



Research & Technology

Boeing Parts Management Requirements

PSMC Meeting
Oct 25, 2010

Background

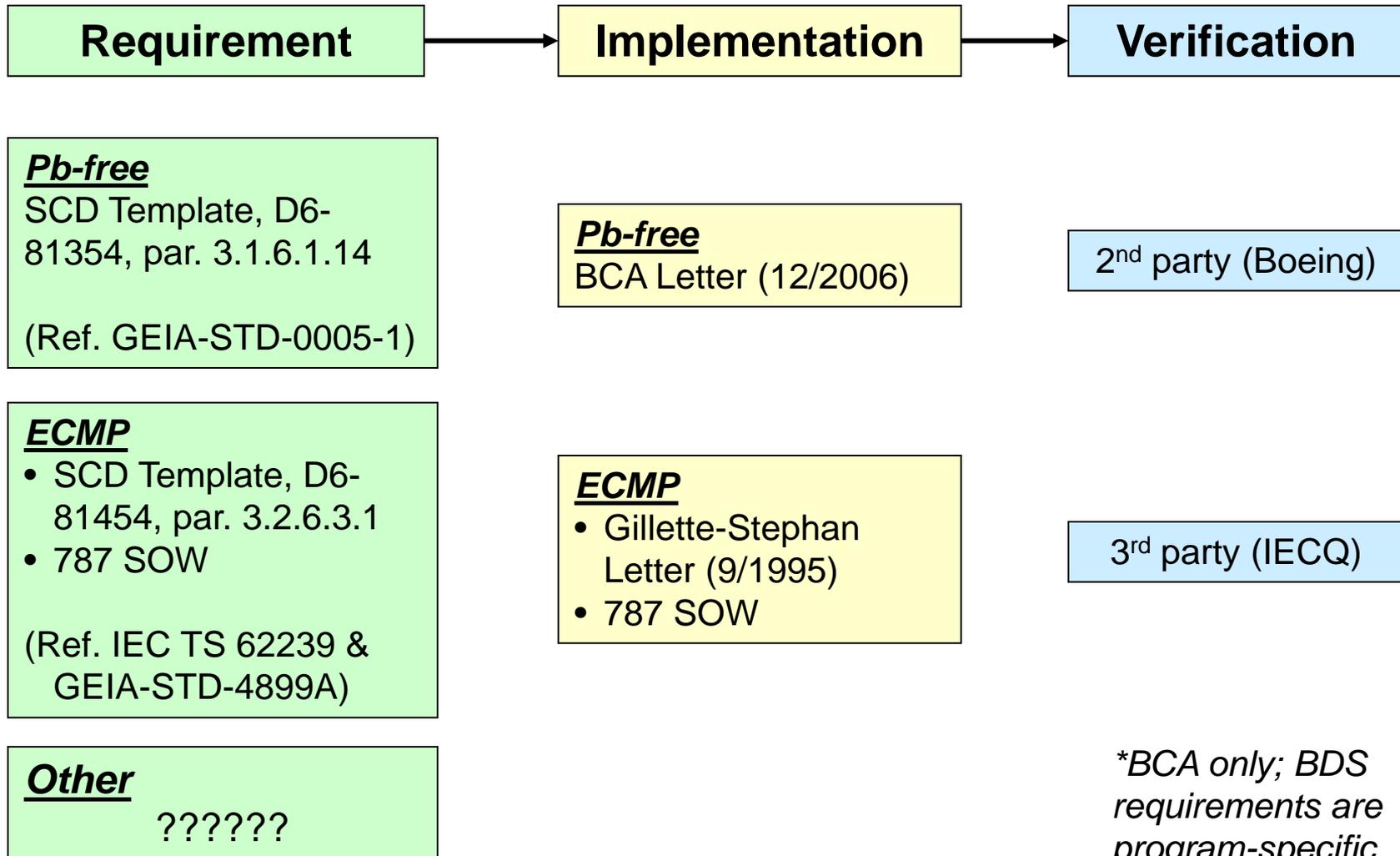
Q: How can Boeing minimize the risks of implementing technologies that are not yet proven for aerospace applications?

