

The background of the slide is a composite image. On the left, there is a close-up, low-angle view of a large, dark-colored jet engine, showing its complex internal structure and the outer casing. On the right, a blue and white commercial airplane is shown in flight against a bright blue sky with scattered white clouds.

**AS13100 Deployment  
Virtual Supplier Forum  
4 May 2022**

# Registration Overview



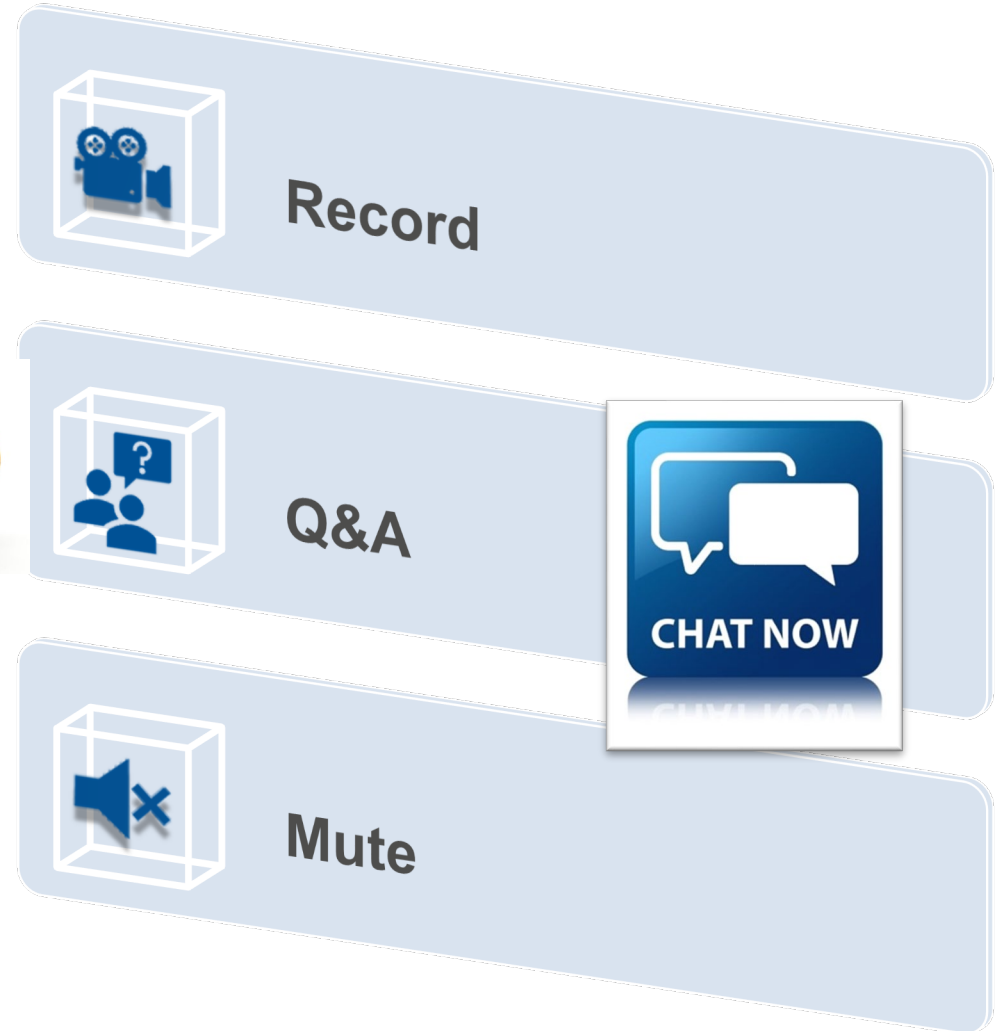
**300+ Individuals Registered from 24 Countries**

# Webinar Overview

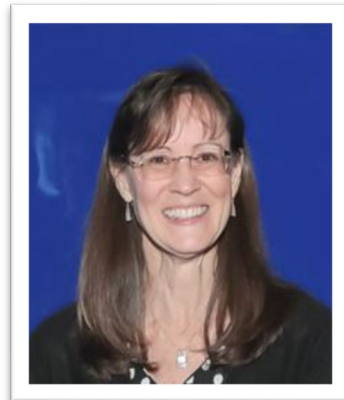
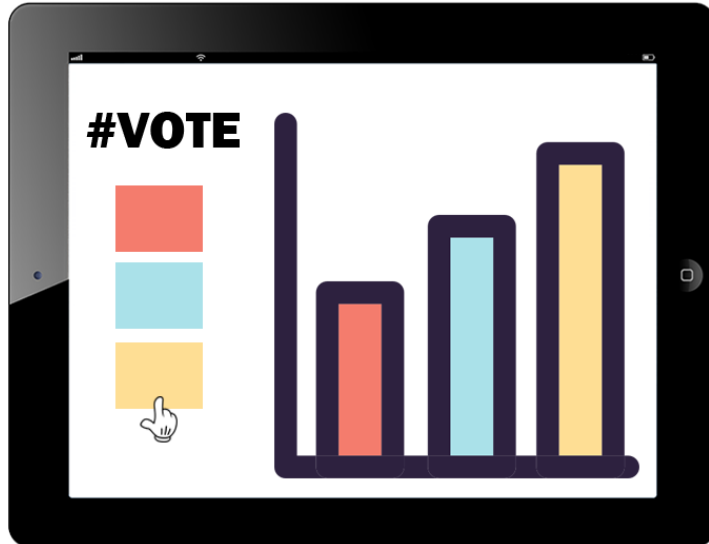
We are **recording** today's webinar and will distribute the video link following the close of the webinar. It will also be posted on the AESQ website for free viewing.

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

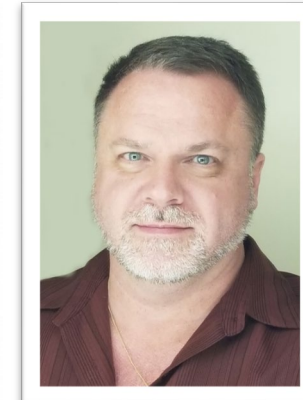
**Please remain on Mute** during the presentation to prevent background noise. We will also be muting all lines at the start of the session.



# 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






## Introducing AS13100: AESQ Quality Management Requirements

**THE NEW STANDARD CREATING A COMMON LANGUAGE FOR QUALITY THROUGHOUT THE AEROSPACE ENGINE SUPPLY CHAIN**

**SAE AS13100 AESQ QUALITY MANAGEMENT SYSTEM REQUIREMENTS FOR AERO ENGINE DESIGN AND PRODUCTION ORGANIZATIONS**

This standard sets out to create a common set of supplemental requirements with common training and reference manuals to improve understanding, efficiency, and performance. While significantly simplifying the businesses of suppliers with multiple customers, the primary intent of this new standard is to improve overall product quality by focusing on the key systems and processes currently deterring consistent aerospace engine product quality.

These common supplemental requirements aim to raise the bar for anticipated performance in these key areas, and therefore detailed guidance is provided to ensure clarity of expectations.

To assure customer satisfaction, the aviation, space, and defense industry organizations have to produce and continually improve safe, reliable products that equal or exceed customer and regulatory authority requirements. The globalization of the industry and the resulting diversity of regional/national requirements and expectations have complicated this objective. End-product organizations face the challenge of assuring the quality of and integration of product purchased from suppliers throughout the world and at all levels within the supply chain. Industry suppliers face the challenge of delivering product to multiple customers having varying quality expectations and requirements.

 Learn about how SAE AS13100 AESQ Quality Management System Requirements for Aero Engine Design and Production Organizations minimizes requirements and improves overall product quality by focusing on the key quality systems and processes! Through an executive overview and a self-paced course, your organization can gain key knowledge about a common quality language, how to gain compliance to AS13100 and the business value and benefit of the standard. Walk-through each section of the standard and understand the new requirements.

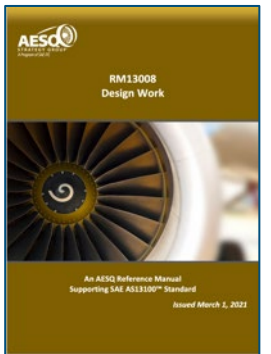
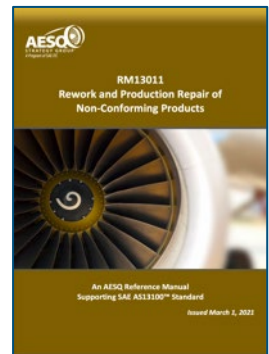
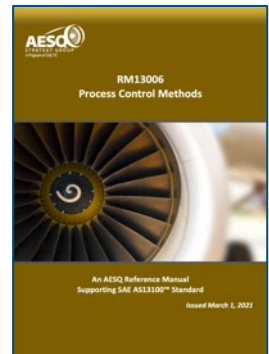
**For more information, please visit:**  
[discover.sae.org/AS13100](http://discover.sae.org/AS13100)

 **TESTIMONIAL**

*"Although created by the Aero Engine Supplier Quality Group in conjunction with the SAE G-22 Aero Engine Supplier Quality Standards Committee, this standard and supporting materials will benefit any organisation, in any industry."*

**Dr. Ian Riggs**  
Global Quality Executive  
Rolls-Royce & AESQ Chair

**Learn more:**  
[www.sae.org/standards/content/AS13100/](http://www.sae.org/standards/content/AS13100/)



### AESQ – Aerospace Engine Supplier Quality Strategy Group

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# Agenda

Topic	Presenter
AESQ Overview, Vision & Objectives	Barbara Negroe, Executive Sourcing Quality Leader, GE Aviation
AS13100 Standard Overview	Larry Bennett, Consulting Engineer, Global Sourcing Quality, Supply Chain Division, GE Aviation
Deployment Introduction & Milestones	Elizabeth Pace, Supplier Quality Strategy, Associate Director, Raytheon Technologies
Deployment Plans: <ul style="list-style-type: none"> <li>• IHI</li> <li>• MTU</li> <li>• Safran</li> <li>• Pratt &amp; Whitney</li> </ul>	<ul style="list-style-type: none"> <li>• Hiroshi Yamamoto, General Manager, Quality System Dept., IHI</li> <li>• Michael Mrosewski, Quality Management Programs, MTU</li> <li>• Catherine Catarina-Graca, Supplier Management System Coordinator, Safran Aircraft Engines</li> <li>• Paul Morgan, Sr. Director Quality &amp; Processing Engineering, Pratt &amp; Whitney</li> </ul>
Deployment Dashboard	Elizabeth Pace, Supplier Quality Strategy, Associate Director, Raytheon Technologies
Deployment Survey Results	Jim Wilson, Sr. Manager, Supplier Quality, & Development, Pratt & Whitney Canada, & Elizabeth Pace, Supplier Quality Strategy, Associate Director, Raytheon Technologies
<b>BREAK – 15 Minutes</b>	<b>BREAK – 15 Minutes</b>

# Agenda

Topic	Presenter
Focus on APQP Deployment	Karl Evans, APQP Technical Project Manager, Rolls-Royce
Risk Based Audit System – Internal and Supplier	Lisa Stömer, Audit Management, MTU Aero Engines AG (Munich)
AESQ How to Get Involved	Jun Sakai, Chief Engineer, IHI Corporation
Questions	Jim Wilson, Sr. Manager, Supplier Quality, & Development, Pratt & Whitney Canada
Summary & Close	Barbara Negroe, Executive Sourcing Quality Leader, GE Aviation

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**AESQ – Aerospace Engine Supplier Quality Strategy Group**

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# Use the Chat Function to Ask a Question..



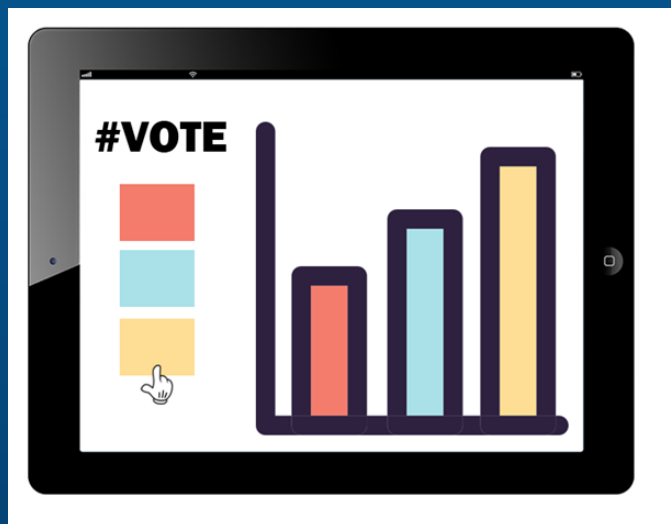
**... or just make a comment**



be kind

## POLL QUESTION #1:

What city are your calling in from today?



# AERO ENGINE SUPPLIER QUALITY GROUP (AESQ) OVERVIEW



**BARBARA NEGROE**  
EXECUTIVE SOURCING QUALITY LEADER  
GE AVIATION

# Aero Engine Industry Burning Platform

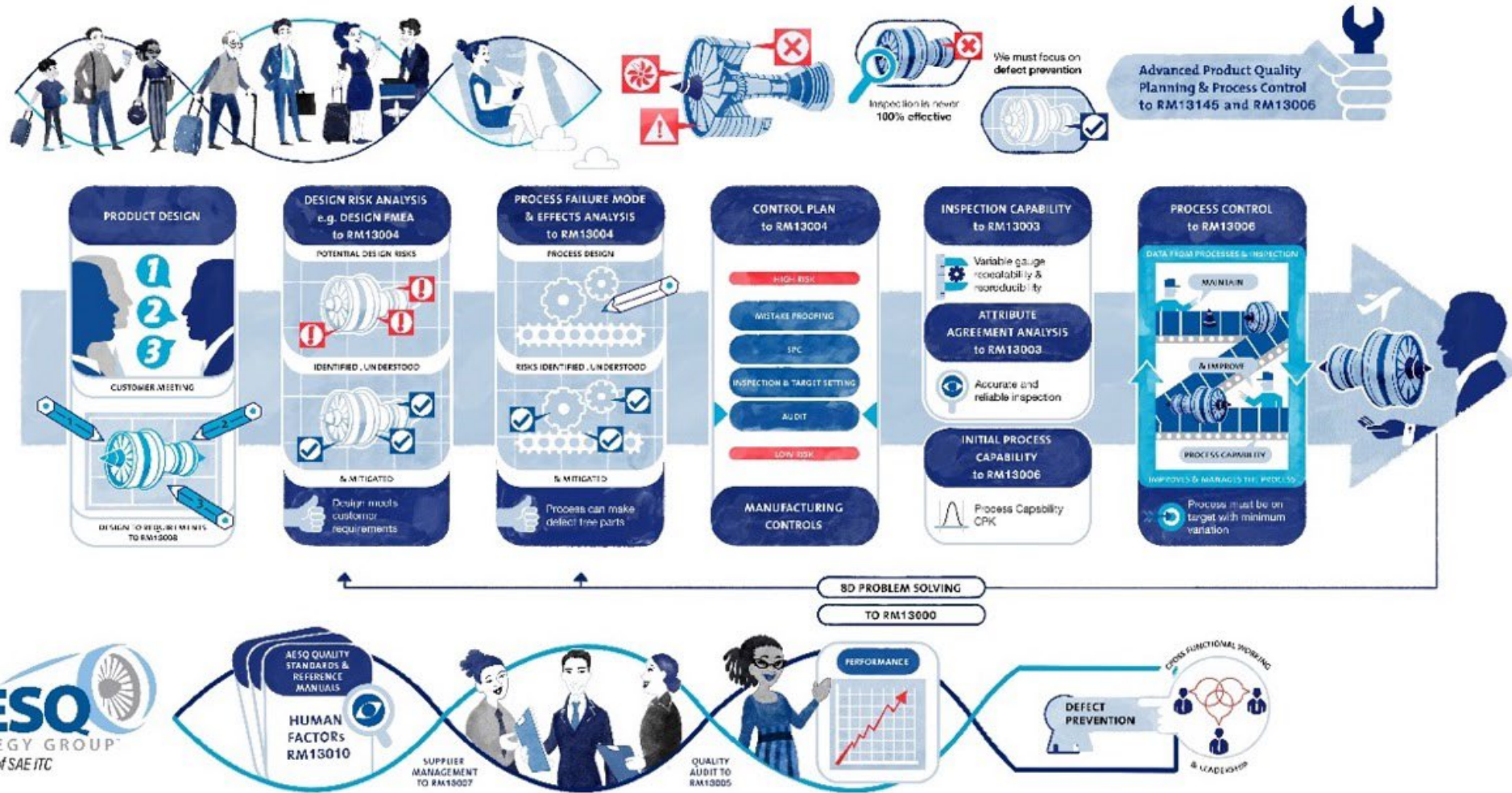
*Aero Engine Manufacturers created a Collaboration working group to address burning platform in 2013 with key Global Suppliers*

*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



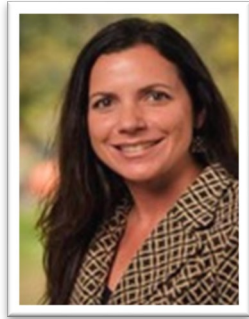
## AESQ Members

Cincinnati Thermal Spray  
Consolidated Precision Products  
Meggitt PLC  
Solar Atmospheres

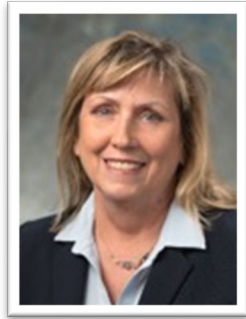
### AESQ – Aerospace Engine Supplier Quality Strategy Group

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# 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**



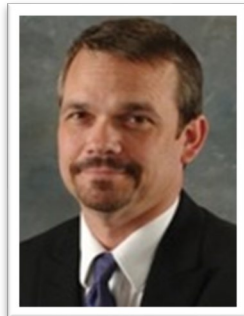
Uzam Khan  
Supplier Quality Executive  
**Rolls-Royce**



Emmanuel Vivier  
VP Manufacturing & Supply  
Chain Deputy  
**Safran Aircraft Engines**



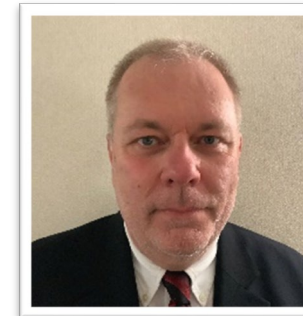
Jun Sakai  
Chief Engineer  
**IHI Corporation**



