



7th USA – EUROPE ATM R&D Seminar

July 02–05, 2007
Barcelona
Spain

PROGRAMME

Monday 02/07/2007

Plenary Welcome Session

- 09:00 Welcome and Logistics - **Christian Pusch** (Europe Chair) & **Sabrina Saunders-Hodge** (USA Chair)
- 09:15 Welcome - **Fernando Palao**, Transport Secretary of State, Ministry of Development
- 09:30 Welcome - **Victor Aguado**, DG EUROCONTROL & **Vicki Cox**, VP FAA ATO Operations Planning
- 10:00 Keynote address EUROPE - **Bo Redeborn**, DAS EUROCONTROL & **Luc Tytgat**, EC DG TREN
- 10:30 Keynote address USA - **Vicki Cox**, VP FAA ATO Operations Planning



Monday 02/07/2007

Track I: Innovative ATM Concepts

Room A

Session Manager: *Jacco Hoekstra, NLR*

- 11:30** **COULD ERASMUS SPEED ADJUSTMENTS BE IDENTIFIABLE BY AIR TRAFFIC CONTROLLERS?** [Paper N° 164]
Averty Philippe, DSNA, Toulouse, France
Johansson Björn, Linköpings Universitet, Sweden
Wise John, Honeywell International, Phoenix, Arizona, USA
Capsie Corinne, Sofreavia, Toulouse, France
- 12 :15** **UNMANNED AIRCRAFT COLLISION AVOIDANCE – TECHNOLOGY ASSESSMENT AND EVALUATION METHODS** [Paper N° 89]
Andrew R. Lacher, David R. Maroney, Dr. Andrew D. Zeitlin
The MITRE Corporation, McLean, VA, USA
- 14:30** **NEW AIR TRAFFIC MANAGEMENT CONCEPTS ANALYSIS METHODOLOGY: APPLICATION TO A MULTI-SECTOR PLANNER IN US AIRSPACE** [Paper N° 170]
Kevin Corker, Paul Lee, Tom Prevot, San Jose State University, San Jose, Ca.
Diana Liang, Federal Aviation Administration, Washington, DC
- 15 :15** **IMPROVING ATC EFFICIENCY THROUGH AN IMPLEMENTATION OF A MULTI SECTOR PLANNER POSITION** [Paper N° 130]
Almira Williams, Mark D. Rodgers, Stephane Mondoloni
CSSI, Inc., Washington, DC, USA
Diana Liang, FAA, Washington, DC, USA
- 16:30** **AIR-TRAFFIC COMPLEXITY RESOLUTION IN MULTI-SECTOR PLANNING USING CONSTRAINT PROGRAMMING** [Paper N° 23]
Pierre Flener, Justin Pearson, and Magnus Agren
Uppsala University, Sweden
Carlos Garcia-Avello, Mete Celiktin, and Søren Dissing
EUROCONTROL, Belgium
- 17 :15** **SYSTEMATIC AIR TRAFFIC MANAGEMENT IN A REGULAR LATTICE** [Paper N° 115]
Richard Irvine, Horst Hering,
EUROCONTROL Experimental Centre, France



Monday 02/07/2007

Track II: Active ATM Performance Management

Room B

Session Manager: *Wim Post, EUROCONTROL*

- 11:30 FIVE YEARS EXPERIENCE IN ATM COST BENCHMARKING** [Paper N° 94]
Giovanni Nero, Sébastien Portet
EUROCONTROL Performance Review Unit
Brussels, Belgium
- 12 :15 ESTIMATING CAPACITY REQUIREMENTS FOR AIR TRANSPORTATION SYSTEM DESIGN** [Paper N° 62]
Shannon Zelinski and Tom Romer
NASA Ames Research Center, USA
- 14:30 EVALUATING THE PERFORMANCE OF NEXTGEN USING THE ADVANCED CONCEPTS EVALUATION SYSTEM** [Paper N° 145]
Frederick Wieland, Greg Carr, George Hunter, Alex Huang, Kris Ramamoorthy
Sensis Corporation, Seagull Technology Division, USA
- 15 :15 EXAMINING THE TEMPORAL EVOLUTION OF PROPAGATED DELAYS AT INDIVIDUAL AIRPORTS: CASE STUDIES** [Paper N° 111]
Andrew M. Churchill, David J. Lovell, Michael O. Ball, Robert H. Smith,
University of Maryland, USA
- 16:30 DEVELOPMENT OF AN ALGORITHM TO MODEL THE LANDING OPERATIONS, BASED ON STATISTICAL ANALYSIS OF ACTUAL DATA SURVEY (PROESTOP)** [Paper N° 27]
Carlos Barbas, Javier Vázquez, Pablo López.
INECO S.A., Spain
- 17 :15 CALIBRATING AGGREGATE MODELS OF FLIGHT DELAYS AND CANCELLATION PROBABILITIES AT INDIVIDUAL AIRPORTS** [Paper N° 121]
David J. Lovell and Andrew M. Churchill, University of Maryland,
Amedeo R. Odoni, Massachusetts Institute of Technology,
Avijit Mukherjee, University of California
Michael O. Ball, University of Maryland



