SESAR Showcase

A Conference & Exhibition of SESAR 1 Results

Amsterdam, 14-16 June 2016

SESAR JOINT UNDERTAKING

EU 2016

Airport Operations Management

Mark Burgess

SEAC Heathrow Airport

Integration of AOP-NOP and Target Time Management

Gonzalo Quiles

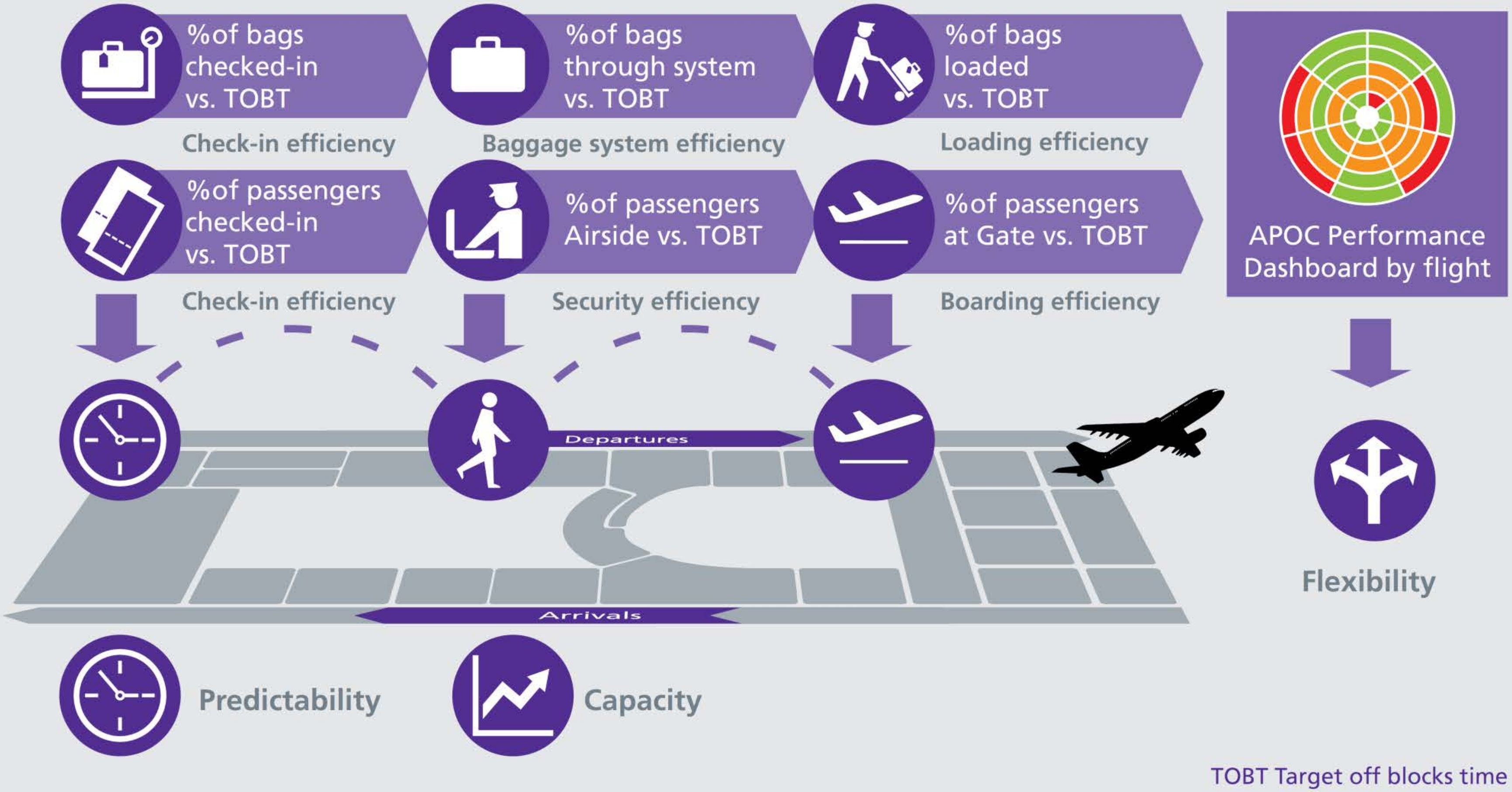
Indra Sistemas

SESAR Showcase

Amsterdam, 14-16 June 2016

Why do we need change?

