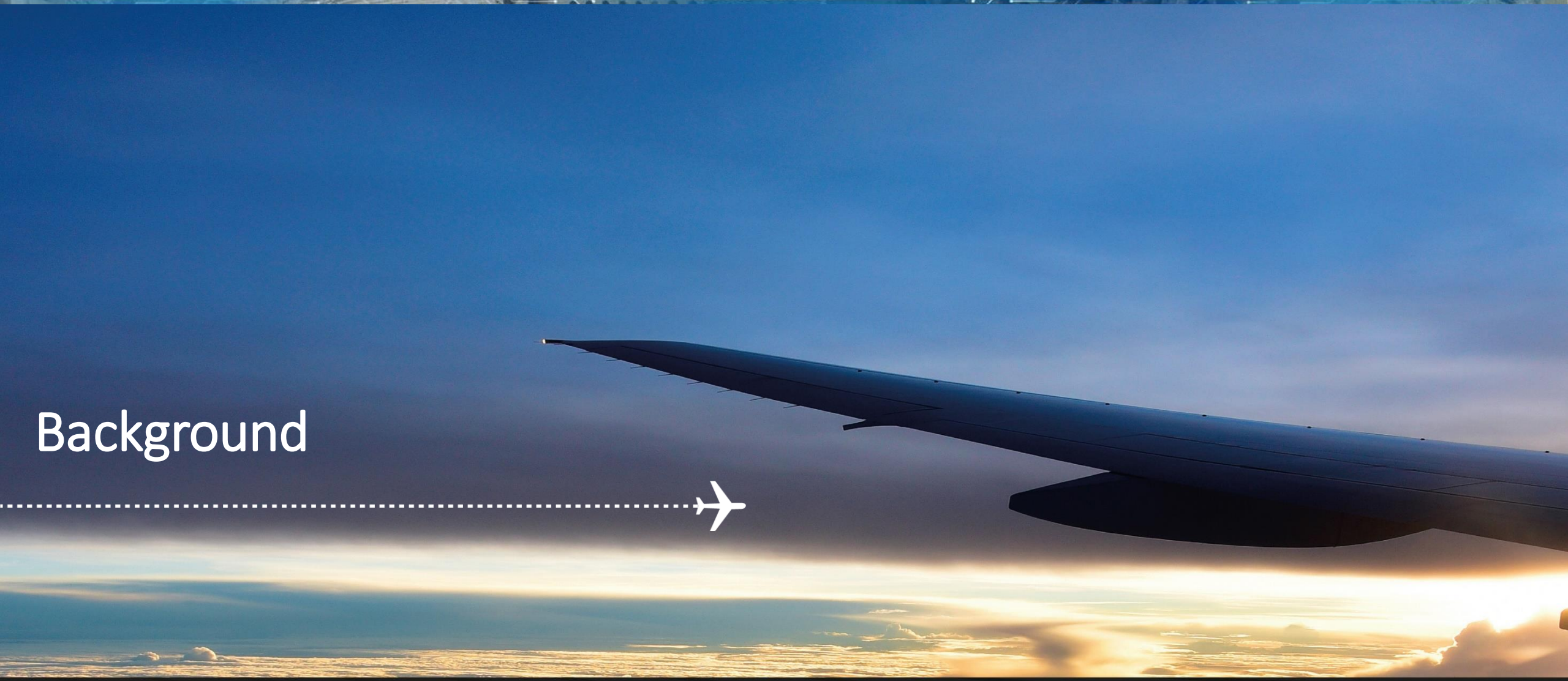
SANS Virtual Tower System Program

Background



Background

AFIS	No ATS
4	10

- There are 28 airports in the Kingdome of Saudi Arabia.
- Currently, many aerodromes within the Kingdom only provide AFIS or do not have an established ATS
- SANS seeks to upgrade, improve & enhance Air Traffic Services performance and quality at selected aerodromes (AFIS & with no ATS), in parallel, close coordination and consultation processes with the regulator (General Authority of Civil Aviation) has been established.
- While continuing to build sustainable solutions, to ensure long-term resilience in service delivery to airspace users, SANS is exploring innovative technologies and service models to enhance the value delivered, and continue to drive toward services and operational excellence through adopting **Innovative and advanced Technologies such as deployment of Virtual Tower System**

Background

- To provide an empirical understanding of the benefit merits and risks to facilitate more informed decision making in selecting VTS sites, a VTS **Airport Selection Profile** has been designed as a **generic framework** to assess and measure the technical and operating conditions of identified airports, which have the potential to be elected as candidate airports for VTS deployment and operation in the KSA, the output was used as an input for making the decision on feasible airports.
- This framework contains the following:
    - Site Assessment Process
    - Site Pre-Selection criteria
    - Site Assessment Criteria

Airport Selection Framework

Airport Selection Framework:
Site Assessment Process

The process for the VTS Airport Selection Profile involves a number of steps in order to determine a candidate airport and its suitability for VTS deployment and operation.

