



AAR-100

Human Factors Newsletter # 04-22

October 30, 2004 – November 12, 2004

Technical Note: D. Chandra, M. Yeh, V. Riley (2004). Designing a Tool to Assess the Usability of Electronic Flight Bags (EFBs). Report No. DOT/FAA/AR-04/38. USDOT Volpe Center: Cambridge, MA.

Abstract. FAA, system designers and customers all recognize that Electronic Flight Bags (EFBs) are sophisticated devices whose use could affect pilot performance. As a result, human factors issues have received considerable attention from the EFB community. In addition, the FAA's Advisory Circular (AC) on EFBs (AC 120-76A) identifies a need for evaluating EFBs from a human factors perspective, and contains a list of human factors considerations for review. However, the AC does not specify how to perform EFB human factors evaluations.

This research was directed at developing a tool that could be used by FAA Aircraft Certification Service specialists in the field to conduct structured and comprehensive, yet practical, EFB usability evaluations. Two tools were developed for initial tests, with the expectation that a single tool would eventually emerge. The tools were refined over the course of several tests with prototype commercial EFB systems. In the end, researchers found that both tools are valuable, but in different ways. In this report, they describe both tools, procedures for testing the tools, and methods for processing the resulting data into feedback for the manufacturer.

Point of Contact: T. McCloy, ATOP-R&D

Technical Note: Dr. Michelle Yeh of the Volpe Center presented a paper entitled "Issues in Symbol Design for Electronic Displays of Navigation Information" at the 23rd Digital Avionics Systems Conference (DASC) conference held in Salt Lake City, Utah (26-29 October). The paper, which was co-authored by Dr. Yeh and Dr. Divya Chandra, addresses issues to consider when evaluating the usability of aeronautical symbols for electronic displays of navigation information and discusses their approach to symbology design. DASC is recognized as one of the leading international conferences in the field of aviation and avionics. This year, the conference highlighted avionics systems necessary for maintaining a safe, secure, and efficient aviation system.

Abstract: An increasing number of electronic displays, ranging from small hand-held devices for general aviation to installed avionics for air transports, are showing navigation information such as symbols representing navigational aids. The wide range of display technology and the different functions these displays support make it difficult to design symbols that are easily recognizable across platforms. The goals of this research effort are to identify features of navigation symbology that are problematic when presented on electronic displays and to develop a method to design and evaluate symbology that takes into account the different media (e.g., paper vs. electronic) and platforms on which they will be displayed. Researchers address four questions to consider when evaluating the usability of a symbol: (1) Is the symbol easy to find? (2) Is the symbol distinctive from other symbols? (3) Is the on-screen symbol size appropriate? (4) Can all encoded attributes of the symbol be decoded quickly and accurately? Background findings and a proposed experiment to explore some of the higher-level issues related to the design of effective symbology are described in the paper.

These activities support the Administrator's Flight Plan Goal for Safety, Objective One: Reduce the commercial fatal accident rate.

Point of Contact: T. McCloy, ATOP-R&D

Web Page for DRVSM: Tanya Yuditsky from the William J. Hughes Technical Center's NAS Human Factors Group will work with a team of Traffic Management Specialists from the field to design a web page for Domestic Reduced Vertical Separation Minimum (DRVSM) coordination requests. Information from the web page will be transmitted to the National Traffic Management Log (NTML), a tool used in the field to log and share information about traffic management initiatives. This is an important step in the upcoming transition to DRVSM in the en route airspace structure. It will help to ensure that there is consistency between the information and design elements entered through the web page and those displayed in the NTML. This research supports the Administrator's Flight Plan Goal for Safety, Objective Seven: Enhance the safety of FAA's air traffic systems. It also supports the Administrator's Flight Plan Goal for Greater Capacity, Objective One: Increase capacity to meet projected demand. (E. Stein, WJHTC)

Traffic Management Advisor: On November 4th, the William J. Hughes Technical Center's NAS Human Factors Group completed the third week of data collection in the Traffic Management Advisor (TMA) simulation. Representatives from the TMA Program Office and Miami Center visited the laboratory to observe the simulation and review prototypes of alternative display options. The final two controllers will participate in the simulation the week of Nov 15th. TMA is a computerized tool that helps controllers manage air traffic more efficiently in airspace around some of the nation's busiest airports. This research supports the Administrator's Flight Plan Goal for Safety, Objective Seven: Enhance the safety of FAA's air traffic systems. It also supports the Administrator's Flight Plan Goal for Greater Capacity, Objective 2: Increase or improve airspace capacity in the eight major metropolitan areas and corridors that most affect system delay. (M. McAnulty, WJHTC)

DoD TAG Meeting: FAA human factors researchers and engineers participated in the 52nd DoD Human Factors Engineering Technical Advisory Group Meeting, November.1-4. The focus of the meeting was on what the military services are doing to implement DoD Human Systems

