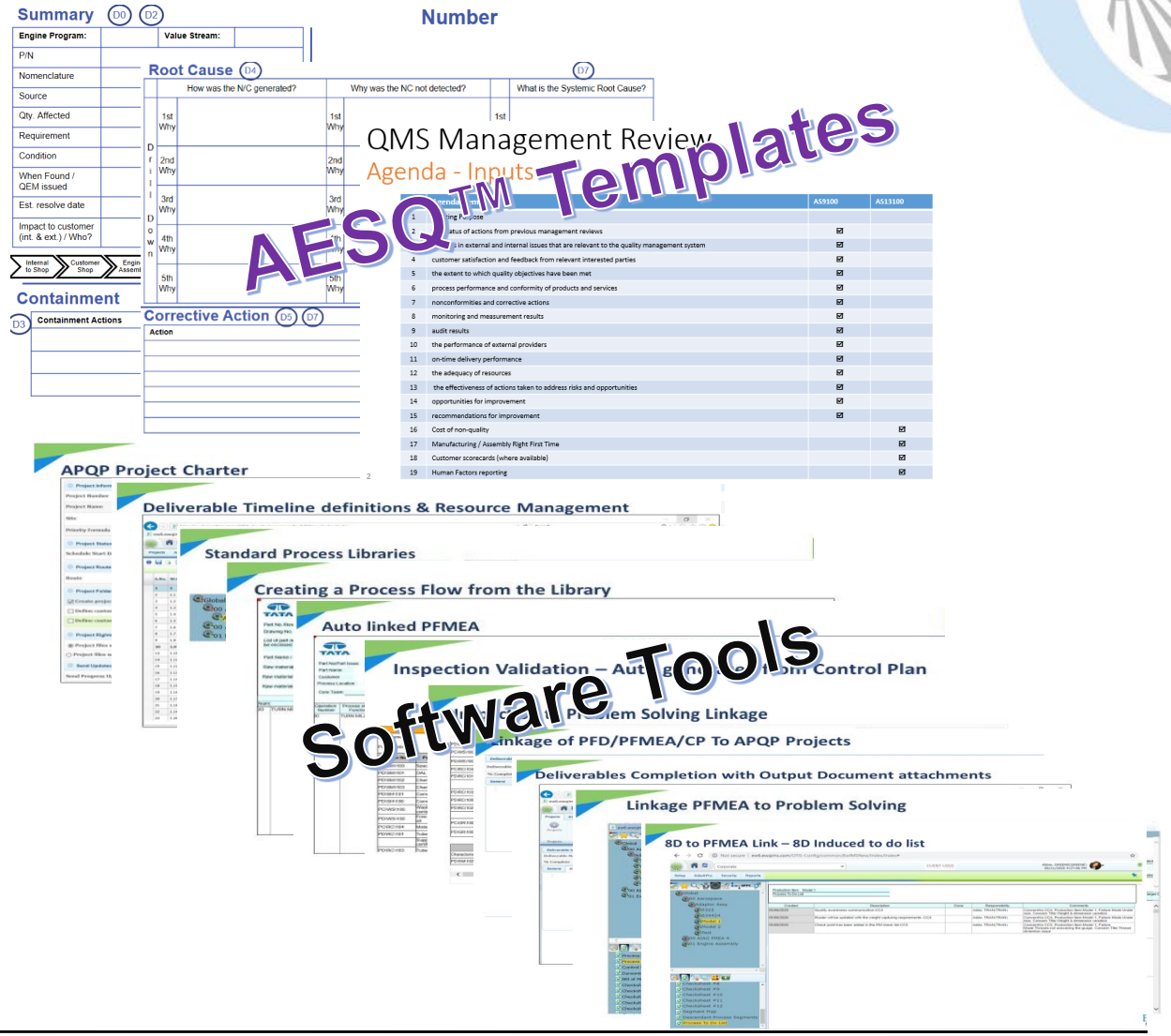
Clause 7 — Support Functions (Plant Engg, PPC, IE, etc.) — Administrative Functions (HR, Admin, etc.) — **Clause 7**

Engineering	Production	Quality
Clause 6, 8.1, 8.2, 8.5 PFD,PFMEA, CP	**Clause 8.5**	**Clause 4, 8.6, 9, 10 MSA & SPC**
Manufacturing Engineering	Supervisors and Machine Engineers	Quality Engineering — **Clause 8.2, 8.6**
Process Planners	Special Process Engineers	Quality Assurance & Supplier Quality — **Clause 4, 8.4, 8.7, 9, 10**
Special Process Engineering		Quality Control — **Clause 8.5, 8.6, 8.7**
		Special Process & NDT Quality — **Clause 8.5, 8.6, 8.7**

*CFT Team for QMS & APQP Implementation.
*Clause 8.3 requirements Excluded

TOOLS FOR EFFECTIVE IMPLEMENTATION OF AS13100
(SOFTWARE TOOLS AND TEMPLATES)



