

Industry Game Changers: SAE G-19 Standards Updates

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Agenda

- G-19 Committee Evolution
- Document Roadmap since AS5553
- G-19 Document Updates and Features
- Certification
- Summary

SAE G-19 Committee

- September 2007 - G-19 Chartered
 - Develop standard(s) suitable for use in aeronautic, space, defense, civil and commercial electronic equipment applications to mitigate the risks of counterfeit electronic components... will document recognized best practices in component management, supplier management, procurement, inspection, test/evaluation methods and response strategies when suspect or confirmed counterfeit components are detected
- November 2008 - NASA adopts AS5553 with update to NPD 8730.2C, NASA Parts Policy
- April 2009 - SAE International released aerospace standard AS5553, Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition
- August 2009 - DoD adopts AS5553

Government Members

- AMCCC Business Operations - Headquarters US Army Materiel Command
- DCMA: Defense Contract Management Agency
- DLA: Defense Logistics Agency
- DOE: Department of Energy
- DOE NNSA: National Nuclear Security Administration
- FAA: Federal Aviation Administration
- GIDEP: Government-Industry Data Exchange Program
- IARPA: Intelligence Advanced Research Projects Activity
- Institute for Defense Analyses
- JPL: Jet Propulsion Laboratory
- Ministry of Defence UK
- MDA: Missile Defense Agency
- NASA: National Aeronautic and Space Administration
- NAWC: Naval Air Warfare Center
- NSWC: Naval Surface Warfare Center
- NAVSEA
- Sandia National Laboratories
- SUBMEPP: Submarine Maintenance Engineering, Planning and Procurement Activity Department of Navy
- The Aerospace Corporation
- AMRDEC: U. S. Army Aviation and Missile Research Development and Engineering Center
- US Army
- US Army Aviation & Missile Command
- US Army TARDEC
- DOT: US Department of Transportation
- US Navy

Note: Members function as individuals intending to represent the best interests of the industry, and not as agents or representatives of any organization with which they may be associated

