QUALITY MANAGEMENT SYSTEM
DELIVERABLE SOFTWARE
9115 REVISION A
KEY CHANGES PRESENTATION
IAQG 9115 TEAM

May 2017
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9115 REVISION A

BACKGROUND
9100D / 9115 revision A

Background

• Reminder: AS9115 supercedes AS9006, which was published in March, 2003 as an Americas only standard
• Later Internationally adopted as 9115
• AS9115 - Software Supplement to AS9100
  – Adds specificity and granularity for compliance with the objectives of AS9100 requirements for Deliverable Software

Deliverable Software

• Developed or modified, airborne, shipborne, space borne or ground software
• Can be a stand alone deliverable software by contract line item or embedded in deliverable product
• Unmodified COTS components excluded
9100D / 9115 revision A

- **AS9115 SUPPLEMENTS AS9100**

- Clarifies 9100 requirements relative to deliverable software

http://www.sae.org/iaqg/organization/requirements.htm
AS9100 Reference to AS9115

AS9100 Section titled “Intended Application” references AS9115:

NOTE: Organizations whose products are deliverable software, or contain deliverable software, should use the IAQG-developed 9115 standard (see Bibliography) when planning and evaluating the software design, development, or management activities of the organization. The 9115 standard provides guidance to the requirements of the 9100 standard when it is desired to add “software” to the 9100 quality management system scope.
Example of standard AS9115 verbiage when AS9100 text applies with **NO** clarification needed for deliverable software

7.1.5.2 Measurement Traceability

When measurement traceability is a requirement, or is considered by

7.1.5.2 Measurement Traceability

The requirements of 9100 apply. No clarification required for software.

7.1.6 Organizational Knowledge

The requirements of 9100 apply. No clarification required for software.
Example of standard AS9115 verbiage when AS9100 text applies WITH clarification needed for deliverable software

7.2 Competence

The organization shall:

The requirements of 9100 apply with the following clarification for software.

Software practitioners (e.g., Engineering, Quality, Testers) shall be qualified.
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REASONS FOR REVISION
9100D / 9115 revision A
ISO 9001 / 9100 core reasons for change

• Adapt to a changing world
• Enhance an organization's ability to satisfy its customers
• Provide a consistent foundation for the future
• Reflect the increasingly complex environments in which organizations operate
• Ensure the new standard reflects the needs of all interested parties
• Integrate with other management systems
9100D / 9115 revision A
The “9100” needs to change, to:

• Incorporate changes made by ISO TC176 to the ISO 9001:2015 requirements
  (ISO liaison organized to collaborate with the IAQG 9100 team and to obtain consideration for IAQG requirements)

• Consider Aviation, Space and Defense stakeholders’ needs identified since the last revision
  (web survey performed in 2013)

• Consider clarifications to 9100 series requests issued by IAQG since the last revision
  (requirements clarified or notes added)
9100D / 9115 revision A
Why “9115” needed to change:

- AS9100 changed to align with ISO 9001:2015
- Respond to changes in software development methods
- Consider threat profiles to Aviation, Space and Defense software systems – adds themes of cybersecurity
- Advances in tools, simulations and testing capabilities
- Recognize the expanded scales of software impact such as cloud based services, mobile apps, small embedded web based servers and networked appliances
- Ensure mitigation of potential quality concerns are met for software
- Disposition the collection of feedback related to 9115 since 2010
9100 REVISION D / 9115 REVISION A
HIGH LEVEL STRUCTURE
9100 revision D
High Level Structure (from ISO 9001)

High Level Structure

- ISO is going from 8 clauses to 10 clauses

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Rationale

- Better alignment to business strategic direction
- With PDCA approach
- More compatible with other management system standards

Implementation Considerations

- Review your current QMS structure  
  (preferable to adapt the QMS structure to the Business Processes)
**Plan**

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**High Level Structure (from ISO 9001)**

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KEY CHANGES
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High quality software is not enough

- In the past, software had to meet functional and safety requirements

- This alone is no longer adequate

- Now, software and it’s environment must also be SECURE – Information Assurance

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Understanding: Information Assurance, Information Security and Cybersecurity

*Information Assurance* as defined in AS9115:

“The set of activities needed to protect information and information systems by ensuring availability, integrity, authentication, confidentiality, and non-repudiation including protection, detection, and reaction capabilities. This includes activities conducted to reduce vulnerability of operational networks, Information Technology (IT), and computing equipment. Activities may include development of innovative and cost-effective ways to mitigate those vulnerabilities. IA may include actions to provide assured access, and transparent identification and authentication across the network or within systems of systems.”

Source: [IAQG International Dictionary](https://www.iaqg.org/standards/9115/)

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Significant addition to 9115 standard:
Enhanced cybersecurity requirements
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Cybersecurity derived themes

- Culture of Security
- Technical Security
- Software Life Cycle Security
- Supply Chain Security
- Internal Audit of Cyber Security
- Notification, Response, and Recovery

NIST Cybersecurity Framework (NIST 800-53)
9115 revision A

- 1.0 – Scope: provides inclusion of mobile applications, and services (e.g. cloud environment, web hosted solutions or platforms)

- 3.0 – Terms and Definitions:
  - Information Assurance – new definition
  - Interested Parties – replaces Stakeholder
  - Non-developmental Software – added Government off-the Shelf (GOTS) software to definition
  - Software Life Cycle – slight definition revision to provide clarity
  - Support Software – slight definition revision to provide clarity
  - Validation – slight definition revision to provide clarity
  - Verification – slight definition revision to provide clarity
9115 revision A

Note: this is the most impactful IA requirement added

• 4.0 – Context of the Organization:
  – Requirement for Organizations to include the appropriate Information Assurance elements when determining the scope of the organization’s QMS.
  – See the IAQG Supply Chain Management Handbook (SCMH) for further information.
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- 6.0 – Planning:
  - Adds software services to the list of considerations for Risk Management
  - This should include external providers, when appropriate

- 7.0 – Support:
  - 7.1.3 and 7.1.4: Focuses on information assurance considerations in infrastructure
  - 7.2: Ensures competence appropriate for the criticality and complexity to support customer and system requirements
  - 7.5.3: Requires resource retention to access legacy data
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- 8.0 – Operation:
  - Software planning addresses software related activities from project planning through product delivery and maintenance
  - Quality objectives and requirements expressed in measurable terms, including critical items and key characteristics
  - Defined rules, practices, conventions, techniques, and methodologies for development and test
  - Strong software configuration management guidance
  - Focus on product integrity and safety
  - Prevention of counterfeit software (8.1.4)
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- 9.0 – Performance Evaluation:
  - Software organizations analyze and evaluate industry data on emerging threats and vulnerabilities
  - Internal audits include software aspects of the QMS

Support materials on 9115 and software QMS:

IAQG Supply Chain Management Handbook
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Questions?

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