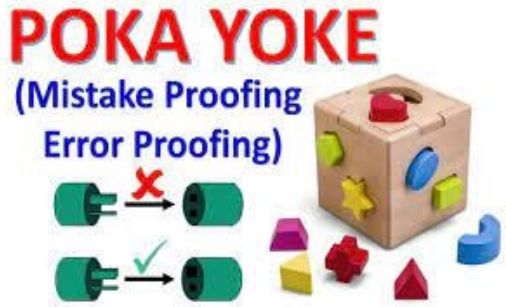


POTENTIAL BENEFITS OF IMPLEMENTING AS13100

Improved Internal and External communication

Increased Throughput and Productivity

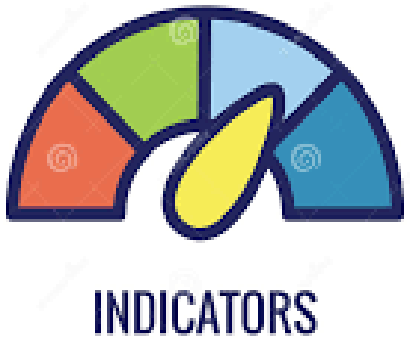
Improved Knowledge management



Error proofing product and process designs

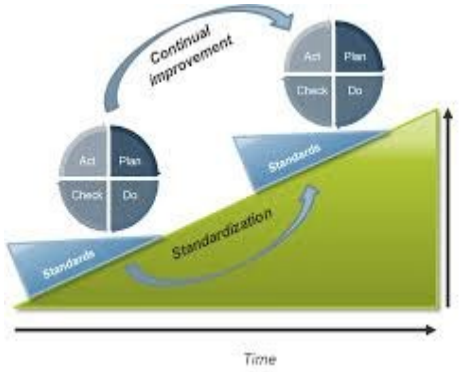
Proactive, Early Detection and mitigation of quality and design issues

