



## ATOP-R&D

### Human Factors Newsletter # 05-10

May 21, 2005 – June 10, 2005

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- *Technical Note - A comparison of subject-based classification strategies for enhanced usability.*
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#### **Technical Note:**

William J. Hughes Technical Center personnel submitted the following for presentation and publication in the proceedings for the September 2005 Annual Meeting of the Human Factors and Ergonomics Society:

Ahlstrom, V. (2005). A comparison of subject-based classification strategies for enhanced usability. *To appear in the Proceedings of the Human Factors and Ergonomics Society Annual Meeting, Orlando, FL.*

Abstract. Collections of documents, such as technical notes, are often classified on websites using a set of key words that describe general subject areas. These key words are used as a set of links to help the user navigate to the information he or she is seeking. This subject-based classification is intended to help users find information. A poorly designed subject-based index can make it difficult or impossible for users to find the information they need. Creating an

effective subject-based index is not easy. There are many different classification strategies that can be used. Each of these strategies can result in a different set of key words/key phrases. Some of these strategies may result in an index that is more usable than others. This paper addresses the problem of how to create a subject index that facilitates usability. Several strategies are compared against user search data. The results demonstrated an approach to creating a key word index that would maximize user success in retrieving information.

*This research activity supports the Administrator's Flight Plan Goal for Organizational Excellence, Objectives 2 & 3: Control costs while delivering quality customer service; Make decisions based on reliable data to improve our overall performance and customer satisfaction.*

Point of Contact: D. Piccione, ATO-P R&D

### **Technical Note:**

William J. Hughes Technical Center personnel submitted the following for presentation and publication in the proceedings for the September 2005 Annual Meeting of the Human Factors and Ergonomics Society:

Friedman-Berg, F., & Ahlstrom, A. (in press). Evaluating controller use of advanced weather products by evaluating user interaction patterns. *To appear in the Proceedings of the Human Factors and Ergonomics Society Annual Meeting, Orlando, FL.*

Abstract. We evaluated how Terminal Radar Approach Control (TRACON) controllers interacted with advanced weather products displayed on primary tactical radar displays or on auxiliary flat-panel displays. When we provide the controllers with access to appropriate weather tools, we potentially decrease workload and improve performance by increasing weather situational awareness (WSA). We assessed the benefit of providing weather information using Gantt charts to graphically depict user interaction patterns and by conducting an analysis of the frequency and duration of interactions with the weather tools. From these analyses, we identified two patterns of interacting with tools corresponding to heavy and light users. We correlated tool use with our measure of controller efficiency and found an increase in traffic throughput with increasing tool use. We also determined that the controllers were more likely to interact tactically with tools when placed on the Terminal Controller Workstation (TCW), turning them on when needed and turning them off when not needed. This method provides us with insight into how the controllers use the information on their displays to help provide them with tools to increase safety and efficiency.

*This research activity supports the Administrator's Flight Plan Goal for Greater Capacity, Objective 1: Increase capacity to meet projected demand.*

Point of Contact: D. Piccione, ATO-P R&D

**FAA Human Factors Job Announcement:** The Federal Aviation Administration is seeking applicants for a Scientific and Technical Advisor for Human Factors position at FAA Washington Headquarters Region, Air Traffic Organization, Operations Planning Service Unit, ATO-P. This position is located in the Director of Research & Development, Human Factors Research and Engineering office. The closing date for this announcement is July 1, 2005. Salary range is \$62,745 to \$118,648. The incumbent provides advice, expertise, and technical support on the planning, design, development, and conduct of a variety of human factors projects in support of the research, acquisition, and operation of air traffic control systems. The incumbent will be required to identify and assess existing or potential issues, risks, and solutions involving the human factors engineering aspects of air traffic control, plan evaluations and conduct analyses, collect and evaluate data, identify trends, and identify current or potential risks. The incumbent will also be required to identify alternative solutions and coordinate proposals with supervisors, managers, contractors, operating officials, and acquisition teams to resolve or mitigate human performance issues. A copy of the job announcement can be found at the FAA Jobs Database: [http://jobs.faa.gov/announcement\\_detail.asp?vac\\_id=78812](http://jobs.faa.gov/announcement_detail.asp?vac_id=78812). *This activity supports the Administrator's Flight Plan Goal for Increased Safety, Objective 7: Enhance the safety of FAA's air traffic systems. This activity also supports the Administrator's Flight Plan Goal for Organizational Excellence, Objective 1: Make the organization more effective with stronger leadership, increased commitment of individual workers to fulfill organization-wide goals, and a better prepared, better trained, safer, diverse workforce* (G. Hewitt, ATO-P R&D)