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**

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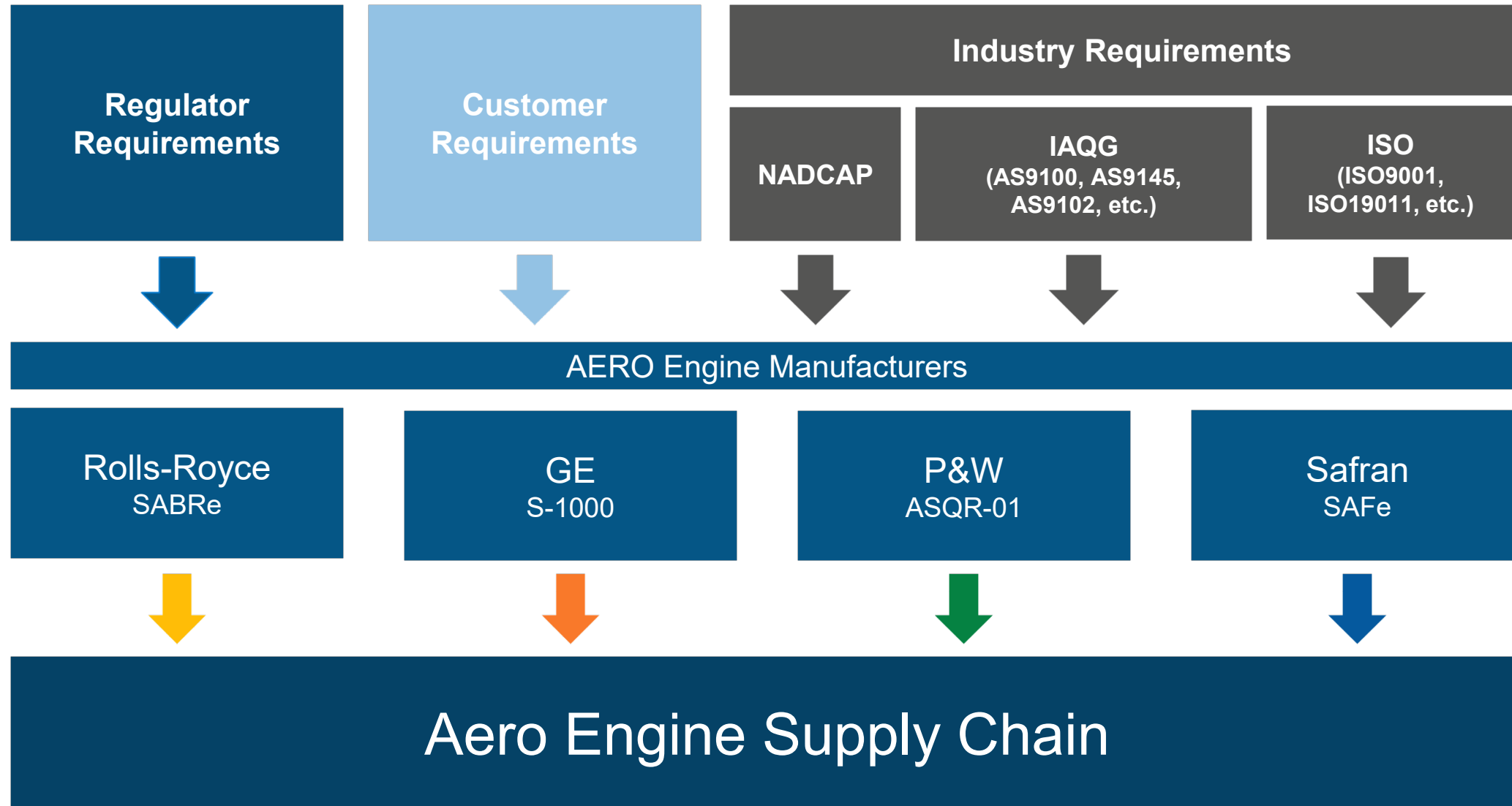
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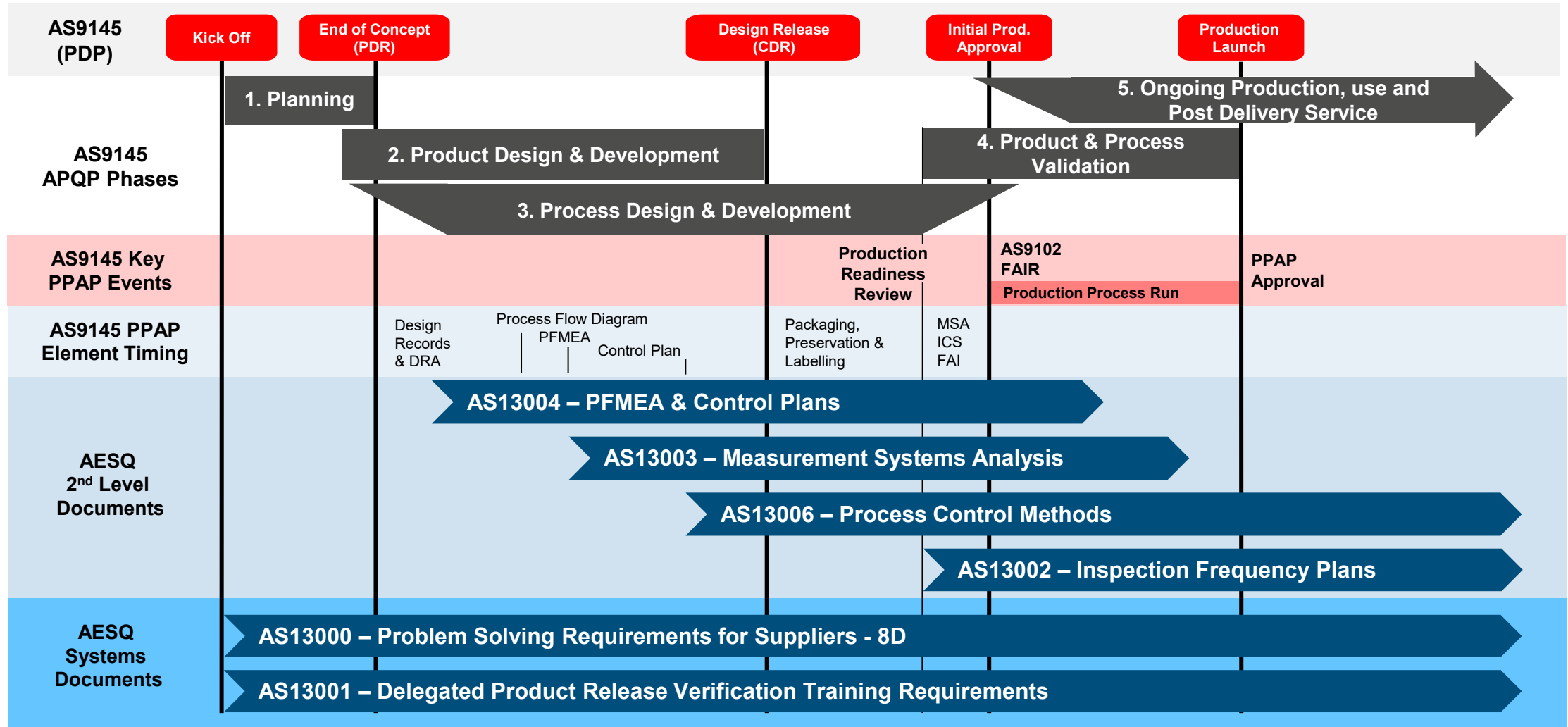


To establish and maintain a common set of  
Quality Requirements that enable the  
**Global Aero Engine Supply Chain**  
to be truly competitive through lean, capable processes  
and a culture of Continuous Improvement.

# 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

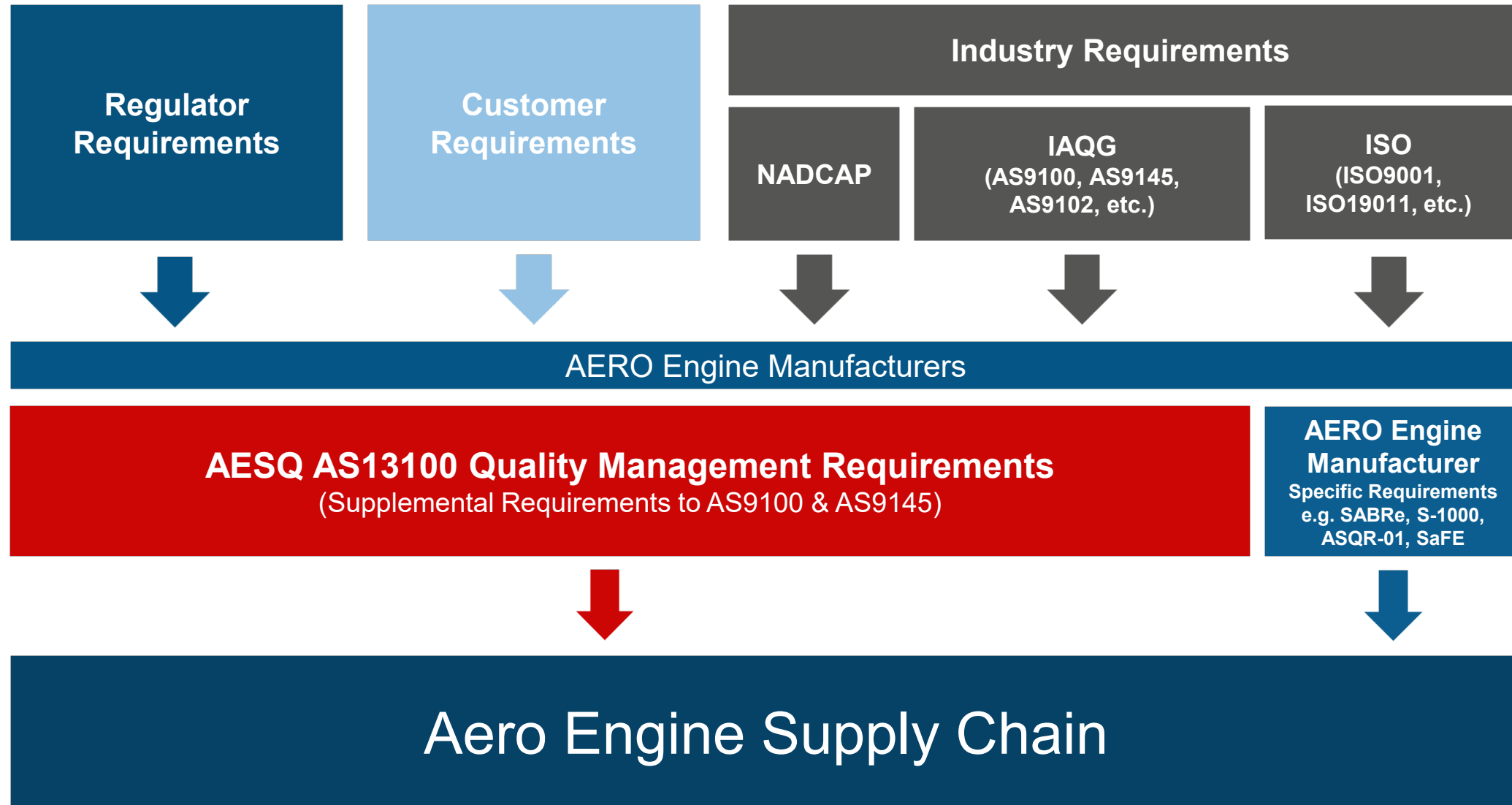
## STRUCTURE & KEY HIGHLIGHTS



**LARRY BENNETT**

CONSULTING ENGINEER, GLOBAL SOURCING QUALITY  
SUPPLY CHAIN DIVISION  
GE AVIATION

# Aero Industry Requirements Future Vision



# AS13100 Creation Process



OEM Unique Requirements

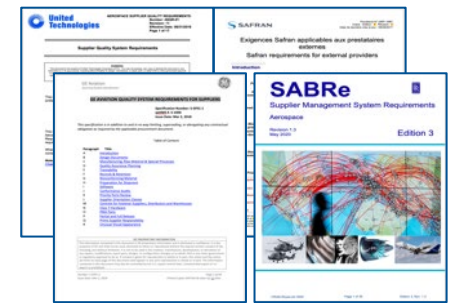
Existing Engine Maker Supplier Requirements

Harmonized Requirements

Requirements

Existing & WIP AESQ Standards

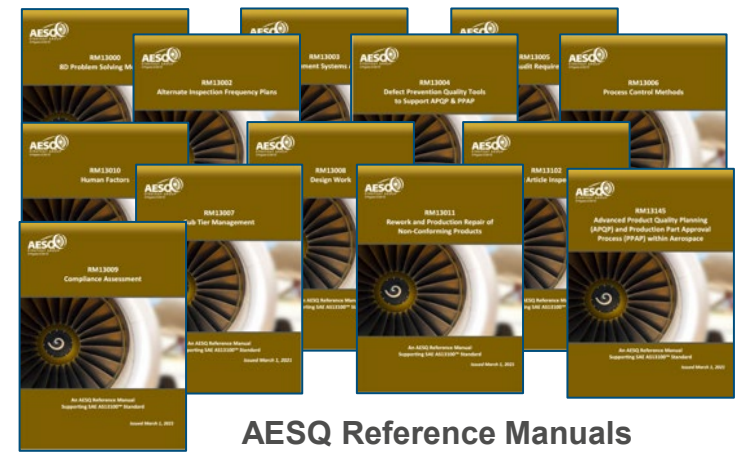
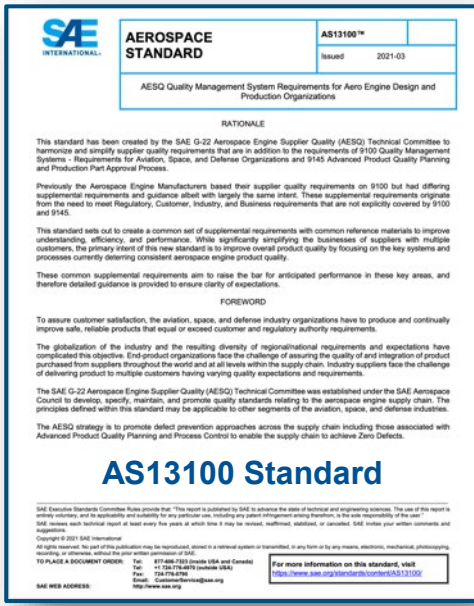
Supporting Guidance & Best Practice Material



Future Engine Maker Supplier Requirements

Overall Number of Requirements reduced by >50%

Starting Point September 2018



# 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	

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

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

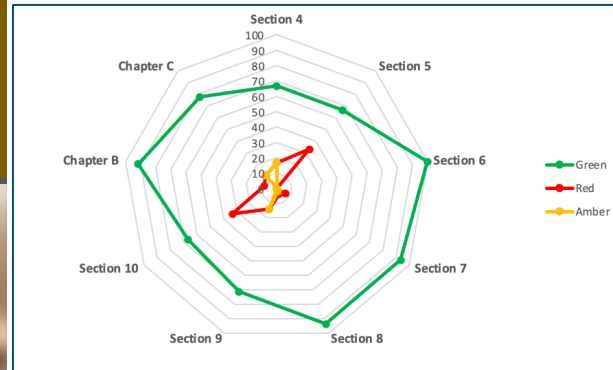
# AS13100 Requirement Highlights



**RM13009**  
**Compliance Assessment**



An AESQ Reference Manual Supporting SAE AS13100



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.

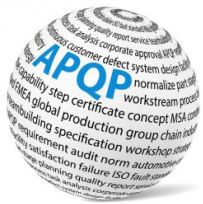
Any compliance gaps must be highlighted to the individual customer and a resolution agreed.

Reference Manual RM13009 provides information to support this requirement.

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

# 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



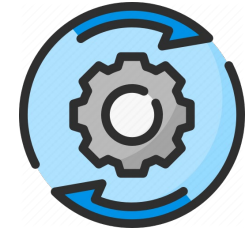
Defines  
Design FMEA  
approach to meet  
Design Risk Analysis  
requirement



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



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# 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  
Björkålv 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  
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Olivier Castets  
Patrice Richen  
Paul Gorg  
Paul Hacker

Perr Rendell  
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Pete Teti  
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Richard Bolingbrook  
Rob Farndon  
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Rudi Braunrieder  
Simon Gough-Rundle  
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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



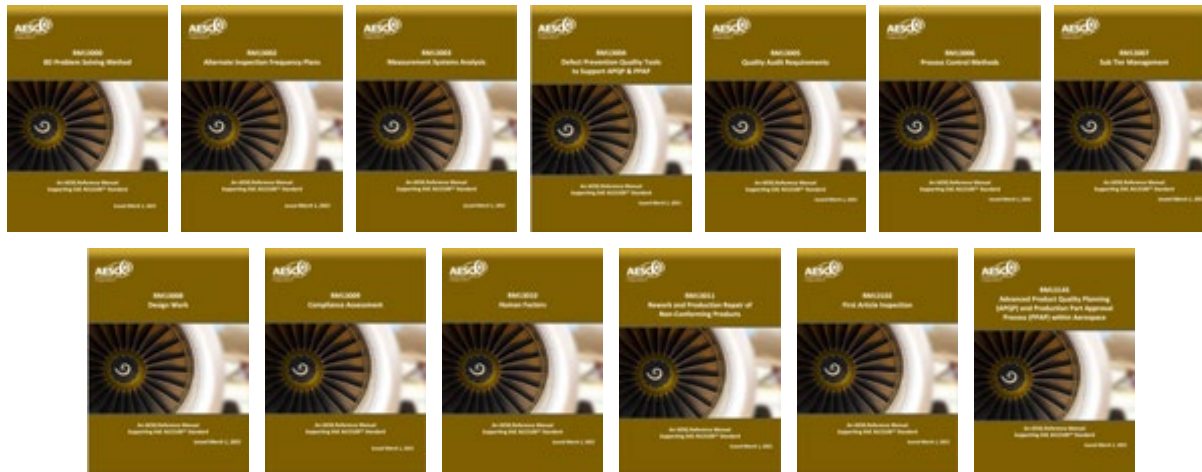


# AS13100 Supporting Reference Manuals



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

## AESQ – Aerospace Engine Supplier Quality Strategy Group

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# AS13100 DEPLOYMENT INTRODUCTION & MILESTONES



**ELIZABETH PACE**

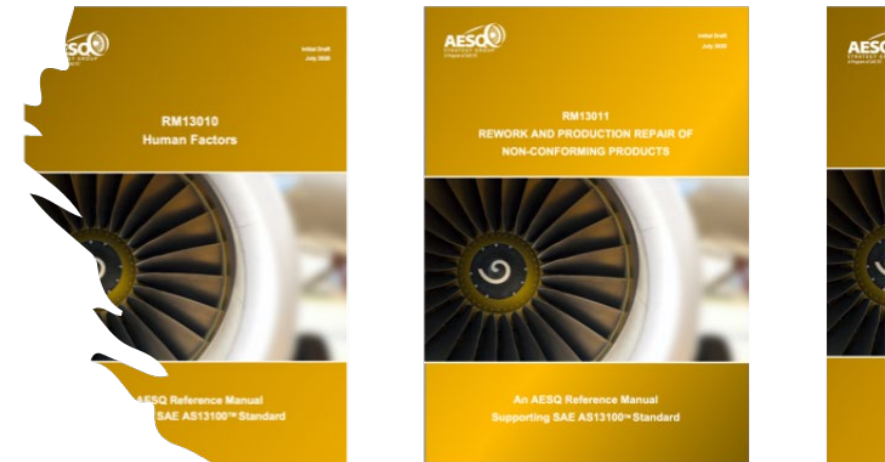
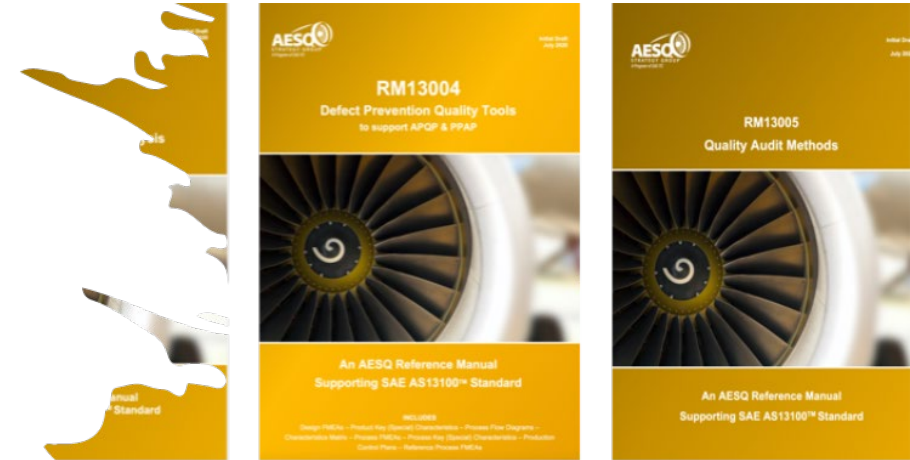
ASSOCIATE DIRECTOR, SUPPLIER QUALITY  
RAYTHEON TECHNOLOGIES