Adopt Industry Best Practices

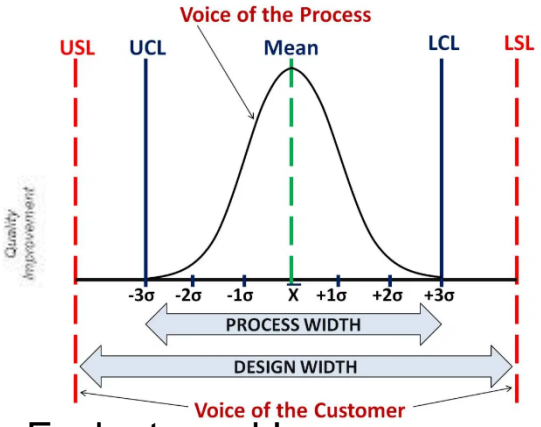


Aid to Meet Key Process Performance Indicators

Feedback based process Improvements



Promotes Continual Improvement

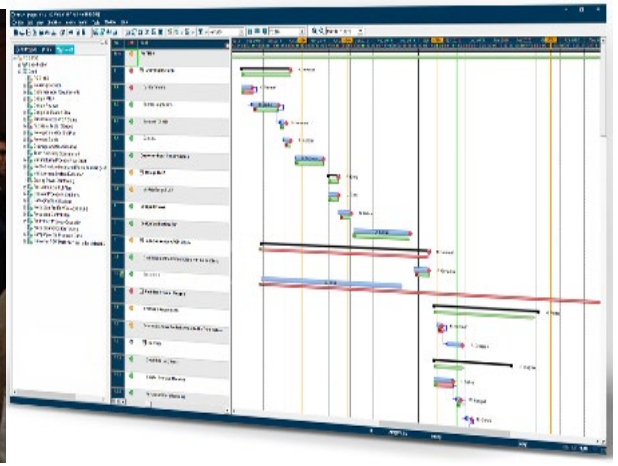


Evaluate and Improve process performance and capability

And Many More

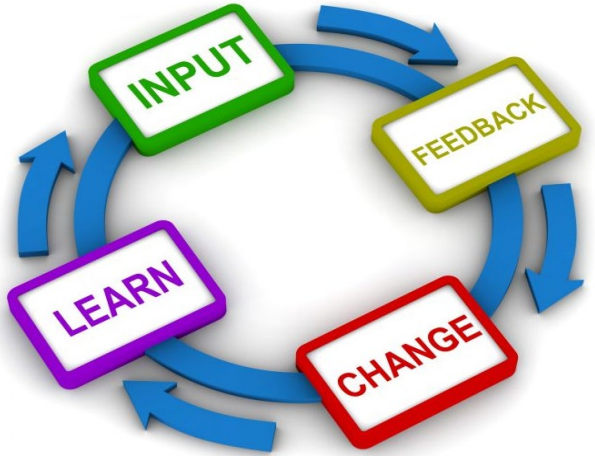
AS13100 TRANSITION BEST PRACTICES & LESSONS LEARNT

Early Engagement of Leadership and Customers



Integration of APQP and Program Management

Customer best practice deployment

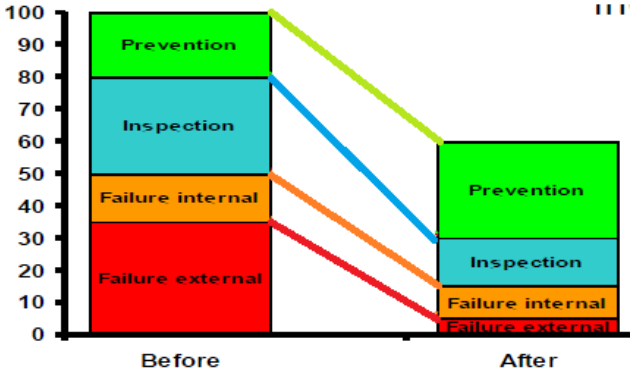


Focus on Process Improvement Initiatives

Promotes CFT involvement for Compliance and Improvements

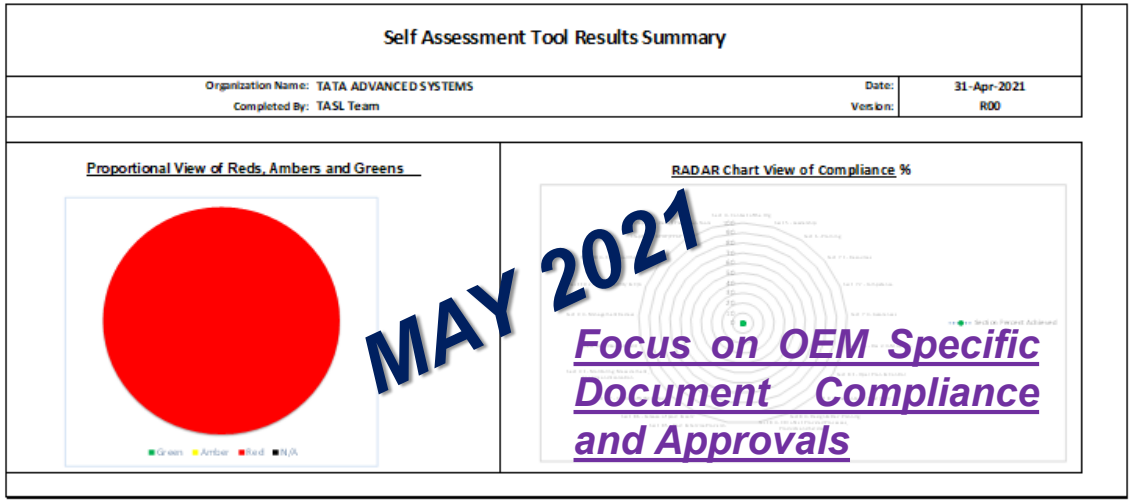
Standardized Baseline Supplier Audit requirements

Enhances capability to meet KPI's and Customer satisfaction



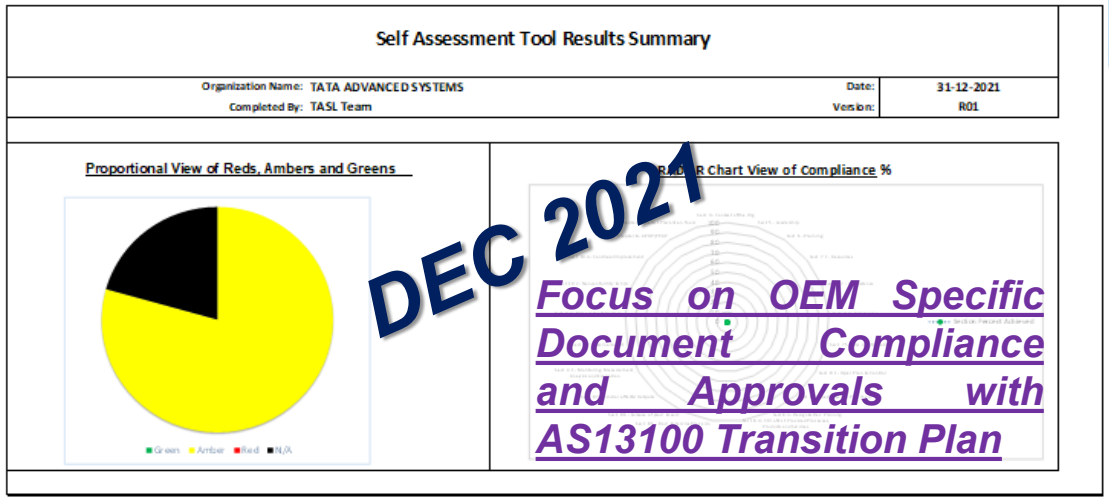
Defect Prevention with Rapid Industrialization