A: (Paraphrased from Boeing legal)

- **Access the best technical information available**
 - Boeing and non-Boeing resources
 - Universities, research consortia, etc.
- **Work with the aerospace industry to develop consensus methods, processes, requirements, etc.**
 - Suppliers, customers, competitors, government, etc.
 - Leverage technical input to solutions
 - Requirements agreed upon
- **Use industry consensus organizations to avoid anti-trust issues**
 - AIA, SAE, TechAmerica, IEC, VITA, ANSI, etc. publish standards, etc.
 - No proprietary, export controlled, ITAR, etc., information exchanged
 - Non-competitive activities, open to all

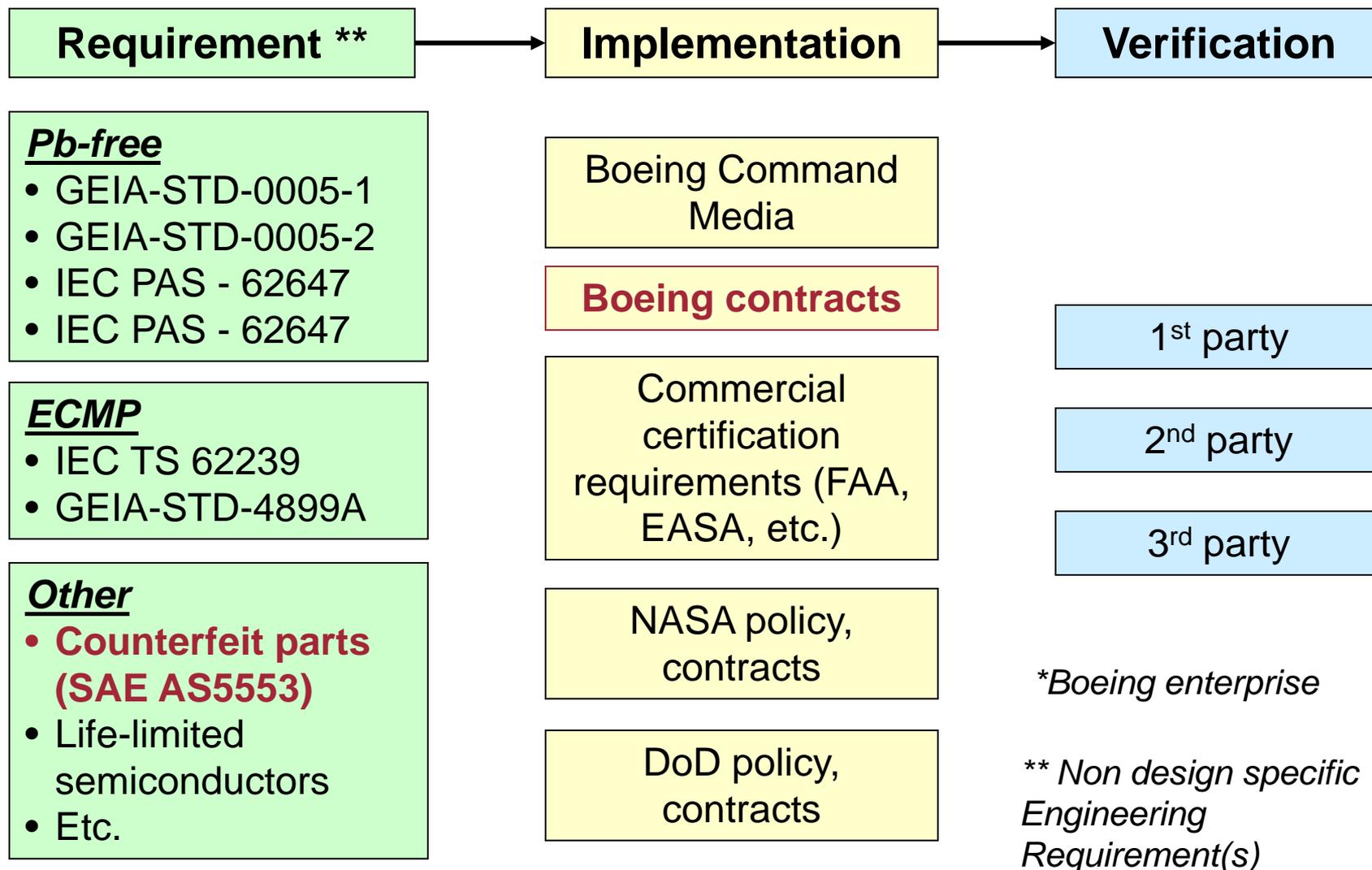
Also conducted a
CALCE “legal” project
(U of MD law school)