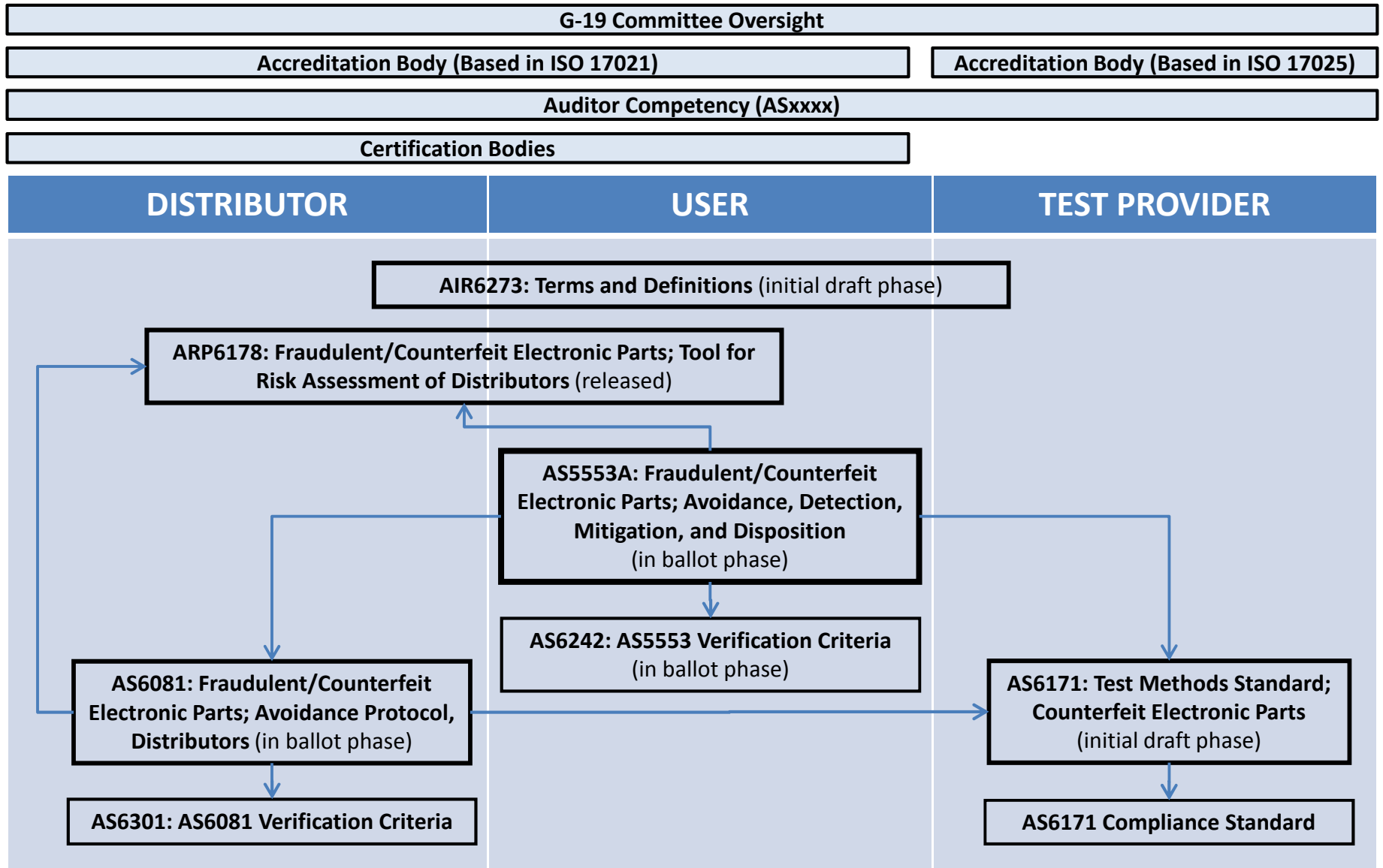
Industry/Industry Association Members

3M	Creative Electron Inc	Honeywell Technology Solutions Inc	Process Sciences Inc.
AAL/Brand Protection and IP Consultants	Crestwood Technology Group	Honeywell Transportation & Power Systems	PV Tron
Adaptive Management Solutions	Da-Tech Corporation	IC Source Inc	Raytheon Co
Aero Engine Controls Ltd	Derf Electronics Corporation	IEC Electronics Corp	Rochester Electronics Ltd
Aerospace Corp	DNV	Impact Components	Schlumberger Technology Corp.
Aerospace Industries Association	DPA Components International	IDEA	Selex Galileo
American Electronic Resource Inc	Dynamic Research & Testing Labs	Infinion Technologies AG	Silicon Cert Laboratories
ANAB-AClass-FQS	EIA Standards and Technology Elect. Comp	Innovative Surface Analysis Inc	Smith & Associates
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Astute Electronics Limited	Focal Spot Inc	Lansdale Semiconductor Inc	SRI International
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BAE Systems (Operations) Limited	General Dynamics AIS	Lockheed Martin Aeronautics Co	Thales
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Boeing Research & Technology	Goodrich Power Systems	Mouser Electronics Inc	TWI NDT Validation Centre
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Business & Quality Process Management BQPM	Hi-Rel Laboratories Inc	Nisene Technology Group Inc	UL DQS Inc
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Component Trends	Honeywell Aerospace Electronic Systems	Performance Review Institute	World Data Products
Covisus A ChromoLogic Company	Honeywell Inc	Plexus Corp	World Micro Inc
	Honeywell International Inc	Premier Semiconductor Services LLC	Wyle Laboratories Inc