# 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

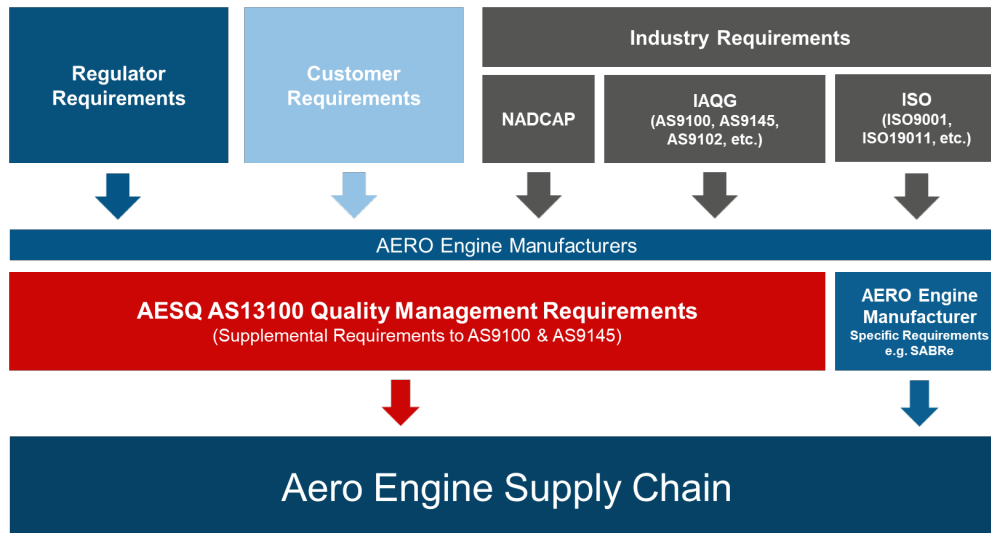
- Removal of duplicate / redundant requirements
- Builds on existing Aerospace Industry Standards where appropriate

### Setting higher standards for Quality

- Adopt best practice from across industry
- Standards written by industry practitioners
- Challenging current acceptance thresholds – “raising the bar of quality performance”

### Acceleration of Supplier Quality Capability Improvement

- Aligned Supplier Development activities using Common Quality Tools
- Availability of Global training and consultancy providers aligned to AESQ requirements



# Committed to AS13100 Compliance on December 31, 2022



AESQ – Aerospace Engine Supplier Quality Strategy Group

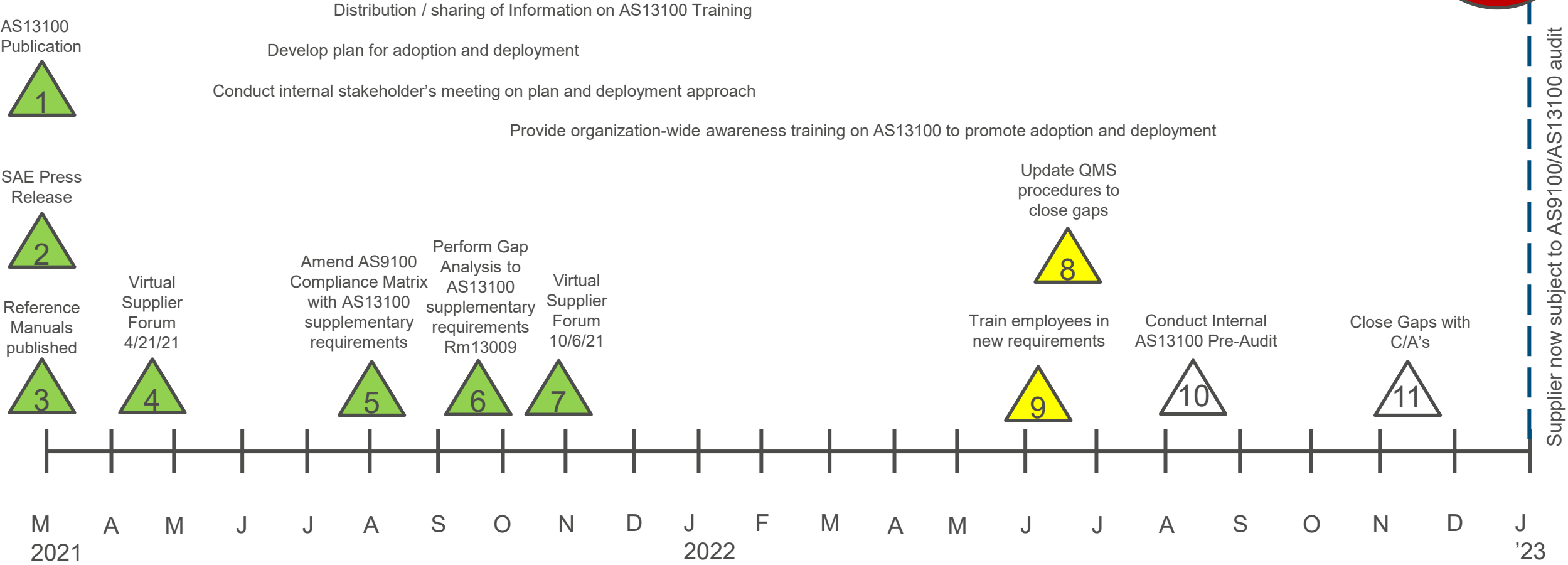
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# AS13100 Supplier Preparation Milestone Plan

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



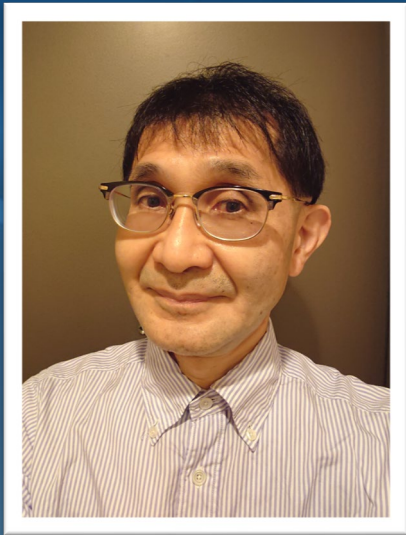
**AS13100 Requirements now in effect**



**AESQ – Aerospace Engine Supplier Quality Strategy Group**

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# 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)



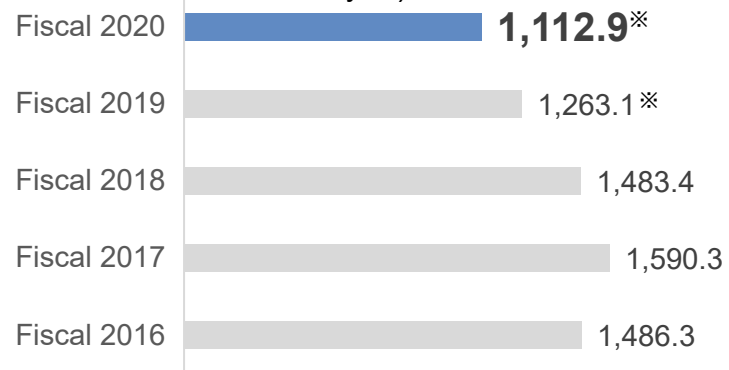
Branches in Japan  
**8**



Overseas affiliates  
**143**  
[Subsidiaries: 121 Affiliates: 22 ]

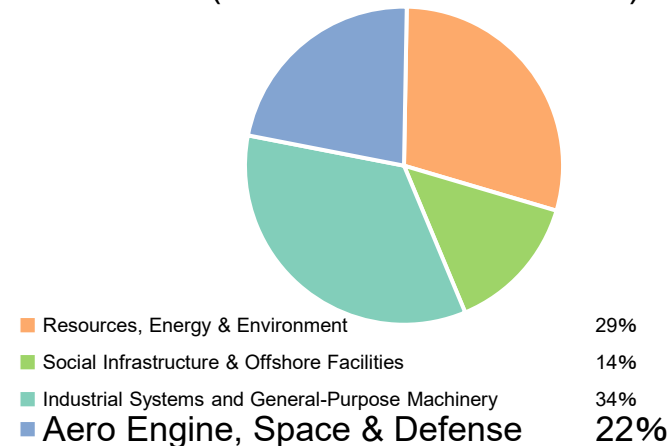
## Net sales/Revenue

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 Compositions by business areas (Consolidated/fiscal 2020)



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

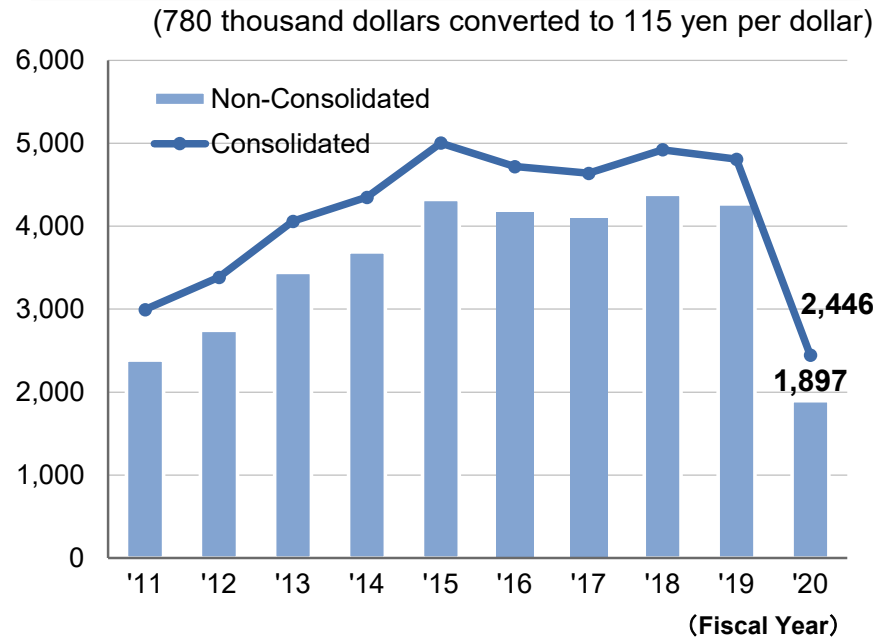


## 2. Profile of Aero-Engine, Space & Defense Business Area

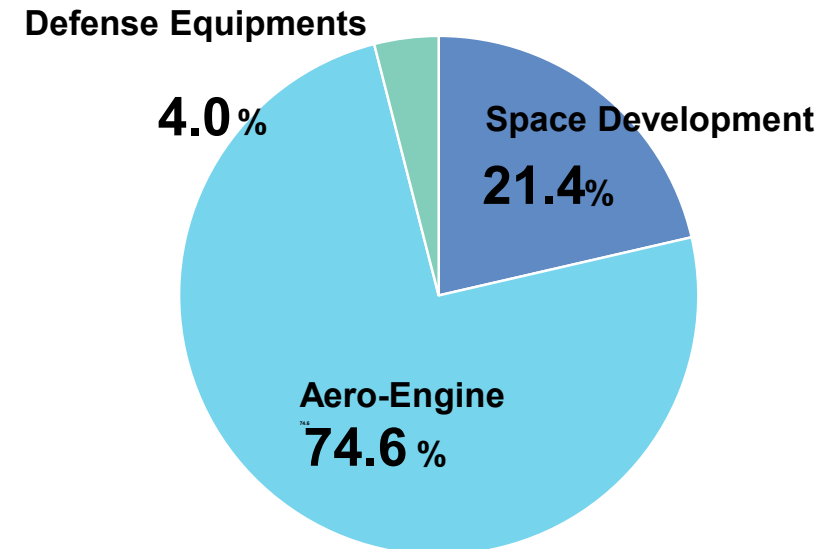
<b>President of Business Area</b>		<b>Hideo Morita</b>
		<b>Managing Executive Officer</b>
<b>Employees (as of March 31, 2021)</b>	<b>(consolidated)</b>	6,765
	<b>(non-consolidated)</b>	4,212

<b>Operation divisions</b>	<ul style="list-style-type: none"> <li>● Defense Systems Div.</li> <li>● Civil Aero-Engine Div.</li> <li>● Space Development Dept.</li> <li>● Research &amp; Engineering Div.</li> <li>● Manufacturing Div.</li> <li>● Life Cycle Solution Div.</li> </ul>
----------------------------	--

**Annual Sales (Unit: 100 million yen)**

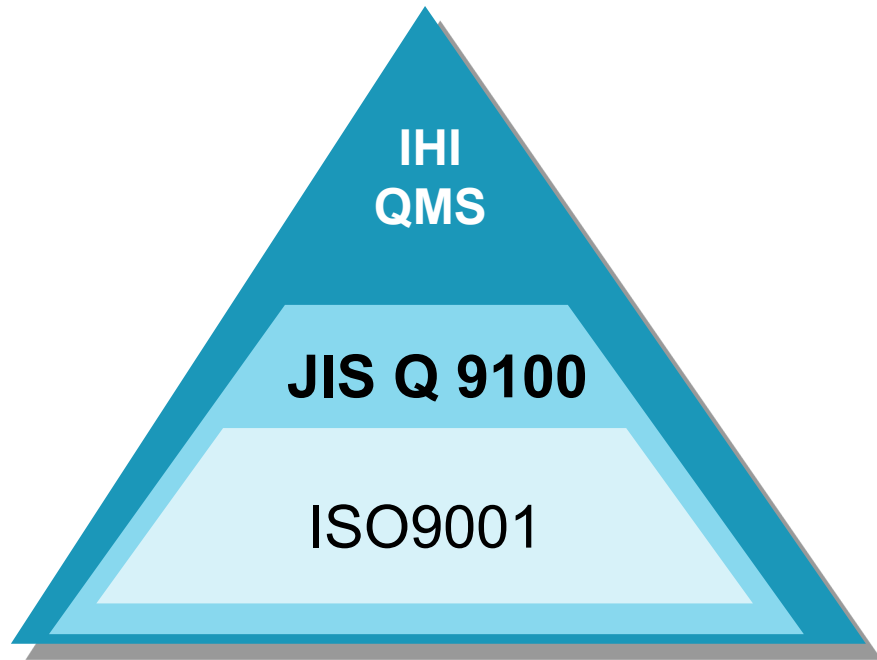


**Consolidated Sales Ratio (In fiscal 2020)**

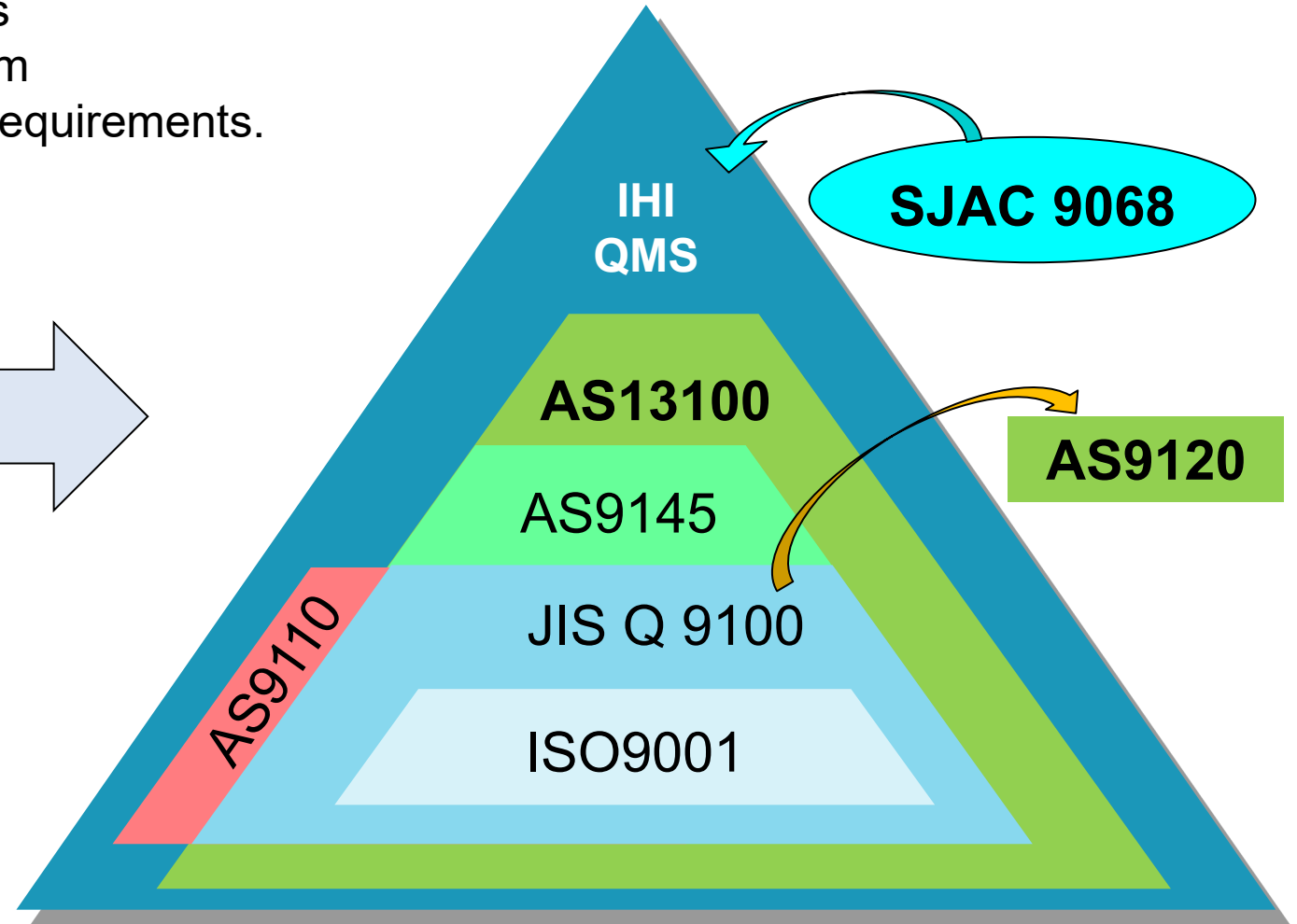
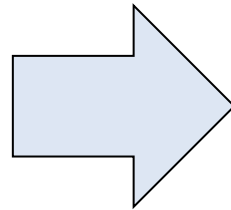


### 3. IHI Quality Management System Architecture

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

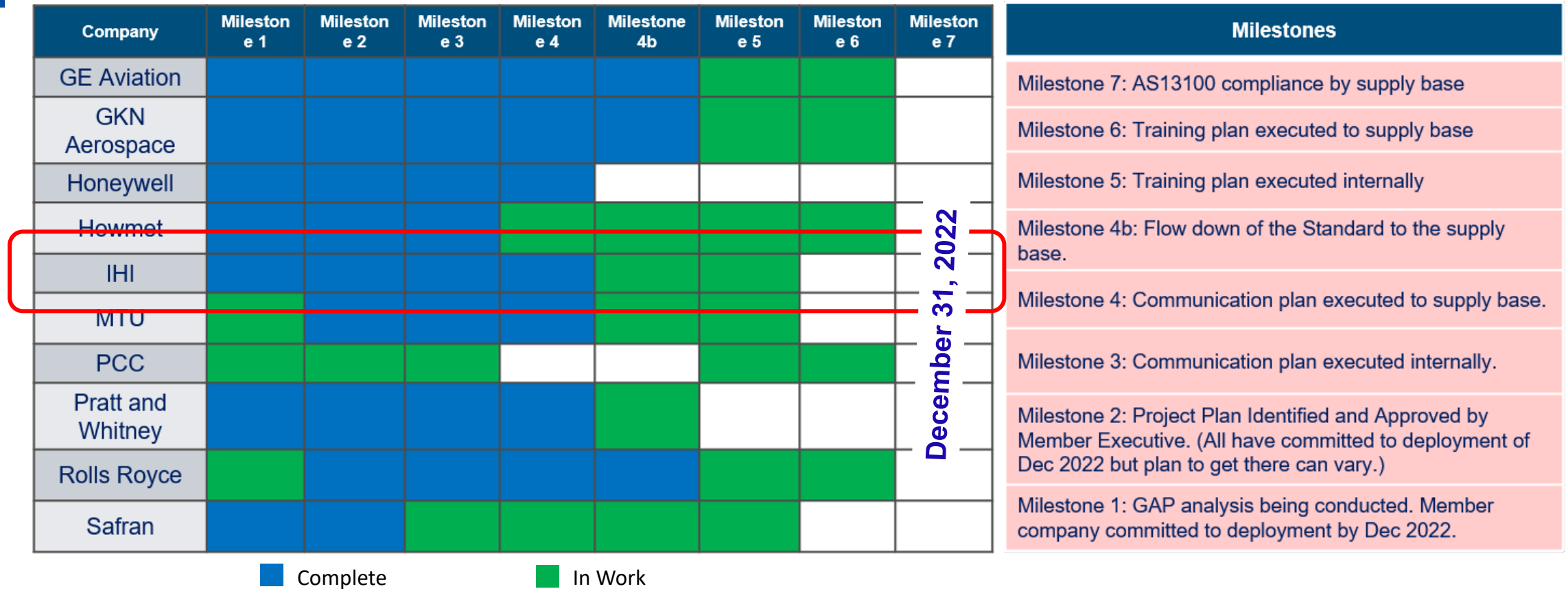


**Previous Architecture**



**Current Architecture**

# 4. Deployment Strategy Group dashboard



We have reached Milestone 4 so far.