**NTML:** On June 13, 2005, William J. Hughes Technical Center researcher Tanya Yuditsky I participated in a meeting of the National Traffic Management Log (NTML) Severe Weather Subgroup. The focus of the meeting was to define NTML requirements that will allow field facilities and Severe Weather Specialists at the Air Traffic Control System Command Center to share information more effectively. Currently, reroute advisories due to severe weather are received as paper copies or via e-mail, making it difficult to use or log the information. By receiving reroute advisories in the NTML, field facilities will be able to use the information quickly without having to utilize word processing software. In addition, the NTML can be used to coordinate reroute requests between facilities. By sharing the information electronically, the potential for user error in writing down or relaying the information is greatly reduced. The amount of time specialists spend on the phone accomplishing the coordination should also be reduced. System requirements that provide these capabilities were specified. In addition, input on interface design, human performance, and workload was discussed. *This research activity supports the Administrator's Flight Plan Goal for Greater Capacity, Objective 1: Increase capacity to meet projected demand* (E. Stein, WJHTC)

**ATCSCC Website Redesign:** On June 13, 2005, William J. Hughes Technical Center Kenneth researcher Kenneth Allendoerfer participated in a team meeting to redesign the Air Traffic Control System Command Center (ATCSCC) website ([fly.faa.gov](http://fly.faa.gov)). This tool allows users to check on the delay status of airports. The site receives millions of visits per year. The goal of the team is to make the site more appealing, easier to use, and more accessible for people with disabilities. In addition, the project seeks to bring the website into compliance with FAA branding and knowledge management efforts. Consulting will be provided on best practices in user interface design, reducing display complexity, information organization, matching the design to user needs and expectations, and user-centered design processes. The website will be redesigned this summer and a usability demonstration will be scheduled before the re-launch.

*This research activity supports the Administrator's Flight Plan Goal for Greater Capacity, Objective 1: Increase capacity to meet projected demand. (E. Stein, WJHTC)*

**Presentation on Human Error:** On June 14<sup>th</sup> Scott Shappell will provide an invited address to the American Society of Safety Engineers entitled, "Managing Human Error in Complex Environments." The presentation is a highlighted address during the conference whose theme is "Safety 2005 – Advancing the Environmental, Health, & Safety Profession." *This activity supports the Administrator's Flight Plan Goal for Increased Safety. (D. Schroeder, CAMI)*

### **Technical Information: Human Factors Reports Database**

The Human Factors Reports Database has over 1400 articles from 29 different sources, including the William J. Hughes Technical Center, CAMI, NASA and EUROCONTROL. There are also articles from research conducted at several universities. To access the reports, point to: [www.hf.faa.gov/Workbench/search.aspx](http://www.hf.faa.gov/Workbench/search.aspx). The database is updated regularly, and we will keep you informed about the latest articles. Each month we will list articles that have been added to the database. Here is a list of recent additions:

----(2004). The Human Factors Case: Guidance for Human Factors Integration.  
<http://www.hf.faa.gov/Workbench/techrptdetails.aspx?id=1338>.

Rothaug, J. (2004). Age, Experience and Automation in European Air Traffic Control - Survey in the ECAC Area. <http://www.hf.faa.gov/Workbench/techrptdetails.aspx?id=1335>.