G-19 Subcommittees



Document Roadmap since AS5553

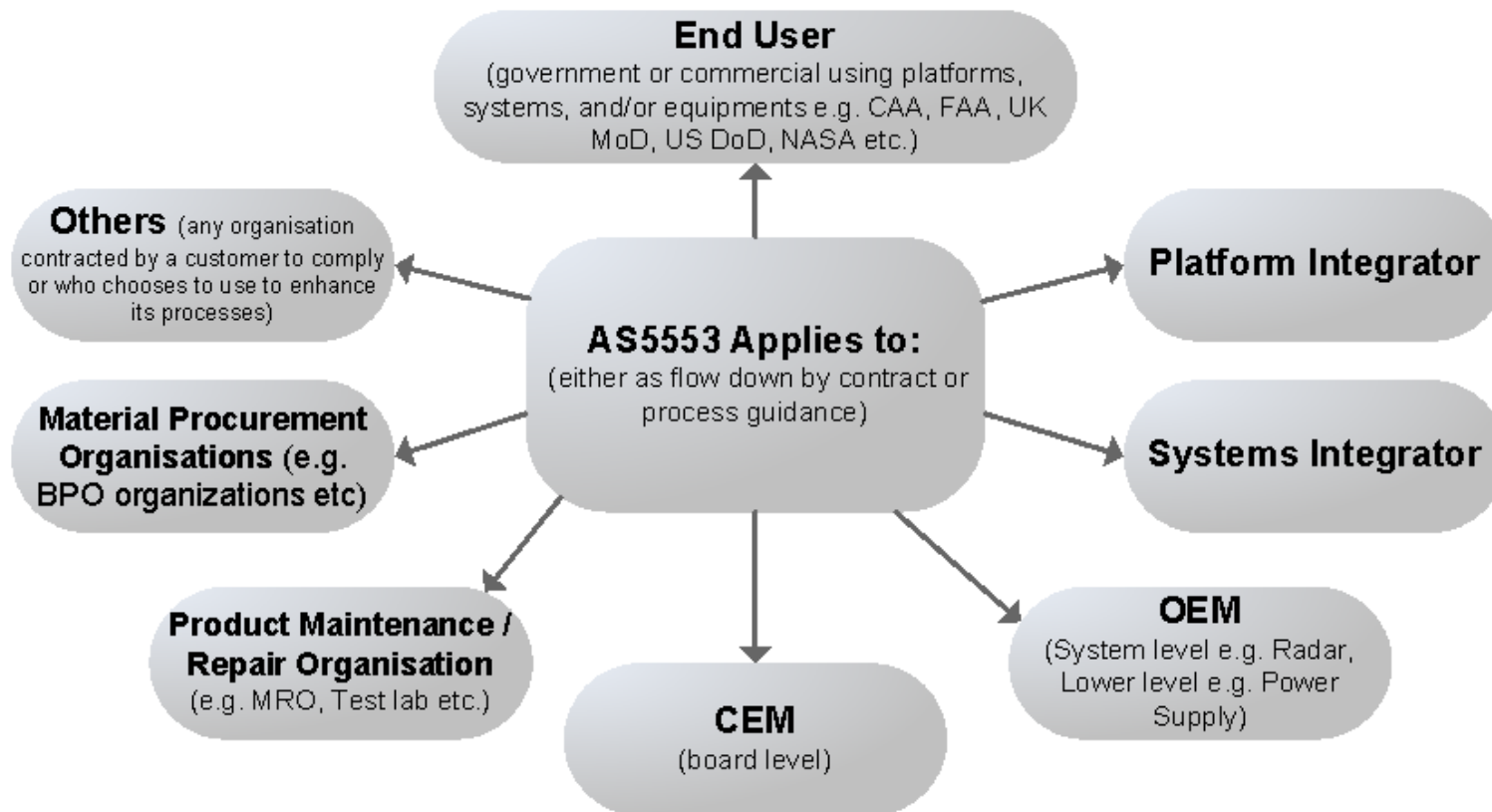


AS5553 Revision A

- Worked by the G-19 Continuous Improvement (G-19 CI) Subcommittee, Chaired by G-19 member in the UK
- Majority of members from OEM/Aerospace/Defense/Hi-Rel community and seeking same type of members from other countries
- Primary tasks are to integrate updated content and add global references

AS5553A Change Highlights - Application

Added diagram to illustrate to whom AS5553 applies in an Aerospace supply chain landscape. It is not exhaustive or intended to replicate other industries.



AS5553A Change Highlights – Suspect/Fraudulent/Counterfeit Definitions

Suspect Part: A part in which there is an indication that it may have been misrepresented by the supplier or manufacturer and may meet the definition of fraudulent part or counterfeit part provided below.

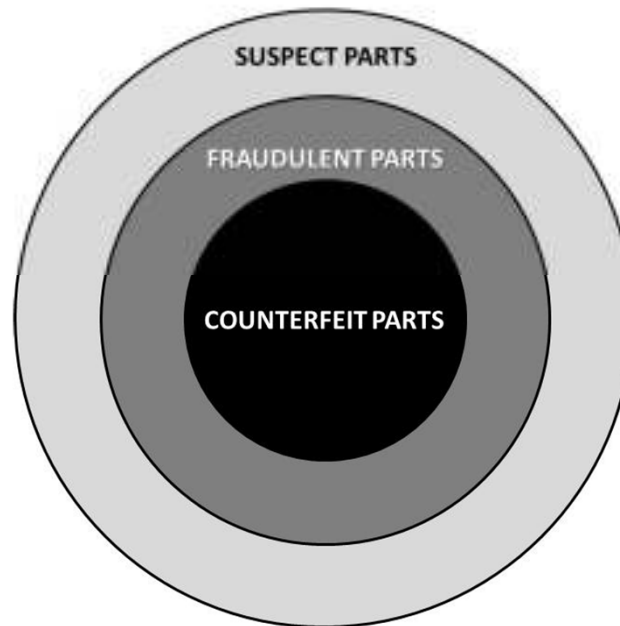
Fraudulent Part: Any suspect part misrepresented to the customer as meeting the customer's requirements.