Monday 02/07/2007

Track III: Safety in ATM

Room C

Session Manager: *Dres Zellweger, JPDO*

- 11:30 OPERATIONAL RISK ASSESSMENT FOR AIRSPACE PLANNING** [Paper N° 107]
Karim Mehadhebi
Direction des Services de la Navigation Aérienne, France
- 12 :15 SAFETY ANALYSIS METHODOLOGY FOR ADS-B BASED SURVEILLANCE APPLICATIONS** [Paper N° 58]
Jonathan Hammer, The MITRE Corporation
Gilles Caligaris, EUROCONTROL
Marta Llobet, Sofréavia
- 14:30 A QUANTITATIVE MODEL FOR EN ROUTE ERROR RATE ANALYSIS** [Paper N° 20]
Daniel Murphy, Federal Aviation Administration, USA
Gerald Shapiro, The CNA Corporation, USA
- 15 :15 SAFETY RISK ANALYSIS OF RUNWAY INCURSION ALERT SYSTEMS IN THE TOWER AND COCKPIT BY MULTI-AGENT SYSTEMIC ACCIDENT MODELLING** [Paper N° 51]
Sybert H. Stroeve, G.J. (Bert) Bakker, Henk A.P. Blom
National Aerospace Laboratory NLR, Amsterdam, The Netherlands
- 16:30 AN ANALYSIS OF OPERATIONAL ERRORS AND THE INTERACTION WITH TCAS RAS** [Paper N° 131]
Garcia-Chico, José L. & Corker, Kevin M., PhD, San José State University, CA
- 17 :15 OPERATIONAL IMPACT OF RA DOWNLINK: RESULTS OF A REAL-TIME SIMULATION** [Paper N° 84]
Stanislaw Drozdowski & Doris M. Dehn, EUROCONTROL, Brussels, Belgium
Jürgen Teutsch – National Aerospace Laboratory of the Netherlands (NLR)
Bernd Lorenz – German Aerospace Center (DLR)



Tuesday 03/07/2007

Track I: Innovative ATM Concepts

Room A

Session Manager: *Jacco Hoekstra, NLR*

09 :00 **A PSYCHOSOCIAL APPROACH TO UNDERSTANDING PILOT AND CONTROLLER ACCEPTANCE OF CHANGE IN ATM, BASED ON THREE CDA CASE STUDIES**

[Paper N° 56]

*Andrew Cook, Graham Tanner, University of Westminster, UK
Nadine Pilon, Tony Joyce, EUROCONTROL Experimental Centre, France*

09 :45 **COORDINATED ARRIVAL DEPARTURE MANAGEMENT**

[Paper N° 102]

*Dietmar Böhme, Ralph Brucherseifer, Lothar Christoffels
German Aerospace Center DLR, Institute of Flight Guidance, Braunschweig, Germany*

11:00 **THROUGHPUT, RISK, AND ECONOMIC OPTIMALITY OF RUNWAY LANDING OPERATIONS**

[Paper N° 162]

Babak G. Jeddi, John F. Shortle, George Mason University, Fairfax, Virginia, USA

11 :45 **EFFICIENT AND EQUITABLE DEPARTURE SCHEDULING IN REAL-TIME: NEW APPROACHES TO OLD PROBLEMS**

[Paper N° 66]