What is the Solution?
Airport Operations Management



What will it look like?

APOC

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?

SEAC

EUROCONTROL

aena

ENAIRE

noracon

ENAV

Selex ES
A Finmeccanica Company

indra

dgac

DSNA

AT-One
the ATM Research Alliance

NLR

DLR

AIRBUS
DEFENCE & SPACE

FREQUENTIS

THALES

NATMIG

What benefits can you expect?

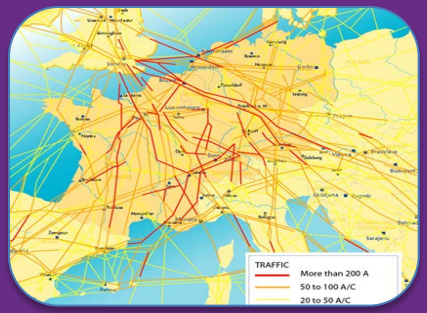
SESAR Airport Operations Management Solution

Validated in SESAR

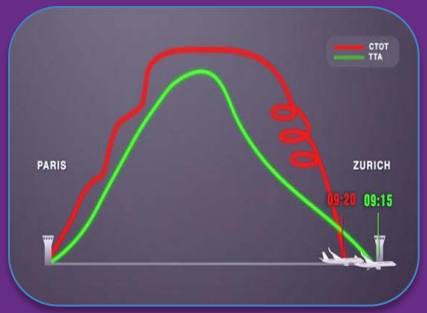
and across Europe

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)

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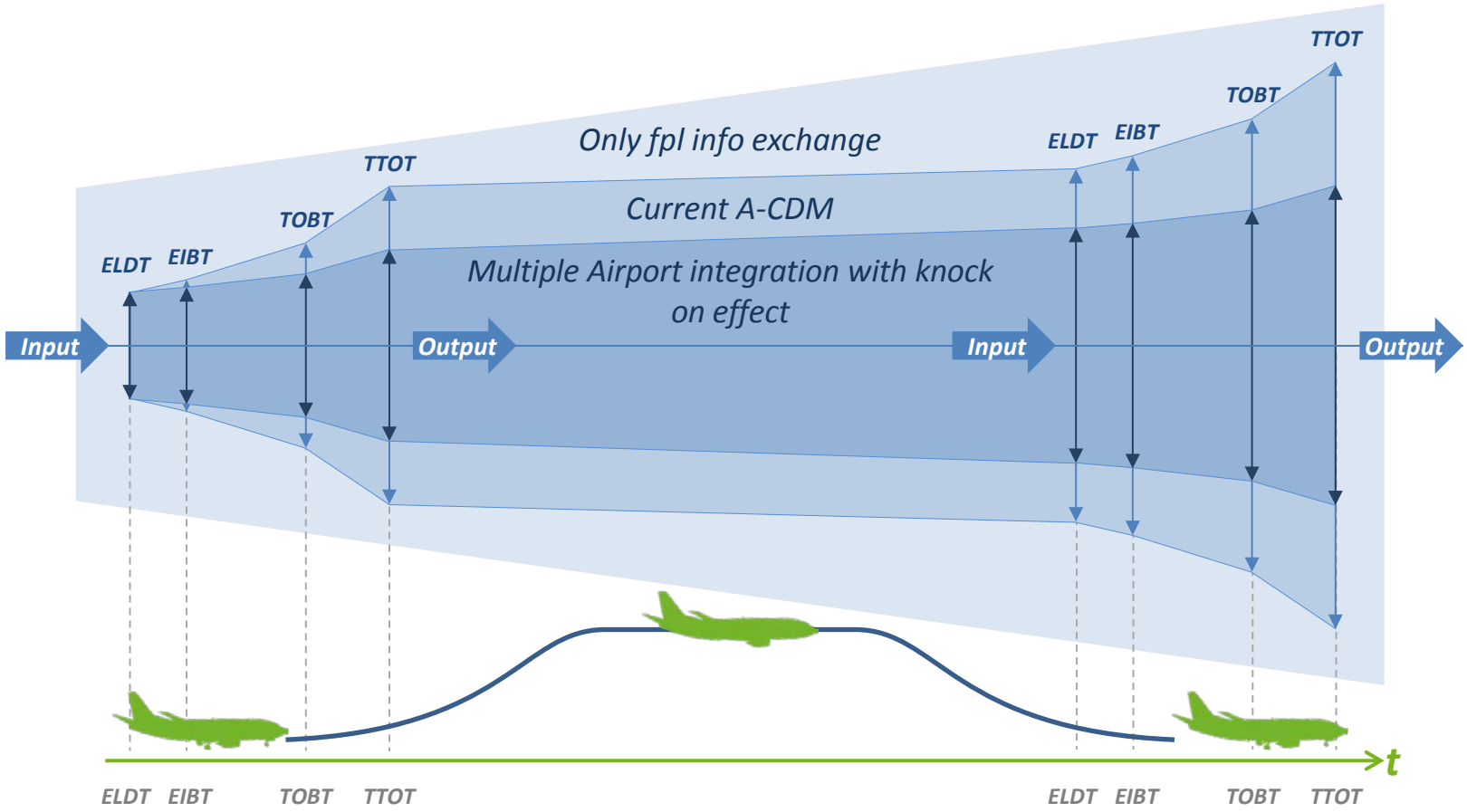
We have an objective:

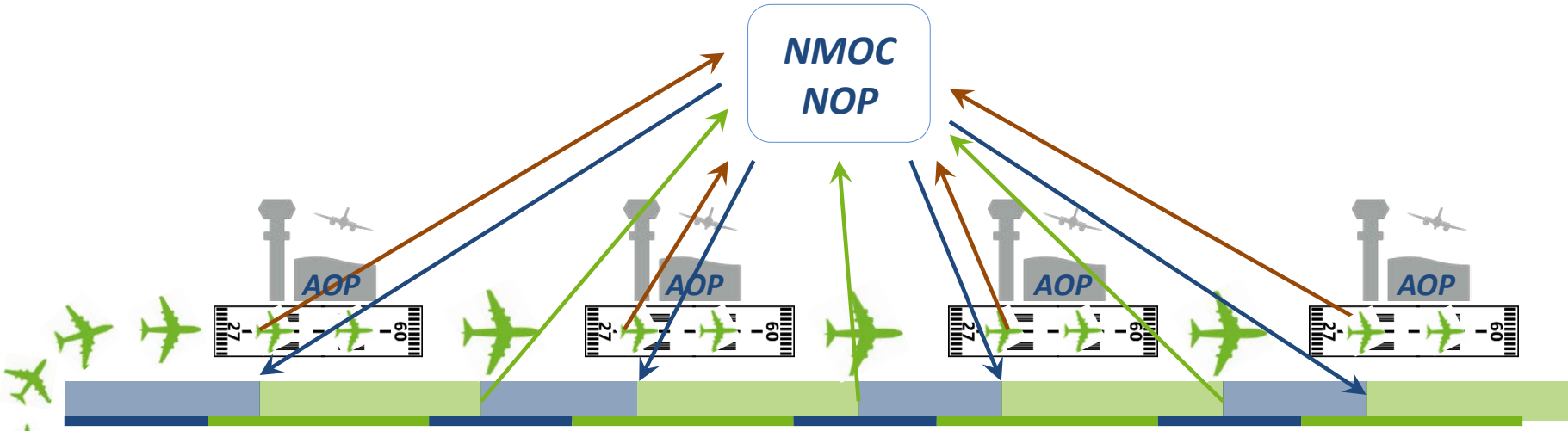
The airport integration into the Network…

