



AS 9101E

From the Clients perspective

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9 July 2015



SMITHERS
QUALITY ASSESSMENTS



AS 9101E Introduction for Clients

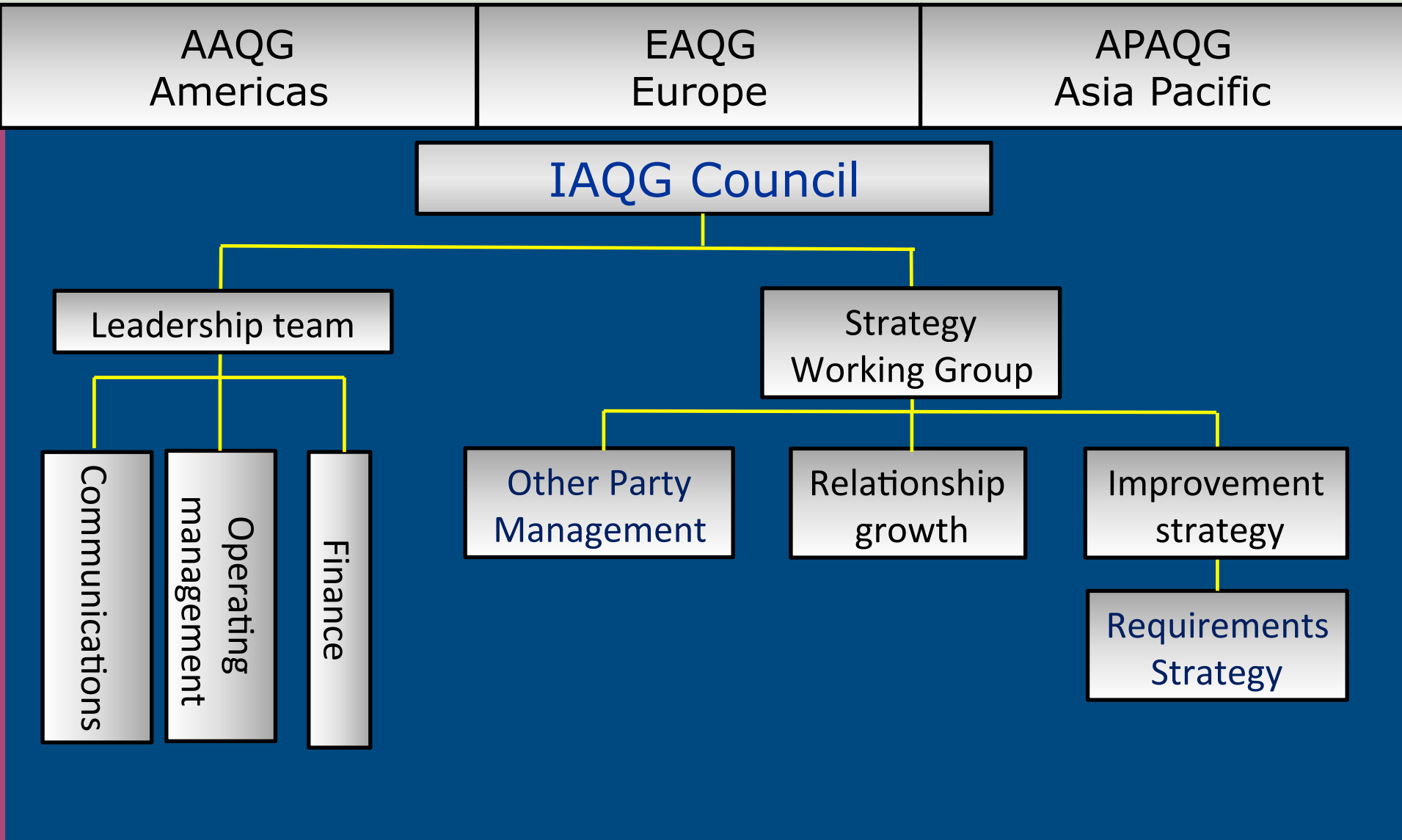
Presenter: Brian Geer

Date: July 9th 2015

Agenda

- **Background and Structure of the industry**
 - Oversight and requirements
 - Document relationships
- **What is 9101?**
 - History- How did we get here?
 - Writing team
 - Reason for change
- **Key concepts and changes**
- **Current Status**
- **Q&A**

IAQG Structure



IAQG Structure



AAQG
Americas

EAQG
Europe

APAQG
Asia Pacific

**Other Party
Management**

Industry-controlled, oversight committee chartered to manage the Industry-Controlled Other Party (ICOP) process for certification of organizations to the 9100 series of AQMS standards

The goal of the OPMT is to improve the quality level and assure QMS implementation throughout the aerospace supply chain.