Current Boeing Requirements*



*BCA only; BDS requirements are program-specific

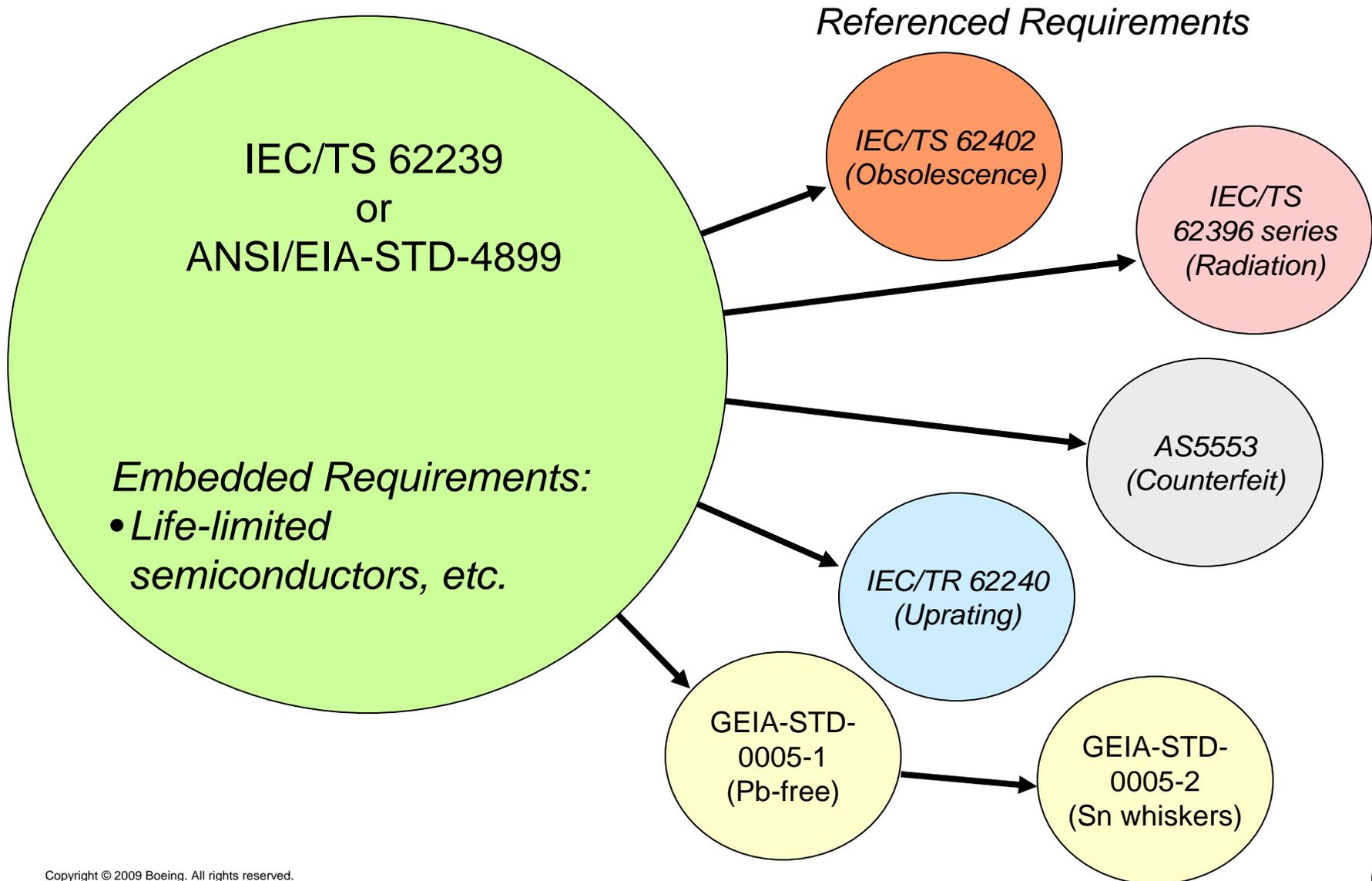
Proposed Boeing Requirements*



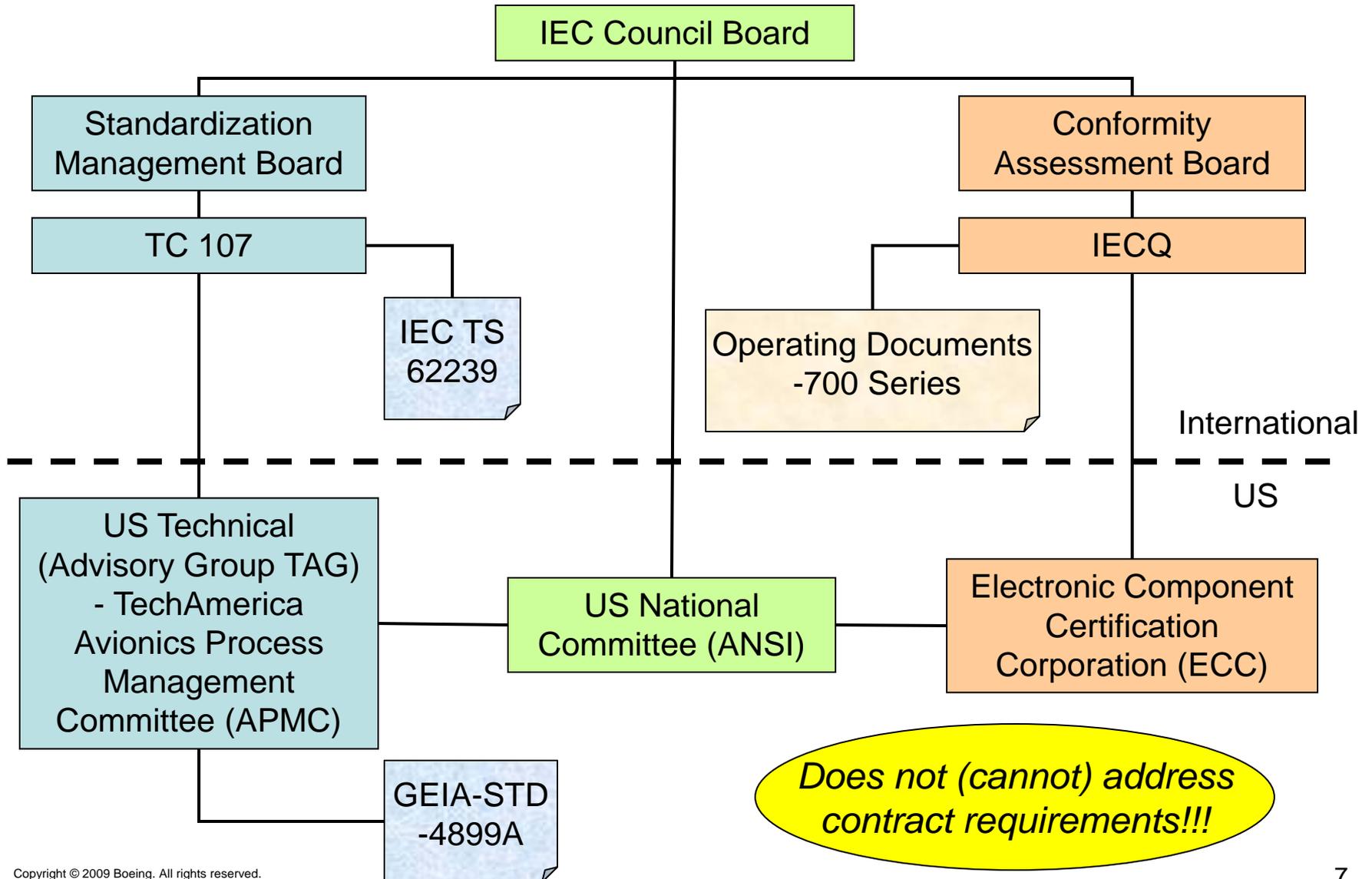
Industry ECMP Documents

- **IEC/TS 62239, Process Management for Avionics – *Preparation of an Electronic Components Management Plan*, Edition 2.0, 2008-10, International Electrotechnical Commission**
- **GEIA-STD-4899A (ANSI/EIA STD-4899A-2009), *Standard for Preparing an Electronic Components Management Plan*, 2007-02-11, TechAmerica**