…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

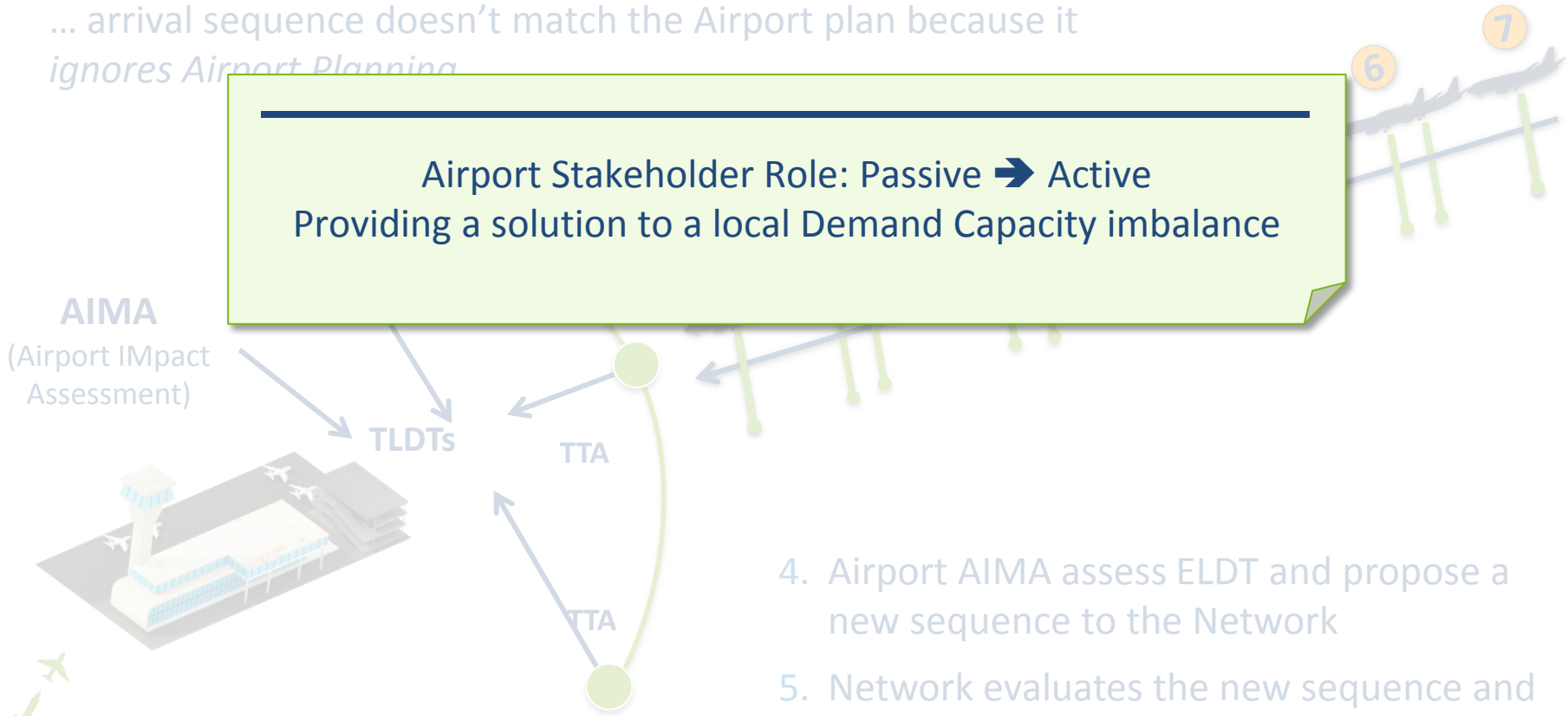
Achievement:
Full dynamic information exchange for a full Common Situational Awareness

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*

Airport Stakeholder Role: Passive ➔ Active
Providing a solution to a local Demand Capacity imbalance