Oasis

Training

Structure

Oversight

IAQG Structure



AAQG Americas Aerospace Quality Group

Registrar Management Committee (RMC)

The RMC is the Americas sector oversight body for recognition of Accreditation Bodies (ABs), Certification Bodies (CBs), Auditor Authentication Bodies (AABs), Training Provider Authentication Bodies (TPAB's), Training Providers (TP's), AQMS training courses and Aerospace Auditors

AB's
Accrediting Bodies

AAB's
Auditor Authentication
Bodies

TPAB's
Training Provider
authentication bodies

CB's
Certifying Bodies

TP's
Training Providers

Auditors

IAQG Structure and Oversight

- **The IAQG the Strategy Working Group, governs the Other Party Management Team (OPMT) and the requirements team**
- **The OPMT is charged with oversight of the third party scheme internationally**
- **Americas sector oversight is managed by the registrar management committee (RMC)**
- **In North America, Oversight of CB's is conducted by A Accrediting Bodies and industry Original Equipment Manufacturer (OEM) assessors**

IAQG Requirements Team

- **The IAQG the Strategy Working Group also governs the requirements team**
- **The requirements team is charged with overseeing the generation of requirements standards for the industry**
- **The standards include AS9100 and AS9101**

AQMS History

- **Mil-Q9858 and Mil I 45208 canceled in favor of ISO 9001**
- **ISO 9001 didn't support customer needs leading to creation of AS9000 and later international standard AS9100.**
- **The Aerospace Industry: more structure needed in third party scheme.**
- **AS9101 was created to define audit Requirements**
 - AS9101 Objective Evidence Report (OER) was born
 - AS9101D evaluation of effectiveness and OER
 - AS9101E The OER is retired to support more process based audits

IAQG Document Relationships



9104-1 Certification Scheme Rules	9104-2 Oversight Rules	9104-3 Auditor Competency Rules
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Certification
Scheme
QMS
Standards

9100
Quality Management System

9110
Maintenance

9120
Distributors

9101
Audit
Process

What is AS9101?

- **A set of requirements in addition to ISO 17021 for the conduct of third party audits in the Aerospace Space and Defense (AS&D) Industry providing:**
 - **A framework to collect objective evidence**
 - **A means of determining process effectiveness**
- **AS 9101 is not a set of requirements for organizations**

AS9101 is a document of international consensus



IAQG 9101 writing team

Industry representation

- **Rolls Royce**
- **PFW**
- **GKN Aerospace**
- **Safran**
- **Zodiac**
- **Lockheed Martin**
- **United Technologies**
- **Mitsubishi Heavy Industries**

CB representation

- **ABS Quality Evaluations**
- **Bureau Veritas Certification**
- **Det Norske Veritas**
- **Lloyd's Register Quality Assurance**



AS9101 is a document of international consensus

Reasons for change to 9101E

- **Impact of the revisions to ISO/IEC17021:2011, ISO19011:2011 and 9104/1:2012**
- **Large number of FAQ's arising from current "D" version**
- **Feedback from Aerospace Auditor Transition Training (AATT)**
- **Lessons learned from OPMT oversight of CB audit reports**
- **Stakeholder feedback**
- **Some requirements lost in appendix instructions**

Key Changes-General

- **Specific call out of ISO/IEC17021 requirements by clause number e.g.**
 - ***4.2.2.4 Audit Conduct - “The requirements of ISO17021 clauses 9.1.9.3 thru 9.1.9.5 apply. In addition, the audit shall be conducted*”**
- **Incorporation of AS9104/2:2012 requirements, including the new certification structures (single site, multiple site, several sites, campus, complex)**
- **General improvements to QMS Process Matrix, NCR and Audit Reports**

Key Changes- Forms

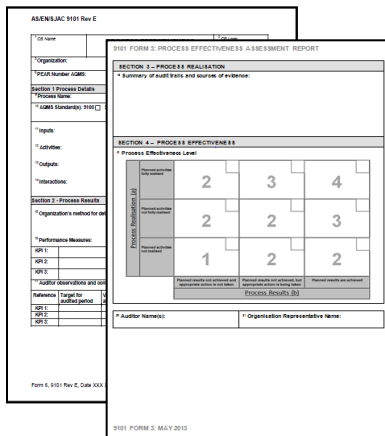
- Appendices are now referenced as Forms
 - 9101E includes an image of the forms (not intended for use)
 - URL link is referenced in order to access the forms via the IAQG website <http://www.sae.org/iaqg/>
- Improvement of Forms to aid OASIS entry requirements



