



## AAR-100

### Human Factors Newsletter # 04-13

June 26, 2004 – July 9, 2004

**Technical Information:** Ahlstrom, U., Keen, J., & Mieskolainen, A. J. (2004, July-September). A Weather Information Display System (WIDS) for Air Traffic Control: Design Philosophy, Display Affordances, and Capabilities for Empirical Research. *Journal of Air Traffic Control*. (Note: article accepted for the September 2004 issue)

#### Abstract

Adverse weather has a major impact on the National Airspace System (NAS). Providing controllers with the display of accurate and timely weather information is one way to improve the ability of NAS to deal with adverse weather. Unfortunately, there is a lack of consensus on what information to display to controllers and also how such information should be presented. In the present paper, we describe a Weather Information Display System (WIDS) that allows empirical evaluation of weather information and display design. The WIDS can display weather information together with traffic data on the main situation display, weather information on an auxiliary display, or any hybrid combination of weather and traffic data. This article emphasizes the importance of weather display evaluations where human factors problems are identified and corrected prior to the fielding of such displays. We discuss important display issues from current research in display design and human-computer interaction. We also provide some 'lessons learned' from operational weather displays.

Point of Contact: E. Stein, WJHTC

**FEW:** Researchers at the William J. Hughes Technical Center's Research and Development Human Factors Laboratory conducted an initial capability evaluation of a future en route workstation (FEW) platform. The FEW platform integrates data from automation tools and a Display System Replacement (DSR)/HOST emulation onto two radar displays, one for the radar controller and one for the radar associate controller. The FEWS platform capabilities included a conflict probe integrated in the DSR simulator, alternative interactivity with display elements, alternative use of data already available in the National Airspace System, and an early prototype of electronic flight progress strips. In addition to evaluating the FEWS platform capabilities, participants handled simulated traffic at levels of 100, 133, and 166 per cent of current Monitor Alert Parameter values acceptable for a similar sector used in operations. Researchers received

valuable feedback that will help guide them in the concept exploration of a FEWS platform that supports controllers who will handle traffic levels expected in FY 2015 and beyond. (E. Stein, WJHTC)

**JFK Approach:** At the request of the Area Navigation (RNAV) Program Office, researchers from the William J. Hughes Technical Center's NAS Human Factors Group attended a meeting on a new RNAV approach to JFK Airport at the Eastern Region Headquarters. This approach will be one of five targeted for implementation during 2004. They will be implemented as Special Aircrew and Aircraft Authorization Required (SAAAR) procedures. The researchers are assessing the human factors issues associated with the new approaches from the controllers' perspective. Representatives from three airlines, FAA Eastern Region, and FAA Flight Standards, ATC facilities, and support contractors attended the meeting. (E. Stein, WJHTC)

**Research Review:** The Air Transportation Human Factors team participated in a research review meeting on June 21-22 in San Diego, CA. The researchers, who came from industry, academia, NASA and the Volpe Center, presented their current projects and results to FAA research sponsors, and discussed future research opportunities and collaboration. (E. Edens, AFS-230)

**ERAM:** In June, research psychologists from the NAS Human Factors Group at the William J. Hughes Technical Center participated in dry-run activities for the En Route Automation Modernization (ERAM) Early User Involvement Event (EUIE). The EUIE will take place July 20-29 and will provide user representatives from the field with an opportunity to interact with a prototype of the ERAM Monitor and Control (M&C) workstation. During the dry-run activities, researchers from the FAA and Lockheed Martin worked with two participants from the field to review the flow and operational relevance of scripted procedures, and identified limitations of the prototype. (T. Yuditsky, WJHTC)

