The passenger within
Performance Based Airport Operations

META-CDM
Gunnar Spies
2013-01-16
Classification of this presentation

• How can disruptive/crisis events seen from a passenger perspective be incorporated / be part of Performance Based Airport Operations (PBAO)?
  – Measures are needed to describe and evaluate the performance of the whole travel (ground and air) seen from the perspective of the passenger.
    • Which existing measures are suited?
    • Which new measures are needed?
    • How can these measures be incorporated in PBAO?
Overview

- KPIs for enabling performance based airport operations as defined by the TAM-OCD
- KPAs and Focus Areas used in Episode 3
- KPIs defined within the ATMAP framework
- KPIs that were adjusted, detailed or added by the TAMS project
- KPIs derived from ASSET
- Evaluation of the presented KPIs for META-CDM
- KPAs/KPIs for META-CDM and possibilities for R&D
KPIs derived from TAM-OCD (1)

• **Performance-Targets**
  - Punctuality (t), Following IATA definition, 15min criterion
  - Throughput (t), Aircraft (or Passengers) per time
  - Emission (t), Gaseous and Noise
  - Cost / Efficiency (t)
  - Predictability (t)
  - Stability of Operations (t)
  - Safety is not compromised nor weighted in any case; therefore it is not a parameter to be set.
KPIs derived from TAM-OCD (2)

• Flow-Targets
  – Capacity (t)
  – Demand (t)
  – Flow (t)
  – Queue (t)

All these parameters can be considered or planned for the airport, for arrival/departure, for individual airport resources (RWY, TXWY, Apron,...) or a combination of these possibilities.
KPIs derived from TAM-OCD (3)

- **Resource-Event-Targets**
  - **Resource-Configuration-Targets**
    - E.g. RWY in mixed or segregated mode,
  - **Operation/Flight Targets**
    - E.g. target time to complete boarding, locations are bound to the target times to associate target times with the resources to be used. Can be converted into a resource usage view
KPAs and Focus Areas in Episode 3 (1)

Episode 3
D2.0-03 - EP3 Performance Framework cycle 1

• Capacity (Operational Perf.)
  – Airspace, Airport & Network Capacity

• Efficiency (Operational Perf.)
  – Temporal, Fuel & Mission Effectiveness

• Flexibility (Operational Perf.)
  – Business Trajectory update for scheduled and non-scheduled flights
  – Flexible access-on-demand for non-scheduled flights
  – Service location flexibility
  – Suitability for military requirements
KPAs and Focus Areas in Episode 3 (2)

• Predictability (OP) Safety (Societal Out.)
  – On-Time operation
  – Service Disruption Effect
  – Knock-on effect

• Environment (Societal Outcome)
  – Environmental constraint management
  – Best ATM Practice in Environmental Management
  – Compliance with environmental rules
  – Atmospheric Impacts
  – Noise Impacts
KPIs defined in the ATMAP framework (1)

ATM Airport Performance (ATMAP) Framework Measuring Airport Airside and Nearby Airspace Performance, 2009

- Handled traffic
  - Number of flights arrived and departed to and from an airport in a given time period

- Coordinated demand
  - Number of flights with assigned airport slot

- Coordinated cancelled demand
  - Number of cancellations, out of the coordinated demand, per 1,000 flight operations in a given time period
KPIs defined in the ATMAP framework (2)

• Airport Declared Capacity
  – Average number of airport slots per hour

• Service Rate
  – 1% percentile of the numbers of movements per 10-min rolling hours in busy periods

• Arrival Punctuality
  – Percentage of flights arriving no more than 15 minutes (alternatively 3 min) late compared to scheduled arrival times
KPIs defined in the ATMAP framework (3)

• Departure Punctuality
  – Percentage of flights departing no more than 15 minutes (alternatively 3 min) late compared to scheduled departure times

• Early arrivals
  – Percentage of flights arriving 15 minutes or more ahead of schedule

• Departure delay causes
  – Percentage of contributory cause to departure delays (based on airline reported IATA delay codes)
KPA&Is detailed or added by TAMS project (1)

TAMS-OCID, Version 1.01 released

• Traffic Volume & Demand
  – Handled Traffic (ATMAP)
  – Handled Pax (detailed for TAMS)

• Capacity
  – Airport Declared Capacity (ATMAP)
  – Slot Compliance (A-CDM Manual)
  – Terminal Capacity (detailed for TAMS)
KPA&Is detailed or added by TAMS project (2)

• Punctuality
  – Arrival Punctuality (A-CDM Manual & ATMAP)
  – Departure Punctuality (A-CDM Manual & ATMAP)
  – Early Arrivals (ATMAP)
  – Departure Delay Causes (ATMAP)
  – Waiting Time at Runway (detailed for TAMS)
  – Boarding Punctuality (detailed for TAMS)
  – Passenger Connectivity (detailed for TAMS)
KPA&Is detailed or added by TAMS project (3)