<http://www.sae.org/iaqg/>

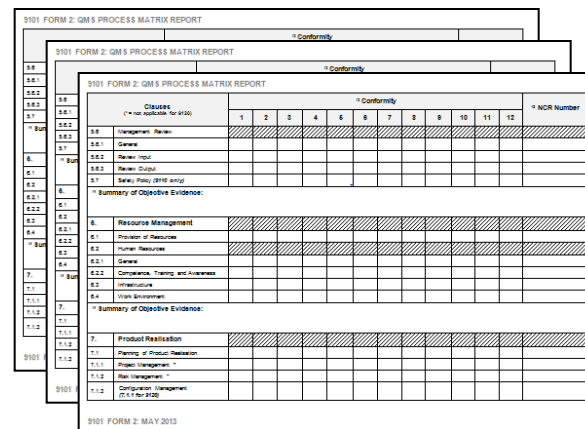
Key Changes- Objective evidence

- Principle of recording objective evidence remains, however:
 - Objective Evidence Record (OER) has been withdrawn
 - Summary objective evidence will now be captured within the new PEAR (for 9100 series clause 7) and updated QMS Process Matrix Report (for other clauses)



AS9100 Form 3: PEAR (Form 3) - Process Effectiveness Assessment Report. The form includes sections for Process Realization and Process Effectiveness. The Process Effectiveness section contains a 3x3 grid with values: 2, 3, 4 in the top row; 2, 2, 3 in the middle row; and 1, 2, 2 in the bottom row.

PEAR (Form 3)



AS9100 Form 2: QMS Process Matrix Report. The report is a table with columns for Clauses (1-12) and rows for various process categories. The 'Conformity' column is shaded, indicating compliance. The categories listed include: Management Review, General, Resource Management, Production of Product, Human Resources, General, Competence, Training, and Awareness, Infrastructure, Work Environment, Product Realization, Planning of Product Realization, Project Management, Risk Management, and Configuration Management.

QMS Process Matrix Report (Form 2)

See example next slide

Revision– Objective evidence continued...

9101 FORM 2: QMS PROCESS MATRIX REPORT

Clause (* = not applicable for #120)	Conformity												NCR Number	
	1	2	3	4	5	6	7	8	9	10	11	12		
3.0 Management Review														
3.0.1 General														
3.0.2 Review Input														
3.0.3 Review Output														
3.0.4 Review Policy (2016 only)														
* Summary of Objective Evidence:														
4.0 Resource Management														
4.0.1 Provision of Resources														
4.0.2 Human Resources														
4.0.2.1 General														
4.0.2.2 Competence, Training and Awareness														
4.0.3 Infrastructure														
4.0.4 Work Environment														
* Summary of Objective Evidence:														
7.0 Product Realisation														
7.0.1 Planning of Product Realisation														
7.0.1.1 Project Management *														
7.0.1.2 Risk Management *														
7.0.1.3 Configuration Management (CLM No-#120)														

9101 FORM 2: MAY 2013

QMS Process Matrix Report (Form 2)

9101 FORM 3: PROCESS EFFECTIVENESS ASSESSMENT REPORT

SECTION 3 – PROCESS REALISATION

* Summary of audit trails and source of evidence:

SECTION 4 – PROCESS EFFECTIVENESS

* Process Effectiveness Level

Process Evaluation (A)	2	3	4
Reported on/Not Reported			
Reported on/Not Reported	2	2	3
Reported on/Not Reported	1	2	2

9101 FORM 3: MAY 2013

PEAR (Form 3)

Summary evidence captured here

Will support report writing here

9101 FORM 5: AUDIT REPORT

AUDIT CONCLUSION 8

* Audit Summary:

* Key Issues/Concerns Requiring Top Management Attention:

* Strengths and Good Practices:

* Opportunities for Improvement:

* Previous Surveillance Audit Nonconformity Status:

NCRs Issued: (during last audit)	NCRs Closed:	NCRs Open:

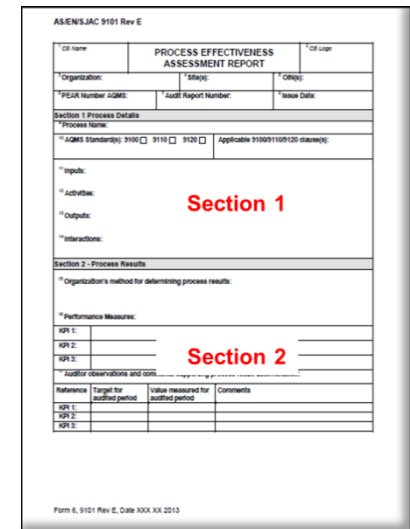
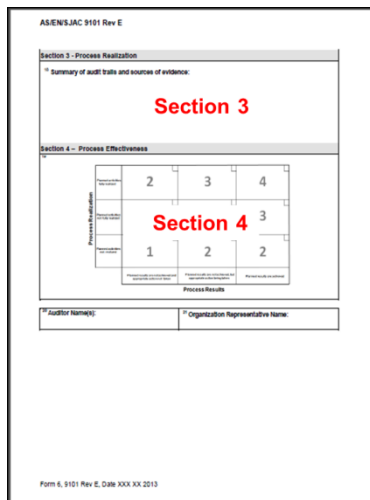
9101 FORM 5: MAY 2013

Audit Report (Form 5)

Revision – Process effectiveness

PEAR continues to be mandated for 9100 series clause 7 and is now in 4 sections

- **Section 1 - Process Details: Inputs, Activities, Outputs and Interactions**
- **Section 2 – Process Results: Identification of performance measures and targets (KPIs)**

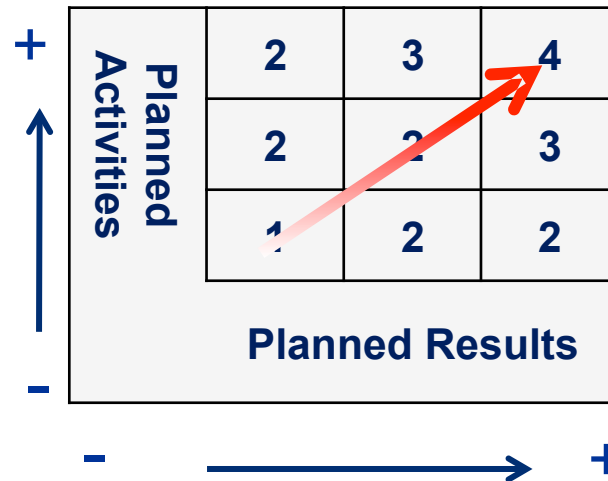





- **Section 3 - Process Realisation: Summary of audit trails and sources of evidence**
- **Section 4 – Process Effectiveness: Determined using a structured assessment matrix**

Revision – Process effectiveness continued...

- PEAR approach has been updated to reflect the ISO9000 definition of “Effectiveness”
 - Process effectiveness level is determined by the audit outcome based on:
 - » Process conformity (planned activities realised)
 - » Process performance (planned results achieved)

Auditor selects the effectiveness value using a structured Process Evaluation Matrix (PEM)



Revision – Definitions

Effectiveness?

Extent to which planned activities are realised and planned results achieved

Source: ISO9000-2005

Revision – Definitions

Planned Activities?

The means, methods, and internal requirements by which an organisation intends to achieve planned results of a given process to meet customer requirements.

Planned activities include conformity to process requirements and procedures

Source AS/EN/SJAC 9101 Rev E

Revision – Definitions

Planned Results?

The intended performance of a process, as defined and measured by the organisation.

Planned results include product conformity and OTD to meet customer requirements, and may include other elements as defined by the organisation

Source AS/EN/SJAC 9101 Rev E

Process Evaluation Matrix (PEM)

TABLE 3 – PROCESS EVALUATION MATRIX

Process Realisation (a)	Planned activities realised	The process is defined, implemented, and planned activities fully realized; however, The process is not delivering the planned results and appropriate action is not being taken.	2	a) The process is defined, implemented, and planned activities fully realized; however, b) The process is not delivering the planned results, but appropriate action is being taken.	3	a) The process is defined, implemented, and planned activities fully realized; and b) The process is delivering the planned results.
	Planned activities fully realized	The process is defined and implemented, but planned activities not fully realized; and The process is not delivering the planned results and appropriate action is not being taken.	2	a) The process is defined and implemented, but planned activities not fully realized; and b) The process is not delivering the planned results, but appropriate action is being taken.	3	a) The process is defined and implemented, but planned activities not fully realized; and b) The process is delivering the planned results.
	Planned activities not realised	The process is not defined, implemented, and planned activities not realized; and The process is not delivering the planned results and appropriate action is not being taken.	1	a) The process is not defined, implemented, and planned activities not realized; and b) The process is not delivering the planned results, but appropriate action is being taken.	2	a) The process is not defined, implemented, and planned activities not realized; however b) The process is delivering the planned results.
		Planned results not achieved, but appropriate action is being taken		Planned results not achieved, but appropriate action is being taken		Planned results are achieved