TASL AS13100 TRANSITION PHASES AND FOCUS



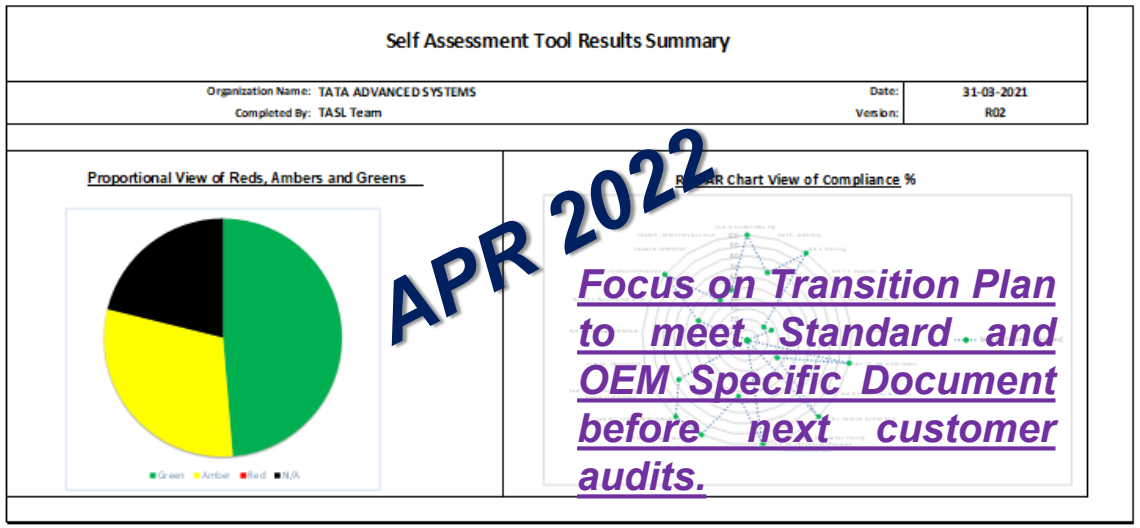
MAY 2021

Focus on OEM Specific Document Compliance and Approvals



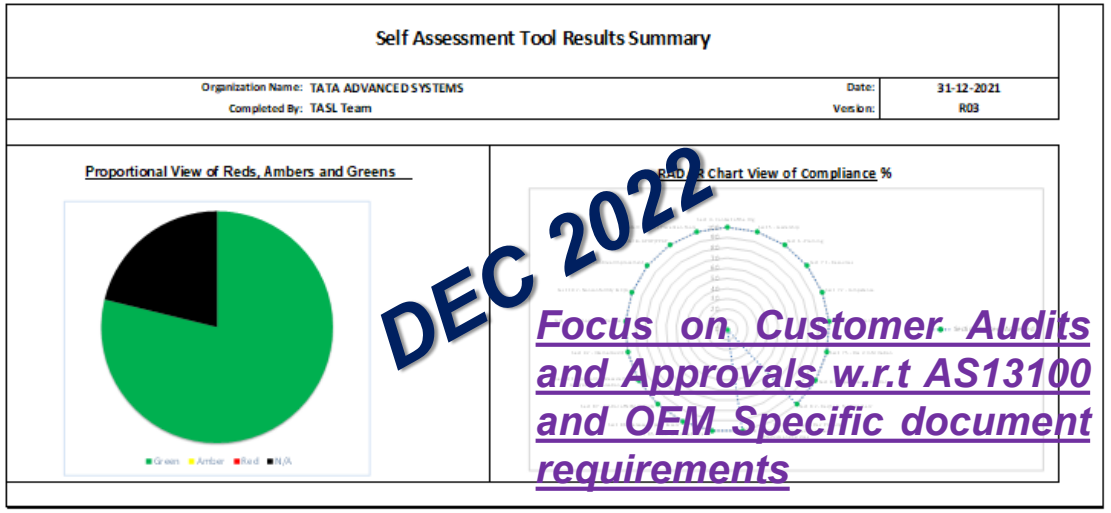
DEC 2021

Focus on OEM Specific Document Compliance and Approvals with AS13100 Transition Plan



APR 2022

Focus on Transition Plan to meet Standard and OEM Specific Document before next customer audits.



