

Track F - Air Traffic Mgmt Systems  
Digital Avionics Systems

# 17<sup>th</sup> D A S C

## The AIAA/IEEE/SAE Digital Avionics Systems Conference

**Bellevue, WA**  
**Oct. 31 – Nov. 7, 1998**

# Proceedings

**Volume II**

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## 17<sup>th</sup> DASC Presentations

### Track F - Air Traffic Mgmt Systems

#### Session F1: Air Traffic Management

- |   |  |                    |
|---|--|--------------------|
| 1 | Vertical Path Trajectory Prediction for Next Generation ATM  | Mr. Anthony Warren |
| 2 | Advances in Flight Data Acquisition and Management Systems   | Mr. Tom McDade     |
| 3 | CNS/ATM Aircraft Customization Task (Not Published)  | Mr. Arnold Oldach  |
| 4 | USAF Initiatives for Global Air Traffic Management and Navigation Safety   | Mr. Leo La Forge   |
| 5 | A Simplified Aeronautical Telecommunications Network (ATN) Avionics Router   | Mr. T. Signore     |
| 6 | Avionics Architecture For Air Force Mobility Command Aircraft To Meet Cns/Atm And GATM Requirements                  | Mr. Donald Happel  |
| 7 | A Pseudo Ramp Manager Workstation for the Laboratory Development of Airline-ATC Collaborative Arrival Planning Tools | Ms. Susan Dorsky   |

#### Session F2: Surface Movement 1: Display & Datalink

- |   |   |                            |
|---|---|----------------------------|
| 1 | Airport Surface Movement Technologies - Atlanta Demonstration Overview                            | Ms. Denise R. Jones        |
| 2 | Description and Flight Test of a Rollout and Turnoff (ROTO) Head-Up Display (HUD) Guidance System | Mr. Richard Hueschen       |
| 3 | Field Evaluation Of T-NASA: Taxi Navigation And Situation Awareness System                        | Mr. Anthony D. Andre Ph.D. |
| 4 | Airport Surface Operations Data Link Communications and DGPS                                      | Mr. Steve Koczo            |
| 5 | Controller-Pilot Data Link Statistics from NASA's 1997 Atlanta Flight Test                        | Dr. James Rankin           |

#### Session F3: Surface Movement 2: Surveillance

- |   |   |                       |
|---|---|-----------------------|
| 1 | Runway Incursion Reduction Program (RIRP) Surveillance System - NASA / FAA Atlanta Demonstration      | Mr. Vincent Capezzuto |
| 2 | Development of Airport Surface Surveillance Performance Requirements                                  | Mr. Rick Cassell      |
| 3 | Analysis of ADS-B, ASDE-3 and Multilateration Surveillance Performance -- NASA Atlanta Demonstration  | Mr. Carl Evers        |
| 4 | Application of ADS-B for Airport Surface Surveillance   | Mr. Dan Hicok         |
| 5 | Comparison of A-SMGCS Requirements with Observed Performance of an Integrated Airport CNS System      | Mr. Steven Young      |
| 6 | What's Next for LVLASO: Status of Plans for a Year 2000 Flight Test and Demonstration (Not Published) | Mr. Wayne H. Bryant   |

#### Session F4: Communication, Navigation, Surveillance

- |   |  |                        |
|---|--|------------------------|
| 1 | Bancroft's Algorithm for Solving Passive Multilateration Equations   | Dr. Michael Geyer      |
| 2 | An Integral Flight Director and Surveillance System for Helicopters in Metropolitan Service                | Prof. Chin Lin         |
| 3 | Data Processing Methods For Autonomous On-Board Surveillance And Collision Avoidance                       | Mr. Juan Besada Portas |
| 4 | Implementation of a Low-Cost SSR/ADS-B Aircraft Receiver Decoder   | Mr. Alex Smith         |
| 5 | Loop Technology (LOT) as an Alternative Surface Surveillance System  | Mr. Vern Edwards       |
| 6 | Broadcast Data Link Range Performance as a Function of Aircraft Size- Experimental Results (Not Published) | Robert Strain          |