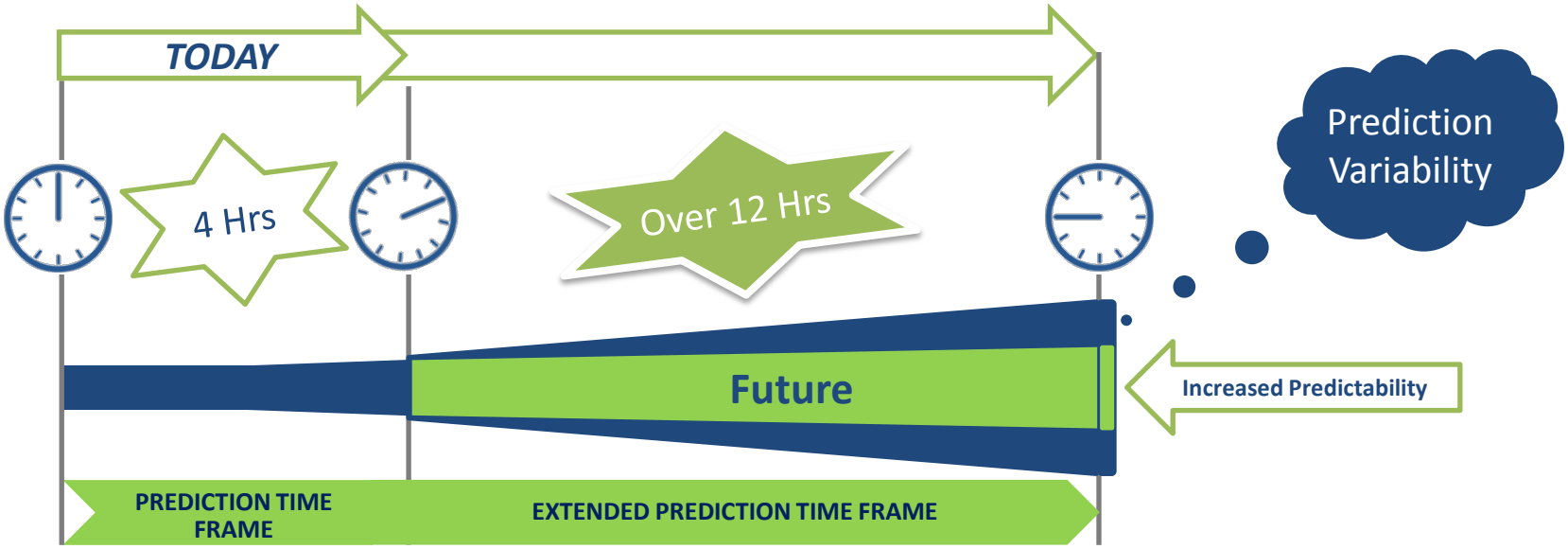


4. Airport AIMA assess ELDT and propose a new sequence to the Network
5. Network evaluates the new sequence and approves it

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)

Conclusions

Predictability → **Improves efficiency of highly congested environments**

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

More information:

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Remote Towers

Marcus Filipp – Noracon, LFV
Paul Diestelkamp – DFS

SESAR Showcase
Amsterdam, 14-16 June 2016

Remote Towers

Local Air Traffic Service at an aerodrome hasn´t changed much since the beginning of flying

noracon

NATMIG

DFS Deutsche Flugsicherung

FREQUENTIS

ENAIRE

indra

Remote Towers

<u>Single Remote Tower</u>

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

<u>Multiple Remote Tower for low density aerodromes</u>

ATS to two aerodromes simultaneously.