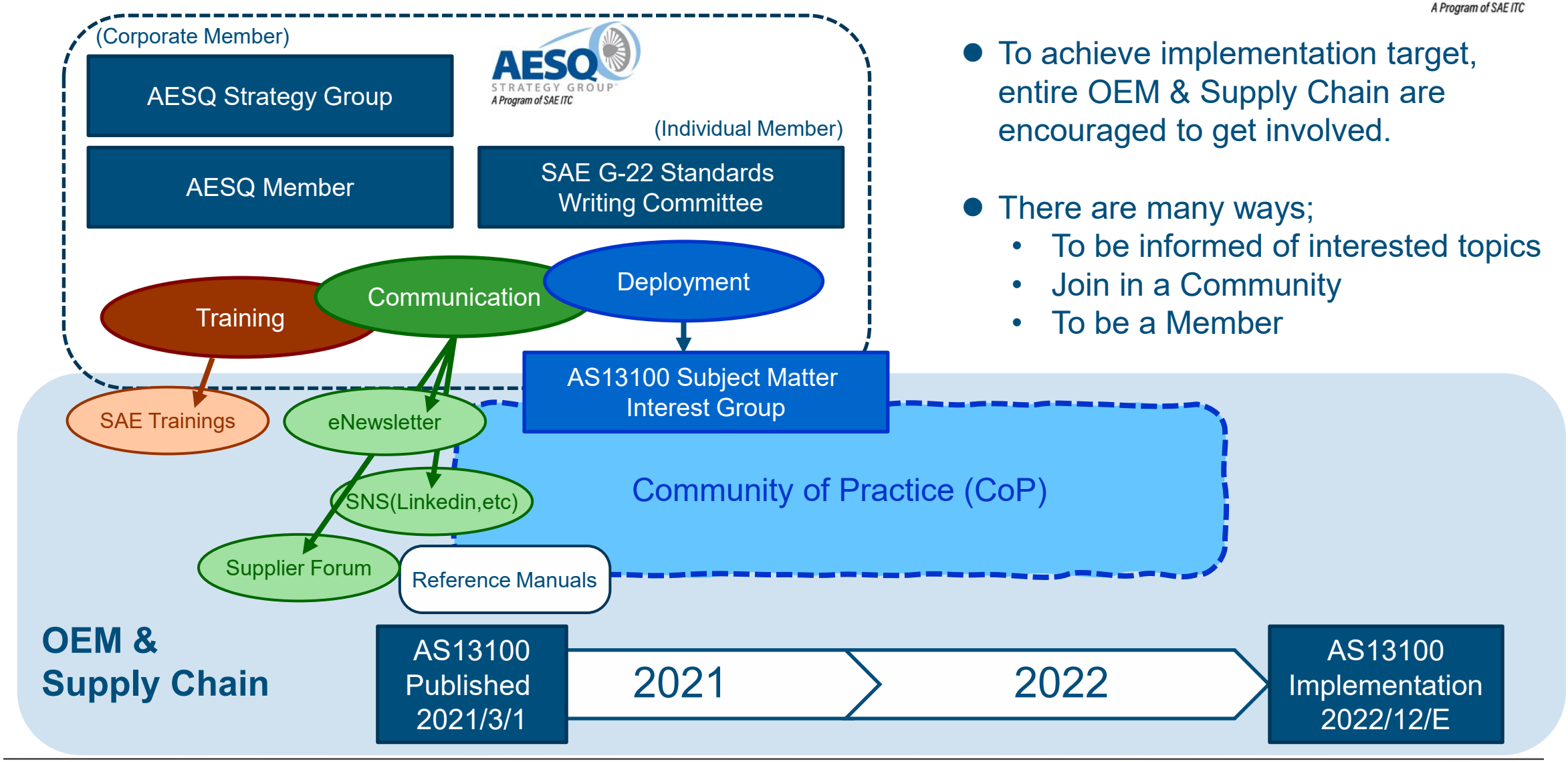
DEC 2022

Focus on Customer Audits and Approvals w.r.t AS13100 and OEM Specific document requirements

AESQ
HOW TO GET INVOLVED

JUN SAKAI
CHIEF ENGINEER
IHI CORPORATION

How to Get Involved - Overview

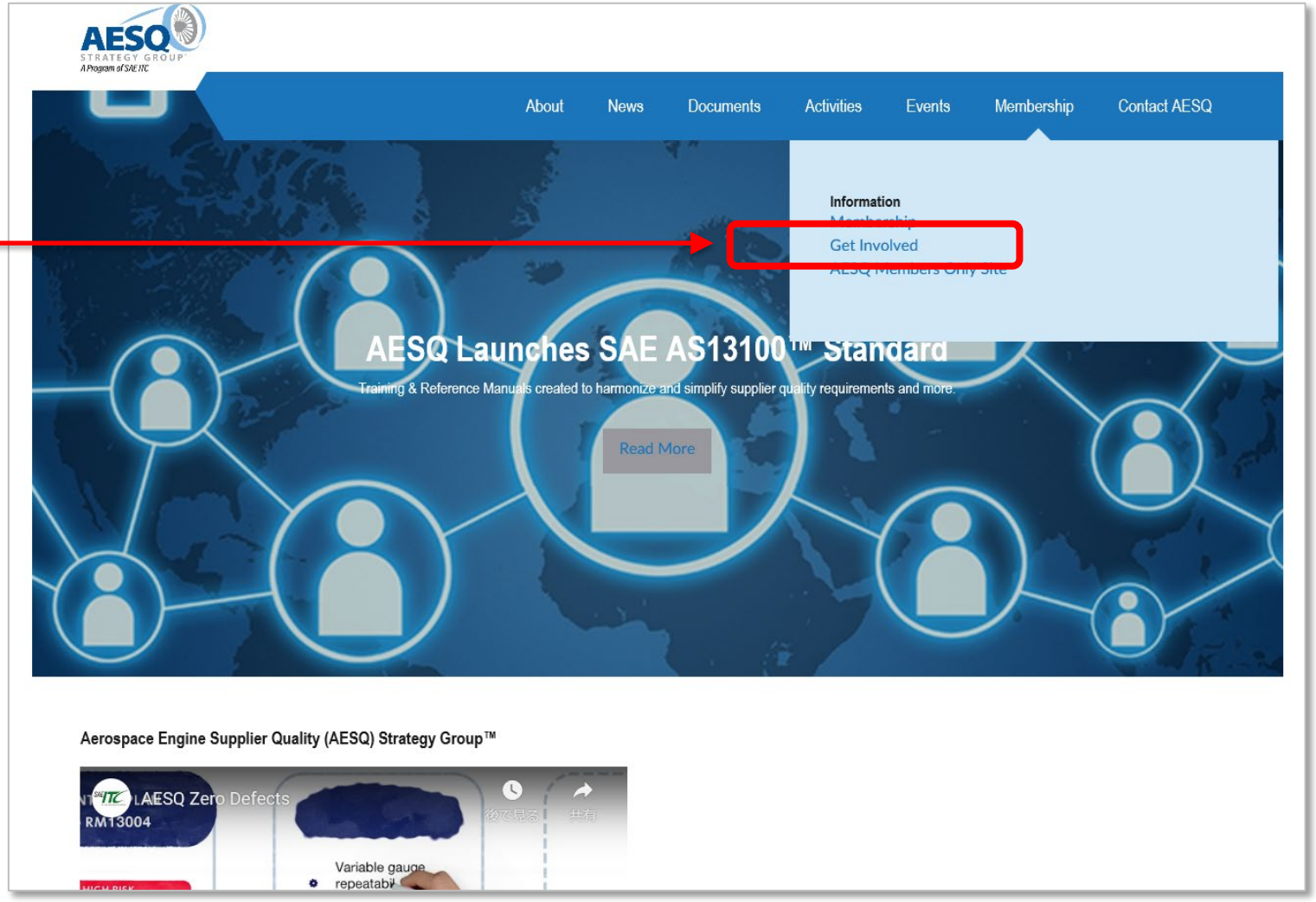


- To achieve implementation target, entire OEM & Supply Chain are encouraged to get involved.
- There are many ways;
  - To be informed of interested topics
  - Join in a Community
  - To be a Member