Counterfeit Part: A fraudulent part that has been confirmed to be a copy, imitation or substitute that has been represented, identified, or marked as genuine, and/or altered by a source without legal right with intent to mislead, deceive or defraud

AS5553A Change Highlights – Suspect/Fraudulent/Counterfeit Definitions

NOTE: The following diagram (Figure 1) depicts the above interrelationship between Suspect, Fraudulent and Counterfeit Parts. A Suspect Part may be determined to be, fraudulent or counterfeit through further evaluation and testing. All counterfeit parts are fraudulent, but not all fraudulent parts are counterfeit.

FIGURE 1. INTERRELATIONSHIP BETWEEN SUSPECT, FRAUDULENT AND COUNTERFEIT PARTS



AS5553A Change Highlights – Requirements

Added Personnel Training Requirement

- Relevant personnel, including management of programs, projects, procurement, quality assurance, inspection, receiving, manufacturing and engineering activities shall be trained as appropriate to their function, in the awareness, avoidance, detection, mitigation and disposition of suspect/fraudulent/counterfeit parts.

Added Customer-Identified Suspect Fraudulent/Counterfeit Part

- The documented process shall describe how customer-identified suspect fraudulent/counterfeit electronic parts/assemblies are managed.

Modified the Reporting Requirement

- The documented processes shall assure that all occurrences of suspect or confirmed fraudulent/counterfeit parts are reported, as appropriate, to internal organizations, customers, government reporting organizations, industry supported reporting programs, and criminal authorities having jurisdiction. Guidance: Appendix G.

AS5553A Change Highlights – Enhanced Purchasing Information Requirements

The documented process shall specify contract/purchase order requirements to minimize the risk of being provided fraudulent/counterfeit parts and at a minimum require:

- Supply chain traceability to the OCM or aftermarket manufacturer that **identifies the name and location of all of the supply chain intermediaries** from the part manufacturer to the direct source of the product for the seller. If this supply chain traceability is unavailable or the documentation is suspected of being falsified, a documented risk assessment is required.
- Specify flow down of applicable requirements of this document to applicable contractors and their sub-contractors. In the event that one or more supply chain intermediaries do not have a fraudulent/counterfeit part control plan compliant to this document, a risk analysis shall be required for every application of the part.

ARP6178 - Tool for Distributor Risk Assessment

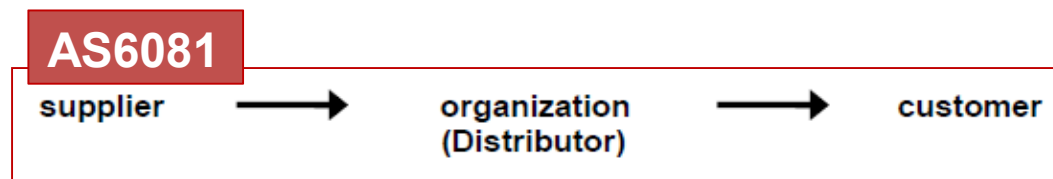
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Section	Question	Comments/Guidance	Recommended Rating (Examples Provided)			
			0	1	2	3
6.8	Will you provide a listing of suppliers you have disapproved due to quality concerns?	This is <u>not</u> ratable. However, all distributors should maintain a listing of companies that are considered too risky to buy product from.				
6.9	If you must buy from a high-risk source (geographical region or questionable history), what additional steps do you take to minimize the risk of obtaining fraudulent/counterfeit product?	Distributors note that authentic product can be found in high-risk areas. Special precautions should be taken to reduce the risk.	No additional steps are taken to authenticate product.	Product undergoes rigorous visual inspection.	Product undergoes rigorous visual inspection and test and the customer is notified.	Product undergoes rigorous visual inspection and test. The customer is required to give written approval to shipment.
7.0 Handling and Facilities						
7.1	Are all handling/storage areas compliant or certified to ANQ/ESD S20.20? State which, and provide a copy of the certification.	Certification to ANQ/ESD S20.20 ensures that processes are in place to minimize the risk of damaging product through electrostatic discharge. This applies to all handling, packaging, and storage areas where parts may be exposed to electrostatic charging.	No.	Compliant to ANQ/ESD S20.20 or equivalent standard (not certified).	Certified to ANQ/ESD S20.20 or equivalent standard, but not an ANAB or ANAB equivalent International Accredited Agency.	Certified to ANQ/ESD S20.20 or equivalent standard (ANAB or ANAB equivalent International Accredited Agency).
7.2	Are your component inspection and handling areas temperature and humidity controlled? To what levels?	Many components are sensitive to moisture. An air-conditioned facility keeps the risk of moisture contamination low.	No control, ambient.	Room temperature kept in same environment as offices.	Temperature and humidity controlled, but without monitoring.	Temperature and humidity controlled, with both parameters monitored.
7.3	Is your component storage area temperature controlled? To what levels?	Many components are sensitive to moisture. An air-conditioned facility keeps the risk of moisture contamination low.	No control, ambient.		Room temperature kept in same environment as offices.	Continuously monitored. Storage location has its own air conditioning controls.

