

7th USA/Europe Air Traffic Management Research and Development Seminar 2007

**Barcelona, Spain
2-5 July 2007**

ISBN: 978-1-5108-0477-7

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2007) by The European Organisation for Safety of Air Navigation (Eurocontrol)
All rights reserved.

Printed by Curran Associates, Inc. (2015)

For permission requests, please contact The European Organisation for Safety of Air Navigation (Eurocontrol) at the address below.

The European Organisation for Safety of Air Navigation (Eurocontrol)
Rue de la Fusée 96
Brussels 1130
Belgium

Phone: +31 2 729 90 11
Fax: +32 2 729 90 44

infocentre@eurocontrol.int

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

The Computation of Communication Complexity in Air Traffic Control Messages	2
<i>O. Prinzo, A. Hendrix, R. Hendrix</i>	
Prediction of Operational Failure States at Airports by Means of Stochastic Transition Matrices	12
<i>D. Schaad</i>	
AEDT Global NO_x Demonstration	24
<i>T. Thrasher, A. Nguyen, C. Hall, G. Fleming, C. Roof, S. Balasubramanian, F. Grandi, S. Usdrowski, E. Dinge, C. Burleson, L. Maurice, R. Iovinelli</i>	
Determining the Environmental Benefits of Implementing Continuous Descent Approach Procedures	34
<i>E. Dinges</i>	
A Quantitative Model for En Route Error Rate Analysis	44
<i>D. Murphy, G. Shapiro</i>	
Air-Traffic Complexity Resolution in Multi-Sector Planning Using Constraint Programming	53
<i>P. Flener, J. Pearson, M. Agren, C. Garcia-Avello, M. Celiktin, S. Dissing</i>	
Weather Index with Queueing Component for National Airspace System Performance Assessment	63
<i>A. Klein, R. Jehlen, D. Liang</i>	
Development of an Algorithm to Model the Landing Operations, Based on Statistical Analysis of Actual Data Survey(POESTOP).....	73
<i>C. Barbas, J. Vazquez, P. Lopez</i>	
Incremental, Probabilistic Decision Making for En Route Traffic Management.....	84
<i>C. Wanke, D. Greenbaum</i>	
Macroscopic Workload Model for Estimating En Route Sector Capacity	94
<i>J. Welch, J. Andrews, B. Martin, B. Sridhar</i>	
Predicting Sector Capacity for TFM.....	104
<i>L. Song, C. Wanke, D. Greenbaum</i>	
So It's Reliable But Is It Safe? A More Balanced Approach To ATM Safety Assessment	114
<i>D. Fowler, G. Galo, E. Perrin, S. Thomas</i>	
Air Navigation Service Charges in Europe.....	125
<i>L. Castelli, A. Ranieri</i>	
Safety Risk Analysis of Runway Incursion Alert Systems in the Tower and Cockpit by Multi-Agent Systemic Accident Modelling.....	135
<i>S. Stroeve, G. Bakker, H. Blom</i>	
Airspace Complexity Measurement: An Air Traffic Control Simulation Analysis.....	145
<i>P. Kopardekar, A. Schwartz, S. Magyarits, J. Rhodes</i>	
Algorithms for Managing Sector Congestion Using the Airspace Restriction Planner	154
<i>R. Jakobovits, P. Kopardekar, J. Burke, R. Hoffman</i>	
A-SMGCS Verification and Validation Results From the Project EMMA (Level 1&2)	164
<i>J. Jakobi, J. Teutsch</i>	
A Psychosocial Approach to Understanding Pilot and Controller Acceptance of Change in ATM, Based on Three CDA Case Studies.....	175
<i>A. Cook, G. Tanner, N. Pilon, T. Joyce</i>	
Safety Analysis Methodology for ADS-B Based Surveillance Applications	185
<i>J. Hammer, G. Caligaris, M. Llobet</i>	
Validation of Required Surveillance Performance (RSP) Accuracy	196
<i>J. Andrews, S. Thompson</i>	
Estimating Capacity Requirements for Air Transportation System Design.....	206
<i>S. Zelinski, T. Romer</i>	
Identification and Analysis of Proximate Events in High Density Enroute Airspaces.....	215
<i>E. Gonzalez, F. Nieto, M. Izquierdo</i>	
Air Traffic Complexity: An Input-Output Approach.....	225
<i>K. Lee, E. Feron, A. Pritchett</i>	
Quantifying the Relationship Between Air Traffic Management Inefficiency, Fuel Burn and Air Pollutant Emissions	234
<i>M. Ohsfeldt, T. Thrasher, I. Waitz, G. Ratliff, C. Sequiera, T. Thompson, M. Graham, R. Cointin, W. Gillette, M. Gupta</i>	
Efficient and Equitable Departure Scheduling in Real-Time: New Approaches to Old Problems	243
<i>H. Balakrishnan, B. Chandran</i>	