Integration (HSI) policy. DoD acquisition guidance issued on May 12, 2003, (e.g., DODD 5000.1 and DODI 5000.2), requires service program managers to implement HSI on major acquisition programs. Enclosure seven to DODI 5000.2 specifically charges program managers with having a comprehensive plan for HSI in place early in the acquisition process. In the plenary session, representatives from each of the services highlighted their HSI policies, practices, regulations and initiatives intended to fully implement this new HSI mandate. NASA and FAA representatives made presentations on their agencies' policy and HSI implementation. FAA members also chaired and/or presented FAA research results and products in the following subgroups – Human Factors Standardization, Human Factors Engineering/Human Systems Integration: Management and Applications, and Sustained /Continuous Operations. This supports the Administrator's Flight Plan Goal for Safety, Objectives One and Seven: Reduce the commercial fatal accident rate; Enhance the safety of FAA's air traffic systems. (T. McCloy, ATOP-R&D)

Career Opportunity: Supervisory General Engineer, FAA Washington Headquarters Region, Air Traffic Organization, Operations Planning Service Unit, ATO-P. Duties: The Program Director for the Aviation Research Division provides leadership for the strategic management of the agency's research and development (R&D) program. The Program Director works with FAA research and operational organizations to: analyze customer and agency requirements; develop recommendations for agency investments in safety, security and National Airspace System R&D; assess the performance of the R&D program; recommend process modifications to improve the R&D program; and foster cooperative R&D activities with academia, industry, and other government agencies. The incumbent also serves as the focal point for integrating the aviation systems R&D Program across FAA organizations and with other government agencies. This position is open to all sources including current/former FAA employees. For more information, point to: <http://www.faa.gov/>

More information on human factors research can be found at the FAA Human Factors (ATOP-R&D) web site: <http://www.hf.faa.gov>

Mark D. Rodgers
FAA (ATOP-R&D)



November 12-17, 2004 – American Society for Information Science and Technology Annual Meeting, Providence, RI asis@asis.org

November 13-14, 2004 – Aviation Nation, Nellis AFB, NV www.nellisairshow.com

November 15-18, 2004 – 57th Annual International Air Safety Seminar (“Sharing Knowledge to Improve Safety”), Pudong Shangri-La Hotel, Shanghai, China
<http://www.flightsafety.org/seminars.html>

November 15-18, 2004 – Fire and Cabin Safety Research Conference, Lisbon, Portugal
www.caa.co.uk/srg/intsd/event.asp?groupid=73

November 16, 2004 - FY04 General Aviation, Vertical Flight, and Aviation Maintenance Human Factors Program Review, FAA Headquarters Bessie Coleman Training Center, Wash, DC <mailto:william.krebs@faa.gov>.

November 18-19, 2004 – IT World Expo, Toronto, Canada richardp@WowGao.com

November 18-21, 2004 – 45th Annual Meeting of the Psychonomic Society, Hyatt Regency and Millenium Hotels, Minneapolis, MN [45th Annual Meeting of the Psychonomic Society](#)

November 22-24, 2004 - ICRAT 2004 - International Conference on Research in Air Transportation, University of Zilina , Zilina, Slovakia. www.icrat.org

December 1-2, 2004 – Future of Air Transport, le Meridian Piccadilly, London, England
<http://www.marketforce.uk.com/airtransport2004>

December 9-10, 2004 – Annual EUROCONTROL Experimental Centre Innovative Research Workshop, Brétigny-sur-Orge, France <http://www.eurocontrol.fr/>

January 9-12, 2005 – International Conference on Intelligent User Interfaces, San Diego, CA
<http://www.catamaranresort.com/>

January 9-13, 2005 – TRB 84th Annual Meeting, Washington, DC <http://trb.org/calendar/>

January 10-13, 2005 - 43rd AIAA Aerospace Sciences Meeting and Exhibit, Reno Hilton, Reno, NV <http://www.aiaa.org/>

January 19-21, 2005 – Air Cargo Symposium, Ritz-Carlton New Orleans, New Orleans, LA
<http://www.aci-na.org>

January 25-27, 2005 – AE-2 Aerospace Lighting Committee Meeting, New Orleans, LA
elizd@sae.org

January 28, 2005 – Deadline for papers - 6th USA/Europe ATM Seminar, Baltimore, MD, June 2005 <http://atmseminar.eurocontrol.fr/>

February 1-3, 2005 - ATC Maastricht (EUROCONTROL), Maastricht, Netherlands
<http://www.atcmaastricht.com/>

February 9-11, 2005 – 6th Annual Aviation Security Summit Expo, US Grant Hotel, San Diego, CA <http://www.worldrpg.com/AW500/wrg.asp>

February 16-17, 2005 – World Aerospace Symposium, Pierre Baudis Toulouse Congress Center, Toulouse, France http://www.aviationweek.com/conferences/meu_e3.htm

March 6-8, 2005 – Air Cargo 2005, Hotel del Coronado, San Diego, CA
<http://www.aircargoconference.com>

March 17-18, 2005 – Aviation and Environment Summit, Crowne Plaza, Geneva, Switzerland
<http://www.iata.org>

April 2-7, 2005 – CHI 2005, Portland, OR chi2005-chair@acm.org.

