



Airspace Management

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Papers

- ▶ 5 out of 8 papers accepted
- ▶ 3 papers from US
 - George Mason University
 - The MITRE Corporation
 - MIT
- ▶ 2 papers from Europe
 - CENA
 - Imperial College London, EUROCONTROL

Research Objective

- ▶ Space partitioning to balance traffic
- ▶ Optimum 3D separated flow trajectories
- ▶ Detecting airspace with excess flying time
- ▶ Invitation to research
- ▶ Factors affecting workload/airspace capacity

Methods

- ▶ Simulation (RAMS)
- ▶ Genetic Algorithms
- ▶ Heuristics
- ▶ Statistical Analysis

Participation

Between 30 and 60 participants

30 + 15 minutes (presentation + discussion)

Rapporteur's Comments

- ▶ What do we mean when we say AIRSPACE MANAGEMENT (Research)?
 - Geometry
 - Kinematics
 - Complexity
 - Workload
 - Capacity

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Rapporteur's Comments

- ▶ What was the ATM R&D Seminar reported ASMT research?

ATM 1997

- ▶ Only mention of:
 - Airspace design
 - Airspace usage
- ▶ No research results presented

ATM 1998

- ▶ **ATC Preferred Routes**
- ▶ Mention of “Airspace Complexity” but actually work on Traffic Complexity (Dynamic Density, Instantaneous Airborne Count)

ATM 2000

- ▶ **Design of an Air Route Network**(min Airlines cost, ATC constraints)
- ▶ Complexity but more Traffic than Airspace

ATM 2001

- ▶ Sector-less ATM
- ▶ Transition between Free Flight and Managed Airspace
- ▶ Converging Instrument Approaches
- ▶ More Complexity (Traffic rather than Airspace)

ATM 2003

- ▶ **Airspace Design** using TAAM
- ▶ **Airspace Design**: Super-Sector Concept
- ▶ **Optimizing Sectorization** (min Coordination)
- ▶ High Altitude Airspace Analysis using RAMS
- ▶ Complexity (Sector Classification)

Rapporteur's view on Research Status

- ▶ Insufficient research in the ASMT area
- ▶ Necessary better understanding of ASMT
- ▶ AS - Limited resource
- ▶ Need expressed in particular lately in Europe (Single Sky => Functional Blocks)

Rapporteur's view on Possible Directions

- ▶ High volume flows need “traffic engineering” solution:
 - High Capacity “Infrastructure” i.e.
 - ▶ 3D separated “routes”
 - ▶ Highly regulated
 - ▶ Priority over low volume flows

“SKY HIGHWAYS” ?

THANKS

- ▶ Review Group
 - Jan Terlouw, Chair
 - Lourdes Maurice
 - Amy Pritchett
 - Sandy Lozito
- ▶ Session Chairs
 - Yu Zhang
 - Mark Hansen
- ▶ Seminar Chairs
 - Sabrina Saunders-Hodge and Christian Pusch