“Get Involved” with AESQ

- Go to AESQ Homepage
  https://aesq.sae-itc.com/

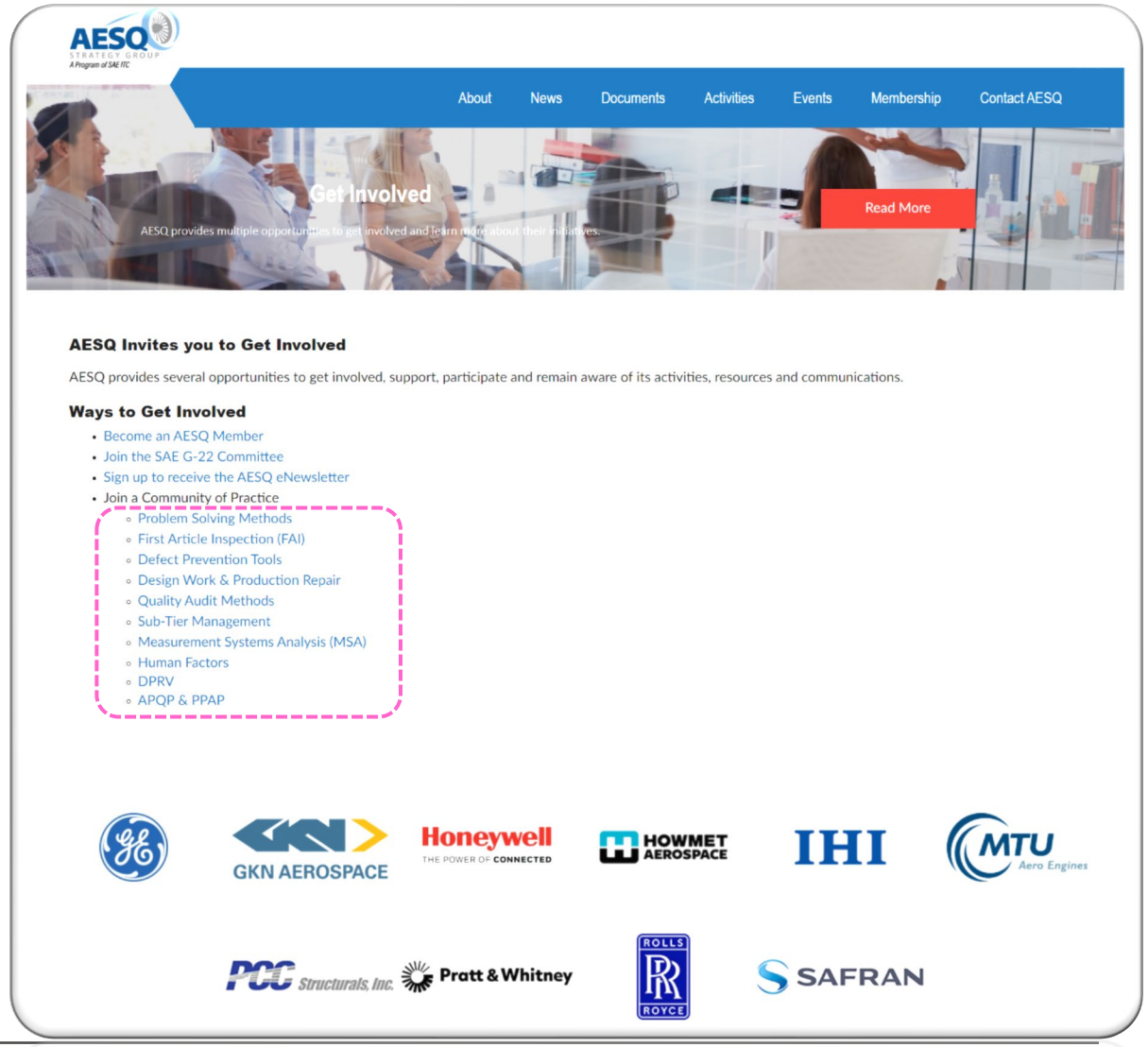
- Click “Get Involved”

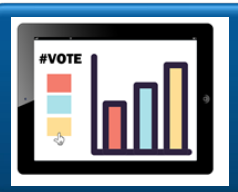


“Get Involved” Options

1. Sign up to receive AESQ eNewsletter
2. Become an AESQ Member
3. Join the SAE G-22 Committee
4. Join a Community of Practice

Click on the appropriate link for additional information





POLL QUESTION #3: Have you already joined LinkedIn for any of the Communities of Practice? (Yes/No)