Shorrock, S. & Straeter, O. (2004). Managing System Disturbances in ATM: Background and Contextual Framework. <http://www.hf.faa.gov/Workbench/techrptdetails.aspx?id=1340>

Voller, L. & Low, I. (2004). Impact of Automation on Future Controller Skill Requirements and a Framework for their Prediction.  
<http://www.hf.faa.gov/Workbench/techrptdetails.aspx?id=1337>

Yeh, Michelle (2005). Human Factors Considerations in the Design and Evaluation of Moving Map Displays of Ownship on the Airport Surface.  
<http://www.hf.faa.gov/Workbench/techrptdetails.aspx?id=1331>

*This initiative supports the Administrator's Flight Plan Goal for Organizational Excellence, Objective 3: Make decisions based on reliable data to improve our overall performance and customer satisfaction*

Point of Contact: Dino Piccione, ATO-P R&D

**eJANUS:** The eJANUS workgroup will meet at Indianapolis Center to brief facility personnel on the eJANUS project and demonstrate website functionality. eJANUS is a web-based tool for identification of operational error (OE) causal factors. It was developed to enhance the current OE reporting system. The first live test of e-JANUS is scheduled for Tuesday, June 14, 2005.

*This research activity supports the Administrator's Flight Plan Goal for Increased Safety, Objective 7: Enhance the safety of FAA's air traffic systems. (J. Pounds, CAMI)*

**eJANUS/NATPRO:** CAMI researcher Julia Pounds participated in a program review discussion with the Human Factors Research and Engineering Office along with representatives from ATO-A, ATO-E, ATO-P, ATO-S, ATO-T, and ATO-W. Presentations were made regarding the status of FY05 research activities in (1) development and testing of the web-based version of the JANUS (eJANUS) technique to identify operational error casual factors, and (2) the National Air Traffic Professionalism Program (NATPRO), a skill-based training program to enhance attention and concentration processes. Key objectives of NATPRO are to increase controller understanding of mental processes and influences that may affect performance, develop personal performance improvement programs to supplement existing knowledge-based training, and test the utility of interactive computer programs as tools for increasing awareness and improving mental skills. The NATPRO program is an example of how rewarding and cost effective training can be deployed. *This research activity supports the Administrator's Flight Plan Goal for Increased Safety, Objective 7: Enhance the safety of FAA's air traffic systems. It also supports the Administrator's Flight Plan Goal for Organizational Excellence, Objective 1: Make the organization more effective with stronger leadership, increased commitment of individual workers to fulfill organization-wide goals, and a better prepared, better trained, safer, diverse workforce. (J. Pounds, CAMI)*

**General Aviation:** On May 31, 2005, CAMI representatives Dave Schroeder and William Knecht met with sponsors and management in Washington to set goals for a project that will address how weather information delivery systems are actually used by general aviation pilots. The project will gather use-pattern information on older FAA-sponsored programs as well as newer programs like the joint NOAA-FAA initiative ([www.aviationweather.gov](http://www.aviationweather.gov)). *This research activity supports the Administrator's Flight Plan Goal for Increased Safety, Objective 2: Reduce the number of fatal accidents in general aviation. (D. Schroeder, CAMI)*

**EAS:** The 2005 Employee Attitude Survey (EAS) on-line data collection closed on June 3, 2005. Overall, 1,277 of 3,798 sampled employees completed the on-line short version of the EAS, for an on-line response rate of 33.7%. The purpose of the survey is to help FAA management assess progress on the Flight Plan Goal of increasing management effectiveness and accountability. *This research activity supports the Administrator's Flight Plan Goal for Organizational Excellence, Objective 1: Make the organization more effective with stronger leadership, increased commitment of individual workers to fulfill organization-wide goals, and a better prepared, better trained, safer, diverse workforce. (D. Schroeder, CAMI)*

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

Paul Krois  
FAA (ATO-P R&D Human Factors)



**June 12-15, 2005** – The American Society of Safety Engineers Safety 2005 Conference, Ernest Morial Convention Center, New Orleans, LA <http://www.asse.org/>

**June 13-19, 2005** - Paris Air Show 2005, Parc des expositions de Paris Nord - Le Bourget, 93350, France. [www.paris-air-show.com](http://www.paris-air-show.com)

**June 20-22, 2005** – 3<sup>rd</sup> Human System Integration Symposium, Sheraton National Hotel, Arlington, VA <http://www.navalengineers.org/Events/HSIS2005/HSIS05Index.html>

*June 20-24, 2005 - International Society for Theoretical Psychology Conference, Cape Town, Western Cape, South Africa <http://www.udallas.edu/istp/>*

**June 21-23, 2005** - Center of Excellence for General Aviation, Research Annual Meeting, University of Alaska, Fairbanks, AK. [www.cgar.org](http://www.cgar.org).