We are aiming for completing remaining milestones by the end of this year.

# 5. AS13100 Deployment schedule

	2021FY												2022FY											
	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12			
IHI	AS13100GAP analysis							AS13100/RM GAP analysis					Revise Quality procedure as needed											
	Create quality plan							Create / Revise Quality procedure					QMS activity (1 <sup>st</sup> cycle)											
								▽Kick Off					2 <sup>nd</sup> Cycle											
								Training Auditors					Extra internal Audit											
								Purchasing materials (spectrometer etc.)					Customer review / Audit											
								Create education material					Education / training											
								Extra MR▽																
S C													▽Introduction to IHI group companies											
													▽Introduction to supplier											
	Create / Revise purchase documents												Training Auditors											
													Supplier Audit											

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

# 6. AS13100 Gap analysis

(Excerpt of AS13100 Gap analysis)

AS13100 Requirement	Requirement	Requirement	Requirement	Requirement	Requirement	Requirement	Requirement	Requirement
1.1 Understanding the Organization and its Context	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.
1.2 Understanding the Needs and Expectations of Interested Parties	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.
A.2.1 Understanding the Needs and Expectations of Interested Parties - Supplier's Requirements	The organization shall ensure on-site right of entry to its customer and their respective governmental and regulatory agencies, third parties mandated by the customer and contracting parties, subcontractors, customer representatives including access to documented information and the ability to conduct audits, trials of quality investigations, and to verify products and processes.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.
	Right of entry include access to the application level of organization facilities cover all related supplier and business partner facilities.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.	Reference to ISO 9001:2015 clause requirements.

(AS13100 Requirement)

(Primary Gap analysis)

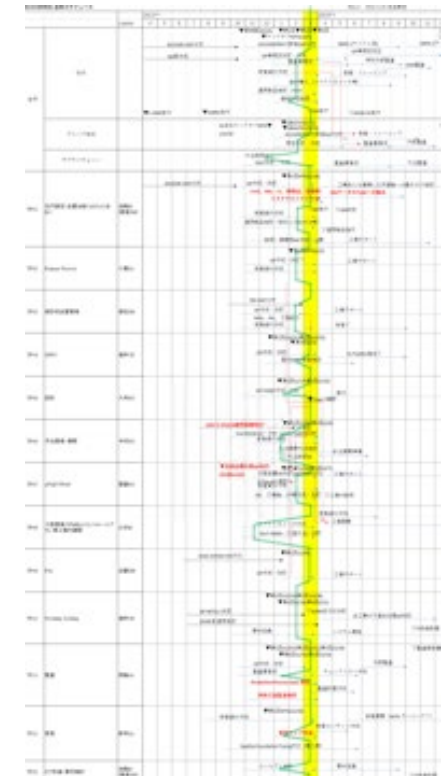
(To be verified by each task team to clarify what kind of action we have)

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

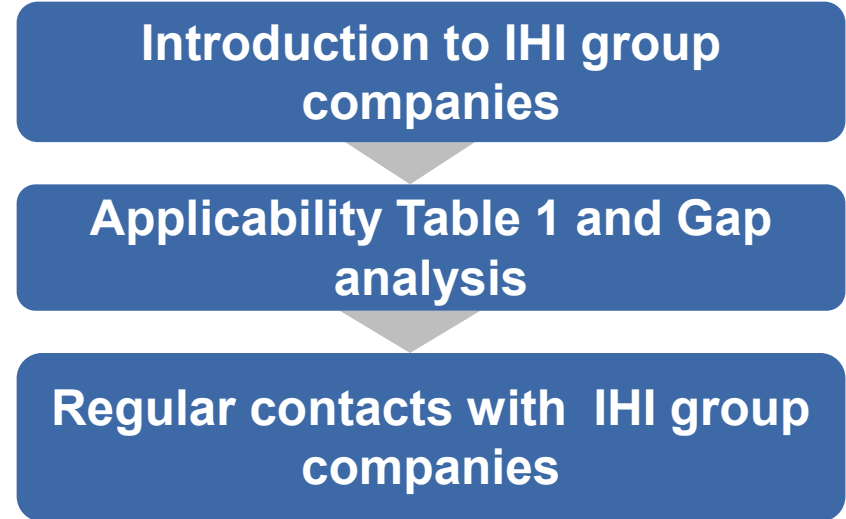
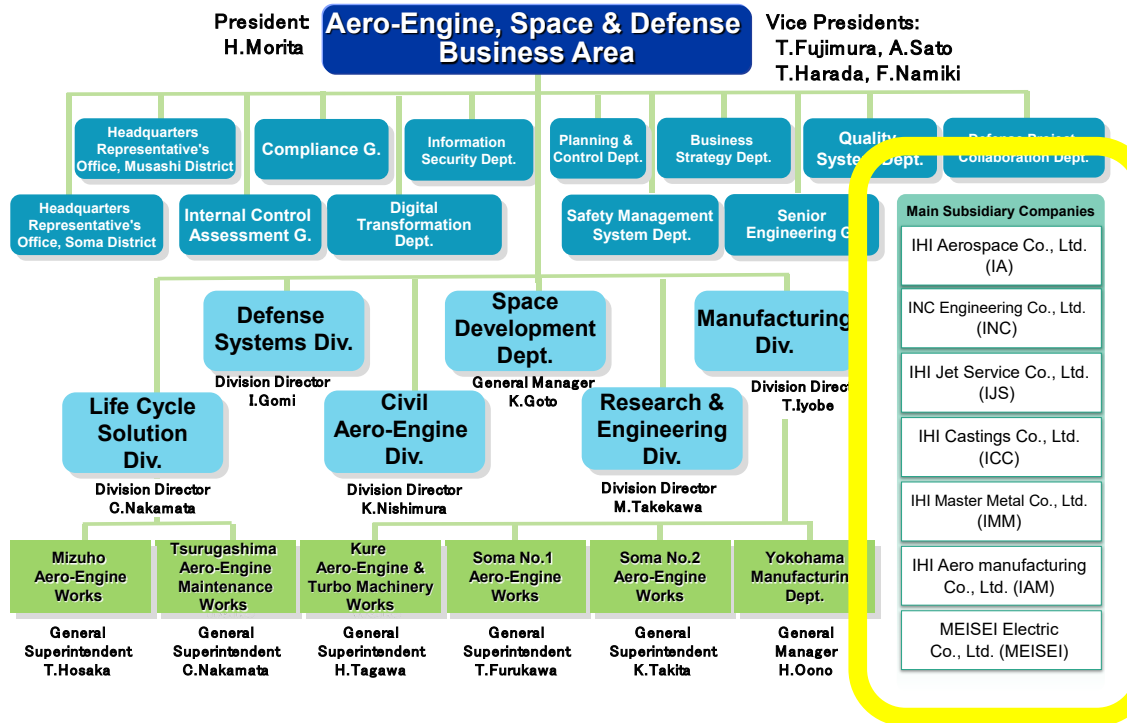
We are organizing a team and promoting the creation of IHI quality management system based on AS13100 Requirement.

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



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



DRIVEN BY VISIONS  
OF TOMORROW

## 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, ...

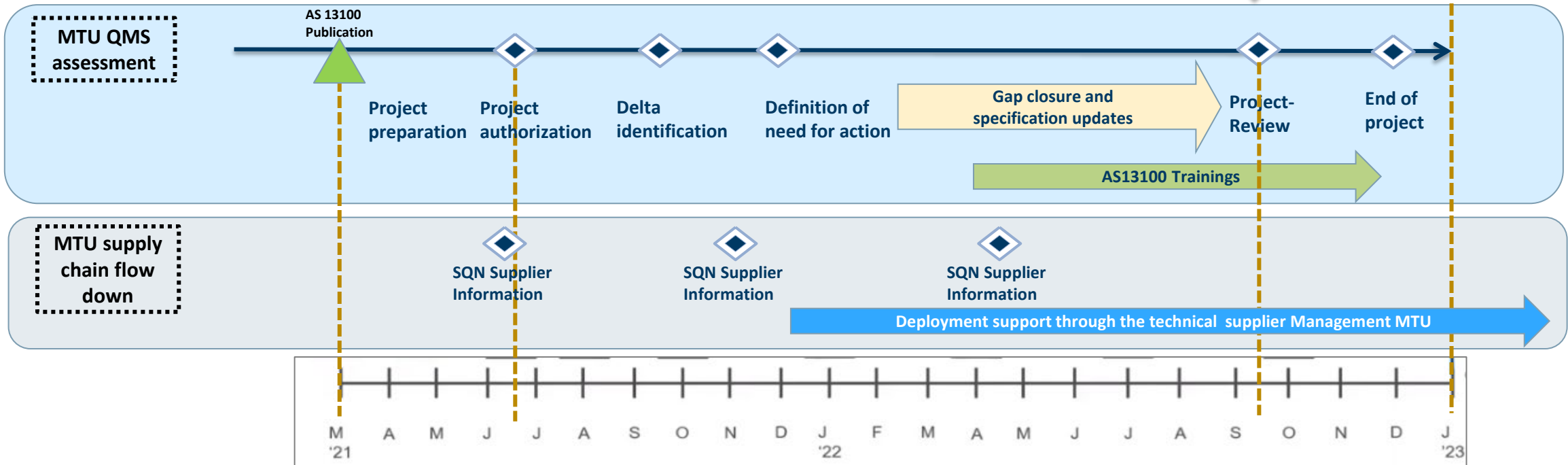
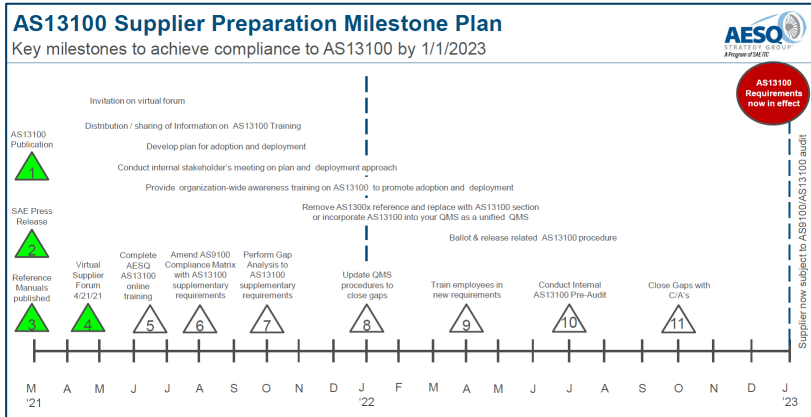
→ Core team is extended where needed, depending on the relevant topics.

Core team

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



# Project plan to achieve AS13100 compliance by January 1<sup>st</sup> 2023



# MTU Assessment of the AS13100 requirements

RM13009

## AS13100 Compliance Self Assessment Chapter A

Organization Name: <b>MTU Aero Engines</b>	Date:
Completed By:	Version:

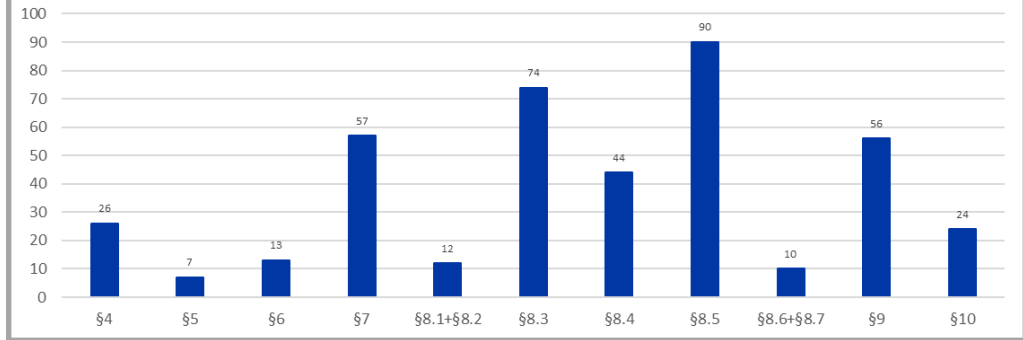
**Self Assessment Compliance Status Key**

- Not Compliant 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
<b>Chapter A - Quality Management System Requirements</b>			
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		

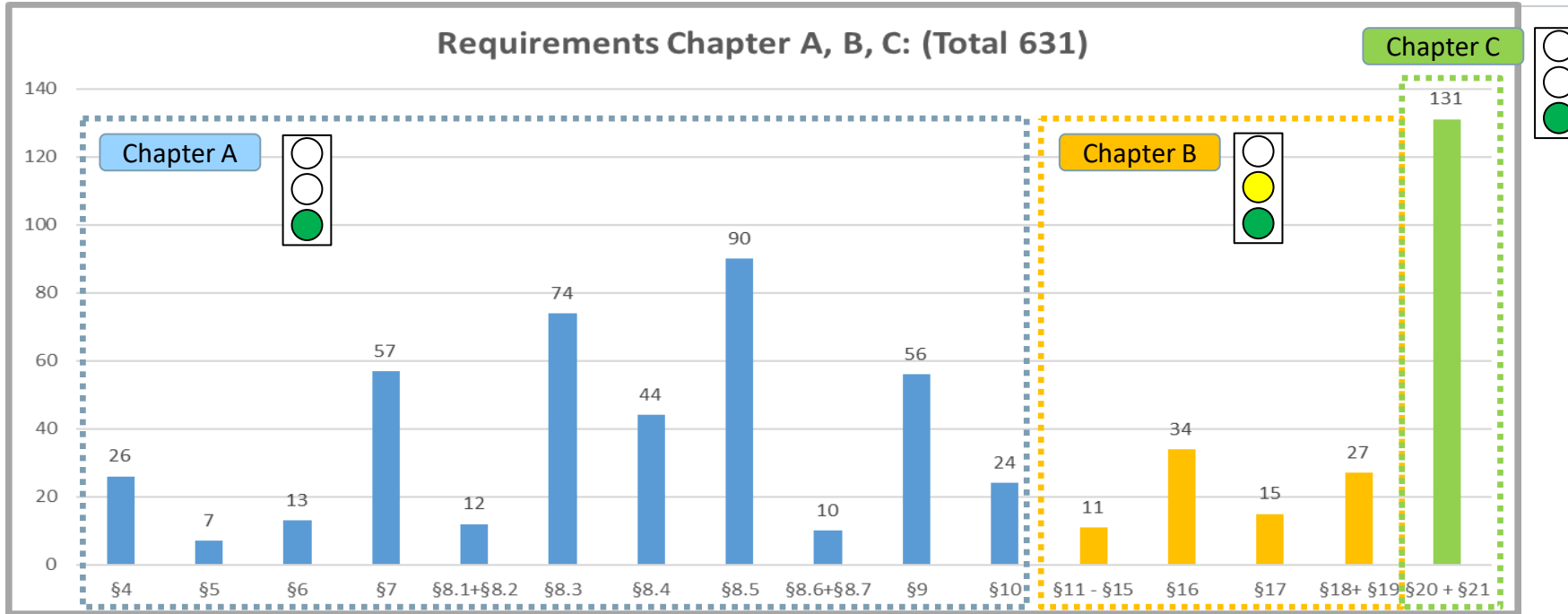
Example

Requirements Chapter A: (Total 413)



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)
<b>4. CONTEXT OF ORGANIZATION</b>			N/A					
<b>4.2.1 Understanding the Needs and Expectations of Interested Parties - Supplemental Requirements</b>			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



## 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**



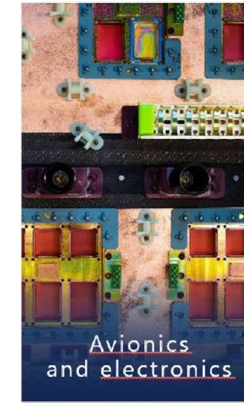
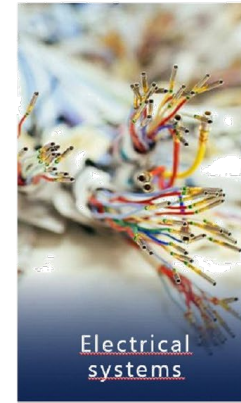


# SAFRAN GROUP Activities

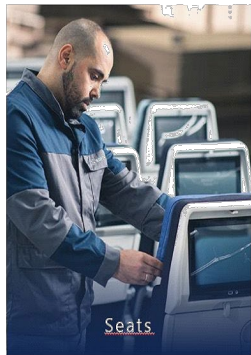
**Aircraft propulsion:** proven innovation and reliability to support aircraft manufacturers and airlines



**Aircraft equipment:** a complete range of products and services



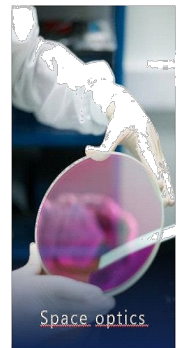
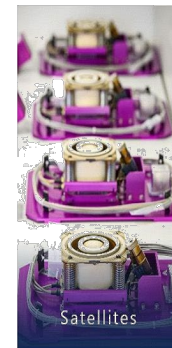
**Aircraft interiors:** an extended range for all types of aircraft to enhance passenger comfort



**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

# 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

- 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)

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

**GRM-0123**  
Provider Handbook

**GRF-0033**  
Compliance matrix to requirements

# 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

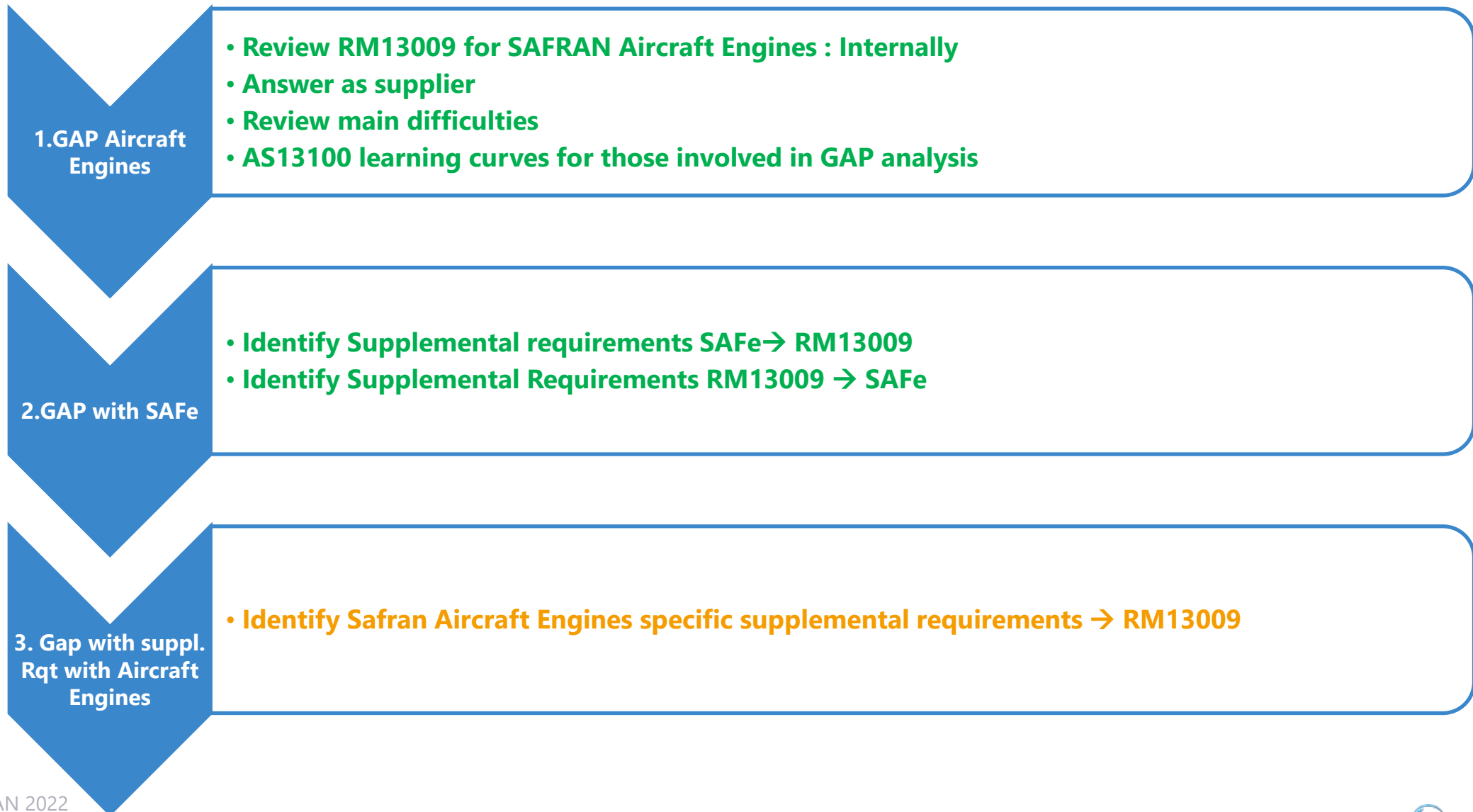
**Milestone 4:** Communication plan executed to supply base.