April 5-7, 2005 – Aviation Testing Expo 2005: Scientific Conference and Technology Forum, Europe, Messe Hamburg, Germany <http://www.aerospacetesting-expo.com/northamerica/conf+forum.html>

April 11-15, 2005 – SAE 100th Anniversary World Congress, Cobo Hall, Detroit, MI
<http://www.sae.org/congress/about/news/congressdates.htm>

April 12-18, 2005 – Sun ‘n Fun 2005, Lakeland, FL <http://www.sun-n-fun.org/>

April 17-22, 2005 – International Federation of Air Traffic Controller’s Associations, Melbourne, Australia http://www.ifatca.org/conferences/annual_conference.htm

April 18-21, 2005 – 13th International Symposium on Aviation Psychology (ISAP), Civil Aerospace Medical Institute (CAMI), Oklahoma City, OK <http://www.cami.jccbi.gov/>,
<http://www.wright.edu/isap/>

May 9-12, 2005 - 76th Annual Scientific Meeting of the Aerospace Medical Association, Kansas City, MO <http://www.asma.org/>

May 26-29, 2005 – *American Psychological Society 17th Annual Convention, Westin Century Plaza Hotel, Los Angeles, CA* <http://www.psychologicalscience.org/convention/>

June 2005 – 6th USA/Europe ATM Seminar, Baltimore, MD (note: call for papers deadline is January 28, 2005) <http://atmseminar.eurocontrol.fr/>

June 13-19, 2005 - Paris Air Show 2005, Parc des expositions de Paris Nord - Le Bourget, 93350, France. www.paris-air-show.com

July 22-28, 2005 – HCI International 2005, 11th International Conference on Human-Computer Interaction, Caesars Palace, Las Vegas, NV hci2005@ecn.purdue.edu

July 25-31, 2005 – EAA AirVenture Oshkosh 2005, Oshkosh, WI <http://www.airventure.org>

August 15-18, 2005 - 43rd AIAA Aerospace Sciences Meeting and Exhibit, Hyatt Regency San Francisco at Embarcadero Center, San Francisco, CA <http://www.aiaa.org/>

August 18-21, 2005 - 113th Convention of the American Psychological Association, Wash, DC
<http://www.apa.org/convention>

September 12-16, 2005 – Interact 2005, Tenth IFIP TC13 International Conference on Human-Computer Interaction, Rome, Italy <http://www.interact2005.org/>

September 19-23, 2005 – ANA 2005 Aviation Conference and Exhibition, Connecticut Convention Center, Hartford, CN <http://www.aerospace-na.com/ace2005.asp>

September 25-28, 2005 - 11th Ka and Broadband Communications Conference and 23rd AIAA International Communications Satellite Systems Conference 2005 (organized by IIC), Aurelia Convention Center, Rome, Italy <http://www.aiaa.org/>

September 26-28, 2005 - AIAA 5th Aviation, Technology, Integration, and Operations Forum (ATIO), Hyatt Regency Crystal City, Arlington, VA <http://www.aiaa.org/>

September 26-28, 2005 - AIAA 2nd Intelligent Systems Conference (IS), Hyatt Regency Crystal City, Arlington, VA <http://www.aiaa.org/>

September 26-30, 2005 – Human Factors and Ergonomics Society 49th Annual Meeting, Royal Pacific Resort at Universal Orlando, Orlando, FL <http://hfes.org/meetings/menu.html>

October 3-6, 2005 – SAE 2005 AeroTech Congress and Exhibition, Gaylord Texan Resort and Convention Center, Dallas/Fort Worth Airport Area, Texas
<http://www.sae.org/events/conferences/aerospace/>

October 6-9, 2005 – Aviation North Expo Conference, Fairbanks Princess Riverside Lodge, Fairbanks, AK www.AviationNorth.org

October 24-25, 2005 – National Academies Institute of Medicine Annual Meeting, National Academy of Sciences, Washington, *DC* <http://wwwsearch.nationalacademies.org/>

October 30—November 3, 2005 – 24th Digital Avionics Systems Conference, Hyatt Regency Crystal City, Wash., DC <http://www.dasconline.org>

November 6-9, 2005 - ACI World / Pacific Conference and Exhibition, Auckland, New Zealand.
www.auckland-airport.co.nz

November 8-10, 2005 – Aerospace Testing Expo, North America: Scientific Conference and Technology Forum, Long Beach Convention Center, Long Beach, CA
<http://www.aerospacetesting-expo.com/northamerica/conf+forum.html>

January 9-12, 2006 - 44th AIAA Aerospace Sciences Meeting and Exhibit, Reno Hilton, Reno, NV <http://www.aiaa.org/>

January 22-26, 2006 – TRB 85th Annual Meeting, Washington, DC <http://trb.org/calendar/>

Note: Calendar events in Italics are new since the last Newsletter



Comments or questions regarding this newsletter?
Please contact Bill Berger at (334) 271-2928
or via e-mail at bill.ctr.berger@faa.gov

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