

Foreword

The *Human Factors Design Standard (HFDS) for Acquisition of Commercial-off-the-Shelf (COTS) Subsystems, Non-Developmental Items (NDI), and Developmental Systems* is a comprehensive reference tool that will help human factors professionals within the Federal Aviation Administration (FAA) and contractor organizations to efficiently carry out FAA human factors policy.

The HFDS was developed by the Human Factors Group at the FAA Technical Center to consolidate and capitalize upon multiple sources of human factors design and evaluation guidelines. It provides FAA system modernization programs access to the most applicable human factors guidance. This document is intended to overcome the limitations associated with using other design standards in an FAA environment.

Application of this design standard is not a substitute for in-depth professional human factors practice. The FAA Acquisition Management System refers to Human factors as a *critical* aspect of aviation safety and effectiveness. It requires that Integrated Product Teams assure that planning, analysis, development, implementation, and in-service activities include human factors engineering. It states that human factors engineering should be integrated with the systems engineering and development effort, throughout the acquisition process. This document can serve as a critical tool for aiding this process by providing input to acquisition and development documentation, processes, and activities. However, human factors acquisition standards and processes are to be professionally applied. The use of the HFDS requires expert professional judgment on its application to systems and equipment.

This document compiles extensive guidance from diverse sources for human factors applications integral to the procurement, acquisition, design, development, and testing of FAA systems, facilities, and equipment. It will aid in identifying functional, product, and NAS specification requirements and in ensuring acceptable human factors practice and products.

This edition of the HFDS is applicable to COTS and NDI procurements as well as new developmental system or equipment acquisitions. The relationship between hardware and software subsystems and the human subsystem's characteristics must be determined and tested in advance of commitments to procure and implement COTS and NDI equipment and systems. These characteristics can include human roles, organizations, interfaces, tasks, training, and human performance effectiveness.

The HFDS draws heavily from human factors information published by the Department of Defense, National Aeronautics and Space Administration, and Department of Energy. The FAA

recognizes the excellent quality of information found in many of the technical documents and handbooks written by these agencies.

The HFDS contains 15 chapters, only some of which have been revised. Some of the chapters that have not been revised reference military standards that are no longer current. The military standards referenced in this document and their status (if known) are now listed in an appendix to this document.

Many individuals contributed to the creation of this document. Todd Truitt contributed extensively to Chapter 3 (Automation). Linda Johnson edited and proofread the entire document. Bonnie Kudrick assisted in the completion of the document and getting the document produced. Jean Dunn completed the final technical editing and formatted the Table of Contents.

As described in the introduction (Chapter 1), several of the chapters in this document have been rewritten or revised from the 1996 Human Factors Design Guide. Each of these chapters were reviewed by a group of human factors experts. The insight of these individuals was invaluable in producing this document. The following individuals served as reviewers on one or more of the chapters: Paul Krois, Alan Poston, Glen Hewitt, Dino Piccione, Dan Herschler, Chuck Overbey, and Raja Parasuraman (Chapter 3 only).

The 1996 Human Factors Design Guide was created in Word Perfect, and later converted to Word 6, then revised by us in Word 2000. As we went through each chapter, these conversions provided us with innumerable surprises and challenges. With the help of first Kelly Longo and then Bonnie Kudrick, I hope that we have fixed all of the formatting anomalies. If you as a user discover something that was not fixed, please contact us at the address on the comment sheet.

Request for feedback and comments. This is considered a living document, which means that although every effort has been made to make it usable and comprehensive, we acknowledge that there will always be room for improvement. User feedback in the form of corrections or improvements is encouraged. Comments can be made at any time by using the form at the end of the document.