**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**



# 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 :

8.3.3.3

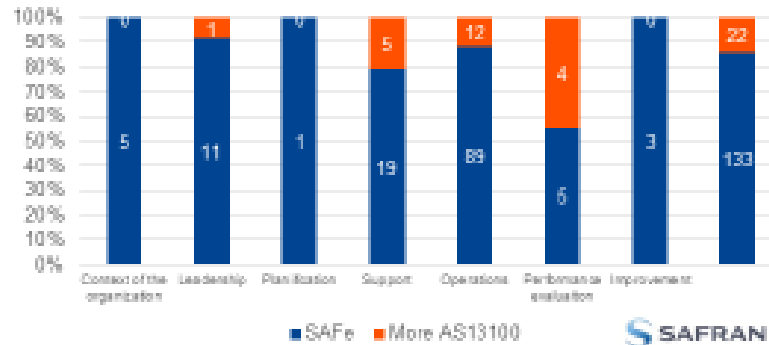
The organization shall configure and plan Design Reviews appropriate to the project considering magnitude, complexity, novelty, risk, etc., (8.3.4.3) and include those milestone dates in the design and development plan.

MORE AS13100 (some elements in (8.3.3a + Chapter 12 (APP-0087 + GRM-0123))

Strictly More AS13100  
Fuller in AS13100

133 SAFe requirements common

22 AS13100 additional requirements (to be reviewed)



24 Safran – March 2nd, 2022 - Quality Committee  
Ce document et les informations qu'il contient sont la propriété de Safran. Ils ne doivent pas être copiés ni communiqués à un tiers sans l'autorisation préalable écrite de 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

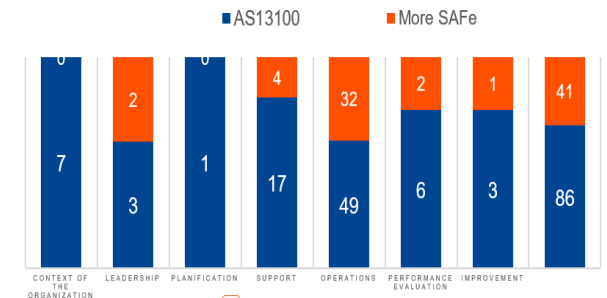
The Provider's commitment on these two items shall be formalized through the signing of Safran's Charter for Responsible Purchasing (document available onto Safran's Website under the reference GRF-0164).  
The Provider shall also initiate the invoices dematerialization to eliminate paper invoices. It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

A

MORE SAFe

86 common AS13100 requirements (represented by "AS13100")

41 additional SAFe requirements (represented by "More SAFe")



# 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)

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.

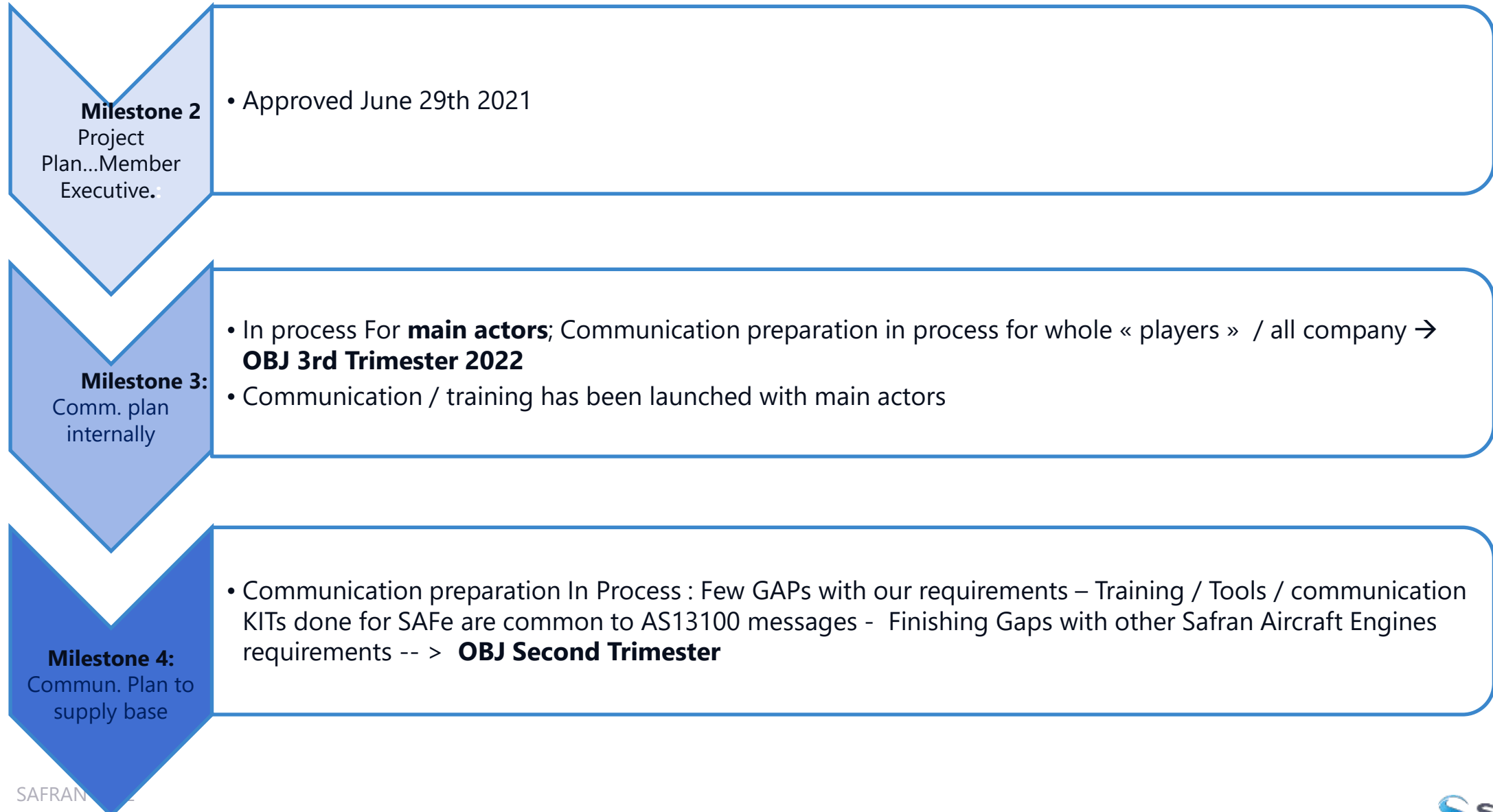
**GRF-0033**  
Compliance matrix to  
SAFe requirements

## **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**



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

**Milestone 5**  
Training plan  
executed internally

- Already started with main Actors but will be extended 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



**PAUL MORGAN**  
SR. DIRECTOR QUALITY & PROCESSING ENGINEERING  
PRATT & WHITNEY

# TRANSITION OF ASQR-01 -> AS130XX

ASQR JOURNEY HAS PROGRESSED, AND NOW IS 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

**AEROSPACE STANDARD**

AS13100™  
Issued 2021-03

AESQ Quality Management System Requirements for Aero Engine Design and Production Organizations

**RATIONALE**

This standard has been created by the SAE G-22 Aerospace Engine Supplier Quality (AESQ) Technical Committee to harmonize and simplify supplier quality requirements that are in addition to the requirements of ASQ1900 Quality Management Systems - Requirements for Aviation, Space, and Defense Organizations and S142 Advanced Product Quality Planning and Production Part Approval Process.

Previously the Aerospace Engine Manufacturers based their supplier quality requirements on ASQ1900 but had differing supplemental requirements and guidance albeit with largely the same intent. These supplemental requirements originate from the need to meet Regulatory, Customer, Industry, and Business requirements that are not explicitly covered by ASQ1900 and S142.

This standard sets out to create a common set of supplemental requirements with common reference materials to improve understanding, efficiency, and performance. While significantly simplifying the businesses of suppliers with multiple customers, the primary intent of this new standard is to improve overall product quality by focusing on the key systems and processes currently determining consistent aerospace engine product quality.

These common supplemental requirements aim to raise the bar for anticipated performance in these key areas, and therefore detailed guidance is provided to ensure clarity of expectations.

**FOREWORD**

To assure customer satisfaction, the aviation, space, and defense industry organizations have to produce and continually improve safe, reliable products that equal or exceed customer and regulatory authority requirements.

The globalization of the industry and the resulting diversity of regional/national requirements and expectations have complicated this objective. End-product organizations face the challenge of assuring the quality of and integration of product purchased from suppliers throughout the world and at all levels within the supply chain. Industry suppliers face the challenge of delivering product to multiple customers having varying quality expectations and requirements.

**AS13100 Compliance Self Assessment Chapter A**

Organization Name:	Pratt and Whitney	Date:	10/9/2021
Completed By:	J. Massicot/T. Carpenter/E. Capozzi/S. Shilberg/P. T.	Version:	Initial

**Self Assessment Compliance Status Key**

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

Clause	Clause Title	Organization Process Reference (or comment)	Compliance Status
<b>Chapter A - Quality Management System Requirements</b>			
4	CONTEXT OF THE ORGANISATION	T&C/PWA-SDU-ASQR-01 (Page 8, 4.2.6)	C
4.1	Understanding the needs and expectations of interested Parties - Supplemental Requirements	INTERNAL: Management System Manual	C
4.1.1	Determining the scope of the quality management system - Supplemental Requirements	EXTERNAL: ASQR-01 INTERNAL: Mfg for N/A as PWA does not develop product software but buys it (e.g. Catia/PLM software) INTERNAL: ASQR-07 S	C
4.1.2	Deliverable Software	INTERNAL: PWA registered by 951	C
4.1.3	Identification Body and scope	EXTERNAL: ASQR-01 INTERNAL: PWA access controlled by Gen Whinn/DCCM has access to any PWA OASIS system	C
4.1.4	Access to OASIS and NADCAP Databases	EXTERNAL: ASQR-01 INTERNAL: PWA has compliance matrix (supplemental & ASQR) also completing RM13009 matrix	A
4.1.5	Compliance Matrix & Scope	EXTERNAL: Compliance Regs Plan to inform supplier to complete RM13009 compliance matrix & gap analysis	A

AS13100 Chapter A | Compliance Matrix | Result Table | Red Check | Compliance Plan | Version Control

**AEROSPACE SUPPLIER QUALITY REQUIREMENTS**  
Number: ASQR-01  
Revision: 1.6 7/20  
Effective Date: 6/24/2018  
Page 1 of 17

**Supplier Quality System Requirements**

**WARNING**  
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**INTRODUCTION**

This document defines supplier quality requirements as agreed upon by the following business entities herein referred to as "Member".

Pratt & Whitney	PW
Pratt & Whitney Canada	PWC
UTC-Aerospace-Systems	UTAS

This document has been developed based upon the requirements of the International Aerospace Quality Group (IAQG) AS9100 - Quality Management Systems - Requirements for Aviation, Space and Defense Organizations. This document identifies unique requirements for RTX UTC Member companies.

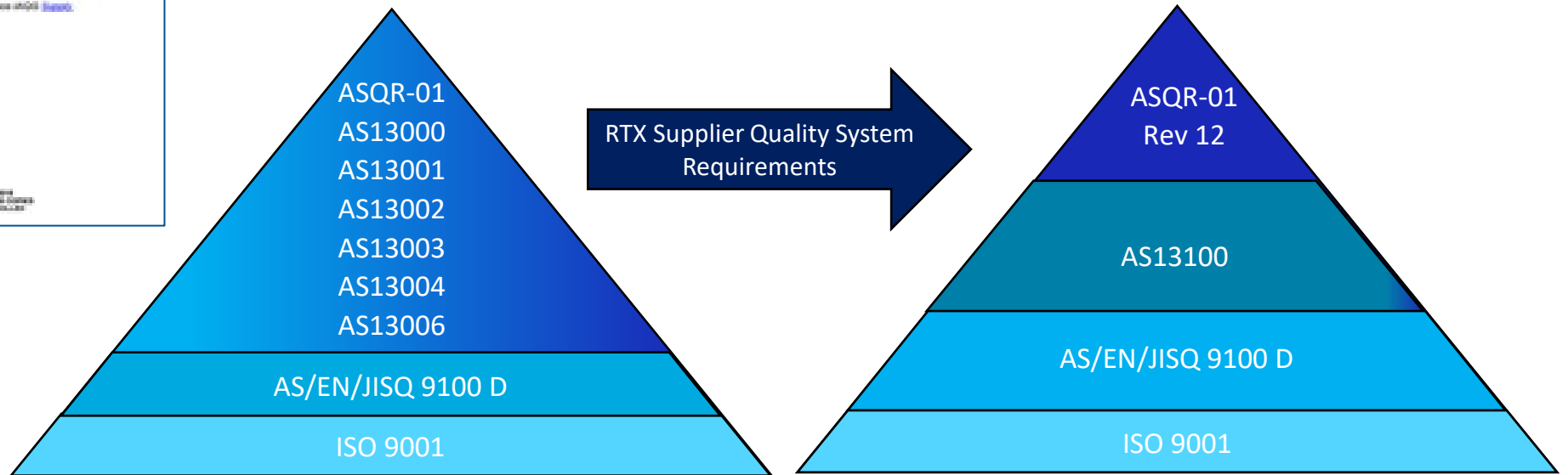
When a supplier provides product or service to more than one Member, the requirements contained herein are to be uniformly applied for each individual Member.

Note: For guidelines on implementing supply chain best practices, reference IAQG Supply Chain Management Handbook (SCMH).



# TRANSITION OF ASQR-01 -> AS13100

ASQR JOURNEY HAS PROGRESSED, AND NOW IS INFLUENCED BY AS13100



# TRANSITION OF ASQR-01 -> AS13100

ASQR JOURNEY HAS PROGRESSED, AND NOW IS INFLUENCED BY AS13100

## ASQR-01 Revision 12

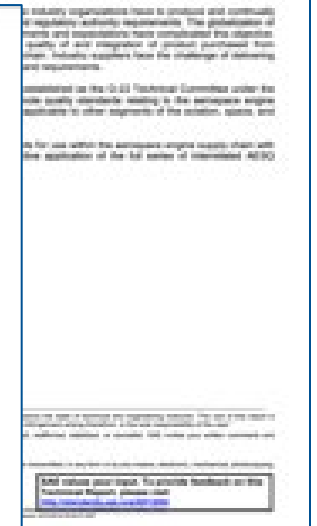
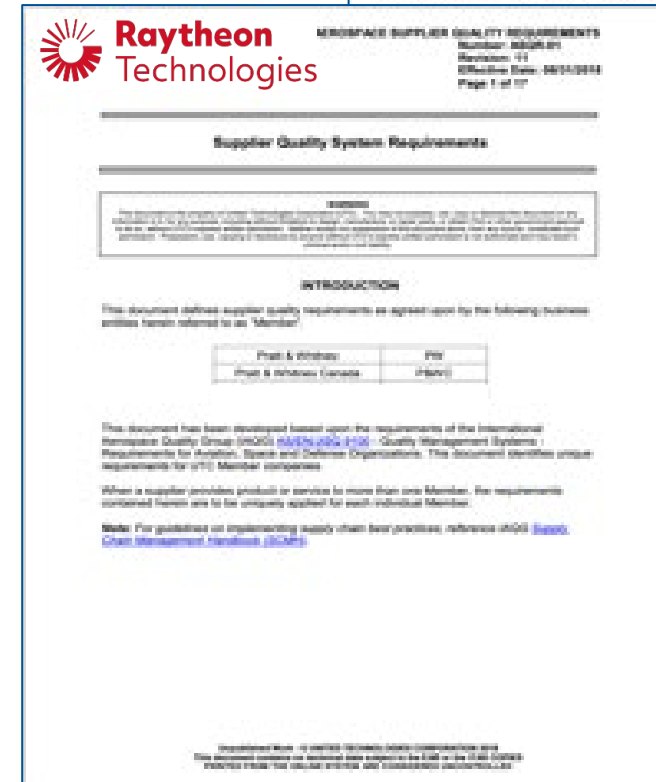
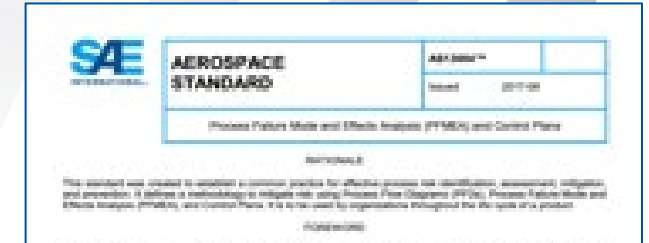
Current requirements of ASQR-01 Rev 11 at **174** pages forecast to drop to **102** pages, a 41% reduction.

“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.

## EAGLE EYES


Quality Lessons Learned

**Applicability:**  
 Pratt & Whitney  Pratt & Whitney Canada

**AESQ PUBLISHES AS13100 SUPPLEMENTARY REQUIREMENTS TO AS9100 – ANN**



**SUPPLIER QUALITY**



**Eagle Eye  
Lessons Learned**

**Applicability:**  
 Pratt & Whitney  Pratt & Whitney Canada

**AS13100**

Pratt and Whitney will be requiring the deployment and implementation of the new AS9100 quality system *System Requirements* by the Aerospace Engine Division. **AS13100 as defined in customer-specific quality requirements** between engine manufacturer and Pratt & Whitney.

As Pratt & Whitney's partner Engines, we are offering their staff within our suppliers are aware an January 1st, 2023, dear Manager with the reason.