<u>Remote Contingency Tower for medium s aerodromes</u>

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

Visual tracking

Infrared - IR

Hot-spot cameras

Weather data

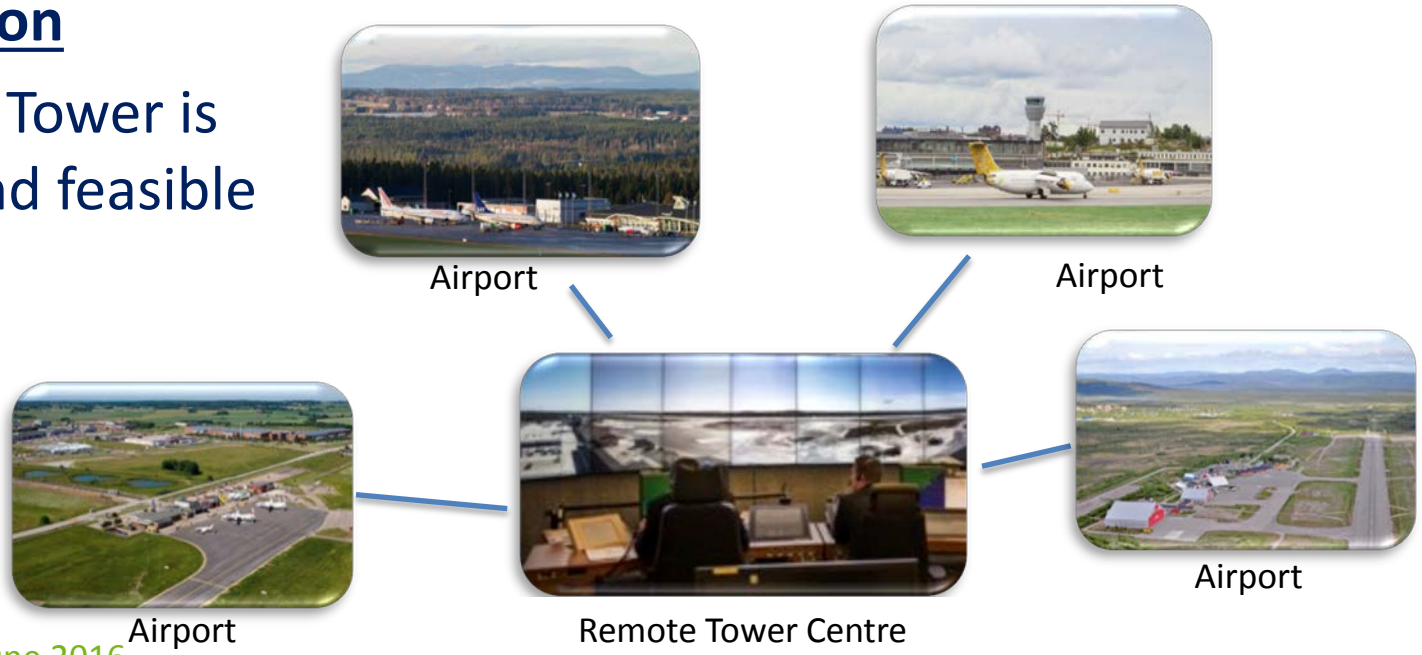
Single Remote Towers - conclusions

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

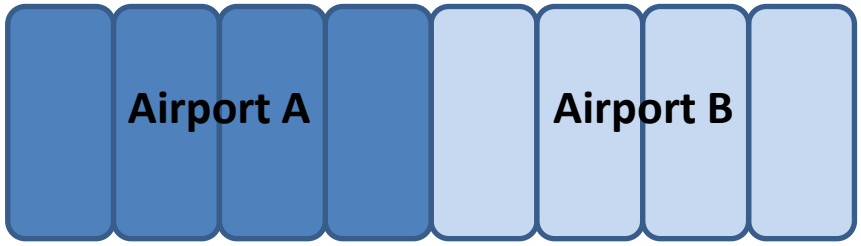
Sundsvall airport

Örnsköldsvik airport

