A-CDM

Airport Collaborative Decision Making
What is A-CDM?

✈ „Single European Sky“- project
✈ Optimising Resources
✈ Inbound - Turnaround – Outbound seen as a big process
✈ „Estimated Off Block Time“ (EOBT) minus 3 hours before take off
✈ Austro Control and Vienna Airport

What to improve?

✈ prediction
✈ punctuality
✈ Resources

NMOC is connected indirectly (locally implemented) or directly (fully implemented)

NMOC    Network Management Operation Center
How does A-CDM work?

- CDM is a procedural and cultural change
- CDM is highly transparent
- CDM means a lot of data is exchanged and used in realtime
CDM – Milestone Process

1. Flightplan activation
2. EOBT - 2 hours
3. Departure from foreign ADEP
4. Radar tracking update
5. Approach
6. Landing
7. Aircraft reaching parking stand
8. TOBT
9. TSAT
10. Boarding
11. Boarding completed
12. Start up request
13. Start up approved by ATC
14. AOBT
15. ATOT
TOBT – Target Off Block Time

- The time when the aircraft operator expects to be ready for startup and pushback.

- TOBT can be set 2 hours before the EOBT, until 30 minutes prior to EOBT.

- Changes in the TOBT of more than five minutes have to be communicated by updating the TOBT.
TSAT – Target Startup Approval Time

- TSAT is calculated by ATC based on the TOBT, the available capacity, the demand and possible NMOC regulations

- At TSAT, the aircraft can expect startup and pushback approval

- Calculation of TSAT starts as soon as a TOBT is available

- Startup will be approved at TSAT +/- 5 minutes
# Time-Stamps

**AUA745**

|-----------|---------|------------|--------|---------------|------------|------------|-----------|-----------|----------|-------------|-----------|-----------|-----------|---------|--------|------|--------|-------|----------------|---------|

**Route:** STEIN4B STEIN DCT KOPRY DCT NUPSO/N0400F250 DCT OKLAX OKLAX2D

**Remark:**

- 50 STEIN4B 7125 delivered: 11:47
- Clearance delivered via DCL: 11:47
- Start-up denied: 12:00
- Stand by 15 minutes: 12:00
- Start-up approved: 12:09
- Taxi clearance issued: 12:14
- Line-up approval: 12:19
- Take-off clearance: 12:20
### Runway/ Deicing Capacity

<table>
<thead>
<tr>
<th>RWY</th>
<th>ARR</th>
<th>DEP</th>
<th>ARR CAP/ACT</th>
<th>DEP CAP/ACT</th>
<th>TOTAL DELAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>11</td>
<td>16</td>
<td>0A / 0</td>
<td>38A / 12</td>
<td>175</td>
</tr>
</tbody>
</table>

**ICE SB**
- **GAIN**
- **VEH** 6
- **WX** 1

**ICE S**
- **GAIN**
- **VEH** 6

**ICE N**
- **GAIN**
- **VEH** 6

**Time:** 12:12:42  
**Undo**

**Data Science in Aviation**
2018 Workshop
17th October
Austro Control
Department MANager
Benefitting Stakeholders

- Airport
- Passengers
- ATC
- Airlines
- Environment
- Ground Handling
Advantages of CDM

✈ For the airport

➢ Optimised parking stand allocation
➢ Better use of infrastructure (loading, boarding, cleaning, ...)

✈ For ATC

➢ Better predictability of traffic peaks
➢ No frequency overload
➢ Better coordination between different ground positions (delay allocation..)
➢ Optimised RWY configuration change
➢ No congestion on the taxiways

✈ Environmental benefits

➢ Reduction of CO²
➢ Noise abatement

✈ Für den Passagier & Kunden

➢ Better prediction of departure and arrival times
➢ Optimised connection flights
Advantages of CDM

✈ For the airline

➢ Exact status of handling process
➢ Exact sequence information
➢ Exact arrival time
➢ Efficient fleet management and internal priorisation
➢ Cost reduction through reduced taxi times
➢ Higher predictability
➢ Reduced waiting times at the holding point
➢ Optimised turnaround

✈ For the Ground Handling

➢ Efficient use of resources due to accurate turnaround times
➢ Better prioritisation
➢ Early identification of discrepancies
➢ Environmental friendly
New York – taxitime without CDM

JFK May 4, 2009
WHOSE FAULT IS THIS?
$72,000 just in fuel
CDM Facts

**CO₂ reduction**
6.300.000 kg

**Cuts in jet fuel consumption**
2.500.000

**System availability**
99.9%

**Cost cuts in jet fuel**
€ 2.375.000

**Reduced taxitime**
1.190 hours
(~50 days)

(Analysedaten: 07/2014-12/2016)
Status FULLY IMPLEMENTED

NMOC- fully connected. CTOTs based on TTOTs

Advantages

• Exchange of airport and en-route slots
• Optimised calculation of CTOTs
With or without A-CDM

• First come | first served (without A-CDM)

• Best planned | best served (with A-CDM)
Thank you!