- Intended for use by organizations that procure electronic components from suppliers other than the original component manufacturer (OCM)
- Provides organizations with a tool to assess a supplier's capability to prevent, detect, contain and report suspect or confirmed counterfeit electronic components
- Not intended to replace certification compliance criteria

AS6081 - Counterfeit Electronic Parts; Avoidance Protocol, Distributors

- Similar to AS5553, but contains prescriptive counterfeit parts avoidance requirements intended for distributors that purchase from the open market
- OEMs can specify their suppliers comply with AS6081 to meet selected flow-down requirements of AS5553
- AS6081 requirements are intended to be applied/flowed down to distributor's suppliers
- Independent, third-party certification bodies (CBs) verify of compliance to AS6081



AS6081 Highlights

Added note to the definition of Fraudulent Part:

“Previously used parts, not altered, but represented as new” is a subset of all potential “Fraudulent Parts”. In addition to counterfeit parts, this document addresses only this particular category of Fraudulent Part.

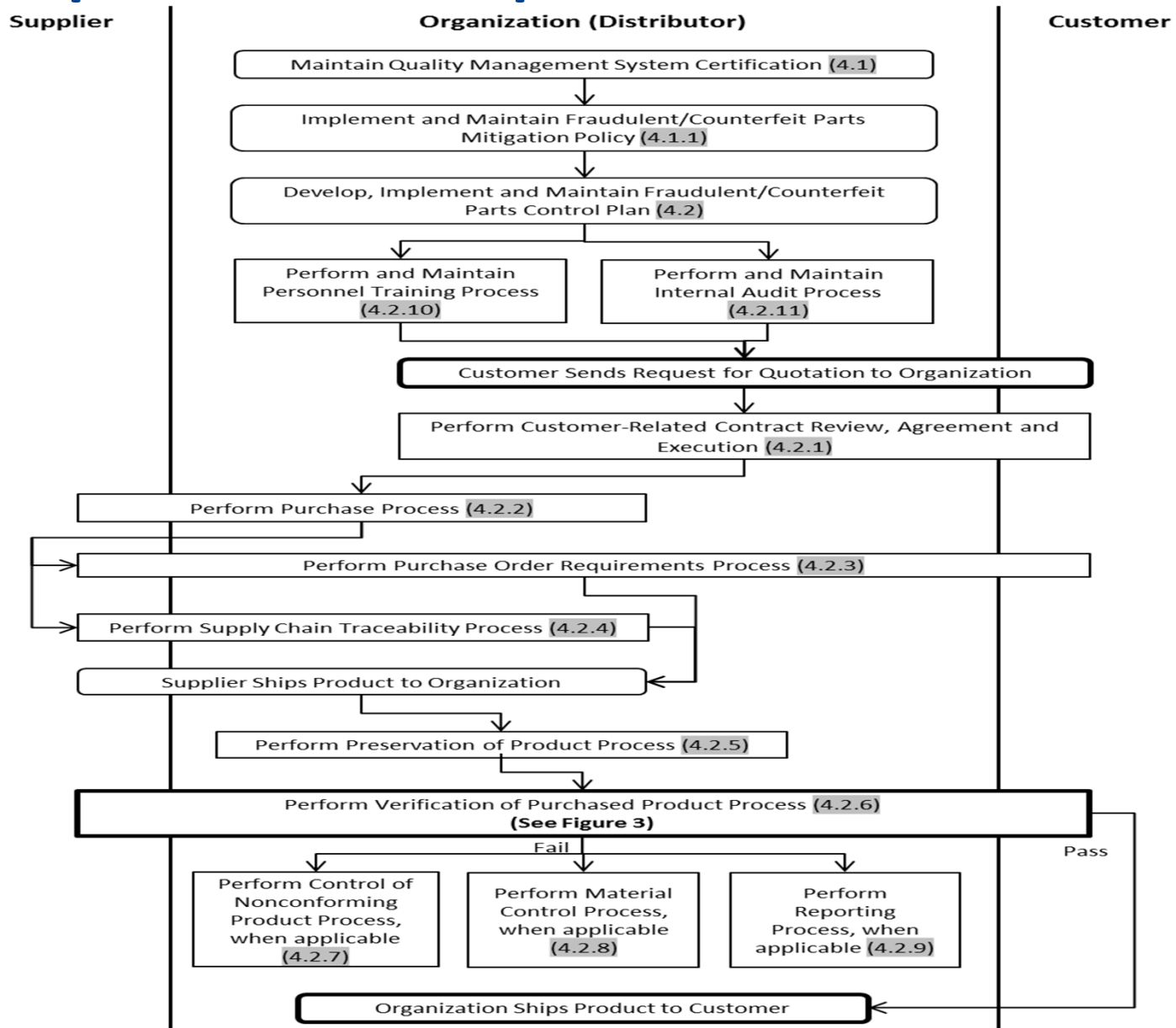
AS6081 Highlights – Contract/Purchasing Requirements