*Hamsa Balakrishnan, Massachusetts Institute of Technology, Cambridge, MA
Bala Chandran, University of California, Berkeley, CA.*

Track I: Integrated Airport Management

Room A

Session Manager: *Sandy Lozito, NASA Ames*

14:00 **PREDICTION OF OPERATIONAL FAILURE STATES AT AIRPORTS BY MEANS OF STOCHASTIC TRANSITION MATRICES**

[Paper N° 11]

Daniel Schaad, German Aerospace Center DLR, Braunschweig, Germany

14 :45 **PREVENTING SELFISH BEHAVIOUR IN DISTRIBUTED TACTICAL AIRPORT PLANNING**

[Paper N° 109]

*Geert Jonker, Frank Dignum and John-Jules Meyer, Utrecht University, The Netherlands
Henk Hesselink National Aerospace Laboratory NLR, The Netherlands*

16:00 **VALIDATION RESULTS OF AIRPORT TOTAL OPERATIONS PLANNER PROTOTYPE CLOU**

[Paper N° 75]

Andreas Pick, German Aerospace Center DLR, Braunschweig, Germany

16 :45 **A-SMGCS VERIFICATION AND VALIDATION RESULTS FROM THE PROJECT EMMA (LEVEL 1&2)**

[Paper N° 55]

*Jörn Jakobi, DLR, Braunschweig, Germany
Jürgen Teutsch, NLR, Amsterdam, The Netherlands*



Tuesday 03/07/2007

Track II: Active ATM Performance Management

ROOM B

Session Manager: *Wim Post, EUROCONTROL*

- 09 :00 AIRSPACE COMPLEXITY MEASUREMENT: AN AIR TRAFFIC CONTROL SIMULATION ANALYSIS** [Paper N° 52]
Parimal Kopardekar, NASA Ames Research Center, Moffett Field, CA, USA
Albert Schwartz, Sherri Magyarits, and Jessica Rhodes, Federal Aviation Administration, Atlantic City, NJ, USA
- 09 :45 VALIDATION OF REQUIRED SURVEILLANCE PERFORMANCE (RSP) ACCURACY** [Paper N° 61]
John W. Andrews, Steven D. Thompson
M.I.T. Lincoln Laboratory, Lexington, MA
- 11:00 WEATHER INDEX WITH QUEUING COMPONENT FOR NATIONAL AIRSPACE SYSTEM PERFORMANCE ASSESSMENT** [Paper N° 24]
Dr. Alexander Klein, Air Traffic Analysis, Inc, Fairfax, VA
Richard Jehlen, Diana Liang, The U.S. Federal Aviation Administration, Washington, DC
- 11 :45 WEATHER NORMALIZATION FOR EVALUATING NATIONAL AIRSPACE SYSTEM (NAS) PERFORMANCE** [Paper N° 163]
Mark Hansen, Jing Xiong, University of California at Berkeley, USA

Track II: Dynamic Airspace Management

ROOM B

Session Manager: *Vojin Tosic, University of Belgrade*

- 14:00 PREDICTING SECTOR CAPACITY FOR TFM** [Paper N° 38]
Lixia Song, Craig Wanke, Daniel Greenbaum The MITRE Corporation, lixia@mitre.org, McLean, VA
- 14 :45 AIRSPACE CONFIGURATION USING AIR TRAFFIC COMPLEXITY METRICS** [Paper N° 108]
David Gianazza, DSNA, Toulouse, France
- 16:00 NEW PROCESS FOR "CLEAN SHEET" AIRSPACE DESIGN AND EVALUATION** [Paper N° 91]
Robert S. Conker, Debra A. Moch-Mooney, William P. Niedringhaus, Brian T. Simmons, The MITRE Corporation, McLean, Virginia
- 16 :45 A TOOL TO DESIGN FUNCTIONAL AIRSPACE BLOCKS** [Paper N° 169]
Charles-Edmond Bichot, Nicolas Durand
LOG (Laboratoire d'Optimisation Globale)
DSNA —ENAC