*June 26-30, 2005 - 30th Inter-American Congress of Psychology, Buenos Aires, Argentina <http://www.sip2005.org/ar>*

**June 27-30, 2005** – TRB 3<sup>rd</sup> International Driving Symposium on Human Factors in Driver Assessment, Training, and Vehicle Design, Rockport, Maine

**June 28-30, 2005** – AAMI Human Factors, Ergonomics, and Patient Safety for Medical Devices, Capital Hilton, Washington, DC <http://www.aami.org/meetings/hf/>

**June 28-30, 2005** – Airport 2025 Conference, Washington, DC [www.sskies.org](http://www.sskies.org)

*July 3-8, 2005 – 9<sup>th</sup> European Congress of Psychology Conference, Granada, Spain [www.ecp2005.com](http://www.ecp2005.com)*

**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](http://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** - 113<sup>th</sup> Convention of the American Psychological Association, Wash, DC <http://www.apa.org/convention>

**August 22-26, 2005** – SAE G-10 (Behavioral Engineering Technology Committee Meeting, Washington, DC [http://forums.sae.org/access/dispatch.cgi/TEAG10\\_pf](http://forums.sae.org/access/dispatch.cgi/TEAG10_pf)

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

**September 15-18, 2005** - Conjoint Meeting of the Australasian Society of Aerospace Medicine and the Asia Pacific Federation of Aerospace Medical Association, Gold Coast, Queensland, Australia. [www.asam.org.au](http://www.asam.org.au).

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

**September 20-21, 2005** - R,E&D Advisory Committee Meeting (joint meeting with NASA's Aerospace Research Advisory Committee), Bessie Coleman Auditorium, FAA Headquarters, Wash., DC [Gloria.dunderman@faa.gov](mailto:Gloria.dunderman@faa.gov)

*September 20-22, 2005 – Second Safety Across High-Consequence Industries Conference, Saint Louis University, St. Louis, MO [http://parks.slu.edu/msasm\\_conference/index.html](http://parks.slu.edu/msasm_conference/index.html).*

*September 20-24, 2005 - 1st Congress of the International Society for Cultural and Activity Research (ISCAR), Seville, Spain [iscar2005@iscar.org](mailto:iscar2005@iscar.org)*

**September 21-23, 2005** - Cargo Facts 2005- 11th Annual Aircraft Symposium, Sheraton Hotel & Towers, Seattle, Washington [ashoemaker@cargofacts.com](mailto:ashoemaker@cargofacts.com)

**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 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 6-9, 2005** – Aviation North Expo Conference, Fairbanks Princess Riverside Lodge, Fairbanks, AK [www.AviationNorth.org](http://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 24-26, 2005** – 43<sup>rd</sup> SAFE Symposium, Grand America Hotel, Salt Lake City, UT  
<http://www.safeassociation.org/symposium.htm>

**October 30-November 7, 2005** – ATCA 50<sup>th</sup> Annual Conference and Exposition, Dallas, TX  
[http://www.atca.org/event\\_items.asp](http://www.atca.org/event_items.asp).

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

**November, 2005** – DoD TAG (Human Factors Engineering Technical Advisory Group) Meeting, Baltimore, MD <http://hfetag.dtic.mil/meetschl.html>

**November 3-5, 2005** - AOPA Expo, Tampa, Florida [www.aopa.org](http://www.aopa.org)

**November 6-9, 2005** - ACI World / Pacific Conference and Exhibition, Auckland, New Zealand.  
[www.auckland-airport.co.nz](http://www.auckland-airport.co.nz)

**November 7-10, 2005** – Flight Safety Foundation 58<sup>th</sup> Annual International Air Safety Seminar, Moscow, Russia [http://www.flightsafety.org/iass05\\_cfp.html](http://www.flightsafety.org/iass05_cfp.html)