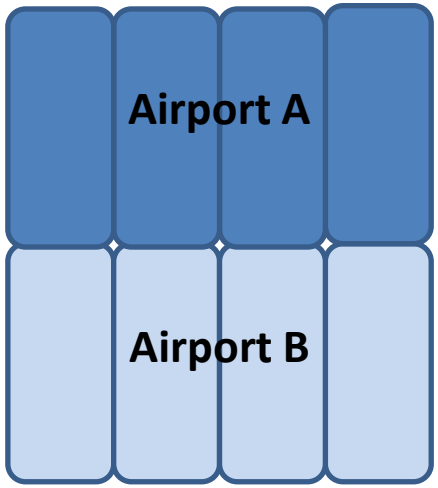
Visual reproduction – Multiple RTO

Different solutions towards the final results

- Low density aerodromes



side by side

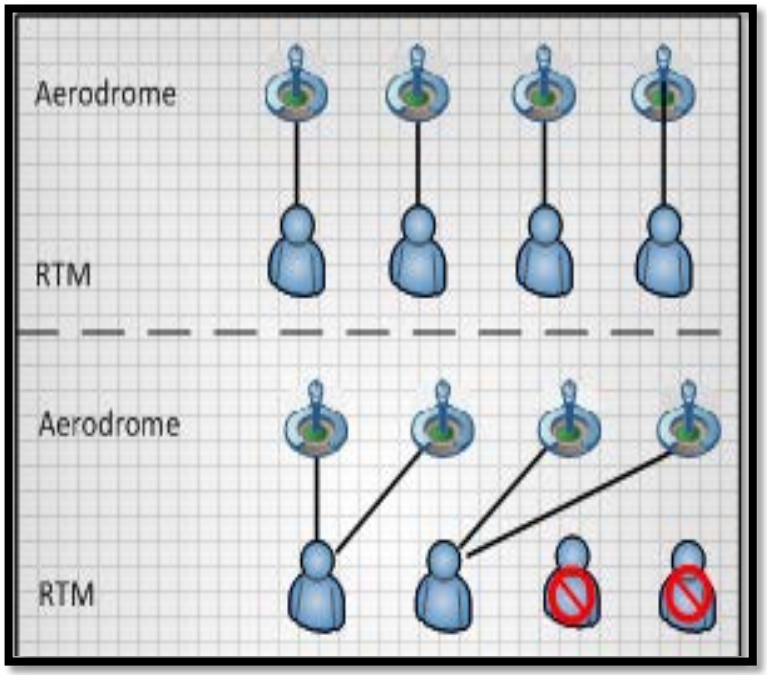


above each other
or full switching

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

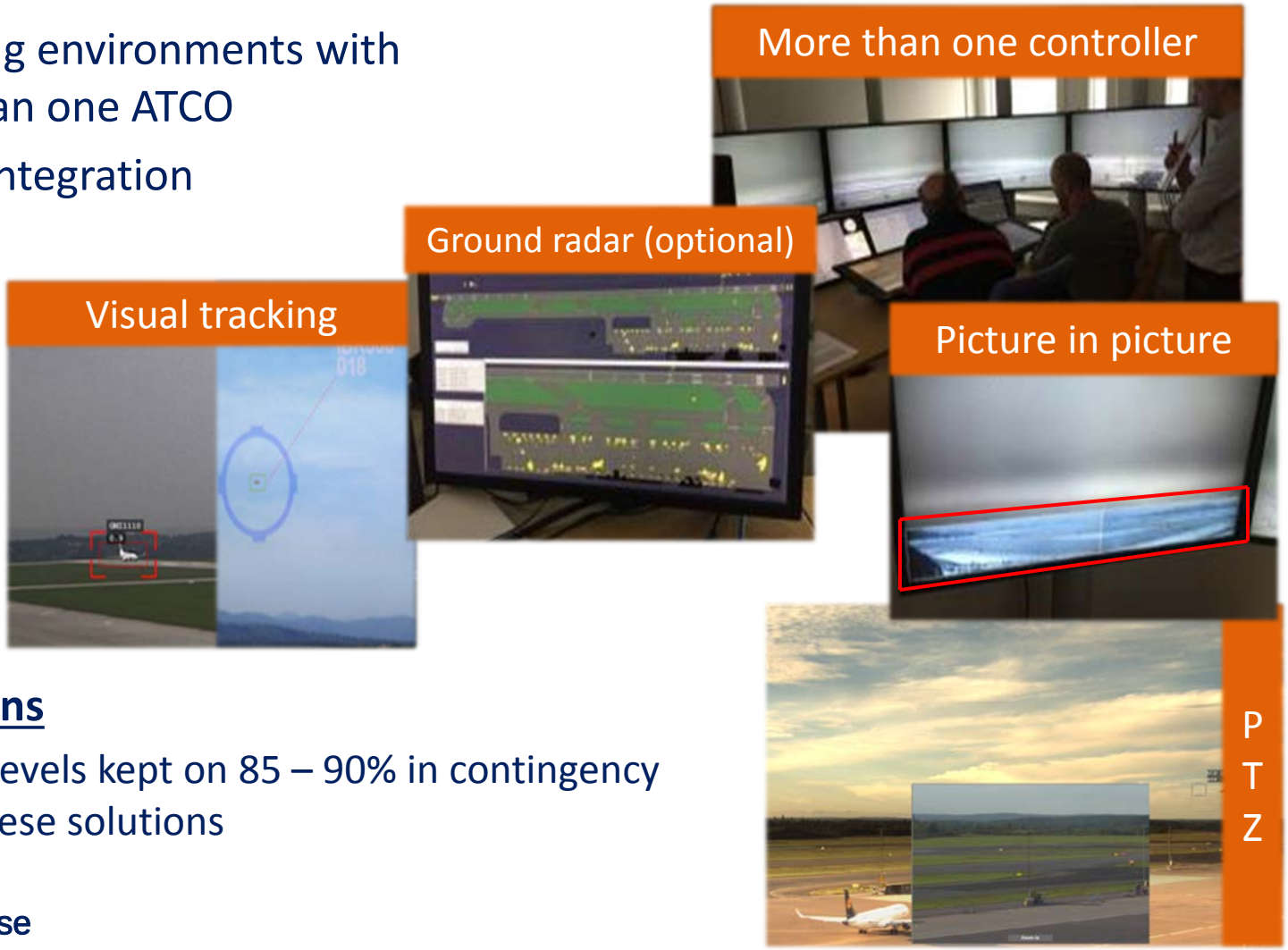
Contingency Remote Tower

Challenge

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