**TRACON Controller Radar:** The William J. Hughes Technical Center's NAS Human Factors Group supported the ATO Terminal and the Air Traffic Enhancement and Modernization team (ATEAM) in an effort to develop a standard color palette for use on TRACON controller radar displays. There is significant interest among field sites receiving new STARS Terminal Controller Workstations (TCWs) or ARTS Color Displays (ACDs) in using color coding to indicate information such as track ownership, destination, flight status, or arrival runway. ATO Terminal intends to develop a palette or set of palettes that meet field site needs while also following good human factors design principles and providing a standardized user interface that eases system maintenance and training. The NAS Human Factors Group used its ATC simulation and prototyping platform, the Distributed Environment for Simulation, Rapid Engineering, and Experimentation (DESIREE), to develop numerous prototype palettes for demonstration to the ATEAM. The palettes were designed to provide readable, distinguishable, and nameable colors that help controllers extract information easily while minimizing other problems. The ATEAM controllers were able to view and interact with the prototypes, and numerous improvements were proposed and examined. A second prototyping session with the ATEAM will occur in July, with a potential human-in-the-loop simulation using the selected palettes in FY05. (K. Allendoerfer, WJHTC; S. Cooley, ATO Terminal)

**Future En Route Workstation:** During a recent Future En Route Workstation early user involvement exercise, researchers demonstrated the three tier flight data block. They were able to show the current state of efforts including the Electronic Flight Progress Strips, Emphasis Function, Conflict Probe Indicator on the R-side, and the R- and D-side Radar Display on a Sony 2K. The feedback from the controllers was generally positive. While researchers running the simulations had several technical difficulties, they were able to achieve the goal of showing initial capabilities and receiving feedback from controllers. (E. Stein, WJHTC)

**Laboratory Tour:** The William J. Hughes Technical Center's Human Factors Group hosted a tour of representatives from the Naval Surface Warfare Organization in Panama City, Florida. The Navy personnel are working on a task involving the control of underwater vehicles that may have some similarity to Air Traffic Control. Technical Center researchers provided them a tour of the laboratory and a discussion of possible common areas of research. (E. Stein, WJHTC)

*More information on human factors research can be found at the FAA Human Factors (AAR-100) web site: <http://www.hf.faa.gov>*

Mark D. Rodgers  
FAA (AAR-100)



**June 12-16, 2004** – National Cargo Security Council 2004 Annual Conference and Exhibition, Riviera Hotel & Casino, Las Vegas, NV <http://www.cargosecurity.com>

**June 18, 2004** – Human Modeling Technology & Standards Committee Meeting, Troy, MI [lemon@sae.org](mailto:lemon@sae.org)

**July 19-25, 2004** – Farnborough International 2004, Farnborough Aerodrome, England <http://www.farnborough.com/>

**July 22-August 2, 2004** – 52<sup>nd</sup> Annual EAA AirVenture Fly-In, Wittman Field, Oshkosh, WI [EAA AirVenture Oshkosh 2004](#)

**July 27-August 2, 2004** – 52nd Annual AirVenture, Oshkosh, WI <http://airventure.org/>

**July 28 – August 1, 2004** – 112<sup>th</sup> Convention of the American Psychological Association. Honolulu, Hawaii <http://www.apa.org/convention>

**August 1-4, 2004** – Designing Interactive Systems, Cambridge, MA <http://www.sigchi.org/DIS2004/>

August 5-7, 2004 – CogSci 2004, 26<sup>th</sup> Annual Meeting of the Cognitive Science Society, Westin River North, Chicago, IL [cogsci2004@cs.northwestern.edu](mailto:cogsci2004@cs.northwestern.edu)

**August 8-12, 2004** – 31<sup>st</sup> International Conference on Computer Graphics and Interactive Techniques, Los Angeles Convention Center, Los Angeles, CA  
<http://www.vr.clemson.edu/eyetracking/etra/2004/>

August 16, 2004 – Deadline for papers - 13<sup>th</sup> Annual Symposium on Aviation Psychology (ISAP), Civil Aerospace Medical Institute (CAMI), Oklahoma City, OK, April 18-21, 2005.  
<http://www.cami.jccbi.gov/>

**August 16-19, 2004** - 6th Workshop on Risk Analysis and Safety Performance Measurements in Aviation, Crystal City, VA. <http://aar400.tc.faa.gov/AAR424/Workshop2004/>.