Below are the planned sessions below will be posted on the P&W and date/time fits best with

Time/Date	Agenda Topic
2022 - February 22, 24 8:00am-10:00am EST (Tues/Thurs) 1:00pm-3:00pm EST (Tues/Thurs)	- Timeline of Expectations - Completing the RM13009 Self-evaluation - RM13009 results of P&W - ASQR-01 revision 12 update
2022 - Apr 12, 14 8:00am-10:00am EDT (Tues/Thurs) 1:00pm-3:00pm EDT (Tues/Thurs)	- Q&A Session – Gap Assessment - Scope of applicability for P&W suppliers
2022 - May 24, 26 8:00am-10:00am EDT (Tues/Thurs) 1:00pm-3:00pm EDT (Tues/Thurs)	- Q&A Session - Review the new ASQR01 / ASQR-01 Gap Assessment checklist - Training employees on new requirements - Conduct AS13100 & ASQR-01 internal Audit
2022 - Jul 19, 21 8:00am-10:00am EDT (Tues/Thurs) 1:00pm-3:00pm EDT (Tues/Thurs)	- Validating closure of audit findings completed and ready for 1/1/23
2022 - Sep 20, 22 8:00am-10:00am EDT (Tues/Thurs) 1:00pm-3:00pm EDT (Tues/Thurs)	- Q&A Session – Topic to be determined based on Quality Mangers questions and feedback
2022 - Nov 15, 17 8:00am-10:00am EST (Tues/Thurs) 1:00pm-3:00pm EST (Tues/Thurs)	- Q&A Session – Topic to be determined based on Quality Mangers questions and feedback

Export Classification: [No Technical Data]  
**P&W PROPRIETARY INFORMATION**

# AS13100 DEPLOYMENT DASHBOARD



**ELIZABETH PACE**  
ASSOCIATE DIRECTOR, SUPPLIER QUALITY  
RAYTHEON TECHNOLOGIES

# Deployment Strategy Group Dashboard



Company	Milestone 1	Milestone 2	Milestone e3	Milestone e4	Milestone 4b	Milestone 5	Milestone 6	Milestone 7	Milestones
GE Aviation	Complete	Complete	Complete	Complete	Complete	In Work	In Work		Milestone 7: AS13100 compliance by supply base
GKN Aerospace	Complete	Complete	Complete	Complete	Complete	In Work	In Work		Milestone 6: Training plan executed to supply base
Honeywell	Complete	Complete	Complete	Complete	Complete	Complete	Complete		Milestone 5: Training plan executed internally
Howmet	Complete	Complete	Complete	In Work	In Work	In Work	In Work		Milestone 4b: Flow down of the Standard to the supply base.
IHI	Complete	Complete	Complete	Complete	In Work	In Work	Complete		Milestone 4: Communication plan executed to supply base.
MTU	Complete	Complete	Complete	Complete	In Work	In Work	Complete		Milestone 3: Communication plan executed internally.
PCC	In Work	In Work	In Work	Complete	Complete	Complete	In Work		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.)
Pratt and Whitney	Complete	Complete	Complete	Complete	In Work	In Work	In Work		Milestone 1: GAP analysis being conducted. Member company committed to deployment by Dec 2022.
Rolls Royce	In Work	Complete	Complete	Complete	Complete	In Work	In Work		
Safran	Complete	Complete	In Work	In Work	In Work	In Work	Complete		

December 31, 2022

■ Complete

■ In Work

■ At Risk

■ Off Plan

**AESQ – Aerospace Engine Supplier Quality Strategy Group**

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# 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 3<sup>rd</sup> party professionals and is available globally

# Subject Matter Interest Groups Status

- Completed
- In Work
- Not Started














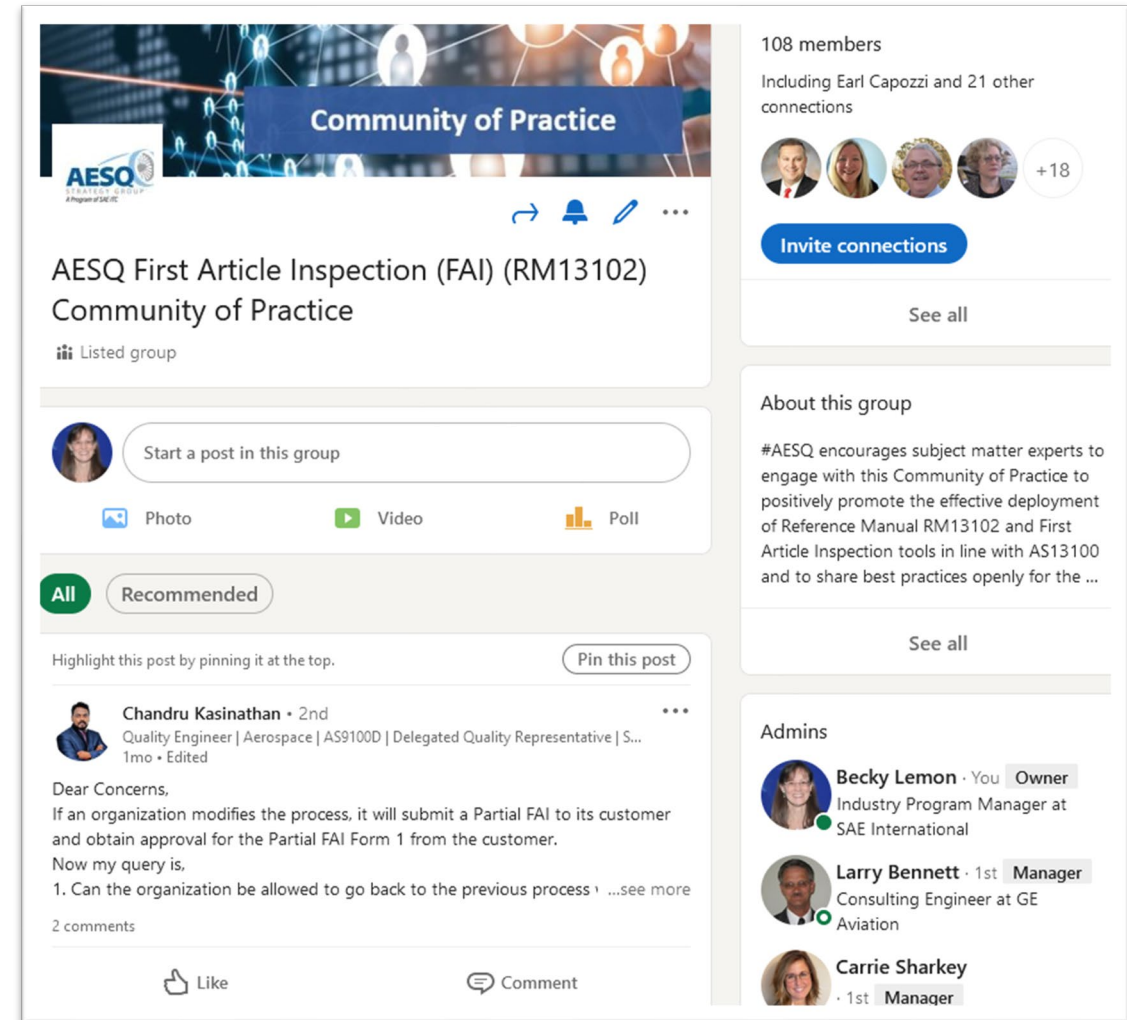
Subject Matter Interest Group	Team Leader	Deputy Team Leader	Team Size	Charter	Regular Meetings	Activity Schedule	Web Page	Linkedin/COP Page	Events
Problem Solving Methods (RM13000)	Marnie Ham (GE)	Completed	Completed	Completed	Completed	Completed	Completed	Completed	Completed
DPRV Training (AS13001)	Earl Capozzi (P&W)	Completed	Completed	Completed	In Work	Not Started	Completed	Completed	In Work
Process Control (incl. Inspection Frequency) (RM13002 & RM13006)	Pete Teti (P&W)	Completed	Completed	In Work	In Work	In Work	Completed	Completed	In Work
MSA (RM13003)	Simon Gough-Rundle (RR)	Completed	In Work	Not Started	Completed	Completed	Completed	Completed	Not Started
Defect Prevention Quality Tools (RM13004)	Ian Riggs (RR)	Completed	Completed	In Work	Completed	Completed	Completed	Completed	Completed
Quality Audit Methods (RM13005)	Tony Pailing (RR)	Not Started	Completed	Not Started	In Work	Not Started	Completed	Completed	Not Started
Sub-tier Management (RM13007)	Vince Miller (Howmet)	Completed	In Work	In Work	Completed	In Work	Completed	Completed	In Work
Design Methods (RM13008)	Lena Eckerbom Wendel (GKN)	Completed	Completed	In Work	Completed	In Work	Completed	Completed	In Work
Human Factors (RM13010)	Catherine Catarina-Graca (Safran)	Not Started	Completed	Completed	Completed	Completed	Completed	Completed	Completed
First Article Inspection (RM13102)	Carrie Sharkey (RR)	Completed	Completed	Completed	Completed	Completed	Completed	Completed	Completed
APQP & PPAP (RM13145)	Karl Evans (RR)	Completed	Completed	Completed	Completed	Completed	Completed	Completed	In Work

**AESQ – Aerospace Engine Supplier Quality Strategy Group**

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

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



**Community of Practice**

**AESQ First Article Inspection (FAI) (RM13102) Community of Practice**

Listed group

108 members  
Including Earl Capozzi and 21 other connections

Invite connections

See all

About this group

#AESQ encourages subject matter experts to engage with this Community of Practice to positively promote the effective deployment of Reference Manual RM13102 and First Article Inspection tools in line with AS13100 and to share best practices openly for the ...

See all

Admins

- Becky Lemon** · You · Owner  
Industry Program Manager at SAE International
- Larry Bennett** · 1st · Manager  
Consulting Engineer at GE Aviation
- Carrie Sharkey** · 1st · Manager

Start a post in this group

Photo Video Poll

All Recommended

Highlight this post by pinning it at the top. Pin this post

**Chandru Kasinathan** · 2nd  
Quality Engineer | Aerospace | AS9100D | Delegated Quality Representative | S...  
1mo · Edited

Dear Concerns,  
If an organization modifies the process, it will submit a Partial FAI to its customer and obtain approval for the Partial FAI Form 1 from the customer.  
Now my query is,  
1. Can the organization be allowed to go back to the previous process? ...see more

2 comments

Like Comment

# AESQ UPCOMING EVENTS



[About](#) [News](#) [Documents](#) [Activities](#) [Events](#) [Membership](#) [Contact AESQ](#)



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



# Pause



Return in 15 Minutes



# Pause



Return in 14 Minutes



# Pause



Return in 13 Minutes



# Pause



Return in 12 Minutes



# Pause



Return in 11 Minutes



# Pause



Return in 10 Minutes



# Pause



Return in 9 Minutes



# Pause



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



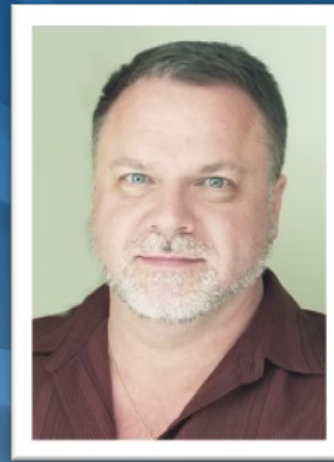
Return in 1 Minute



# 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**

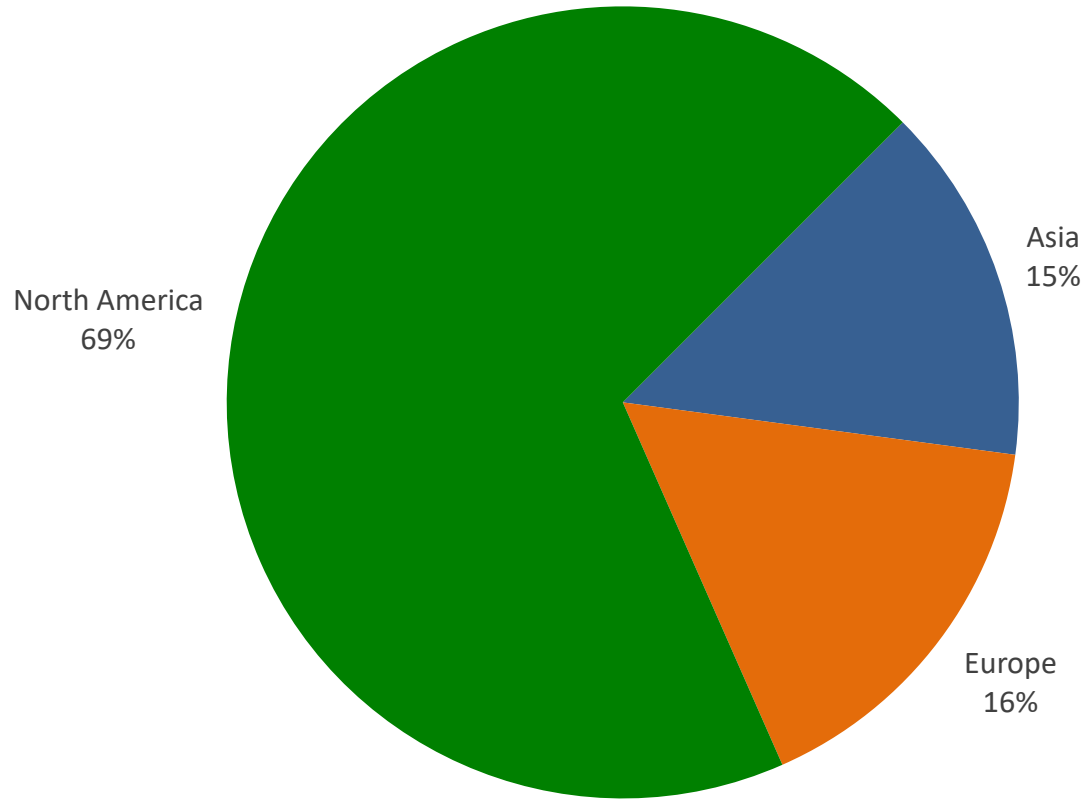
- 158 respondents
- Familiar with AESQ for existing AS13XXX documents
- Create a baseline for deployment well before the deadline
- Basic AS13100 familiarity
- Collected feedback to drive actions

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

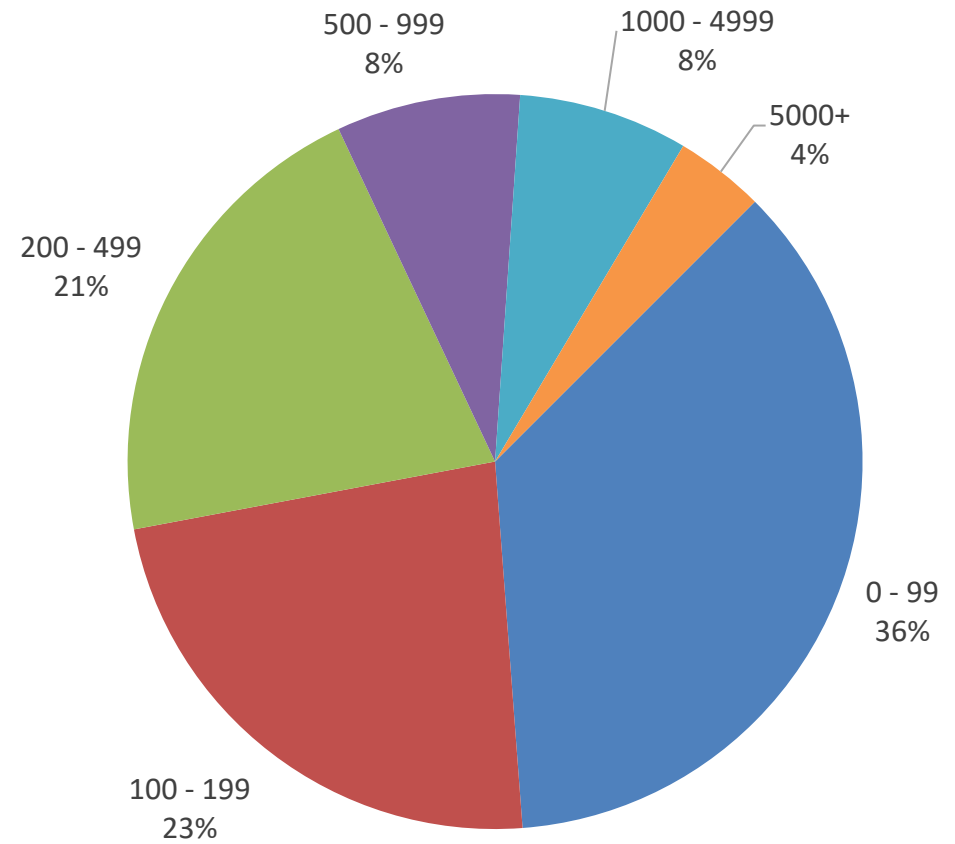
- 13 questions, both objective and open-ended
- 482 respondents to date
- 608 comments and suggestions being analyzed for actions

# Respondent Demographics

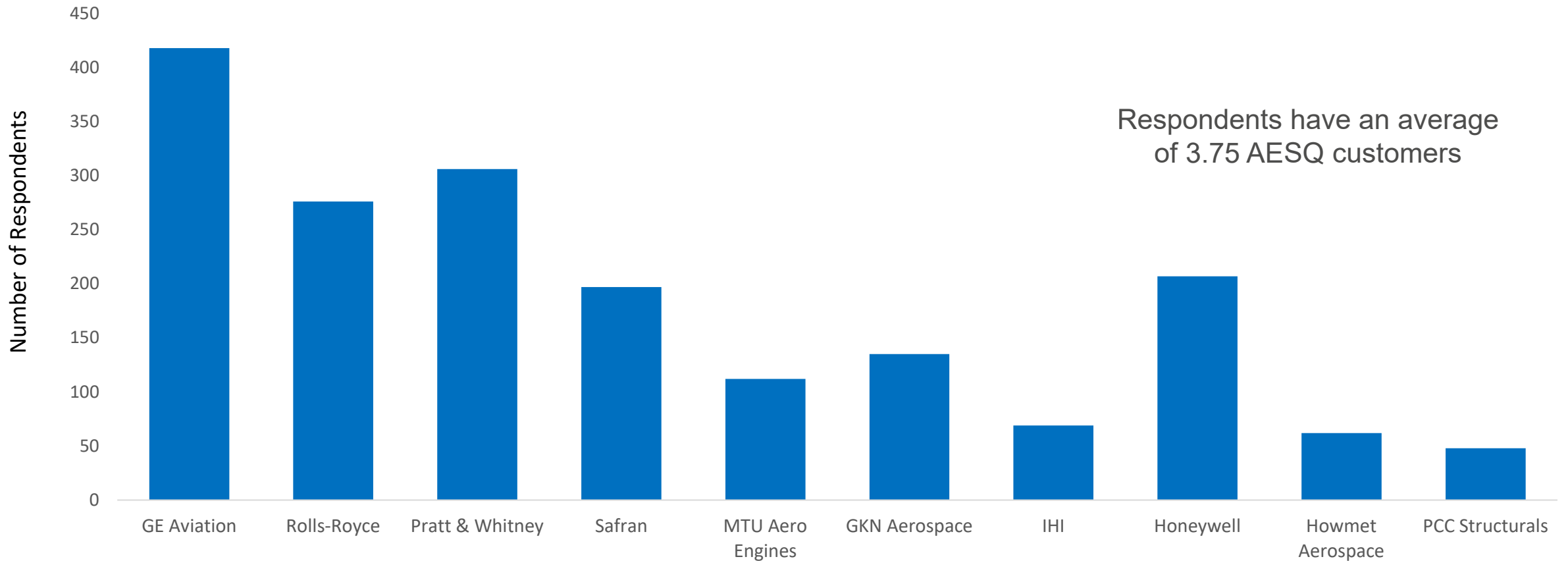
## Respondent Location



## Respondent Company Size



# Respondents Supply to Multiple AESQ Members

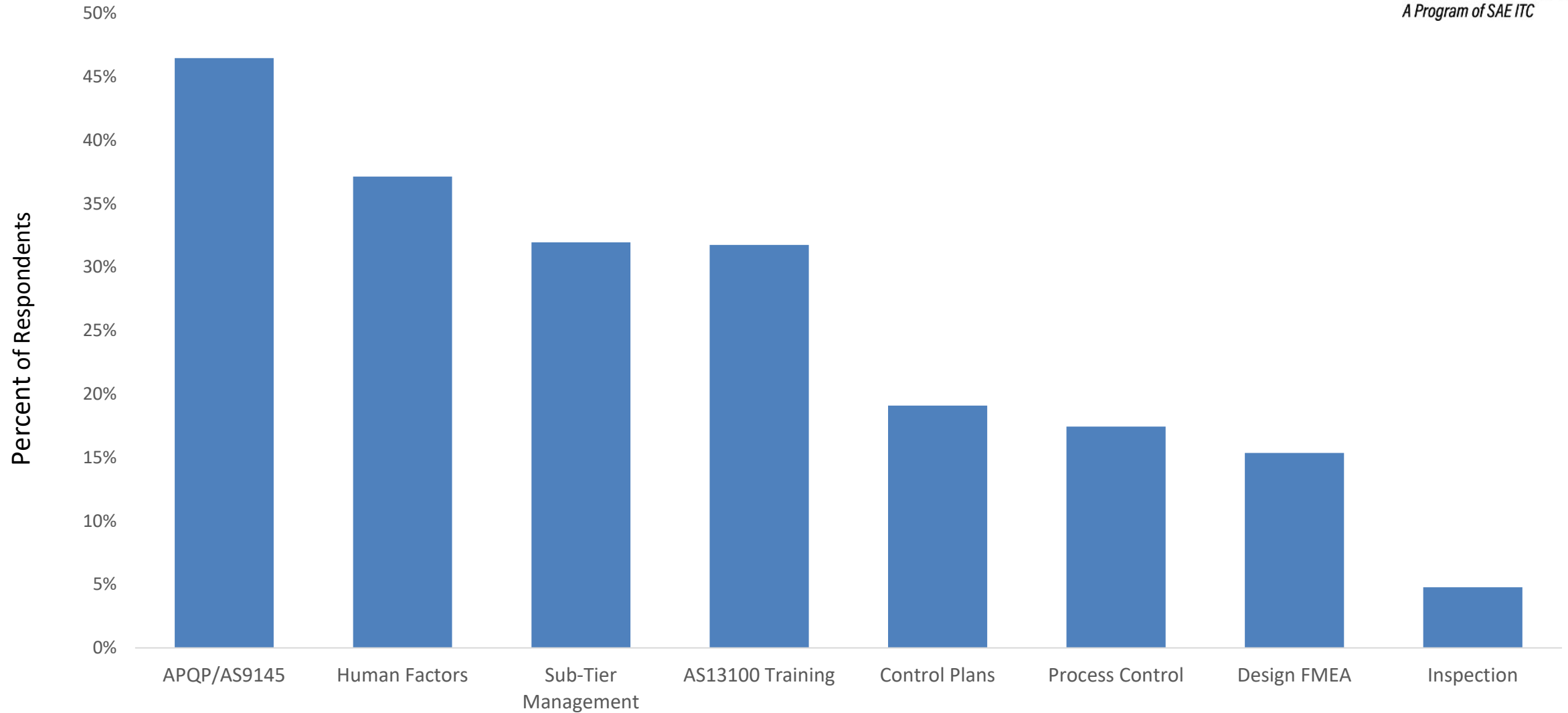


# Evolution of Implementation Status



- The organization believes we are now compliant with AS13100
- The RM13009 gap analysis has been completed and a gap closure action plan is in place
- The compliance gap analysis of RM13009 has been initiated and is in process
- We have purchased a copy of AS13100 and are reviewing it
- Compliance activities have not yet begun