- The Organization shall disclose in writing at the time of each individual quotation, the source of supply (by company name and location), if the Organization is or is not authorized (franchised) for the item(s) being quoted and is or is not providing full manufacturer's warranty on the quoted material.
- When the Organization has quoted parts to the Customer as having been sourced from Authorized Distribution, Organization shall require Suppliers to disclose at the time of each individual quotation, objective evidence that the Supplier is authorized (franchised) for the item(s) being quoted and is or is not providing full manufacturer's warranty on the quoted material.

AS6081 Highlights – Contract/Purchasing Requirements

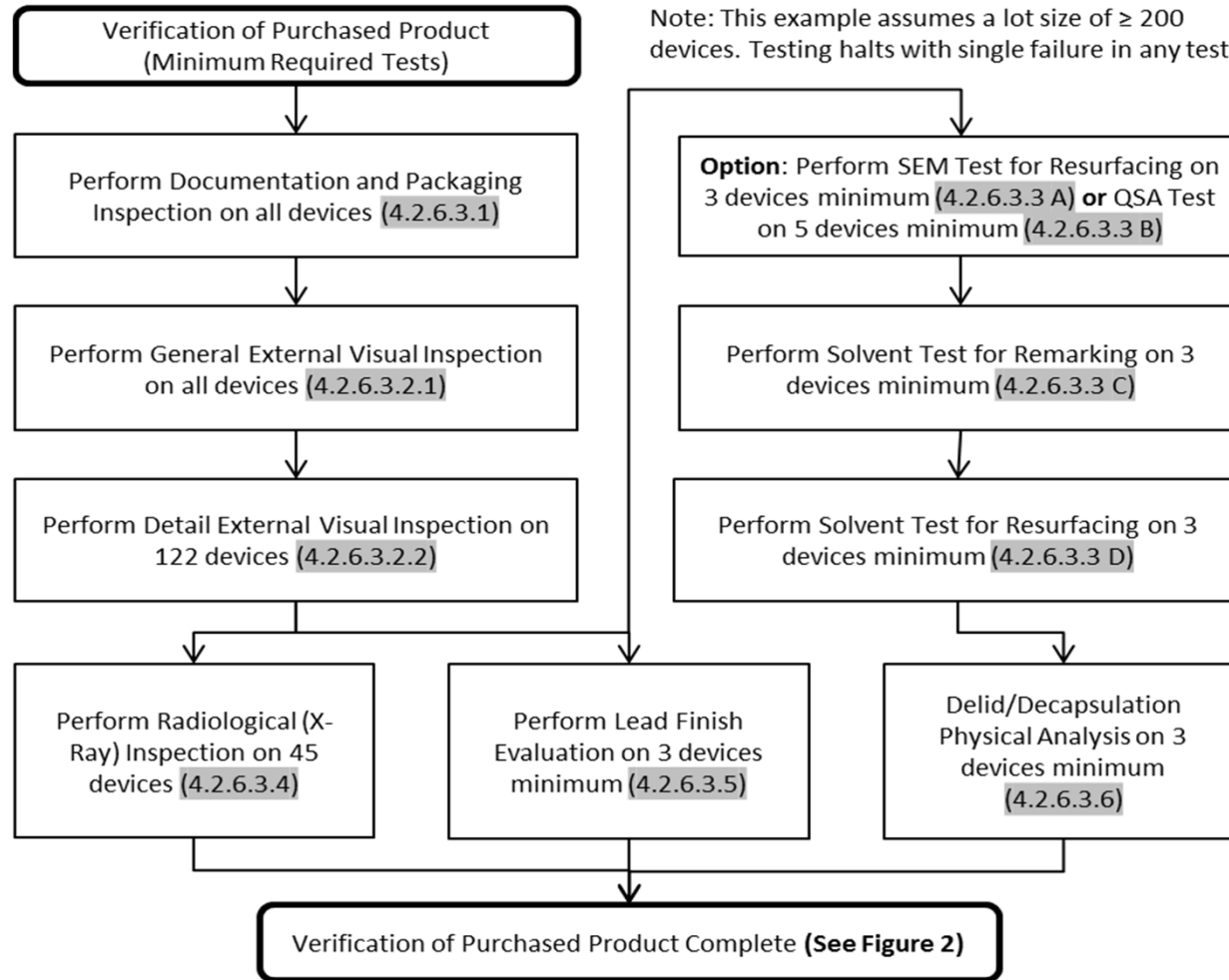
- The Organization shall **issue a revised written quotation to the Customer, if at any time the source of supply changes** (i.e., at the time of initial quote, parts were being procured from an authorized source, but said parts subsequently became unavailable and as a result, the Organization had to procure the material from an alternate source).
- **Require Suppliers to issue a revised written quotation, if at any time the source of supply changes** (i.e., at the time of initial quote, parts were being procured from an authorized source, but said parts subsequently became unavailable and as a result, the Supplier had to procure the material from an alternate source)

Sample AS6081 Requirements Process Flow



Sample AS6081 Requirements Process Flow

Figure 3. VERIFICATION OF PURCHASED PRODUCT



AS6171 - Test Methods Standard

- Standardize practices to detect suspect counterfeit electronic parts and to ensure consistency of test techniques and requirements across the supply-chain