Contingency Remote Tower

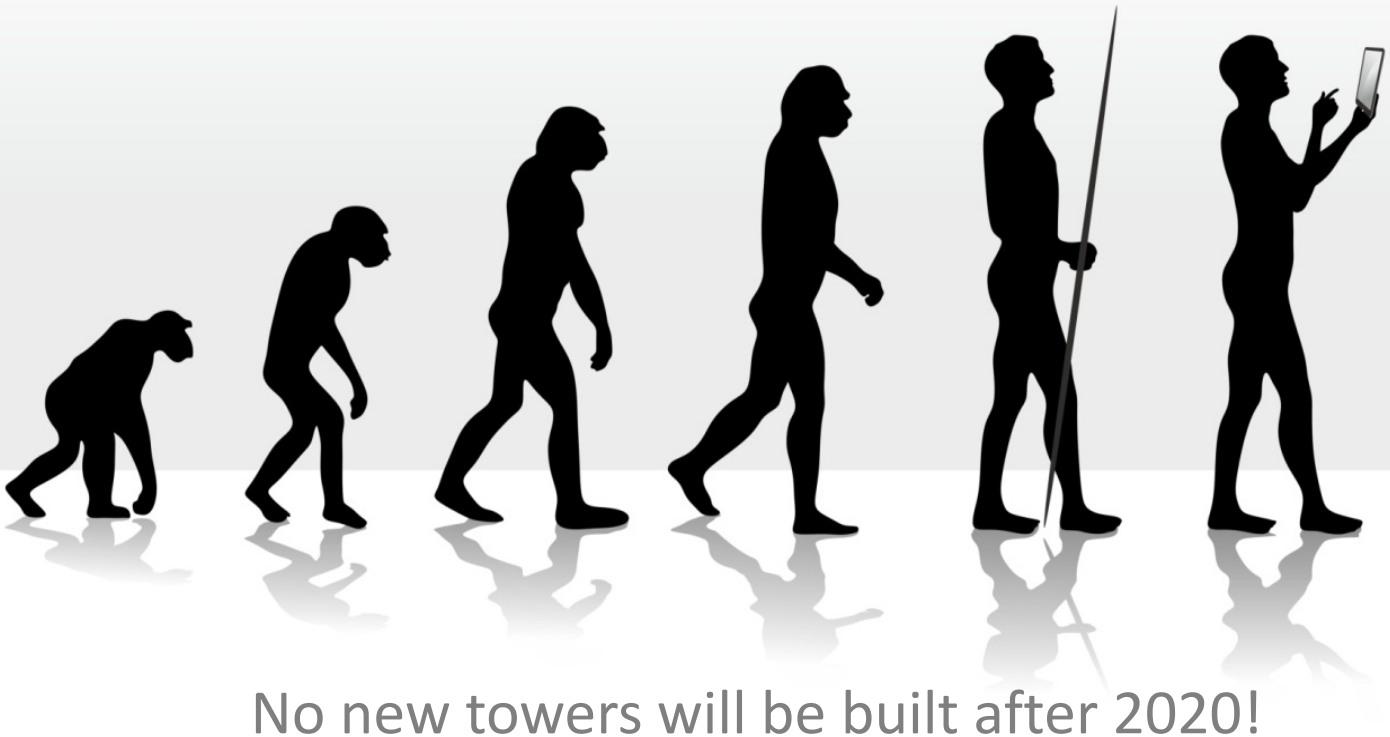
- Operating environments with more than one ATCO
- System integration



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

More information:
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DFS – Paul Diestelkamp (paul.diestelkamp@dfs.de)

Welcome to our stand for more information about Remote Towers