

# Dependability Standards

18-849B

January 26, 1999

Adrian Drury

# Introduction

- What are dependability standards
- Who creates them and how
- Which ones are we interested in
- How do we choose which to use
- The future

# What are Dependability Standards

- Short definition

Standards describing “...the availability performance and its influencing factors: reliability performance, maintainability performance and maintenance support performance.”

# Who Creates Them (Partial List)

- American National Standards Institute (ANSI)
- British Ministry of Defense (MOD)
- British Standards Institution (BSI)
- Canadian Standards Association (CSA)
- Electronic Industries Association (EIA)
- Institute for Interconnecting and Packaging Electronic Circuits (IPC)
- Institute of Electrical & Electronics Engineers (IEEE)
- Institute of Environmental Sciences
- International Electrotechnical Commission (IEC)
- International Organization for Standardization (ISO)
- National Aeronautics and Space Administration (NASA)
- North Atlantic Treaty Organization (NATO)
- Society of Automotive Engineers International (SAE)

# Creation

- Methods of creation are varied
  - International committees (IEC, ISO)
  - National committees (NASA, BSI)
  - Industry consortiums (IEEE, IPC)
  - Voluntary submission (ANSI)
  - Rubber-stamping between organizations (IEC to ISO)

# Updates

- Methods of update are varied - usually by committee decision
  - Standard may be outdated
  - Standards may merge
- Change depends to a degree on the rate of technological improvement.
- Move to COTS components is driving updates.

# Which Ones Are We Interested In?

- IEC/TC 56 Dependability  
“Provide technical guidance rather than advocating compliance to standard requirements”
- IEC 300 series  
“...provides a tailoring process for the selection and use of applicable elements pertinent to the product...”
- ISO 9000-4  
“...give guidance on ‘the essential features of a comprehensive dependability programme... to produce

products which will be reliable and maintainable.””



# Choosing Which To Use

- Marketing pressure
- Ask your boss
- Contract requirements
- Licensing/certification requirements

# The Good News

- We do have international standards
- Standards organizations working more closely
- Standards are actively updated
- Double-edged sword - there are so many to choose from

# Problems

- Terminology differences are the largest potential problem.

“[The ISO Joint Technical Committee/Sub-Committee’s] position is that **slightly different definitions** due to considerations such as need for consistency within one set of standards, intended audience, conceptual organization and terminology usage within a given field. For this reason, DIS 2382-14 ‘Reliability, maintainability and availability’ will use **definitions that are different** from those found in IEC 50(191) and, in some cases, **different terms.**”

# Problems

- Example - different definitions for failure rate
  - One from IEC IEC 191
  - One from ANSI/AIAA R-013
  - One from MIL-HDBK 338
- Different uses of reliability, dependability, etc.
- Organizations have overlapping standards - difficult to know which is applicable for any given situation
- Renumbering and integration can cause confusion

# Conclusion

- Dependability standards are created by many organizations in many disciplines
- Standards organizations are increasingly working together
- Terminology differences have the potential to cause problems
- Question - what can be done about terminology differences?

# References

Benski, Claudio. Dependability Standards: An International Perspective.

Benski, Loll, Kiang, Miller, Moss. Dependability Standards: An International Cooperation.

Kiang, David. Technology Impact on Dependability Requirements.

Worldwide Reliability and Maintainability Standards: A Primer of US and Non-US Commercial and Government Documents, RAC

IEC web site - <http://www.iec.ch>

ISO web site - <http://www.iso.ch>