August 22-27, 2004 – IFIP 13.5 Working Conference on Human Error, Safety, and Systems Development, Toulouse, France [Advance program](#)

**August 23-27, 2004** - SAE G-10 Human Behavioral Performance Committee Semiannual Meeting, Seattle, WA <http://www.sae.org/standardsdev/aerospace/g10tag.htm>

**August 23-27, 2004** – Aircraft Instruments Meeting, Bellvue, WA [elizd@sae.org](mailto:elizd@sae.org)

**September 1-3, 2004** – ICAO Aviation Language Symposium, Montreal, Canada  
<http://www.icao.int/icao/en/anb/meetings/IALS/index.html>

**September 8-9, 2004** – Civil Aviation Safety Symposium 2004, Westin Hotel Galleria, Dallas, TX <http://www.asdnet.org/cass/default.htm>

**September 14-17, 2004** – 22<sup>nd</sup> International Air Cargo Forum and Exposition, Basque Country, Spain <http://www.tiaca.org>

**September 14-17, 2004** – National Cargo Security Council 2004 Conference & Exhibition, Riviera Hotel & Casino, Las Vegas, NV <http://www.cargosecurity.com>

**September 16, 2004** – Aircraft Lighting Meeting, Nashville, TN [elizd@sae.org](mailto:elizd@sae.org)

**September 19-20, 2004** – Association for the Advancement of Medical Instrumentation AAMI/HE Human Factors Engineering Committee Meeting, New Orleans, LA  
[ntongson@aami.org](mailto:ntongson@aami.org)

**September 20, 2004** – Nondestructive Methods and Processes Committee Meeting, Albuquerque, NM [kerrir@sae.org](mailto:kerrir@sae.org)

**September 20-24, 2004** – Human Factors and Ergonomics Society 48<sup>th</sup> Annual Meeting, Sheraton New Orleans Hotel, New Orleans, LA <http://www.hfes.org/>

**September 27-29, 2004** – SAFE Association 42<sup>nd</sup> Annual Symposium, Grand America Hotel, Salt Lake City, UT <http://www.safeassociation.com/symposium.htm>

**September 28 – October 8, 2004** – ICAO Assembly 35<sup>th</sup> Session, Montreal, Canada  
<http://www.icao.int/icao/en/assembl/a35/index.html>

**September 29 – October 1, 2004** – 2004 International Conference on Human Computer Interaction (HCI-Aero), Toulouse, France  
<http://www.eurisco-international.com/hci-aero2004>.

**October, 2004** – 18<sup>th</sup> Airbus/JetBlue Human Factors Symposium, New York City, NY  
<http://www.airbus.com/customer/events.asp>

**October 4-7, 2004** – SAE SEAT – Aircraft Seat Committee Meeting, Albuquerque, NM  
[mlemank@sae.org](mailto:mlemank@sae.org)

**October 5-7, 2004** – Aircraft Seat Committee Meeting, Albuquerque, NM  
[mlemank@sae.org](mailto:mlemank@sae.org)

**October 10-16, 2004** – ACM Multi-Media 2004, New York, NY <http://www.mm2004.org/>

*October 11-14, 2004* – *User Interface 9 Conference, Cambridge, MA* [uiconf@uie.com](mailto:uiconf@uie.com).

**October 12-14, 2004** – Shared Vision of Aviation Safety Conference, San Diego, CA  
<http://www.aviationsafetyconference.com/index2.html>

**October 12-14, 2004** – 57<sup>th</sup> Annual Business Aviation Association Meeting and Convention, Las Vegas County Convention Center, Las Vegas, NV <http://web.nbaa.org/public/cs/amc/>

**October 13-15, 2004** – Sixth International Conference on Multimodal Interfaces, Penn State University, State College, PA <http://www.icmiplace.org/>

**October 18-19, 2004** – National Academies Institute of Medicine Annual Meeting, National Academy of Sciences, Washington, DC <http://wwwsearch.nationalacademies.org/>

**October 18-22, 2004** – AC-9 Aircraft Environmental Systems Meeting, Wichita, KS  
[mlemank@sae.org](mailto:mlemank@sae.org)

**October 19-20, 2004** – Aerospace Council Meeting, Toulouse, France  
[mlemank@sae.org](mailto:mlemank@sae.org)

**October 21-23, 2004** – Aircraft Owners and Pilots Association Expo 2004, Long Beach Convention and Entertainment Center, Long Beach, CA <http://www.aopa.org/expo/2003/virtual/>