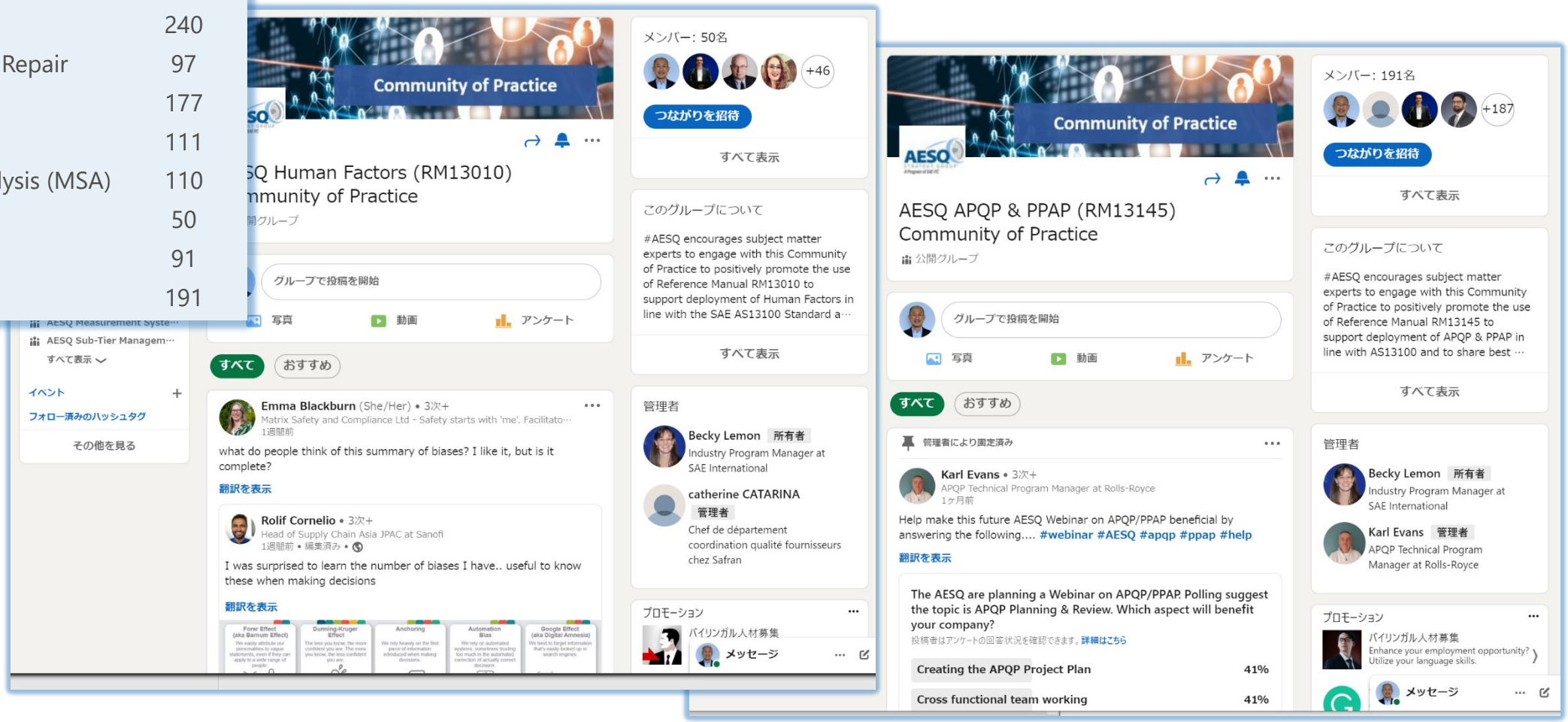
AESQ STRATEGY GROUP
A Program of SAE ITC

- Join a Community of Practice
  - Problem Solving Methods
  - First Article Inspection (FAI)
  - Defect Prevention Tools
  - Design Work & Production Repair
  - Quality Audit Methods
  - Sub-Tier Management
  - Measurement Systems Analysis (MSA)
  - Human Factors
  - DPRV
  - APQP & PPAP