PERFORMANCE

PERFORMANCE

- Design and implement the appropriate training process to meet the effectiveness level.
- Understanding if appropriate action is being taken is key.

TABLE 3 – PROCESS EVALUATION MATRIX

P1

Process Realisation (a)	Planned activities fully realised	a) The process is defined, implemented, and planned activities fully realized; however, b) The process is not delivering the planned results and appropriate action is not being taken.	a) The process is defined, implemented, and planned activities fully realized; however, b) The process is not delivering the planned results, but appropriate action is being taken.	a) The process is defined, implemented, and planned activities fully realized; and b) The process is delivering the planned results.	2	3	4	
		Planned activities not fully realised	a) The process is defined and implemented, but planned activities not fully realized; and b) The process is not delivering the planned results and appropriate action is not being taken.	a) The process is defined and implemented, but planned activities not fully realized; and b) The process is not delivering the planned results, but appropriate action is being taken.	a) The process is defined and implemented, but planned activities not fully realized; however, b) The process is delivering the planned results.	2	2	3
	Planned activities not realised		a) The process is not defined, implemented, and planned activities not realized; and b) The process is not delivering the planned results and appropriate action is not being taken.	a) The process is not defined, implemented, and planned activities not realized; and b) The process is not delivering the planned results, but appropriate action is being taken.	a) The process is not defined, implemented, and planned activities not realized; however b) The process is delivering the planned results.	1	2	2
		Planned results not achieved and appropriate action is not taken		Planned results not achieved, but appropriate action is being taken		Planned results are achieved		
	Process Results (b)							

Summary 9101 Changes

- The OER has been withdrawn – summary objective evidence is to be recorded on the PEAR (9100 series clause 7) and the QMS Process Matrix Report (other clauses)
- PEM added to standardize and add clarity to effectiveness levels – now two dimensional (planned activities realised and planned results achieved)
- The definitions of planned activities and planned results are added to support the definition of effectiveness
- No Required AS9100 4.1c&f NCR at effectiveness level of “2”
- Forms are accessible via the IAQG website

Status AS9101

- AS9101 E was released in April 2014.
- Full implementation is required by July 2014
- Online forms are available including locked and unlocked versions
- Revision "F" is in the works
 - Driven by changes to ISO 9001, AS9100 and ISO 17021
 - Minimal changes to maintain alignment and make clarifications

Questions



Where to get more info

GO

Quality

Leadership

Communication

- Home
- SCMH
- Organization
- Membership
- Upcoming Events
- News Highlights
- Publications
- Industry
- Contact Us

IAQG Announcement

The International Aerospace Quality Group (IAQG) is very pleased to announce the legal incorporation of the IAQG as an International Not for Profit Association (INPA).

Incorporated in Belgium by a Royal Decree on December 15, 2013, the incorporation is viewed as a great step forward to enhance IAQG visibility within the Aerospace and Defence community.

9100, 9110, 9120, 9101 Published -
Click here for Deployment Support Materials

9100:2016 Series
Revision Preview

Organization

The IAQG is a cooperative global organization that brings aviation, space and defense companies together to deliver more value at all levels of the supply chain.

[Mission & Vision](#)
[Purpose & Objectives](#)
[Strategic Focus](#)

Quick Links

- [Members Only](#)
- [OASIS Database](#)
- [9100 Deployment Support Materials](#)
- [IAQG Sanctioned Aerospace Auditor Transition Training Support Material](#)
- [Supply Chain Management Handbook \(SCMH\)](#)
- [Americas Aerospace Quality Group \(AAQG\)](#)
- [Asia-Pacific Aerospace Quality Group \(APAQG\)](#)
- [European Aerospace Quality Group \(EAQG\)](#)
- [IAQG Forms](#)
- [IAQG Dictionary](#)

AS9101 E Client Perspective

28