# Where Can We Help?



# What You Told Us

## AS13100 Implementation vs. Training Status



- The organization believes we are now compliant with AS13100
- The RM13009 gap analysis has been completed and a gap closure action plan is in place
- The compliance gap analysis of RM13009 has been initiated and is in process
- We have purchased a copy of AS13100 and are reviewing it
- Compliance activities have not yet begun

# 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:	
<b>Self Assessment Compliance Status Key</b> Not Compliant 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
<b>Chapter A - Quality Management System Requirements</b>			
<b>4</b>	<b>CONTEXT OF THE ORGANISATION</b>		
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 DASIS and NADCAP Databases		
4.3.5	Compliance Matrix & Scope		
4.4.3	Quality Management System and its processes - Supplemental Processes: Human Factors		
<b>5</b>	<b>LEADERSHIP</b>		
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		
<b>6</b>	<b>PLANNING</b>		
6.1.3	Actions to Address Risks and Opportunities - Supplemental Requirements		
<b>7</b>	<b>SUPPORT</b>		
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		
5.3.5.1	Design Records Retention		
5.3.5.2	Radiographic Film Record Retention		
5.3.5.3	Program Code Record Retention		
<b>8</b>	<b>OPERATION</b>		
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		

# APQP DEPLOYMENT



**KARL EVANS**  
APQP TECHNICAL PROJECT MANAGER  
ROLLS-ROYCE



**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

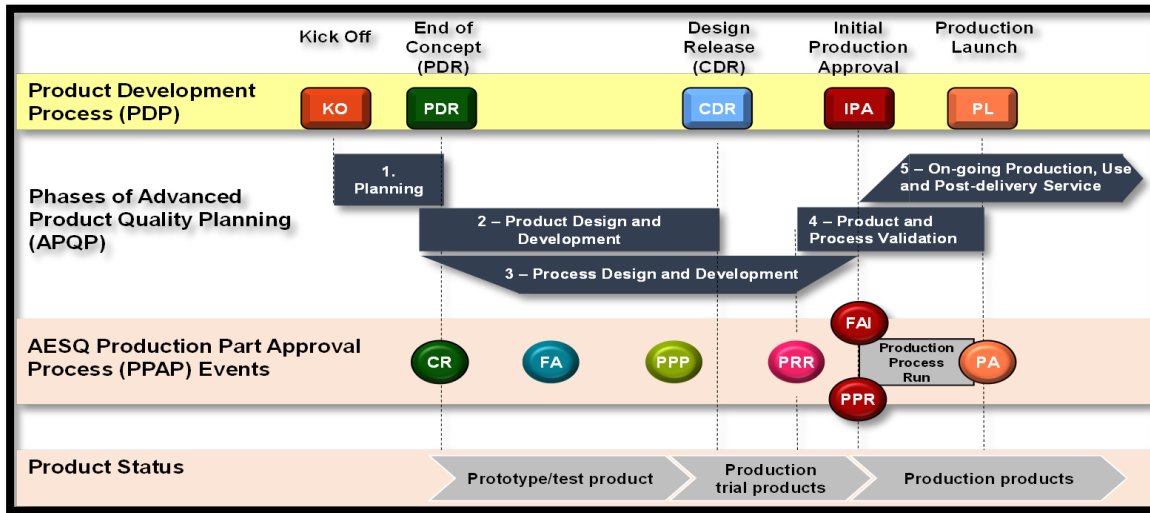


# Application within Rolls-Royce of AS13100/9145 APQP and PPAP

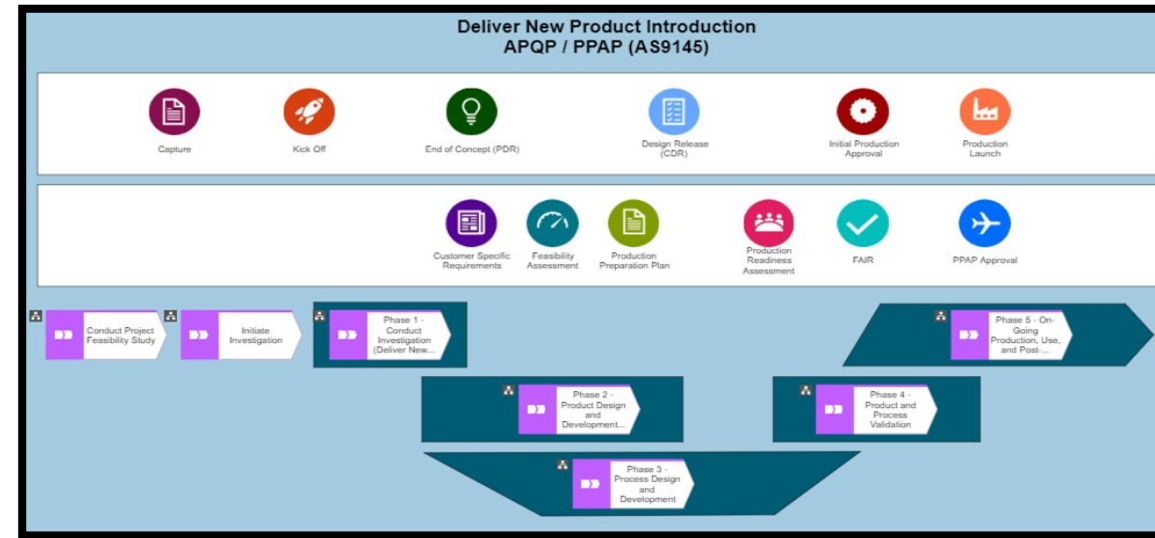


**Ourselves...**Rolls-Royce Civil Aerospace is fully committed to APQP, PPAP and Cross functional working.  
**Our Customers...**they are asking for this.  
**Our Suppliers...**AS13100 APQP and PPAP means we have significantly reduced our Customer Specific Requirements.

## AS13100 APQP & PPAP Timing Chart



## Rolls-Royce Management System



# Our Journey to APQP



2010

2017

2021

2022

## Quality Improvement drivers

Build in Quality

Zero Defects

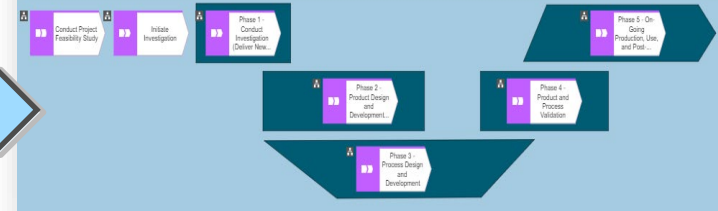
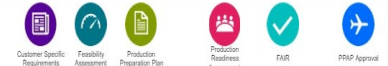
## Quality Management Processes

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

## Adoption of Industry Standards

#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.)

# 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

## Project Planning & Management

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

Define practices for concern management

## 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.

## It's a Team Sport

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

## Each time you start

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

## People Process

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

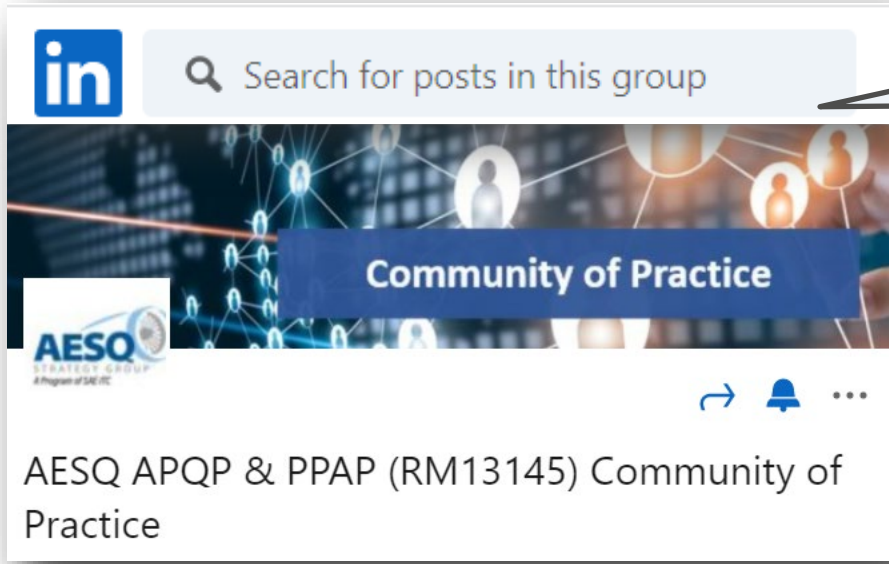
## Progress with a Plan

**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

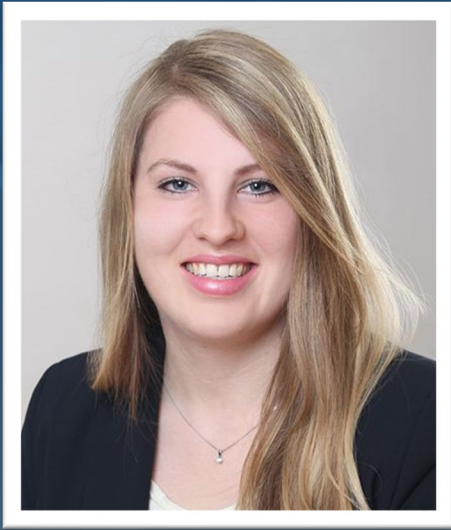
Use “RM13145” it contains a  
volume of good practices

It's Good To 'Talk'

Raise questions, share  
ideas & good practices



# RISK BASED AUDIT SYSTEM – INTERNAL AND SUPPLIER



**LISA STÖMER**  
AUDIT MANAGEMENT  
MTU AERO ENGINES AG (MUNICH)

# Agenda

Requirements of AS13100 in relation to „Risk“

Requirements of RM13005 in relation to „Risk“

Implementation of a Risk Based Audit System

MTU's way to Risk Based Supplier Audits

Outlook – Challenges and Opportunities





# Requirements of AS13100 in relation to „Risk“

Search for „risk“ results in 92 (AS13100) and 34 (RM13005) hits

**Risk (EN9000)**  
**= Effect of uncertainty**

(Note 5 to entry: The word “risk” is sometimes used when there is the possibility of only negative consequences.)

## AS13100

### 9.2 Internal Audit

[...] The frequency of audits shall be reviewed and be increased, if required, due to process changes, quality performance, or risk.

### 8.4.2.5 Supplier Surveillance - Supplemental Requirements

The organization shall perform supplier risk assessments, which, at a minimum, include evaluation of results of supplier’s internal audits, supplier’s current quality performance, and part complexity.

The organization shall establish and execute appropriate surveillance methods to monitor supplier systems, processes, and products based on the risk evaluations.

# Requirements of RM13005 in relation to „Risk“

## RM13005 – Quality Audit Requirements

### Introduction

[...] *This guideline defines the process requirements to be used by organizations to establish a procedure to implement, manage and perform effective and risk based internal and supplier surveillance audit program.*

- Audit program based on risk assessments
- Use risk prioritization tools
- Based on the risk evaluation, mitigate the risks by an appropriate response
- One of the risk mitigation activities can be an audit
- Develop risk assessments that cover Quality Management System, Production Processes, Special Processes & Product Conformity

# Implementation of a Risk Based Audit System

MTU intent is a „Risk Minimizing Audit System“

Audit type	Mandatory requirements AS13100	Risk based approach
Quality System Audits	Entire management system within 3 years	Element/area prioritized based on risk
Production Process Audits	Every production process within 3 years	Selection of part numbers, workstations etc. based on risk
Special Process Audits	All special processes annually	Selection of part numbers, workstations etc. based on risk
Product Audits	Annually	Selection of parts based on risk



**Definition of risk criteria**

## MTU's way to Risk Based Supplier Audits



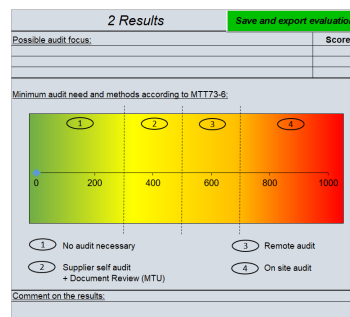
# MTU's way to Risk Based Supplier Audits

## Implementation of the risk based concept for supplier audits

### Supplier Audit Risk Assessment Tool

Supplier Audit Risk Assessment Tool				
1 Evaluation				
Supplier name:	MTU Department:			
	None of the criteria is applicable	Class 1	Direct Statement	Prime Source
1. Last MTU supplier audit	Low	Intermediate	High	
2. Results from last MTU supplier audit	Low	Intermediate	High	
3. Audit results from authorities and certifying offices	Low	Intermediate	High	
4. Internal Audit system from the supplier	Low	Intermediate	High	

### Assessment Result: Audit Needs



### Data Processing

Customer	Event	Risk Score	Class 1	Shared Statement	None of the criteria	Results	Conc.
Supplier 1	340	yes	no	no	no	Niemand Nix	06.12.2021
Supplier 1	315	no	no	no	no	Niemand Nix	06.12.2021
Supplier 1	315	no	no	no	no	Niemand Nix	07.12.2021
Supplier 2	944	no	no	no	yes		

### Annual Audit Plan

Audit Nr.	Beschreibung	Auditor	Suppliers Startdatum	Suppliers Enddatum	Auditor
1	Lieferantenaudit 2021				
1	Lieferantenaudit 2021 - FSP-Audit (Partigewinn Klasse TA)				
AU0000000000000101	1201744 - B.C. - G&S	Lieferanten System und Prozessaudit	01.05.2021	31.05.2021	Heer Jürgen Arnold
AU0000000000000102	1201744 - B.C. - Machring	Lieferanten System und Prozessaudit	01.05.2021	31.05.2021	Heer Oliver Mohr
AU0000000000000103	1201744 - B.C. - Inspection	Lieferanten System und Prozessaudit	01.05.2021	31.05.2021	Heer Felix Rosenkranz
AU0000000000000104	1200577 - Bst. Stremmel - G&S	Lieferanten System und Prozessaudit	01.05.2021	31.05.2021	Heer Felix Seiler
AU0000000000000105	1200577 - Bst. Stremmel - Machring	Lieferanten System und Prozessaudit	01.05.2021	31.05.2021	Heer Günther Jänicke
AU0000000000000106	1200577 - Bst. Stremmel - Inspection	Lieferanten System und Prozessaudit	01.05.2021	31.05.2021	Heer Gerd Guder
AU0000000000000107	1200577 - Bst. Stremmel - Engineering	Lieferanten System und Prozessaudit	01.05.2021	31.05.2021	Heer Nils Urban
AU0000000000000108	1200092 - Parat - G&S	Lieferanten System und Prozessaudit	01.05.2021	31.05.2021	Heer Florian Fahlmann
AU0000000000000109	1200092 - Parat - Machring 1	Lieferanten System und Prozessaudit	01.05.2021	31.05.2021	Heer Günther Jänicke
AU0000000000000110	1200092 - Parat - Engineering	Lieferanten System und Prozessaudit	01.05.2021	31.05.2021	Heer Thomas Hummer
AU0000000000000111	1201487 - T&I - G&S	Lieferanten System und Prozessaudit	01.05.2021	30.09.2021	Heer Günther Jänicke
AU0000000000000112	1201487 - T&I - Machring	Lieferanten System und Prozessaudit	01.05.2021	30.09.2021	Heer Günther Jänicke
AU0000000000000113	1201487 - T&I - Inspection	Lieferanten System und Prozessaudit	01.05.2021	30.09.2021	Heer Nils Urban
AU0000000000000114	1201487 - T&I - Engineering	Lieferanten System und Prozessaudit	01.05.2021	30.09.2021	Heer Nils Urban
AU0000000000000115	1201189 - Magellan - G&S	Lieferanten System und Prozessaudit	01.05.2021	31.05.2021	Heer Daniel Hedgkötter
AU0000000000000116	1201189 - Magellan - Machring	Lieferanten System und Prozessaudit	01.05.2021	31.05.2021	Heer Gerd Jänicke
AU0000000000000117	1201189 - Magellan - Inspection	Lieferanten System und Prozessaudit	01.05.2021	31.05.2021	Heer Gerd Jänicke
AU0000000000000118	1201189 - Magellan - Engineering	Lieferanten System und Prozessaudit	01.05.2021	31.05.2021	Heer Gerd Jänicke
AU0000000000000119	1201993 - Navi - G&S	Lieferanten System und Prozessaudit	01.05.2021	30.09.2021	Frage Lisa Schöner
AU0000000000000120	1201993 - Navi - Machring	Lieferanten System und Prozessaudit	01.05.2021	30.09.2021	Frage Lisa Schöner
AU0000000000000121	1201993 - Navi - Inspection	Lieferanten System und Prozessaudit	01.05.2021	30.09.2021	Frage Lisa Schöner
AU0000000000000122	1201993 - Navi - Engineering	Lieferanten System und Prozessaudit	01.05.2021	30.09.2021	Frage Lisa Schöner

- 16 risk criteria
- Focus on product quality
- Different characteristics and weightings

- Result categories (audit methods):  
*No audit - Supplier Self Audit - Remote Audit - On Site Audit*
- Audit focus related to identified risks

- Automatic summary of all risk assessments
- Use synergies, e.g. one supplier for two commodities

- Centralized and resource optimized planning
- Early involvement of experts

## Outlook – Challenges and Opportunities

### RM13005 - Introduction

*[...] Through this approach, it is anticipated that opportunities will be found to remove redundant audits across the supply chain and hence reduce the overall audit burden whilst improving its effectiveness.*



**Overall goal: Reducing the audit burdens by strengthening and using the supplier audit system**

Focusing on „risk suppliers“

Evaluation regarding ethical and soft facts

Bring an „element of surprise“ to the audit

Thank you for your attention.