- Includes external visual inspection, radiological inspection, x-ray fluorescence, tests for remarking and resurfacing, delid physical analysis, electrical tests, acoustic microscopy, optical/SEM inspection, FTIR/DSC/TMA testing and miscellaneous testing
- Level of testing is risk-based and includes sampling plans
- Accreditation of the Test Laboratory will be through ACLASS to ensure the impartiality and competence of the Test Lab

AIR6273 Terms and Definitions

Approved Supplier

Refurbished

Counterfeit Part

Authority Having Jurisdiction

Suspect Part

Upscreened

Aftermarket Manufacturer



Fraudulent Part

Refinished

Stocking Distributor

Homogeneous Lot

Franchised Distributor

Broker Distributor

Up-rated

Independent Distributor

Authorized Supplier

AS6462: AS5553 Verification Criteria and AS6301: AS6081 Verification Criteria

- Criteria will be utilized by accredited Certification Bodies (CBs) to establish compliance and grant certification to AS5553 and AS6081
- Currently working with ANAB, IECQ and SAE for the management system standards compliance planning process

Why Certification?

- Purpose of Certification is to provide confidence to all parties that a management system fulfills specified requirements
- The value of certification is the degree of public confidence and trust that is established by an impartial and competent assessment by a third-party
- Parties that have an interest in certification include, but are not limited to:
 - the clients of the certification bodies,
 - the customers of the organizations whose management systems are certified,
 - government authorities,
 - non-government organizations, and
 - consumers and other members of the public.

