

Reliability Toolkit: Commercial Practices Edition

A Practical Guide for Commercial Products
and Military Systems Under Acquisition Reform



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Reliability Analysis Center

FOREWORD

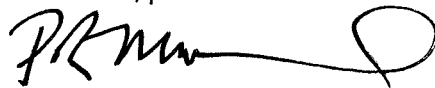
The reliability world is changing; no longer are the commercial and military industrial approaches distinct. For years the military has had its advocates for the use of commercial off-the-shelf (COTS) equipment and nondevelopmental items (NDI), but now the military use of commercial designs is required. The June 1994 Secretary of Defense William Perry memorandum officially changed the way the military develops and acquires systems. Military standards and specifications are out (except with a waiver) and commercial practices are in.

The "Reliability Toolkit: Commercial Practices Edition" is intended to help both the commercial and military sectors deal with developing and manufacturing reliable products in today's competitive world.

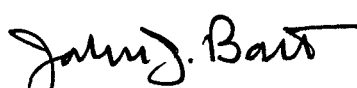
In 1988 Rome Laboratory used the benefit of over 30 years in the reliability discipline to publish its RADC "Reliability Engineer's Toolkit" and in 1993 a revision, "The Rome Laboratory Reliability Engineer's Toolkit," (Rome Air Development Center was renamed Rome Laboratory between the two versions). While intended for the military, these documents were best sellers and are currently in wide use by both the commercial and military communities. Over the last 25 years, the Reliability Analysis Center, along with serving as a centralized reliability data and information center, has worked on hundreds of reliability projects for commercial and military customers. Because of the vast experience base of these two organizations, it was only natural that we collaborate on a new Toolkit that now stresses commercial reliability practices.

The new Toolkit concentrates on activities that have payoff, not necessarily extensive paper outputs. The Toolkit recognizes that reliability is everyone's business, so the term "reliability engineer" doesn't appear in our title. Almost every topic of the previous Toolkit has been significantly revised and numerous new subjects have been added to better represent every aspect of a product's reliability over its life cycle.

Whether you deal with commercial or military products, we hope that you'll find this document useful in planning and carrying-out those activities most beneficial to your products' reliability. If you have any comments or criticisms, please let us know.



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PREFACE

This document represents a joint effort of the Rome Laboratory and the Reliability Analysis Center. The following individuals were the primary authors:

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NOTE TO TOOLKIT READERS

At the time of authoring this Toolkit, the reliability and maintainability discipline is undergoing tremendous change. Many of the military standards and handbooks that have provided the framework and methodologies for the last 30 years are being abandoned or transitioned to dual-use documents. While these military documents have been widely used as the basis of commercial approaches as well, the discipline will now look to non-government and international documents.

The authors of this Toolkit recognize that the military standards and handbooks no longer carry the contractual weight that they did in the past; but because, in most cases, they contain valuable engineering information, references to them will be included for the benefit of those practitioners still able to obtain copies.

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NOTE: Effective 18 April 2008, the "Reliability Toolkit - Commercial Practices Edition" (Product Code: CPE) is no longer available in hard copy format. It's replacement, the "System Reliability Toolkit" (Product Code: SRKIT) can be ordered in either hard copy or PDF download. The CPR Toolkit can still be ordered in PDF download format. The "Reliability Toolkit: Commercial Practices Edition" is intended to help both the commercial and military sectors deal with developing and manufacturing reliable products in today's competitive world. The reliability world is changing; no longer are the commercial and military industry approaches distinct. For years the military has had its advocates for the use of Commercial Off-the-Shelf (COTS) equipment and Nondevelopmental Items (NDI), but now the military use of commercial designs is required. The June 1994 Secretary of Defense Perry memorandum officially changed the way the military develops and acquires systems. Military standards and specifications are out (except with a waiver) and commercial practices are in. The Reliability Toolkit addresses the use of best commercial practices and how to comply with the Perry memorandum. Over 80 topics, representing every aspect of a product's reliability over its life cycle, have been well received by nearly 7,000 Toolkit owners.

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