**October 23-27, 2004** – NordiCHI 2004, Tampere, Finland <http://www.cs.uta.fi/nordichi2004/>

**October 24-27, 2004** – UIST 2004, 17<sup>th</sup> Annual ACM Symposium on User Interface Software and Technology, Santa Fe, NM <http://www.acm.org/uist/>

**October 25-28, 2004** – SAE S-9 Cabin Safety Technical Committee Meeting, San Diego, CA [mlemank@sae.org](mailto:mlemank@sae.org)

**October 25-28, 2004** – DoD Maintenance Seminar and Exhibition, Hilton Americas, Houston, TX <http://www.sae.org/calendar/aeromtgs.htm>

**October 26-28, 2004** – ICAO Security Seminar, Merida, Mexico <http://www.icao.org>

**October 27-29, 2004** – Human Factors and Ergonomics Society Europe Chapter Annual Meeting, Delft University, the Netherlands  
[http://utopia.ision.nl/users/hfsec/meeting/ec\\_meet.htm](http://utopia.ision.nl/users/hfsec/meeting/ec_meet.htm)

**October 27-29, 2004** – S-9 Cabin Safety Technical Committee Meeting, San Diego, CA [mlemank@sae.org](mailto:mlemank@sae.org)

**October 31, 2004** – ATCA Annual Conference and Exposition, Marriott Wardman Park Hotel, Wash., DC [http://www.atca.org/event\\_items.asp#](http://www.atca.org/event_items.asp#)

**November 1-4, 2004** – DOD Human Factors Engineering Technical Advisory Group Meeting, Holiday Inn Select, Alexandria, VA <http://hfetag.dtic.mil/meetschl.html>

**November 2-4, 2004** – World Aviation Conference, Hilton Hotel, Reno, NV  
<http://www.sae.org/events/wac/>

**November 4-5, 2004** – Royal Aeronautical Society Seminar - Human Factors Training in Aviation Maintenance, RAF Bentley Priory, Stanmore, near Watford, North London  
<http://www.raes-hfg.com/xmhfrtraining.htm>

**November 8-9, 2004** – European Aviation Training Symposium, Vienna, [Austria](#)  
<http://www.at-events.com/eats/conference.asp>

*November 12-17, 2004* – American Society for Information Science and Technology Annual Meeting, Providence, RI [asis@asis.org](mailto:asis@asis.org)

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

*November 18-19, 2004* – IT World Expo, Toronto, Canada [richardp@WowGao.com](mailto:richardp@WowGao.com)

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

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

**January 25-27, 2005** – AE-2 Aerospace Lighting Committee Meeting, New Orleans, LA  
[elizd@sae.org](mailto:elizd@sae.org)

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

*April 2-7, 2005* – CHI 2005, Portland, OR [chi2005-chair@acm.org](mailto:chi2005-chair@acm.org).

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

**April 17-22, 2005** – International Federation of Air Traffic Controller's Associations, Melbourne, Australia  
[http://www.ifatca.org/conferences/annual\\_conference.htm](http://www.ifatca.org/conferences/annual_conference.htm)

**April 18-21, 2005** – 13<sup>th</sup> International Symposium on Aviation Psychology (ISAP), Civil Aerospace Medical Institute (CAMI), Oklahoma City, OK (note: call for papers deadline is August 16, 2004).  
<http://www.cami.jccbi.gov/>, <http://www.wright.edu/isap/>

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

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

*July 22-28, 2005* – HCI International 2005, 11<sup>th</sup> International Conference on Human-Computer Interaction, Caesars Palace, Las Vegas, NV  
[hci2005@ecn.purdue.edu](mailto:hci2005@ecn.purdue.edu)

**August 18-21, 2005** - 113<sup>th</sup> 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 26-30, 2005** – Human Factors and Ergonomics Society 49<sup>th</sup> 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 24-25, 2005** – National Academies Institute of Medicine Annual Meeting, National Academy of Sciences, Washington, DC  
<http://wwwsearch.nationalacademies.org/>

**January 22-26, 2006** – TRB 85<sup>th</sup> 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  
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