Tuesday 03/07/2007

Track III: Safety in ATM

ROOM C

Session Manager: *Dres Zellweger, JPDO*

- 09 :00 SO IT'S RELIABLE BUT IS IT SAFE? A MORE BALANCED APPROACH TO ATM SAFETY ASSESSMENT** [Paper N° 41]
Derek Fowler, Gilles Le Galo, Eric Perrin, EUROCONTROL, Brussels, Belgium
Stephen Thomas, Entity Systems Ltd, UK
- 09 :45 A SYSTEMIC MODEL OF ATM SAFETY: THE INTEGRATED RISK PICTURE** [Paper N° 167]
Eric PERRIN, Barry KIRWAN, EUROCONTROL, France,
Ron STROUP, FAA, US
- 11:00 IDENTIFICATION AND ANALYSIS OF PROXIMATE EVENTS IN HIGH DENSITY ENROUTE AIRSPACES** [Paper N° 63]
Eduardo José García González, INECO, Madrid, Spain
Francisco Javier Sáez Nieto, Polytechnic University of Madrid, Madrid, Spain
Maria Isabel Izquierdo, EUROCONTROL, Brussels, Bélgica
- 11 :45 MODELLING AND ESTIMATION OF SEPARATION CRITERIA FOR AIRBORNE TIME-BASED SPACING OPERATION** [Paper N° 137]
Ítalo R. de Oliveira, Paulo S. Cugnasca, Polytechnic School, University of São Paulo, Brazil
Henk A.P. Blom, Bert (G.J.) Bakker, National Aerospace Laboratory NLR, The Netherlands

Track III: Human Factors in ATM

ROOM C

Session Manager: *Paul Krois, FAA/ATO*

- 14:00 THE COMPUTATION OF COMMUNICATION COMPLEXITY IN AIR TRAFFIC CONTROL MESSAGES** [Paper N° 1]
O. Veronika Prinzo, FAA Civil Aerospace Medical Institute, Oklahoma City, OK
Al Hendrix and Ruby Hendrix, Hendrix Consulting Services, Roswell, NM
- 14 :45 ANALYSIS OF MULTIPLE OPEN TRANSACTIONS AND CONTROLLER-PILOT MISCOMMUNICATIONS** [Paper N° 174]
Jasenska Rakas and Suseon Yang
University of California at Berkeley, Berkeley, CA, USA
- 16:00 TACKLING THE PROBLEM OF FLIGHT INTEGRATION** [Paper N° 110]
Benhacene Raïlane, Hurter Christophe, Marion Anthony, DSNA R&D, Toulouse, France
Merlin Bruno, Intuilab, Toulouse, France
Rousselle Marie-Pierre, Protectic, Toulouse, France
Ribet Philippe, Steria, Toulouse, France
- 16 :45 EVALUATING TRANSFORMATIONS OF THE AIR TRANSPORTATION SYSTEM THROUGH AGENT-BASED MODELING AND SIMULATION** [Paper N° 175]
Seung Man Lee and Amy R. Pritchett, Georgia Institute of Technology, Atlanta, GA
Kevin M. Corker, San Jose State University, San Jose, CA



