META-CDM: Multimodal, Efficient Transportation in Airports and Collaborative Decision Making

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Introduction

- A-CDM Airports : Munich, Brussels, Paris-Charles de Gaulle, Frankfurt, London-Heathrow, Helsinki-Vantaa, Düsseldorf and Zurich.

- Total of 250 million passengers a year welcome at these airports

- Meta-CDM objectives : study the conditions under which Collaborative Decision Making can help the transportation system deal under perturbed conditions with a passenger centric approach

- Method: litterature review, interviews & workshops

Outline

- **Benefits of Information Sharing**
  - ➢ At the network level
  - ➢ At the airport level
- **Bridging the airside and the landside – multimodality**
- **Performance Indicators**
- **Conclusion**

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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

Benefits of Information Sharing

- Several aspects remain to be addressed :
  - In case of computer deficiency, often all stakeholders have their own contingency plan but no common one
  - CDM solutions are currently tailored to each airport – the interfacing between several airports for 'network-CDM' is still a big problem
  - For spoke airports, tailored solutions may be needed for CDM implementation

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Bridging the airside and the landside

- **Main drivers of multimodality development:**
  - ➤ Presence of airside and landside congestion at airports
  - ➤ Societal and environmental pressure
  - ➤ To reduce operating costs
  - ➤ To increase the catchment area

Bridging the airside and the landside

- Main obstacles to multimodality :
  - High investments needed
  - Limited coordination and collaboration incentives between intermodal stakeholders who perceive each other as competitors
  - Lack of communication to passengers on multimodal products
  - Poor perception of rail in certain countries
  - Less competitive rail outside of the core European area

Bridging the airside and the landside

- Some airports have specific agreements with rail companies in crisis situations. Ex : Toulouse Blagnac

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Performance Indicators : traditional perspective

- Currently the benefits of CDM are only quantified in tons of fuel saved and seldom in adherence to slots.

- At CDG, 3 performance evaluation levels :
  - At the airport level, for inter-airport comparison
  - Internally to test CDM-tools efficiency
  - Within each major stakeholder (privately)

- Airports interviewed agree that KPIs definition and processing need improvement

Performance Indicators : passengers' perspective

- Disrupted passengers (journey interrupted by a capacity reduction) are only 3% of the total passengers, but suffer 39% of the total passenger delay.

- Passengers rely more and more on personal devices to check-in at airport and go through security.

- Empower passengers to play a more active role in deciding how to pursue their journey when it has been disrupted

Performance Indicators : passengers' perspective

- Passenger-oriented metrics (Cook) to reflect the door-to-door passenger journey (departure and arrival delays, cancelled flights, missed connections, re-routes, etc.)

- Even though stakeholders are aware of the importance of passenger-oriented metrics, the processes to include them in the overall performance monitoring and reporting remain to be defined and implemented.

Conclusion

- Benefits of extending Airport CDM to include the landside should be significant for passengers

- Final outputs of the project: landside-CDM concept & future research paths

- Final workshop: 14 & 15 May 2014 at ENAC (Toulouse)