### **Remote Tower**

**Remote Tower** enables the provision of ATS from a facility autonomous of the local tower (either on or off airport site). A Remote Tower facility has to provide the controller with a means of visual observation and sufficient situational awareness to maintain ATS to at least the same level as in current operations.

#### **SESAR Solution**

SESAR Remote Tower projects PO6.09.03 and PO6.08.04 developed the operational concept, safety and human performance cases. The projects focused on Single, Multiple and Contingency applications to small to medium airports. The aim was to develop a "basic" Remote Tower solution to validate the concept. A series of Advanced Visual Features were added at a later stage to expand the technical solution and potential use cases.

Single

Aerodrome

applications

Voice

communication

**SESAR Remote Tower** 

Concept

Multiple

Aerodrome

applications

#### **Benefits of Remote Tower**

- Cost Efficiency
- Operational Resilience
- Service Continuity
- Flexibility of ATS provision
- Alternatives to Tower Replacement
- Centralisation of Facilities and Resources

# Facilitating New Technologies within ATS Remote Tower provides a unique environm

Remote Tower provides a **unique environment and opportunity** to enable other technologies to be used in ATS provision. Such technologies were primarily developed to support controller situational awareness, however additional benefits are likely to emerge.

**Advanced Visual Features** 

#### **Advanced Visual Features**

- Pan Tilt Zoom (PTZ) cameras
- Infra-Red Sensors
- Visual (non-cooperative) Target Tracking
- Integrating Optical Sensors with Surveillance Sensors
- Augmented Displays
- Area of Interest Viewing
- Adapted Visual Presentations

#### **Potential benefits**

- Improved Situational Awareness
- Reduced Workload
- Enhanced Operational Safety
- Increased Capacity and Resilience

**THK153** 

#### Overlay/Tracking

Optical Input (e.g. static or PTZ cameras)

Contingency

Tower

applications

Remote Tower to to Virtual Tower

Progressing the Concept Advancing the Solution



# Moving

**Forward** 

Taking advantage of **new and emerging technologies** from within and outside of ATM is crucial to advancing Remote Tower for use in more complex applications.

Considerable technological development is required before Remote Towers become Virtual, however it is clear that Virtual Tower solutions have the potential to provide huge benefits to the ATM network.

## **Barriers**

When implementing a Remote Tower solution barriers will often present themselves. The more advanced the Remote Tower solution becomes, the harder it can be to overcome these barriers.

The implementation strategy chosen will depend on specific business goals, operating environment and ATM needs.

Surface Movement Radar (e.g. A-SMGCS)

**MET** 

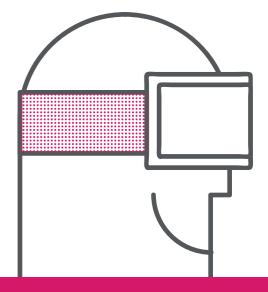
(e.g. local wind,

wake vortex)

#### Virtual Tower

**Virtual Tower** is where ATS are remotely provided through the use of computer generated images of the aerodrome, aircraft and vehicles and/or surveillance. Example of the types of technology which can may be used in Virtual Towers include:

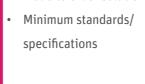
- Augmented Reality
- Head Mounted Displays
- Computer Modelling of Aerodromes
- Integration of Information
- Use in both Local and Remote Tower Environments



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- Solutions to align with ATM needs
- Technology that is it for purpose
- Reliability and robustness
  Aligning virtual reality
- with real operations
- Technological development
- Integration with current ATM systems
- Flexibility of the solution
- Perceptions of all stakeholders
- Ensuring Safety
- Impact on working methods
- Co-existing with the local tower

  Interactions of multiple
- Interactions of multiple
   ATCO roles and CWPs
- Compliance with
- existing regulation
- Need to create new rules
- Standardised vs.
   made to order solutions



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