Wednesday 04/07/2007

Track I: Air-Ground Integration

ROOM A

Session Manager: *Eric Hoffman, EUROCONTROL*

- 09 :00 FAST-TIME SIMULATION EVALUATION OF A CONFLICT RESOLUTION ALGORITHM UNDER HIGH AIR TRAFFIC DEMAND** [Paper N° 173]
Todd Farley, NASA Ames Research Center, Moffett Field, California
Heinz Erzberger, Adjunct Professor, University of California, Santa Cruz, California
- 09:45 PERFORMANCE-BASED AIR TRAFFIC MANAGEMENT: EVALUATING OPERATIONAL ACCEPTABILITY** [Paper N° 116]
Joseph C. Celio, Elida C. Smith, The MITRE Corporation, McLean, Virginia
- 11:00 ARRIVAL MANAGEMENT WITH REQUIRED NAVIGATION PERFORMANCE AND 3D PATHS** [Paper N° 147]
Aslaug Haraldsdottir, Julien Scharl, Matthew E. Berge, Ewald G. Schoemig, Michael L. Coats
Boeing Commercial Airplanes, Seattle, Washington
- 11:45 MERGING ARRIVAL FLOWS WITHOUT HEADING INSTRUCTIONS** [Paper N° 112]
Ludovic Boursier, Direction des Services de la Navigation Aérienne, Paris Orly, France.
Aymeric Trzmiel, Steria Transport Division, Issy-les-Moulineaux, France.
Bruno Favennec, Eric Hoffman., François Vergne, Karim Zeghal
EUROCONTROL Experimental Centre, Bretigny-sur-Orge, France
- 14:00 AIR/GROUND SIMULATION OF TRAJECTORY-ORIENTED OPERATIONS WITH LIMITED DELEGATION** [Paper N° 158]
Thomas Prevot, Todd Callantine, Jeff Homola, Paul Lee, Joey Mercer, San Jose State
University/NASA Ames Research Center, Moffett Field, CA
Everett Palmer, Nancy Smith, NASA Ames Research Center, Moffett Field, CA
- 14:45 PROPAGATION OF AIRBORNE SPACING ERRORS IN MERGING TRAFFIC STREAMS** [Paper N° 105]
Dan Ivanescu, Steria, France
Chris Shaw, Karim Zeghal, Eric Hoffman, EUROCONTROL Experimental Centre, France
- 16:00 EVALUATION OF A FLIGHT DECK-BASED MERGING AND SPACING CONCEPT ON EN-ROUTE AIR TRAFFIC CONTROL OPERATIONS** [Paper N° 153]
William J. Penhallegon and Randall S. Bone
The MITRE Corporation's Center for Advanced Aviation System Development, McLean, VA
- 16:45 APPLICATION OF KEY PERFORMANCE INDICATORS FOR TRAJECTORY PREDICTION ACCURACY** [Paper N° 127]
Stéphane Mondoloni, CSSI Inc., Washington, DC



Wednesday 04/07/2007

Track II: Network and Traffic Flow Optimisation

Room B

Session Manager: *Steve Bradford, FAA/ATO*

- 09 :00 **INCREMENTAL, PROBABILISTIC DECISION MAKING FOR EN ROUTE TRAFFIC MANAGEMENT** [Paper N° 35]
Craig Wanke and Daniel Greenbaum, The MITRE Corporation, McLean, VA
- 09:45 **A PRE-TACTICAL GENERALISED AIR TRAFFIC FLOW MANAGEMENT PROBLEM** [Paper N° 77]
Rainer Kaufhold, Deutsche Flugsicherung GmbH, Research Campus Langen, Germany
Steffen Marx, Carla Müller-Berthel, Karl Nachtigall, Technical University of Dresden, Faculty of Transport and Traffic Sciences, Germany
- 11:00 **RATION-BY-DISTANCE WITH EQUITY GUARANTEES: A NEW APPROACH TO GROUND DELAY PROGRAM PLANNING AND CONTROL** [Paper N° 122]
Robert Hoffman, Metron Aviation, Inc., Herndon, VA,
Michael O. Ball, Robert H. Smith School of Business and Institute for Systems Research, University of Maryland, College Park, MD
Avijit Mukherjee, University of California, Moffett Field, CA,
- 11:45 **SCENARIO-FREE SEQUENTIAL DECISION MODEL FOR THE SINGLE AIRPORT GROUND HOLDING PROBLEM** [Paper N° 154]
Pei-chen Barry Liu, Mark Hansen, University of California, Berkeley, CA
- 14:00 **MACROSCOPIC WORKLOAD MODEL FOR ESTIMATING EN ROUTE SECTOR CAPACITY** [Paper N° 37]
Jerry D. Welch, John W. Andrews, and Brian D. Martin
M.I.T. Lincoln Laboratory, Lexington, MA
Banavar Sridhar, NASA Ames Research Center, Moffett Field, CA
- 14:45 **AIR TRAFFIC COMPLEXITY: AN INPUT-OUTPUT APPROACH** [Paper N° 64]
Keumjin Lee, Eric Feron, Amy Pritchett
School of Aerospace Engineering, Georgia Institute of Technology, Atlanta, GA
- 16:00 **ALGORITHMS FOR MANAGING SECTOR CONGESTION USING THE AIRSPACE RESTRICTION PLANNER** [Paper N° 53]
Ray Jakobovits, Jason Burke and Robert Hoffman, Metron Aviation, Herndon, VA
Parimal Kopardekar, NASA Ames Research Center, Moffett Field, CA
- 16:45 **BENEFITS OF COLLABORATIVE FLOW MANAGEMENT DURING CONVECTIVE WEATHER DISRUPTIONS** [Paper N° 69]
Matthew E. Berge, Michael L. Carter, Aslaug Haraldsdottir, Bruno W. Repetto
The Boeing Company, Seattle, Washington