• Efficiency
  – READY Reaction Time (A-CDM Manual)
  – Aircraft Stand & Pax Gate Freezing Time (A-CDM Manual)
  – Level of Service (LoS) (defined for TAMS)
KPA&Is detailed or added by TAMS project (4)

• Predictability of
  – Stand allocation accuracy: EIBT (A-CDM Manual)
  – Stand allocation accuracy: EOBT (defined for TAMS)
  – TOBT/TSAT Predictability to AOBT/ASAT (A-CDM Manual)
  – TOBT/TSAT Predictability to EOBT (defined for TAMS)
  – TTOT Predictability (defined for TAMS)
  – ELDT Predictability (defined for TAMS)
  – EPTG Predictability (defined for TAMS)
KPA&Is detailed or added by TAMS project (5)

• Environment
  – Noise / Emission on ground (A-CDM Manual)
  – Emission from ground vehicles (defined for TAMS)
  – Airport infrastructure energy efficiency (defined for TAMS)

• Safety
  – Number of aircrafts queuing on sequence (A-CDM Manual)
  – Number of safety incidents (A-CDM Manual)

• Security
  – Number of security incidents (defined for TAMS)
KPIs derived from ASSET (1)

e.g. D_1.3_ReportOfPerformanceParameters.pdf

- Time:
  - process time (POA)
    - duration
    - waiting time (Duration/Variance)
    - service time (Duration/Variance)
  - overall process time
    - variance
  - walking time and transportation time
    - duration
    - variance
KPIs derived from ASSET (2)

• Financials:
  – fix costs
  – variable costs
  – investments
  – revenue
KPIs derived from ASSET (3)

• Supporting parameters that were regarded as important to be assessed qualitatively are:

  – space consumption
  – robustness
  – level of Service
  – security level
  – safety level
  – privacy constraints
  – compatibility
  – effort of implementation
  – operational
  – time
Evaluation of the presented KPIs for META-CDM

• KPIs defined for PBAO so far are not focusing on the perspective of the passenger
• The KPIs should be extended to include the whole travel (including non-air transport).
  – E.g. How is the airport connected to public transportation?
    • Airport shuttles, train to a major train station, etc.
    • Reachability by car, parking lots, etc.
    • Transfer time to/from the terminal, e.g. from parking
META-CDM passenger focused KPA/KPI (1)

• Accomplishment
  – Prizing (Ticket, extra charges, shops, restaurants etc.)
  – Duration of whole travel (door to door)
  – Punctuality
  – Connectivity (& Is there a plan B?)
  – Compensation (Hotel, bus/train transfer, refund etc.)
META-CDM passenger focused KPA/KPI (2)

- Comfort
  - Accommodation (Seating, snacks, newspaper, etc.)
  - Accommodation during disruptive events
  - Guidance (What to do next? Where to go? Etc.)
  - Reachability (transfer time, etc.)
  - Waiting time (time wasted in queues etc.)
META-CDM passenger focused KPA/KPI (3)

• Quality of Service (service personal)
  – Friendliness
  – Communication (Language)
  – Courtesy / Liability
  – Reliability
  – Timeliness of information
  – Service time
META-CDM passenger focused KPA/KPI (4)

• Safety
  – Incident / Accidents
    • Not only number of incidents / accidents for this airline, but although circumstances like bad weather, bad news from other airlines etc.
  – Health
    • E.g. contaminated cabin air
  – Security
    • E.g. risk of hi-jack, sky marshal
META-CDM passenger focused KPA/KPI (5)

- Trust / Image (Publicity & Experience)
  - Safety (Will I reach my destination alive?)
  - Service (Will the airline provide good service?)
  - Security (Will my personal data be treated confidentially?)
  - Connectivity (Will I reach my destination today?)
  - Timeliness (Will I arrive in time?)
  - Lagguage (Will it be lost / its transfer delayed?)
Influence of passenger focused KPI on PBAO

• Passenger focused KPI are mostly important for an airline, but some are although relevant for an airport as well.
  – How is in general the connectivity at an airport during a certain time of the year?
  – Will it be possible to catch an alternative mode of transportation?
  – Is the site interesting (e.g. near to town), thus could I do anything interesting if my flight is cancelled?
Derived research activities in META-CDM

• Examples for derived research activities:
  – Catalogue of critical times for air fare for each airport (to enable the airlines to make better recommendations for the passenger)
  – Study on the weighting of parameters to measure the performance from passengers’ point of perspective
  – Development of Passenger CDM (to put the passenger at the heart of PBAO)
Questions?

• Ask, ask, ask...