Cooperative air traffic structuring
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To cite this version:
Romaric Breil, Laurent Lepasset. Cooperative air traffic structuring. 5th SESAR Innovation days, Dec 2015, Bologna, Italy. hal-01240308

HAL Id: hal-01240308
https://hal-enac.archives-ouvertes.fr/hal-01240308
Submitted on 10 Dec 2015

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Cooperative Air Traffic Structuring

Multi-Agent System

- Resilient, fast and scalable method for problem solving
- Composed of agents (aircraft) cooperating to elaborate their trajectories
- Decisions taken by each aircraft, based on knowledge of its local environment

Conflicts Avoidance by Speed Regulation

- Aircraft send messages containing their estimated trajectories
- Each aircraft selects optimal speed changes based on this shared knowledge
- Speeds are selected within [-6%, +3%] of its optimal speed

Without regulation, conflicts occur

With speed regulation, conflicts are solved

Macro-Structuring of Air Traffic

- The system reduces traffic complexity by structuring trajectories into flows
- The traffic complexity is monitored in real time
- The route network is dynamically adapted to fit the traffic complexity

Unstructured traffic

Structured traffic