Wednesday 04/07/2007

Track III: Finance, Deployment and Implementations Issues
Room C

Session Manager: *Luis Vinagre, ISDEFE*

- 09 :00 AIR NAVIGATION SERVICE CHARGES IN EUROPE** [Paper N° 47]
Lorenzo Castelli, Andrea Ranieri
University of Trieste, Italy
- 09:45 THE DYNAMICS OF AIR TRANSPORTATION SYSTEM TRANSITION** [Paper N° 118]
Aleksandra Mozdzanowska, Roland Weibel, Edward Lester, and R. John Hansman
Massachusetts Institute of Technology, Cambridge, MA

Track III: Environmental Considerations in ATM System Design
Room C

Session Manager: *Lourdes Maurice, FAA/AEP*

- 11:00 ENVIRONMENTAL IMPACT OF AIR TRAFFIC FLOW MANAGEMENT DELAYS** [Paper N° 101]
Sandrine Carlier, Ivan de Lépinay, Jean-Claude Hustache, ENVISA, France
Frank Jelinek, EUROCONTROL Experimental Centre, France
- 11:45 ADVANCED NOISE ABATEMENT APPROACH ACTIVITIES AT NOTTINGHAM EAST MIDLANDS AIRPORT, UK** [Paper N° 119]
Tom G. Reynolds, University of Cambridge, Cambridge, UK
Liling Ren & John-Paul B. Clarke, Georgia Institute of Technology, Atlanta, GA, USA
- 14:00 FLIGHT DEMONSTRATION OF THE SEPARATION ANALYSIS METHODOLOGY FOR CONTINUOUS DESCENT ARRIVAL** [Paper N° 178]
Liling Ren & John-Paul B. Clarke, Georgia Institute of Technology, Atlanta, GA, USA
- 14:45 DETERMINING THE ENVIRONMENTAL BENEFITS OF IMPLEMENTING CONTINUOUS DESCENT APPROACH PROCEDURES** [Paper N° 17]
Eric Dinges, ATAC Corporation, Sunnyvale, CA
- 16:00 AEDT GLOBAL NOX DEMONSTRATION** [Paper N° 16]
Ted Thrasher, Alex Nguyen, Clifford Hall, CSSI, Inc., Washington D.C.
Gregg Fleming, Chris Roof, Sathya Balasubramanian, DOT Volpe Center, Cambridge, MA
Fabio Grandi, Scott Usdrowski, Wyle Laboratories, Inc., Arlington, VA
Eric Dinges, ATAC Corporation, Sunnyvale, CA
Carl Burtleson, Lourdes Maurice, Ralph Iovinelli, FAA, Washington, D.C.
- 16:45 QUANTIFYING THE RELATIONSHIP BETWEEN AIR TRAFFIC MANAGEMENT INEFFICIENCY, FUEL BURN AND AIR POLLUTANT EMISSIONS** [Paper N° 65]
Melissa Ohsfeldt, Ted Thrasher, CSSI, Inc., Washington D.C.
Ian Waitz, Gayle Ratliff, Chris Sequeira, Massachusetts Inst. of Technology, Cambridge, MA
Terry Thompson, Mike Graham, Rebecca Cointin, Metron Aviation, Inc., Herndon, VA
Warren Gillette, Mohan Gupta, Federal Aviation Administration, Washington, DC



Thursday 05/07/2007

Plenary Final Session

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| 09:00 | Outlook EUROPE - Jan van Doorn , DEEC EUROCONTROL |
| 09:30 | Outlook USA - Vicki Cox , VP FAA ATO Operations Planning |
| 10:00 | Q&A, Discussion |
| 10:40 | Session 1 - 5 Reports |
| 12:20 | Best Paper Awards |
| 14:00 | Session 6 - 10 Reports |
| 15:40 | Wrap-up |