*November 7-10, 2005 - Ergonomics and Human Factors: Applications in Occupational Safety and Health, Harvard School of Public Health, Cambridge, MA*  
<http://www.hsph.harvard.edu/ccpe/programs/EHF.shtml>

**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>

*November 8-10, 2005 – Maintenance, Repair & Overhaul Exhibition Asia, Suntec Convention Center, Singapore* <http://www.aviationnow.com/conferences/masmain.htm>

**November 10, 2005** - 34th Annual Meeting of the Society for Computers in Psychology, Toronto, Ontario, Canada <http://www.scip.ws>

**November 10 - 13, 2005** - 46th Psychonomic Society Annual Meeting, Toronto, Ontario, Canada <http://www.psychonomic.org/meet.htm>

**November 15-17, 2005** - National Business Aviation Association's 58th Annual Meeting & Convention, New Orleans, LA [www.nbaa.org](http://www.nbaa.org)

**November 16-17, 2005** – IEE Human Factors Engineering Professional Network/MoD Human Factors Integration Defense Technology Center “People and Systems Symposium: Who Are We Designing For?”, Grange City Hotel London, UK <http://conferences.iee.org/pas2005>

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

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

**March 22 - 25, 2006** - Society for Behavioral Medicine Annual Meeting and Scientific Sessions, San Francisco, CA [www.sbm.org/annualmeeting/index.html](http://www.sbm.org/annualmeeting/index.html)

**March 23-25, 2006** - 17th Annual International Women in Aviation Conference, Opryland Hotel Nashville, TN <http://www.wai.org/>

**April 4-10, 2006** – Sun ‘n Fun, Lakeland, FL <http://www.sun-n-fun.org/content/>

*April 25-27, 2006 – Maintenance, Repair & Overhaul (MRO) Conference & Exhibition, Phoenix Civic Plaza, Phoenix, AZ <http://www.aviationnow.com/conferences/mromain.htm>*

**May 1-4, 2006** - 47th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference; 14th AIAA/ASME/AHS Adaptive Structures Conference; 7th AIAA Gossamer Spacecraft Forum; 2nd AIAA Multidisciplinary Design Optimization Specialist Conference; 1st AIAA Non-Deterministic Approaches Conference, Hyatt Regency Newport, Newport, RI <http://www.aiaa.org/>

**May 14-18, 2006** - 77<sup>th</sup> Annual Scientific Meeting of the Aerospace Medical Association, Caribe Royale Hotel, Orlando, FL <http://www.asma.org/>

**May 25-28, 2006** – American Psychological Society 18<sup>th</sup> Annual Convention, New York Marriott Marquis, New York City, NY <http://www.psychologicalscience.org/convention/>

**June 11-14, 2006** – The American Society of Safety Engineers Safety 2006 Conference, Washington State Convention and Trade Center, Seattle, WA <http://www.asse.org/2006pdcallforpapers.pdf>

**July, 2006** - 26th International Congress of Applied Psychology, Athens, Greece [dgeorgas@dp.uoa.gr](mailto:dgeorgas@dp.uoa.gr) , [http://www.erasmus.gr/dynamic/conventions.asp?conv\\_id=21r/dynamic/conventions.asp?conv\\_id=21](http://www.erasmus.gr/dynamic/conventions.asp?conv_id=21r/dynamic/conventions.asp?conv_id=21)

**July 24-30, 2006** – EAA AirVenture, Oshkosh, WI <http://www.airventure.org/>

**August 10-13, 2006** – American Psychological Association Annual Meeting, New Orleans, LA <http://www.apa.org/convention05/future.html>

**September 10-14, 2006** - 54th International Congress of Aviation and Space Medicine, Bangalore, India. A preliminary registration form may be found at <http://www.isam-india.org/conference44/newreg.php>.

**October 23-25, 2006** – 44<sup>th</sup> Annual SAFE Symposium, Reno Hilton Hotel, Reno, NV <http://www.safeassociation.org/symposium.htm>

*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](mailto:bill.ctr.berger@faa.gov)