Air Transportation and Multimodal, Collaborative Decision Making during Adverse Events

Workshop Oslo, 31\textsuperscript{st} May 2017

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Introduction

• Flight Path 2050: “90% of travelers within Europe are able to complete their journey, door-to-door within 4 hours”

• Regular occurrence of significant perturbation impose high costs on the air transport system and society.

• MetaCDM (FP7 project): conditions under CDM can facilitate pax journey and help to deal with disruptive events

• Initial Partners: ENAC (leader), University of Cambridge & Barco Orthogon

• Additional partners for this paper: University College of London, Georgia Institute of Technology
Outline

• Benefits of Information Sharing

• Benefits of multimodal reaccomodations

• MetaCDM concept

• Concluding remarks
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  • Benefits of multimodal reaccomodations
  • MetaCDM concept

• Concluding remarks
Benefits of Information Sharing

• Greatest benefits of A-CDM:
  – Better common situational awareness between stakeholders at the airport
  – Increase in operational predictability
  – Better arrival estimates, that benefit the stakeholders and the passengers

• Yet, in case of disruptive events, A-CDM procedures are no longer adapted.
Benefits of Information Sharing – Network Level

• Disruptive events and their snowball effects highlight the need for information sharing between different airport platforms.

• Example: Snow Storm Winter 2010 in Europe.
  – Closure of London Heathrow
  – Flights rerouted to Paris CDG
  – Paris CDG closed
  – Flights rerouted to Toulouse Blagnac (A380s)
Benefits of Information Sharing – Airport Level

• Fail soft mode of A-CDM during disruptive events
• Communications between humans lead to delays in information transmission
• Passengers are generally at the bottom of the information cycle
Benefits of Information Sharing – Airport Level

• Frankfurt Terminal Colour Concept:
  – In case of crisis, a dedicated team from Fraport and Lufthansa deploys in the terminals
  – Each area of the terminal is color-coded: optimized orientation & information
  – Staff uses applications on tablets to inform each pax on the possible solutions
Benefits of Information Sharing – Airport Level

• Frankfurt Terminal Colour Concept Successful several times because:
  – Communication channels well-defined
  – Easy to understand for passengers & staff
  – Helps reduce waiting times and provides assistance to pax

• However:
  – System not directly linked to the CDM system
  – Not prevent from the slowness of the human system communication between airside stakeholders during disruptive events
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Multi-modal Transportation

• For the passengers, traveling across several modes of transportation to complete their journey can be difficult, especially when it comes to planning travel times

• To improve the passenger's experience, more and more advanced transport information systems (ATIS) provide services such as route planning, navigation, updates on disruptions, real time information alerts

• But no information on alternative routes / modes of transportation when disruption
Impacts of flight delays on passengers behaviour

- Behavioral consequences of repeated flights delays on airlines (Ferrer and Al.)
  - Passengers who experienced delays tend to travel less with this airline
  - Passengers who experience multiple delays travel less by air than passengers experiencing only one delay,
  - Passengers do not forgive the company for their delay experience.
Alternative solution relevancy

Percentage of passengers who could reach their destination sooner via ground transportation by time to next flight

• Ground transportation must be acceptable in terms of journey time and cost: passengers must arrive sooner at their destinations than they would by taking a later flight as offered by the airline.

• For a 10-hour time to next flight, over half of passengers could arrive at their destination sooner by ground modes.
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MetaCDM concept

• MetaCDM concept: the passenger participates in the information exchange process during disrupted conditions, including being provided with information about ground transportation.

• The MetaCDM concept needs to be adaptable to, and provide benefits for as well crisis as non-crisis situations.

• Basis: the successful and widely-used A-CDM standard as a formal basis.

• Key difference: passengers are not aircraft
MetaCDM concept

- Information sharing with the passenger throughout their door-to-door journey.
- Milestones for which arrival times are assessed to the feasibility or need of re-planning of the chosen travel connection.
- Travel times between milestones calculated flexibly
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A-CDM >>> Meta-CDM

• Immediate barriers:
  – Legal liability issues and baseline info requirements
  – Examine platforms and systems to move towards compatibility
  – Dialogue towards common language and metrics
  – Benefits of the engagement for stakeholders
Needed research areas

• To enable the MetaCDM concept, and to contribute to improved passenger satisfaction under normal conditions and in the case of disruptive events

• 3 main research areas on door-to-door air travels:
  – Integrating Airside and Landside at Airports
  – Measuring the multimodal travel experience e.g. factors influencing the travel time perception
  – Improving information Sharing with Passengers and Others
Thank you very much for your attention

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