Third-party Certification Audit

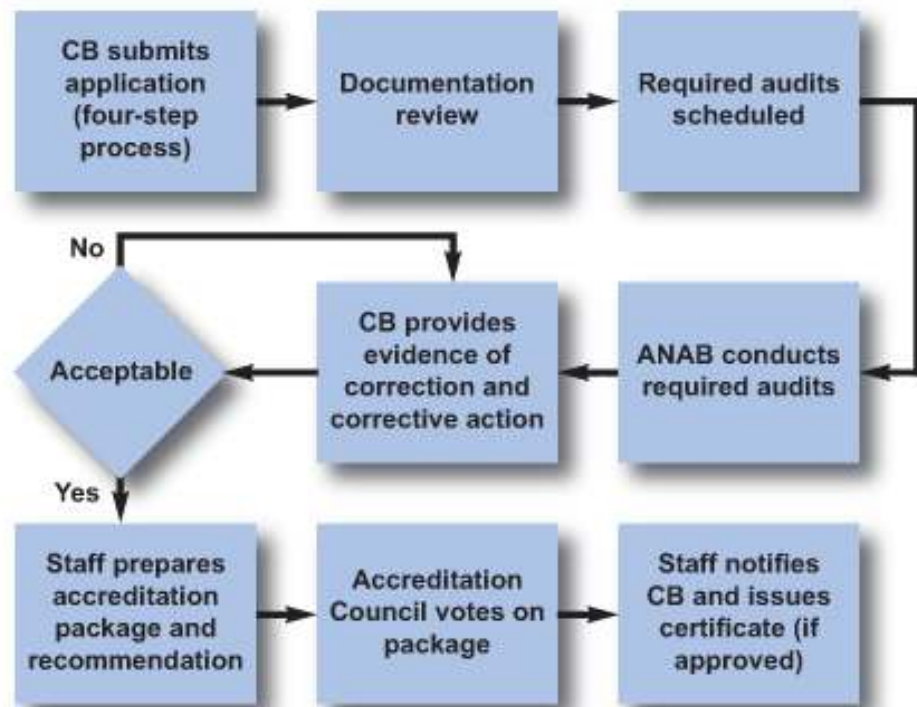
- Audit carried out by an auditing organization independent of the client and the user, for the purpose of certifying the client's management system
- Includes initial, surveillance, re-certification audits, and can also include special audits
- Are typically conducted by audit teams of those bodies providing certification of conformity to the requirements of management system standards
- Combined audit - when a client is audited against the requirements of two or more management systems standards together
- Integrated audit - when a client has integrated the application of requirements of two or more management systems standards into a single management system and is being audited against more than one standard

ANAB Accreditation in General

ANAB assesses and accredits certification bodies (CBs) that demonstrate competence to audit and certify organizations conforming with management systems standards. Accreditation by a recognized and respected body such as ANAB ensures the impartiality and competence of the CB and fosters confidence and acceptance of the CB's certifications by end users in the public and private sectors.

Courtesy of <http://www.anab.org/accreditation.aspx>

Accreditation Process



ANAB, ANSI-ASQ National Accreditation Board

- **ANAB** assesses and accredits certification bodies that demonstrate competence to audit and certify organizations conforming to management systems standards.
- **ACLASS** provides accreditation for ISO/IEC 17025 testing and calibration laboratories, ISO/IEC 17020 inspection bodies, ISO Guide 34 reference material producers, ISO/IEC 17043 proficiency testing providers, and numerous industry-specific programs.
- **ANAB FQS**, formerly Forensic Quality Services, provides conformity assessment services to include accreditation of forensic testing agencies to ISO/IEC 17025.

Summary

- The SAE G-19 Committee is addressing the global counterfeit electronic components threat through a set of international standards that establishes risk-based methods, practices and requirements for the supply chain
- No one practice, combination of practices, standard or certification to that standard's requirements will prevent fraudulent/counterfeit parts from the entering the supply chain, but the G-19 series of documents provide a vehicle for specific elements of the supply chain to work together to minimize that risk
- Independent 3rd party accredited certification to AS5553 and AS6081 will be required to provide confidence that the organization's management system fulfills specified requirements

Thank you!

Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition

SAE International

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STANDARDS

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Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition

Product Code: AS5553
Date Published: 2009-04-02

Issuing Committee:
G-19(c) Continuous Improvement

Scope
This document is intended for use in aviation performance/reliability etc. use by all contracting use by all contracting procured directly or this standard are gen procure electronic pa

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