#### Session F5: CNS/ATM Human Factors

- |   |   |                            |
|---|---|----------------------------|
| 1 | How Data Link Communication Might Affect Controller Workload in a Terminal Option                         | Dr. O. Veronika Prinzo PhD |
| 2 | Simulation Study of Vocoder Communication In Air Traffic Control  | Dr. Earl S. Stein          |
| 3 | Survey of In-Flight Replanning Performed on the Flight Deck   | Mr. James K. Kuchar        |
| 4 | Introducing New Technology to the Air Traffic Controller: Implications for Skill Acquisition and Training | Mr. Alfred L. Smith Jr.    |
| 5 | Human Factors Issues in a Future Air Traffic Management System  | Mr. Philip J. Smith        |
| 6 | Man-In-The-Loop Part Of A Study Looking At A Free Flight Concept  | Jacco Hoekstra             |

# 17<sup>th</sup> DASC Presentations

## Track G Aircraft Systems

### Session G1: InFlight Entertainment

- 1 Total Integrated Management (TIM) (Not Published) Mr. Joseph R. Winston
- 2 Availability, Reliability, and Maintainability Prediction Model Mr. James M. Hansen
- 3 Reality in Certification of IFE and Telephone Equipment Mr. Ritch L. Triplett
- 4 A New Approach to Data Communications Utilizing the North American Terrestrial System (Not Published) Mr. Mike O'Meara
- 5 Real-World Implementations of Intra-Aircraft Infrared Data Communications Networks Mr. Patrick Potega
- 6 In-Flight Entertainment - Getting From Wishlist To Reality Mr. Donald B. Lee
- 7 High Speed Networking of Multimedia Data for Passenger Entertainment (Not Published) Mr. Greg Henrikson
- 8 Packet-based Networks Mr. Steven W. Russert

### Session G2: Aircraft & Satellite Avionics

- 1 Airborne Reception of Data and Direct Broadcast TV using a Phased Array Antenna (Not Published) Mr. David C. Vacanti
- 2 Guidance Characteristics of GNSS Landing Systems Dr. Alex Stratton
- 3 Managing Aircraft Airworthiness Through Information Technology (Not Published) Mr. William E. Larsen
- 4 Pro Line 21 Advanced Avionics System Architecture Mr. Timothy Rayl
- 5 Techniques for Improved Reception of 1090 MHz ADS-B Signals Mr. William Harman
- 6 Enhanced Ground Proximity Warning System (Not Published) Mr. Barry C. Breen

### Session G3: Commercial-Off-The-Shelf & Open Systems

- 1 COTS Based Open Systems for Military Avionics Mr. John Paul
- 2 Reducing Avionics Software Cost Through Component Based Product Line Development Mr. David Sharp
- 3 Introduction to the Electronic Power Specification Standardization Activity Mr. Sergio Navarro
- 4 Open System Design for CNI Avionics Dr. George Mitschang
- 5 The Application of Commercial Processing Technologies to the Airborne Military Environment Mr. Hugh S. Perry
- 6 Telecom Technologies (Not Published) Brian Graber

### Session G4: Unmanned Airborne Vehicles

- 1 Redundant Control Systems for UAV's (Not Published) Graham Gyattt
- 2 Flight Testing Perseus-B (Not Published) Mr. Tom Clancy
- 3 Flight Testing a Large, Autonomous, Unmanned Aircraft (Or Global Hawk Begins to Soar) (Not Published) Robert Ettinger
- 4 Flight Testing DarkStar (Not Published) Mr. John Straub
- 5 X-36 Tailless Agility Aircraft Subsystem Integration (Not Published) Willard J Harris
- 6 X-36 Tailless Agility Aircraft Subsystems Integration (Not Published) Mr. Bill Harris
- 7 X-38 Avionics System (Not Published) Christopher Nagy

