MetaCDM Functional Groups – Passenger Travel Milestone Approach and Variable Process & Transfer Time Predictions
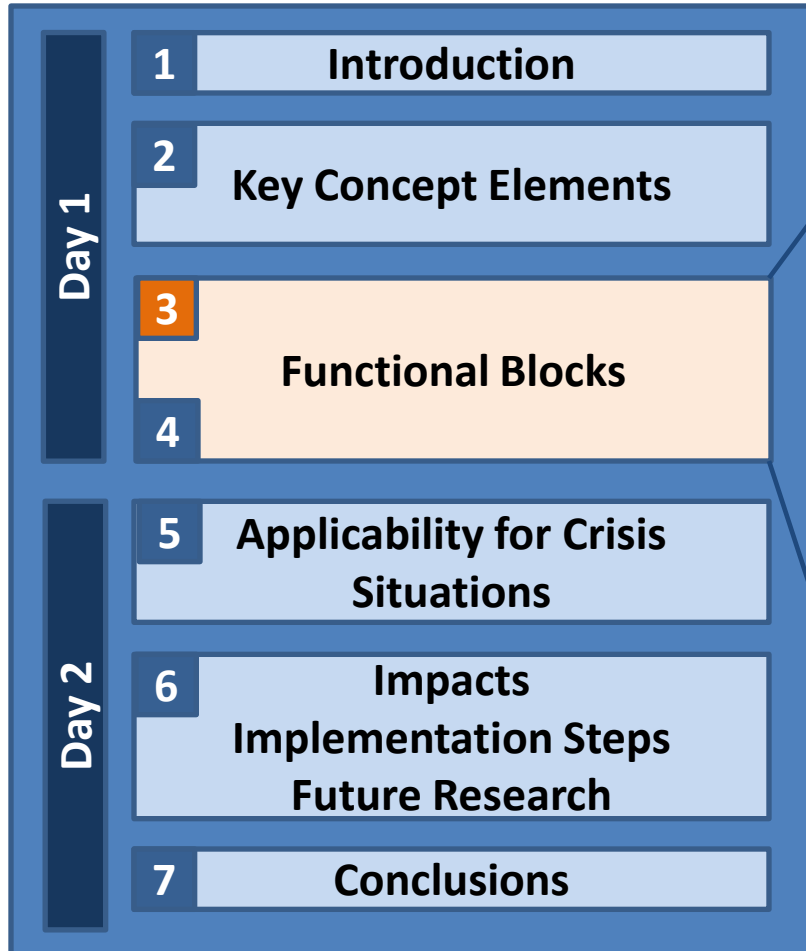
Gunnar Spies (Barco Orthogon)

MetaCDM Workshop

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Meta CDM
Multimodal, Efficient Transportation in Airports and Collaborative Decision Making

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Workshop and MetaCDM concept structure

Day 1	1	**Introduction**
	2	**Key Concept Elements**
	3	**Functional Blocks**
	4	
Day 2	5	**Applicability for Crisis Situations**
	6	**Impacts Implementation Steps Future Research**
	7	**Conclusions**

- **Information Sharing**

- **Passenger Travel Milestone Approach**

- **Variable Process and Transfer Time Predictions**

- **Performance Based Travel Management**

- **Adverse Conditions**

- **Collaborative Management of Travel Updates**

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Overview

- Passenger Travel Milestone Approach
  - Milestones for monitoring of planned and predicted travel/arrival time, for example:
    - Proposed/Planned travel start time,
    - Arrival at airport, security gate, departure gate etc.
- Variable Process and Transfer Time Predictions
  - Calculation of travel times between milestones,
  - Durations according to dynamic travel changes,
  - Calculation of queuing at milestones.

Introduction

- Milestones are needed to define knots for the chosen travel within the connection network. A monitoring for these milestones shall be performed to check if the chosen connection is still reachable or if a re-planning of the travel must be done.

- All milestones in MetaCDM refer to calculate/predict the planned/target time when the traveller starts her/his journey and to reaching a critical transport service.

Passenger Travel Milestone Approach (1)

- After booking a travel connection from a transport service provider, this provider is responsible for defining a target time for boarding.

- In order to empower the traveller to meet this target time, milestones are defined by MetaCDM.

- At these milestones, the travel itinerary should be recalculated to check if the traveller is still able to reach the booked travel connection in time.

- The service provider should provide estimates on travel times between milestones.

Passenger Travel Milestone Approach (2)

- The traveller can book more than one travel connection from one or more service providers in order to reach her/his destination.

- The MetaCDM milestones describe the knots that should be used for each of these travel connections.

- The destination/end of one travel connection is then the start of the next travel connection.

- Some milestones of the follow-up connection might be executed before the travel starts or while the traveller is already journeying.

Variable Process and Transfer Time Predictions

- Duration for long distance connections is in most cases predictable with good accuracy.

- But the arrival of the traveller at milestones and planned/monitored resources of the chosen travel connection might be subject to changes on short notice.

- Thus the calculation of travel times between milestones and process times at resources is an important addition to MetaCDM.

Passenger Travel Milestones - Overview

Pre-Travel
- M1: Activation of travel connection
- M2: Provision of details on travel connection
- M3: Begin of travel (to booked connection)

Pre-Boarding
- M4: Reaching start site of booked travel connection
- M5: Passing of milestone(s) at start site of travel connection
- M6: Boarding of booked travel connection

End of Transport
- M7: De-Boarding of booked travel connection
- M8: Passing of milestone(s) at end site of travel connection
- M9: Leaving end site of booked travel connection

Passenger Travel Milestones – Pre-Travel

Pre-Travel
- M1: Activation of travel connection
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Passenger Travel Milestone 1

- <u>Activation of travel connection</u>:
  - The traveller books a certain travel connection from a service provider and provides information necessary for empowered travel, this might include a setting of performance parameters.
  - The traveller is responsible for the remainder of his journey once the service provider transported him to the end of the booked travel connection.
  - The traveller receives a ticket for his chosen travel connection including mandatory milestones.

