SESAR Showcase
A Conference & Exhibition of SESAR 1 Results

Amsterdam, 14-16 June 2016
Airport Operations Management

Mark Burgess
SEAC Heathrow Airport

Integration of AOP-NOP and Target Time Management

Gonzalo Quiles
Indra Sistemas
Why do we need change?

- Restrictions are needed to balance traffic flow
- Poor communication between stakeholders
- Poor predictability of operations
- Increasing block times
- Decreasing efficiency of Airport resources
- Airport processes are mostly independent from the Network
What is Operations Management

Check-in efficiency
- % of bags checked-in vs. TOBT

Baggage system efficiency
- % of bags through system vs. TOBT

Loading efficiency
- % of bags loaded vs. TOBT

Check-in efficiency
- % of passengers checked-in vs. TOBT

Security efficiency
- % of passengers Airside vs. TOBT

Boarding efficiency
- % of passengers at Gate vs. TOBT

Predictability

Capacity

Flexibility

TOBT Target off blocks time

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What will it look like?

**APOCH**
Manage performance

**AOP**
Monitor performance

**MET**
Integration of data

**DCB**
Arrive & depart to plan

Integration of landside processes
Integration of de-icing processes
Who was involved?
What benefits can you expect?

SESAR Airport Operations Management Solution

Validated in SESAR and across Europe

LHR  CDG  TLS  MAD  PMI  BOD  ALC
How does it link to the Network?

AOP-NOP data sharing

Airports integrated into the Network

Target Time Management
Integration of AOP-NOP and target time management (TTM) - Step 1

Gonzalo Quiles (Indra)
We have an objective:
The airport integration into the Network...
...for a common situational awareness
How do we integrate the airport into the network?

Through the Airport Operation Plan (AOP) and Network Operation Plan (NOP) connection

1 – Airports → Network
2 – Network → Airports
3 – Airports → Network

Achievement:
Full dynamic information exchange for a full Common Situational Awareness
**Uses of AOP-NOP integration: Target Time Management**

1. Airport Demand – Capacity Imbalance → Hotspot definition
2. Network regulation → CTOTs sequence but...
   ... arrival sequence doesn’t match the Airport plan because it ignores Airport Planning
3. AIMA (Airport IMpact Assessment)
4. Airport AIMA assess ELDT and propose a new sequence to the Network
5. Network evaluates the new sequence and approves it

**Airport Stakeholder Role: Passive ➔ Active**
Providing a solution to a local Demand Capacity imbalance
Results of AOP – NOP integration

Deliver to the Network Manager an improved awareness of Traffic Situation, both in terms of:

- Prediction Time Frame
- Accuracy of Predictions in the extended Time Frame

**SESAR Validation Exercise preliminary results**

- With 7h in advance there is an increase of 25% in demand accuracy
- Flights affected by a hotspot are reduced to a 25% of total flights (only 25% will have CTOTs and delays)

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Conclusions

Direct improvements

- Reduces delays and fuel consumption
- Optimises resources usage
- Improves passenger quality service
- Supports crisis management

ATM MP KPA impacted

- Capacity
- Environment
- Cost efficiency

Next Steps: SESAR 2020

- Project – Total Airport Management
- Project – Advanced DCB
- Very Large Scale Demonstration Network Collaborative Management
Thank you for your attention

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Remote Towers

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Remote Towers

Local Air Traffic Service at an aerodrome hasn’t changed much since the beginning of flying.
Remote Towers

Single Remote Tower
One ATCO/AFISO will provide ATS from a remote location.

Multiple Remote Tower for low density aerodromes
ATS to two aerodromes simultaneously.

Remote Contingency Tower for medium sized aerodromes
ATS to an aerodrome when the ordinary tower is out of service.
Single Remote Tower

**Challenge**
- Reproduction of the Out of The Window view (OTW)

Two different setups –
Same set of requirements produced
Visual reproduction – Single RTO

Reproduction of the Out of The Window view (OTW) in a Controller Working Position, CWP
Visual presentation - advanced

- Advanced features can be added

- Infrared - IR
- Visual tracking
- Hot-spot cameras
- Weather data
Single Remote Towers - conclusions

Validation Results:
- Safety is maintained
- Same level of Capacity and Service
- Co-location of Remote Towers reduces costs, **10-20%**

**Conclusion**
Single Remote Tower is implemented and feasible
Multiple Remote Tower

- **TWO** Remote Towers controlled from one controller
- Integration of data from **TWO** different aerodromes

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Visual reproduction – Multiple RTO

Different solutions towards the final results
- Low density aerodromes

Airport A
Airport B

side by side

Airport A
Airport B

above each other or full switching
Multiple Remote Tower for two small aerodromes

Validation Results:
- Safety levels are met
- Capacity is kept
- One ATCO/AFISO controls two aerodromes, costs down **15-35%**

Conclusions
- Industrialization of the multiple concept is ongoing
- Start with small aerodromes
Contingency Remote Tower

Challenge
- Take the single solution to an airport with high capacity, regional HUB
- Close to 100% capacity
Contingency Remote Tower

- Operating environments with more than one ATCO
- System integration

Conclusions
- Traffic levels kept on 85 – 90% in contingency with these solutions
Digitalisation of air traffic management

No new towers will be built after 2020!
Thank you for your attention

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Welcome to our stand for more information about Remote Towers