Performance Metrics, Measurement, Modeling

TRACK 3

summary of Results

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Contents

- Presentations Outline
- Summary of Presentations
- Main Results
- Recommendations to R&D program managers

Performance Metrics and Complexity

- Complexity of defining and understanding performance metrics: Bradford et al.
- System-scale performance metrics: Fron

Effects of Tools and Procedures

- Conflict probe benefits: Kerns and MacFarland;.
- Elimination of ATC preferred routes: Gordon

Modeling

- Model integration: Brunetta et al; Bradford et al
- AOC's: Pujet and Feron
- Flight delay propagation: Beatty et al
- Process modeling: Poppe and Bolz.
- Complexity of ATM systems: Cocanower and Voss;

Methodologies

- Safety modeling: Blom et al; Kostiuk and Kolitz
- Direct routing: Magill
- Accuracy of conflict probes: Cale et al
- Performance metrics for real-time simulations vs. field tests: Schick
- Constraints in airport development: Offerman and Bakker

Cost Benefit Analysis and Economic Performance

- Airborne flight planners: Hughes et al.
- Inter-process development: Bradford et al.
- Impact of ATM improvements
  - On carriers: Sinnot and MacReynolds; Gaier and Kostiuk
  - On terminal area costs: Weidner
  - On environment: Liang and Chin

Main Results

	Metrics and Measurements	Models
Traffic Efficiency - **Capacity** - **Throughput** - **Delays** - **Predictability** - **Flexibility**	In advanced and mature stage Measurements need to expand scope. Predictability and Flexibility need further development	In advanced stage. Awareness of limitations Models are emerging
Economic Efficiency	Quickly emerging	Emerging. CBA more difficult than envisaged
Safety	Metrics need development Measurements need development	Emerging. Very complicated Validation is difficult
Environment (Airports, en-route)	Many metrics and measurements available	Available, but in need of update and integration

Recommendations to R&D program managers

- Identify and interact with the airspace users in the R&D
- CBA for R&D programmatic evaluation rather than CBA for ATM actors.
- ATM safety fundamental: understanding the issue, metrics, measurements and modeling needs development
- Continuity of effort in R&D projects.