Passenger Travel Milestone 2

- <u>Provision of details on travel connection</u>:
  - The service provider informs the empowered traveller about target times at milestones and estimated travel time between milestones.
  - These target times should be updated if needed.

Passenger Travel Milestone 3

- <u>Begin of travel (to booked connection)</u>:
  - The empowered traveller either starts his journey or is at the destination of the previous travel connection and now transfers to the following travel connection.

Passenger Travel Milestones – Pre-Boarding

Pre-Travel
- M1: Activation of travel connection
- M2: Provision of details on travel connection
- M3: Begin of travel (to booked connection)

Pre-Boarding
- M4: Reaching start site of booked travel connection
- M5: Passing of milestone(s) at start site of travel connection
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End of Transport
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- M8: Passing of milestone(s) at end site of travel connection
- M9: Leaving end site of booked travel connection

Passenger Travel Milestone 4

- <u>Reaching start site of booked travel connection</u>:
  - The traveller arrives at the desired entry point to the booked travel connection which might be an airport, a train / bus station or a car rental for example.

Variable Transfer Time Prediction

- **<u>VTTP between milestones 3 and 4:</u>**
  - Travel time between begin of travel and reaching start site of booked travel connection
    - Travel time by car/taxi might be predicted using traffic updates from internet, radio, etc.
    - Travel time by public transport should be updated from the public transport provider,
    - Travel time for bicycle or walk shall be predicted by the traveller. Normally an average walking time between adjacent modes of transport is published by a public transport provider.

Passenger Travel Milestone 5

- <u>Passing of milestone(s) at start site of travel connection:</u>
  - This milestone might consist of one or more resources for which times are planned and monitored, such as check-in, baggage drop, border control or security screening at an airport. The number of monitored resources heavily depends upon the chosen mode of transport.

Variable Transfer Time Prediction

- <u>VTTP between milestones 4 and 5:</u>
  - Travel time to first resource of milestone 5.
    - The travel time depends upon the chosen mode of transport to the start site of the booked connection.
    - Average times are normally provided by the owner of the start site, e.g. the average walking between bus and train station is normally provided by the transport service provider or the average walking time from car park to a terminal of an airport is normally published by the airport authority .

Passenger Travel Milestone 6

- <u>Boarding of booked travel connection</u>:
  - The traveller boards the booked travel connection.
  - The travel connection itself might be subject to a different kind of collaborative decision making, e.g. A-CDM for a flight connection.

Variable Travel Time Prediction

- <u>VTTP between (resources at) milestone 5 and milestone 6 (Boarding of travel connection):</u>
  - The number of monitored resources at milestone 5 differs depending upon size and complexity of the start site.
    - While one VTTP for all resources should be sufficient for small train stations and airports; large and complex train stations and especially hub airports might provide more than one VTTP, e.g. Terminal entrance to Check-In, Check-In to Security and Security to Gate.

Passenger Travel Milestones – End of Transport

Pre-Travel
- M1: Activation of travel connection
- M2: Provision of details on travel connection
- M3: Begin of travel (to booked connection)

Pre-Boarding
- M4: Reaching start site of booked travel connection
- M5: Passing of milestone(s) at start site of travel connection
- M6: Boarding of booked travel connection

End of Transport
- M7: De-Boarding of booked travel connection
- M8: Passing of milestone(s) at end site of travel connection
- M9: Leaving end site of booked travel connection

Milestones at End of Transport

- Less important for transport service provider if no follow-up connection is booked.

- But very important for traveller,
  - because she/he has limited ability on process times at these milestones,
  - but these milestones directly influence the time for leaving the end site of the booked travel connection.

Passenger Travel Milestone 7

- <u>De-Boarding of booked travel connection</u>:
  - The traveller disembarks from his/her chosen transport vehicle and enters the end site of her/his travel connection.
  - The traveller has only a very limited or no ability to influence the duration of a long distance connection.
  - In some cases this might be the end of this travel connection, e.g. for a connecting flight.

Passenger Travel Milestone 8

- <u>Passing of milestone(s) at end site of travel connection:</u>

  – This milestone might consist of one or more resources for which times are planned and monitored, such as border control, baggage claim or toll at an airport.

  – The number of monitored resources depends upon the chosen mode of transport and differs in case of a connection flight/train/bus with the same service provider, e.g. a connecting flight.

Variable Travel Time Prediction

- <u>VTTP between milestone 7 and (resources at) milestone 8:</u>
  - Travel time to last resource of milestone 8.
  - The number of monitored resources at milestone 8 differs depending upon type of connection and may be on size and complexity of the end site.
    - While one VTTP for all resources should be sufficient for small train stations and airports; large and complex train stations and especially hub airports might provide more than one VTTP, e.g. Gate to Emigration and Emigration to Baggage Claim.

Passenger Travel Milestone 9

- <u>Leaving end site of booked travel connection:</u>
  - The traveller leaves the desired exit point from the booked travel connection which might be at an airport, a train / bus station or a car rental location for example.

Variable Travel Time Prediction

- <u>VTTP between milestones 8 (last resource) and 9 (leaving end site):</u>
  - Travel time between last resource of milestone 8 to leaving the end site of the booked travel connection.
  - This travel time is normally given by an average walking time which should be published by the owner of the end site, e.g. the airport authority.

Thank you!

- Questions?