## Track H - Spacecraft Systems

### Session H1: Commercial & Defense Space Systems

- 1 IRIDIUM Low Earth Orbit Satellite Constellation Mr. Peter Lemme
- 2 ATM Mobile Switch Requirements, Issues, and Concerns (Not Published) Mr. Richard H. Paine
- 3 The 'Take-Off' of MOTS Avionics System for Space/Launch Vehicle Applications Joe Cecchini
- 4 Rapid Development of avionic systems Randy Black
- 5 Space-Based Wind-Sensing Lidar Design (Not Published) Dr. Daniel Novoseller
- 6 Multifunctional Structures: A New Concept For Spacecraft Design Integrating Electronics, Structure And Thermal Control (Not Published) Mr. Dave Barnett

## 17<sup>th</sup> DASC Presentations

### Track H - Spacecraft Systems (Continued)

#### Session H2: Space Exploration

- 1 Deep Space One Integration and Test Challenges: Getting to the Launch Pad in the Faster, Better, Cheaper World Ms. Paula J. Pingree
- 2 The Mars Microprobe Mission Advanced Micro-Avionics for Exploration of the Martian Surface (Not Published) Mr Randel Blue
- 3 From the Sun to Pluto Ms. Karla B. Clark
- 4 NASA/JPL Mars Surveyor Program: New Challenges in a New Era (Not Published) Mr. Robert L. Bunker
- 5 Interferometer Real Time Control for the Space Interferometry Mission (Not Published) Mr. Charles E. Bell

#### Session H3: Microelectronics for Space

- 1 Ultra Low Power Rad Hard 12 Bit A/D Converter for Space-Based EO Sensors Sven Nystrom
- 2 Integrating PWA Design and Analysis Using a Unix-Based Durability Toolset (Not Published) Mr. Mostafa Rassaian
- 3 Amecom Direct Chip Attach Project Tracey Clay
- 4 Digital Control of the MIDEX Spacecraft Power System (Not Published) Ms. Karen Castell
- 5 Issues To Address In Use of Composite Materials for Electronic Packaging Mr. Gary Trembley

#### Session H4: Space System Elements

- 1 X2000: Avionics for A Multi-Mission Spacecraft Mr. Savio Chau
- 2 Applications For A Spacecraft Avionics Functional Model Mr. Joseph F. Smith
- 3 A Table-Driven Control Method To Meet Continuous, Near-Real-Time Observation Requirements For The Solar X-Ray Imager Mr. Kevin Shawn Wallace
- 4 The TRWIS III Hyperspectral Imager: Instrument Performance and Remote Sensing Applications Dr. Stephanie Sandor-Leahy
- 5 Fault Protection Design of the Quikscat and Seawinds Instruments Mr. Matthew B. Bennett
- 6 Development of a Low Cost Data Acquisition System for the Space Shuttle Solid Rocket Booster Program Mr. Kevin Crawford

### Track I - Automotive Systems

#### Session I1: Ground Vehicle Electronics

- 1 Software Process Improvement in an Automotive Electronics Organization Mr. Gregory McHugh
- 2 Automotive System Design: Today and Tomorrow Dr. Peter Hofmann
- 3 Specification and Testing of Automotive Powertrain Control System Software Using CACSD Tools Mr. Steve Toeppe
- 4 Active Control of Vehicle Dynamics Mr. Mike Fodor
- 5 The Next Generation Automotive Electrical Power System Architecture: Issues and Challenges. Dr. John P. Miller PE, PhD
- 6 Automotive & Aerospace Circuit Fault Analysis Mr. Craig Siegel
- 7 Requirements For A Real-Time Local Area Network Architecture In Land Combat Vehicles Mr. Paul Richardson

#### Session I2: Intelligent Transportation System (1)- Vehicle Electronics

- 1 The Network Vehicle - A Glimpse into the Future of Mobile Multi-Media Huan-Wun Yen
- 2 A Demonstration Project for the ITS Data Bus Prototype Mr. Philip Spelt Ph.D.
- 3 Signal Processing and Waveform Generation in the Side Zone Automotive Radar Mr. John C. Reed
- 4 Adapting Radar and Tracking Technology to an On-Board Automotive Collision Warning System Dr. Edward Jocoy
- 5 Use of Map Data Information in an On-board Intersection Violation Detection System Mr. John Pierowicz
- 6 SWIFT Project Results Mr. Larry Senn

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