“Get Involved” – Join a Community of Practice

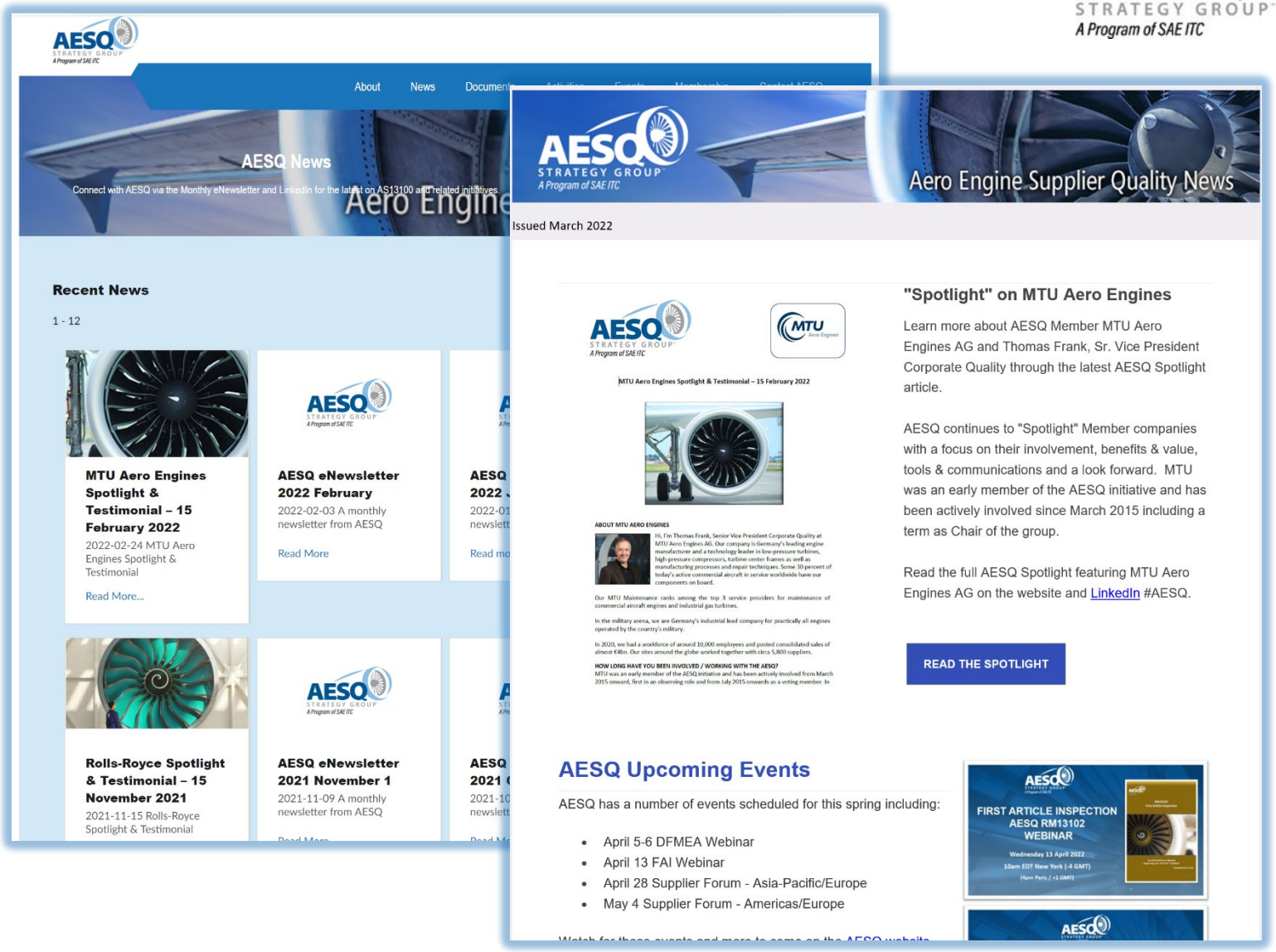
Community of Practice	Members
Problem Solving Methods	172
First Article Inspection (FAI)	132
Defect Prevention Tools	240
Design Work & Production Repair	97
Quality Audit Methods	177
Sub-Tier Management	111
Measurement Systems Analysis (MSA)	110
Human Factors	50
DPRV	91
APQP & PPA	191

LinkedIn Groups for each Community of Practice is now open for anyone to join.



“Get Involved” – Sign up to Receive AESQ’s eNewsletter

- Issued monthly
- Learn about AESQ’s current activities
- Complete online form to begin receiving



“Get Involved” – Become an AESQ Member

2 Membership Levels:

AESQ Strategy Group Member – specified in the AESQ Charter due to their critical support resulting in the establishment of the AESQ Strategy Group.

AESQ Member –

- Open to organizations engaged in the Aero Engine supply chain.
- Required to participate in the work of AESQ by providing resources to support AESQ working groups.
- Representatives shall be senior leaders from the organization or subject matter experts in a relevant area.

Complete Membership Application at bottom of page

“Get Involved” – Subject Matter Interest Groups

- Follow AESQ’s Subject Matter Interest Groups

- Sign up for a Subject Matter Interest Group Webinar

AESQ Subject Matter Interest Groups	
Advanced Product Quality Planning (APQP) & Production Part Approval Process (PPAP)	Defect Prevention Tools to Support APQP & PPAP
Design Work & Production Repair & Rework	Measurement Systems Analysis (MSA)
Sub Tier Management	Process Control Methods
Human Factors	Problem Solving Methods
DPRV Training	Quality Audit Methods
First Article Inspection	

“Get Involved” – Additional Options

- Attend AESQ Events (Supplier Forum, Webinar)
- Take a AS13100 Training Course
- Download Reference Manuals
- Watch the “Zero Defects” Video
- Listen to a Podcast

QUESTIONS?

JIM WILSON
SR MANAGER, SUPPLIER QUALITY & DEVELOPMENT
PRATT & WHITNEY CANADA

Question & Answer "Q&A" Ground Rules

We will now accept questions via the Chat function focused on but not limited to today's presentations including:

- AS13100 Standard
- AS13100 Training
- AESQ Reference Manuals
- Deployment and Transition

Please avoid questions regarding:

- Commercialism
- Pricing
- ITAR
- Export Control

Use the “Chat” Function to Ask a Question..

… or just make a comment

be kind

SUMMARY & CLOSE

UZAM KHAN
SUPPLIER QUALITY EXECUTIVE
ROLLS-ROYCE

Summary

All resources will be available on the AESQ website within a few days.

An email will be sent to all registrants with a link.

AESQ Thanks You for Attending!

Stay in Touch: aesq.sae-itc.com