Embedded and Referenced Requirements



IEC Standardization & Conformity Assessment



IEC TS 62239 Table of Contents

FOREWORD

INTRODUCTION

1. Scope
 2. Normative references
 3. Terms, definitions and abbreviations
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 - 4.2 Component application
 - 4.3 Component qualification
 - 4.4 Continuous component quality assurance
 - 4.5 Component dependability
 - 4.6 Component compatibility with the equipment manufacturing process
 - 4.7 Component data
 - 4.8 Configuration control
 5. Plan administration requirements
- ## Bibliography

Proposed Clause 4 – Technical Requirements

4 Technical requirements

4.1 Electrical components

4.1.1 Component selection (temperature, thermal shock, vibration mechanical shock, radiation*, corrosion, humidity, salt fog, dust, etc.)

4.1.2 Component qualification (life-limited semiconductors*)

4.1.3 Component application

4.1.4 Continuous component quality assurance

4.1.5 Component dependability

4.1.6 Component obsolescence management

4.1.7 Component data

4.1.8 Configuration control

4.2 Lead-free termination and assembly control*

4.3 Counterfeit Parts Avoidance*

*new requirement

4.3 Counterfeit Parts

The Supplier shall have a counterfeit parts risk mitigation plan in accordance with SAE AS 5553 as a minimum. Additional requirements such as GIFAS/5052/2008 may be applicable as specified. *

IECQ Operating Documents

- QC 001002-4, *IEC Quality Assessment System for Electronic Components*, edition 2, 2008-11
- OD 701, *Principles for the Implementation of an ECMP Plan*, version 1.1, 2008-09
- OD 702*, *ECMP Assessment, Evidence of Compliance Summary and Assessment Reporting Form*, version 1, 2007-11
- OD 703, *Assessment Procedures for Acceptance of Candidate Electronic Component Management Plan Subject Matter Experts in the IECQ Scheme*, version 1, 2007-11
- OD 704, *Witness Assessment Checklist for Assessment of ECMP Assessors and ECMP Subject Matter Experts*, version 1.0, 2010-07

*Update to add criteria for CFPCP

Develop BPI CP Counterfeit Risk Mitigation for Electronic Parts (owned by MP&P)

- BPI CP will have link from BPI 3164
- Limited scope to electronic component procurements from distributors (perceived greatest threat)
- Allow for procurements from unauthorized distributors when needed
- Allow Programs/Functions to determine risk levels and appropriate risk mitigations with specific minimum expectations

Seek to drive procurements to OEM, Authorized, and “Trusted Sources”

- PA’s responsible for determining “status” of distributor; Authorized distributors required for production procurement
- Drive Counterfeit Electronic Parts approvals for most utilized/needed unauthorized distributors (“trusted sources” or Nifty List)
- Exceptions allowed through normal deviation process, BPI-3164
- Risk Mitigation (Enhanced Insp&Test) through new BPI-CP

Hard Questions

- 1. Are we trading engineering problems for supplier management problems?**
 - Collaborative solutions – not adversarial
- 2. Is the global electronics supply chain so complex that effective supplier management for high-performance, low volume electronics is impossible?**
 - Static vs. dynamic solutions
- 3. Is the “traditional” aerospace approach to supplier management based on market concepts that are rapidly becoming obsolete?**
 - “Fit them into us” or “fit us into them”
- 4. Is the aerospace applications envelope so broad and demanding that COTS content makes it impossible to define and guarantee system or subsystem reliability?**
 - “Adapt” or “control”
- 5. Is the current trend toward less reliable electronics in general?**
 - Unreliability in – reliability out

The Conundrum

Management

It's a technical problem
Find a solution !!!



Engineers

It's an enterprise issue
What is our policy ???

Source: Sandia