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# AESQ

## HOW TO GET INVOLVED



**JUN SAKAI**  
CHIEF ENGINEER  
IHI CORPORATION

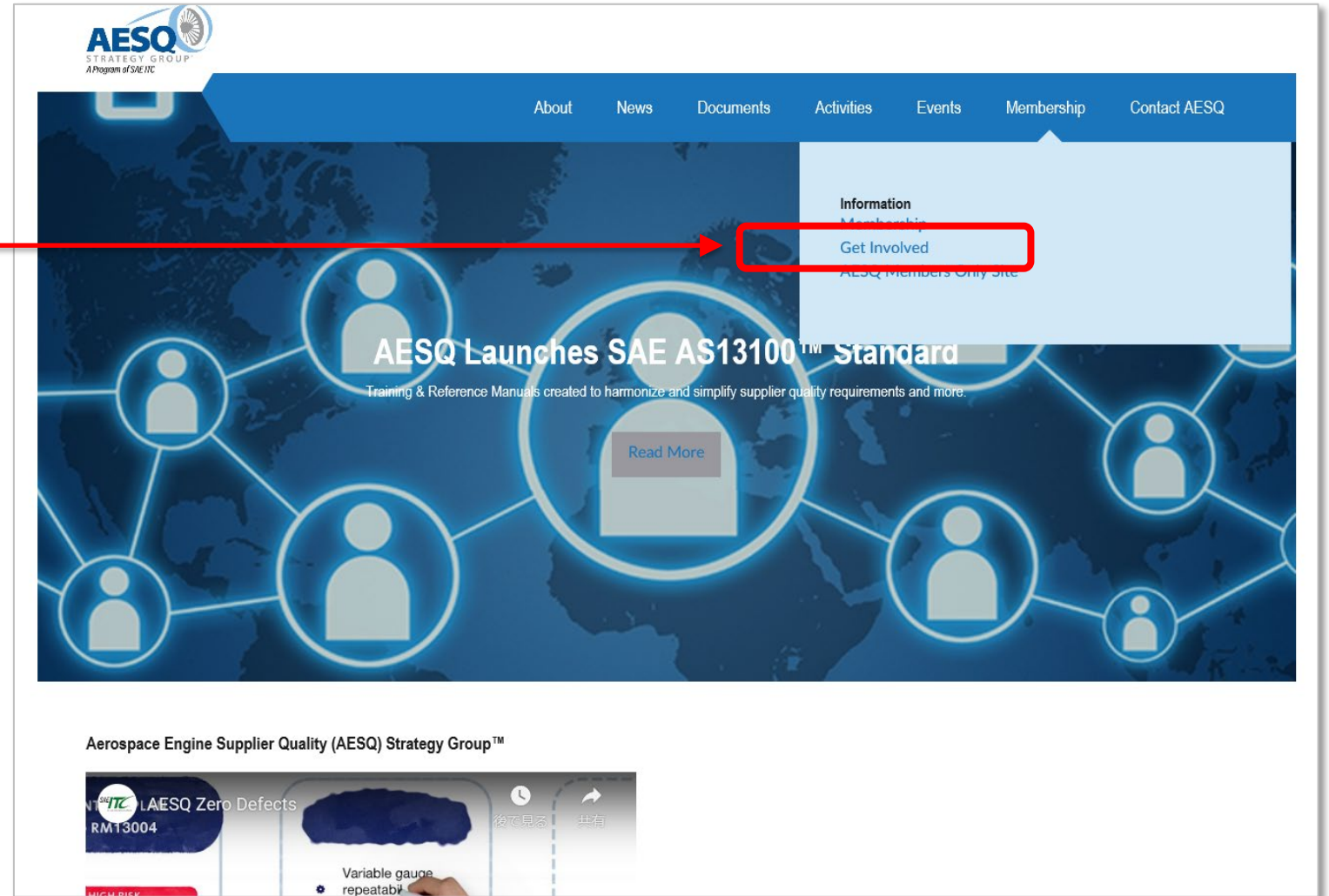


# How to Get Involved - Overview



# “Get Involved” with AESQ

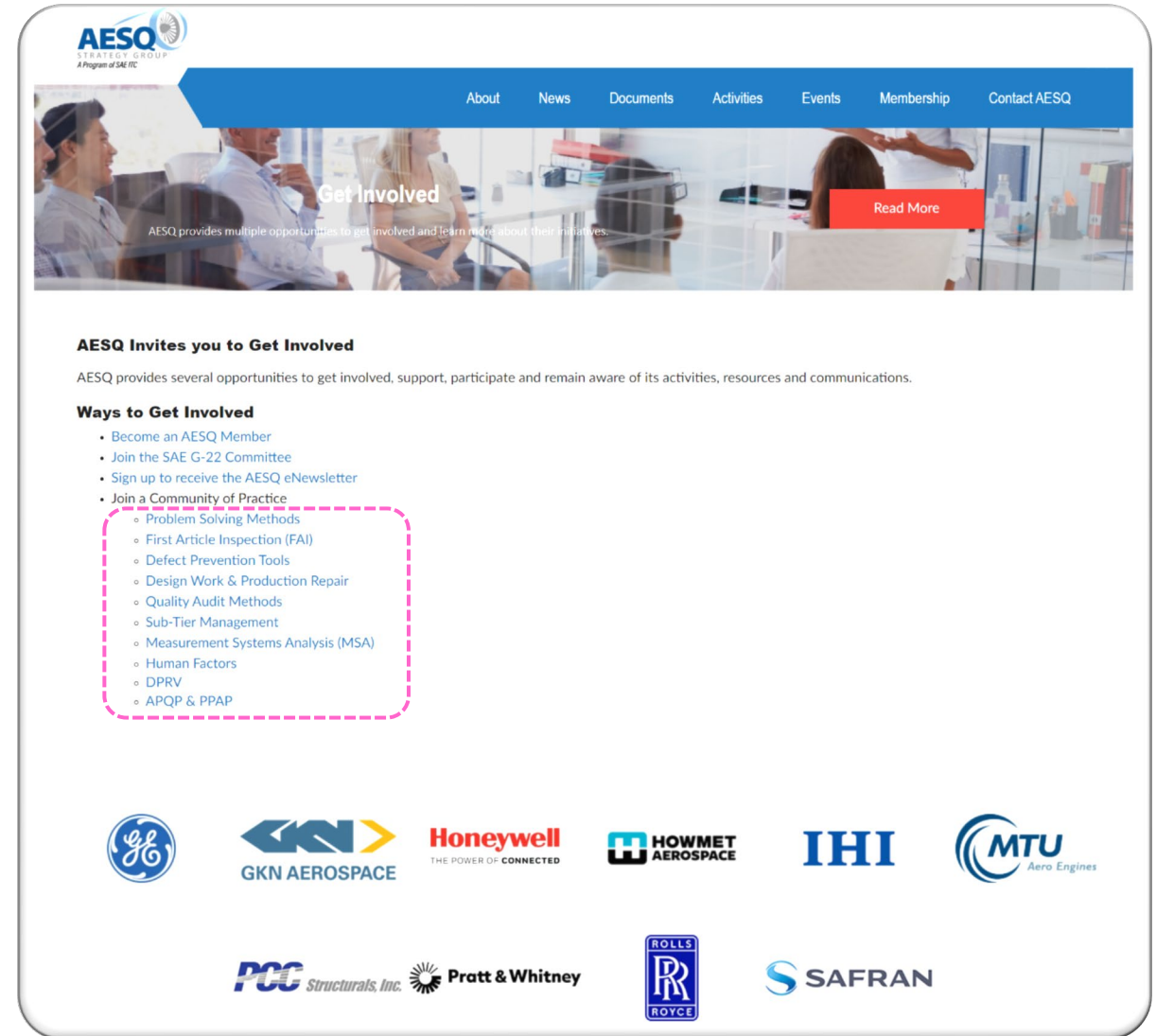
- Go to AESQ Homepage  
<https://aesq.sae-itc.com/>
- Click “Get Involved”



# “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



The screenshot shows the AESQ website's 'Get Involved' page. At the top, there is a navigation bar with links for About, News, Documents, Activities, Events, Membership, and Contact AESQ. Below the navigation bar is a hero image of people in a meeting, with the text 'Get Involved' and a 'Read More' button. The main content area features the heading 'AESQ Invites you to Get Involved' followed by a paragraph: 'AESQ provides several opportunities to get involved, support, participate and remain aware of its activities, resources and communications.' Below this is a section titled 'Ways to Get Involved' with a bulleted list: 'Become an AESQ Member', 'Join the SAE G-22 Committee', 'Sign up to receive the AESQ eNewsletter', and 'Join a Community of Practice'. The 'Join a Community of Practice' item is expanded to show a list of communities: 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, and APQP & PPAP. At the bottom of the page, there are logos for various aerospace companies: GE, GKN Aerospace, Honeywell, Howmet Aerospace, IHI, MTU Aero Engines, PCC Structural, Inc., Pratt & Whitney, Rolls Royce, and Safran.



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

- 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

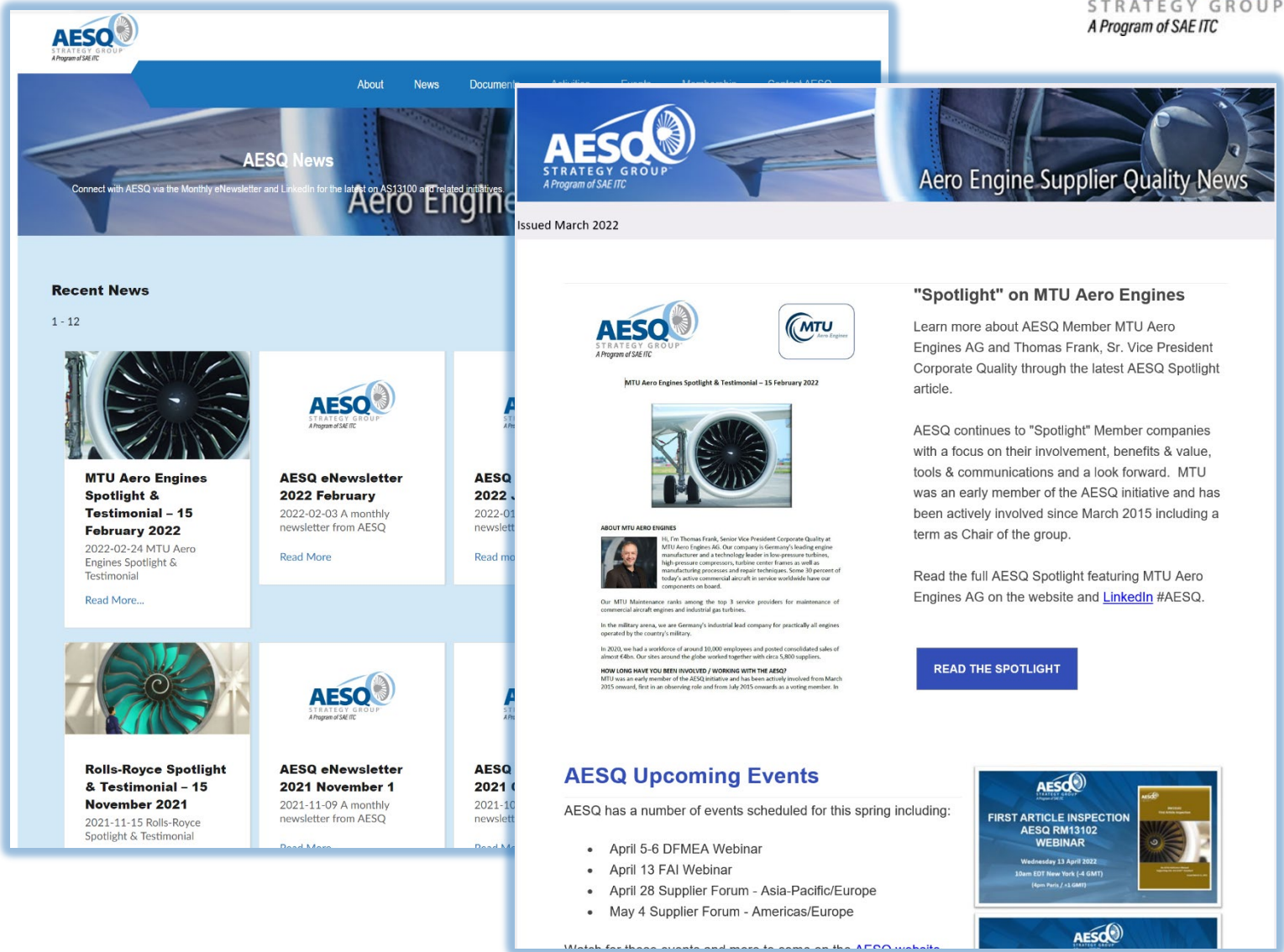
Community of Practice	Members
Problem Solving Methods	172
First Article Inspection (FAI)	132
Defect Prevention Tools	240
Design Work & Production Repair	97
Quality Audit Methods	177
Sub-Tier Management	111
Measurement Systems Analysis (MSA)	110
Human Factors	50
DPRV	91
APQP & PPA	191

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

The screenshot displays two LinkedIn group pages. The left page is for the 'AESQ Human Factors (RM13010) Community of Practice', which has 50 members. The right page is for the 'AESQ APQP & PPAP (RM13145) Community of Practice', which has 191 members. Both pages include a description of the group's purpose, a list of members, and a poll for the APQP/PPAP group. The poll asks: 'The AESQ are planning a Webinar on APQP/PPAP. Which aspect will benefit your company?' with two options: 'Creating the APQP Project Plan' (41%) and 'Cross functional team working' (41%).

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

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



The screenshot displays the AESQ website interface. At the top, there is a navigation bar with links for 'About', 'News', and 'Documents'. Below this is a header section with the AESQ logo and the text 'Aero Engine Supplier Quality News'. A prominent banner reads 'Connect with AESQ via the Monthly eNewsletter and LinkedIn for the latest on AS13100 and related initiatives'. The main content area is divided into two columns. The left column features a 'Recent News' section with a list of articles, including 'MTU Aero Engines Spotlight & Testimonial – 15 February 2022' and 'Rolls-Royce Spotlight & Testimonial – 15 November 2021'. The right column features a 'Spotlight' section on MTU Aero Engines, which includes a testimonial from Thomas Frank, Sr. Vice President of Corporate Quality at MTU Aero Engines AG. Below the spotlight is a 'Read the Spotlight' button. At the bottom of the page, there is a section for 'AESQ Upcoming Events' listing several webinars and forums for the spring of 2022.

# “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



The screenshot shows the AESQ website's "Membership Opportunities" page. The page features a navigation bar with links for About, News, Documents, Activities, Events, Membership, and Contact AESQ. Below the navigation bar is a large image of silhouettes of people in a meeting, with the text "Membership Opportunities" and "AESQ provide two levels of membership to engage with the Aero Engine supply chain." A red "Read more" button is visible. The main content area is divided into sections: "Membership Overview", "Membership Benefits & Levels", "Membership Benefits", "Membership Levels", and "Annual Membership Dues".

**Membership Overview**  
AESQ welcomes new members. AESQ membership is open to organizations that are engaged in the Aero Engine supply chain.

**Membership Benefits & Levels**

**Membership Benefits**

- Contribute to the work of the AESQ and support its working groups
- Participate in Supplier Forums for dialog on industry optional approaches for implementation of quality requirements.
- Gain visibility and recognition on AESQ's website
- Have a voice in promoting the development of voluntary consensus standards addressing aero engine supplier quality concerns benefiting your company
- Greater networking opportunities with other companies and business opportunities
- Participate in Subject Matter Interest Groups
- Join the Communities of Practice Conversations on LinkedIn

**Membership Levels**

- **AESQ Strategy Group Member** – AESQ Strategy Group Members are specified in the AESQ Charter due to their critical support resulting in the establishment of the AESQ Strategy Group.
- **AESQ Member** – AESQ Membership is open to organizations that are engaged in the Aero Engine supply chain. Member organizations are required to participate in the work of the AESQ by providing resources to support the AESQ working groups. Representatives from AESQ Member organizations shall be senior leaders from the organization or subject matter experts in a relevant area.

**Annual Membership Dues**  
Applications for AESQ Membership shall be review by the AESQ Steering Group in accordance with the AESQ Charter. Once approved, continued membership is dependent upon active participation in the working groups and payment of membership dues.

- AESQ Strategy Group Membership – \$8,000 per organization per annum
- AESQ Membership – \$1,000 per organization per annum

[Membership Application](#)

For more information, please contact [info@aesq.sae-itc.org](mailto:info@aesq.sae-itc.org).

# “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	

## AESQ – Aerospace Engine Supplier Quality Strategy Group

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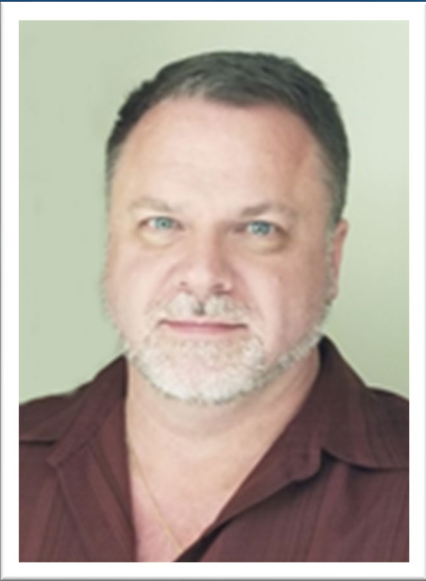


# “Get Involved” – Additional Options

- 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

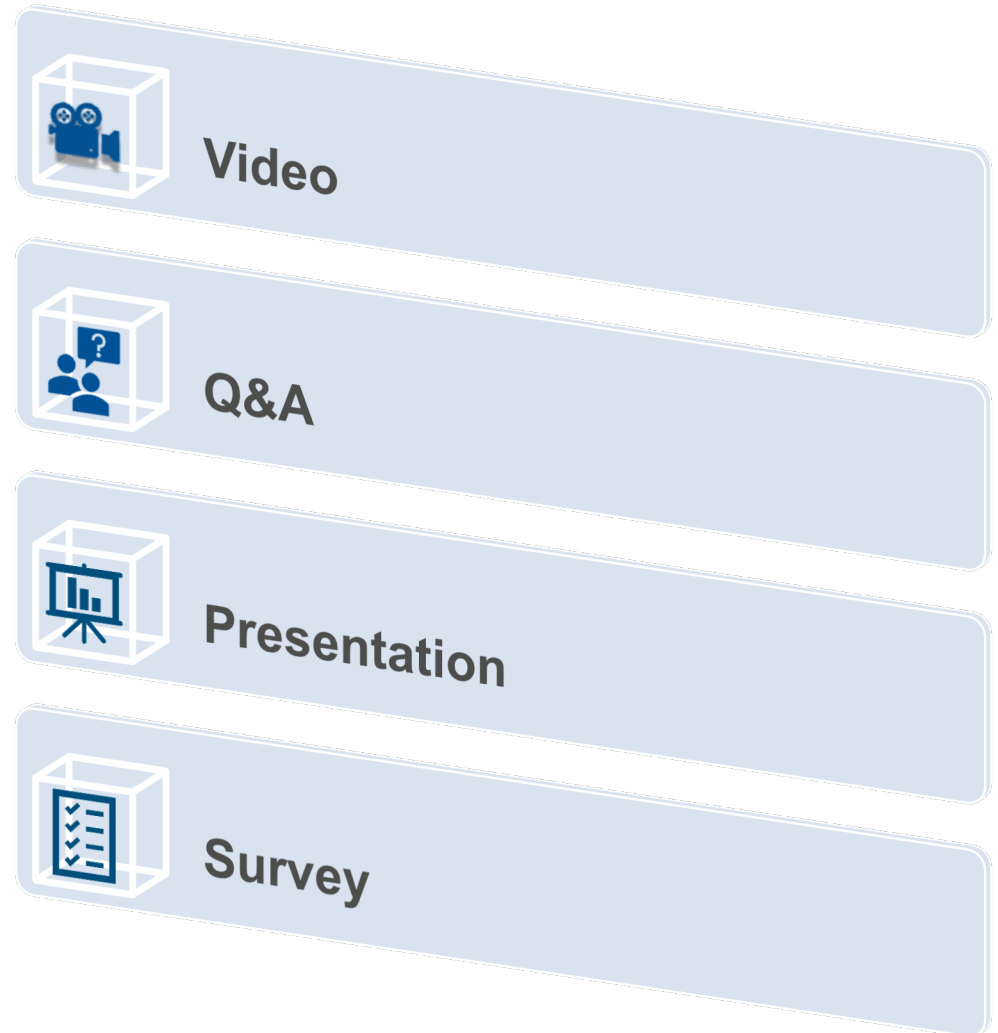


**BARBARA NEGROE**  
EXECUTIVE SOURCING QUALITY LEADER  
GE AVIATION

# 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](http://aesq.sae-itc.com)**



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**AESQ – Aerospace Engine Supplier Quality Strategy Group**

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