Benefits of Collaborative Flow Management During Convective Weather Disruptions	253
<i>M. Berge, M. Carter, A. Haraldsdottir, B. Repetto</i>	
Validation Results of Airport Total Operations Planner Prototype Clou.....	263
<i>A. Pick</i>	
A Pre-Tactical Generalised Air Traffic Flow Management Problem.....	272
<i>R. Kaufhold, S. Marx, C. Muller-Berthel, K. Nachtigall</i>	
Operational Impact of RA Downlink: Results of a Real-Time Simulation	280
<i>S. Drozdowski, D. Dehn, J. Teutsch, B. Lorenz</i>	
Unmanned Aircraft Collision Avoidance - Technology Assessment and Evaluation Methods	290
<i>A. Lacher, D. Maroney, A. Zeitlin</i>	
New Process for "Clean Sheet" Airspace Design and Evaluation	300
<i>R. Conker, D. Moch-Mooney, W. Niedringhaus, B. Simmons</i>	
Five Years Experience in ATM Cost Benchmarking.....	310
<i>G. Nero, S. Portet</i>	
Environmental Impact of Air Traffic Flow Management Delays.....	319
<i>S. Carlier, I. Lepinay, J.-C. Hustache, F. Jelinek</i>	
Coordinated Arrival Departure Management	332
<i>D. Bohme, R. Brucherseifer, L. Christoffels</i>	
Propagation of Airborne Spacing Errors in Merging Traffic Streams	343
<i>D. Ivanescu, C. Shaw, K. Zeghal, E. Hoffman</i>	
Operational Risk Assessment for Airspace Planning	352
<i>K. Mehadhebi</i>	
Airspace Configuration Using Air Traffic Complexity Metrics	362
<i>D. Gianazza</i>	
Preventing Selfish Behaviour in Distributed Tactical Airport Planning	373
<i>G. Jonker, H. Hesselink, F. Dignum, J.-J. Meyer</i>	
Tackling the Problem of Flight Integration.....	383
<i>B. Railane, H. Christophe, M. Anthony, M. Bruno, R. Marie-Pierre, R. Philippe</i>	
Examining the Temporal Evolution of Propagated Delays at Individual Airports: Case Studies	393
<i>A. Churchill, D. Lovell, M. Ball</i>	
Merging Arrival Flows Without Heading Instructions	403
<i>L. Boursier, B. Favennec, E. Hoffman, A. Trzmiel, F. Vergne, K. Zeghal</i>	
Systematic Air Traffic Management in a Regular Lattice	411
<i>R. Irvine, H. Hering</i>	
Performance-Based Air Traffic Management: Evaluating Operational Acceptability	424
<i>J. Celio, E. Smith</i>	
The Dynamics of Air Transportation System Transition	432
<i>A. Mozdzanowska, R. Weibel, E. Lester, R. Hansman</i>	
Advanced Noise Abatement Approach Activities at Nottingham East Midlands Airport, UK.....	444
<i>T. Reynolds, L. Ren, J.-P. Clarke</i>	
Calibrating Aggregate Models of Flight Delays and Cancellation Probabilities at Individual Airports	454
<i>D. Lovell, A. Churchill, A. Odoni, A. Mukherjee, M. Ball</i>	
Ration-By-Distance with Equity Guarantees: A New Approach to Ground Delay Program Planning and Control	464
<i>R. Hoffman, M. Ball, A. Mukherjee</i>	
Application of Key Performance Indicators for Trajectory Prediction Accuracy	474
<i>S. Mondoloni</i>	
Improving ATC Efficiency Through an Implementation of Multi Sector Planner Position	484
<i>A. Williams, M. Rodgers, S. Mondoloni, D. Liang</i>	
An Analysis of Operational Errors and the Interaction with TCAS RAS	493
<i>J. Garcia-Chico, K. Corker</i>	
Modelling and Estimation of Separation Criteria for Airborne Time-based Spacing Operation.....	503
<i>I. Oliveira, P. Cugnasca, H. Blom, B. Bakker</i>	
Evaluating the Performance of Nextgen Using the Advanced Concepts Evaluation System	513
<i>F. Wieland, G. Carr, G. Hunter, A. Huang, K. Ramamoorthy</i>	
Arrival Management with Required Navigation Performance and 3D Paths	523
<i>A. Haraldsdottir, J. Scharl, M. Berge, E. Schoemig, M. Coats</i>	
Evaluation of Flight Deck-based Merging and Spacing Concept on En-route Air Traffic Control Operations.....	535
<i>W. Penhallegon, R. Bone</i>	
Scenario-Free Sequential Decision Model for the Single Airport Ground Holding Problem.....	544
<i>P.-C. Liu, M. Hansen</i>	

Air/Ground Simulation of Trajectory-oriented Operations with Limited Delegation	554
<i>T. Prevot, T. Callantine, J. Homola, P. Lee, J. Mercer, E. Palmer, N. Smith</i>	
Throughput, Risk, and Economic Optimality of Runway Landing Operations	564
<i>B. Jeddi, J. Shortle</i>	
Weather Normalization for Evaluating National Airspace System (NAS) Performance	574
<i>M. Hansen, J. Xiong</i>	
Could Erasmus Speed Adjustments be Indentifiable by Air Traffic Controllers?	583
<i>P. Averty, B. Johansson, J. Wise, C. Capsie</i>	
A Systemic Model of ATM Safety: The Integrated Risk Picture	594
<i>E. Perrin, B. Kirwan, R. Stroup</i>	
A Tool to Design Functional Airspace Blocks	602
<i>C.-E. Bichot, N. Durand</i>	
New Air Traffic Management Concepts Analysis Methodology: Application to a Multi-Sector Planner in US Airspace	611
<i>K. Corker, D. Liang, P. Lee, T. Prevot</i>	
Fast-Time Simulation Evaluation of a Conflict Resolution Algorithm Under High Air Traffic Demand	621
<i>T. Farley, H. Erzberger</i>	
Analysis of Multiple Open Message Transactions and Controller-Pilot Miscommunications	636
<i>J. Rokas, S. Yang</i>	
Evaluating Transformations of the Air Transportation System Through Agent-Based Modeling and Simulation	647
<i>S. Lee, A. Pritchett, K. Corker</i>	
Flight Demonstration of the Separation Analysis Methodology for Continuous Descent Arrival	657
<i>L. Ren, J.-P. Clarke</i>	
Author Index	