In brief, the process is as follows:

1. Identify prospective airports to be candidates for the assessment process
2. Collect prerequisite data for candidate airports to be used for assessment
3. Cluster candidate airport(s) for assessment against the defined pre-selection criteria
4. Assess candidate airports against the defined criteria including scoring and justifications
5. Score candidate airports based on the assessment
6. Use input from selection process into further analysis or scoping activities

Airport Selection Framework:

Site Pre-Selection Criteria

In order to focus assessment efforts and attention to candidate airports that are likely to be most suitable, clusters are created between all civil airports in KSA. The clusters are populated based on a set of pre-selection criteria that are identified as the most critical factors for the implementation of virtual tower service provision

Criterion	Description	Value Range
Service Level	Current service level	(1) AFIS (2) ATC
Locality	Distance between the candidate airport and VTS center	(1) <250km (2) 250 – 500km (3) 500 – 1000km (4) >1000km
Traffic Volume	Number of aircraft movements per annum	(1) Low (<2000) (2) Medium (2000 - 10000) (3) High (10000 - 20000) (4) Very high (>20000)
Traffic Type	Mix of flight types of aircraft movements per annum	(1) IFR only (2) IFR and VFR (3) IFR, VFR and Military
Airport Layout Complexity	Runway, taxiway and apron configurations, and layouts respective to airside physical infrastructure layout	(1) Basic (2) Intermediate (3) Complex

Airport Selection Framework:
Site Assessment Criteria

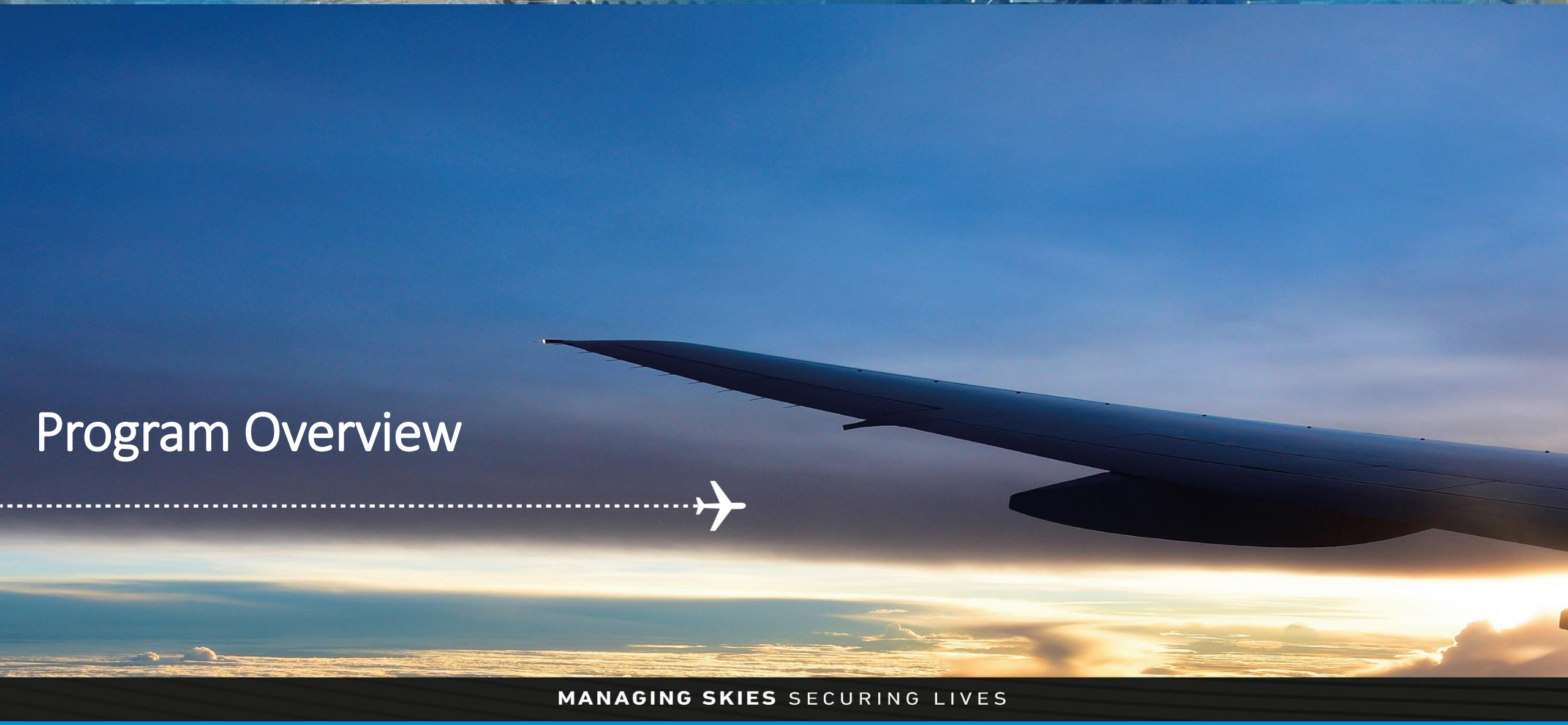
1. Operational Environment (e.g., airspace class, traffic category)
2. Service Delivery Environment (e.g., visual range requirement and angle to be covered by digital cameras, number of working positions)
3. Air Traffic Management (ATM) System Infrastructure
4. Communication, Navigation and Surveillance (CNS) System Infrastructure
5. Supporting System Infrastructure (e.g., Network, MET, Airfield lighting)

Airport Selection Framework:
Understanding the Results

The assessment of candidate airport results is in a total score that reflects the potential suitability for VTS deployment and operations. The scoring range is as follows:

Total score range	Score description
< 40	Likely suitable for VTS deployment and operation
41 - 70	Potential for VTS deployment and operation, but minor capability improvement required
71 - 95	Possible for VTS deployment and operation, but moderate capability improvement required
>96	Not ideal for VTS deployment and operation unless substantial capability improvement is undertaken

Program Overview



Overview

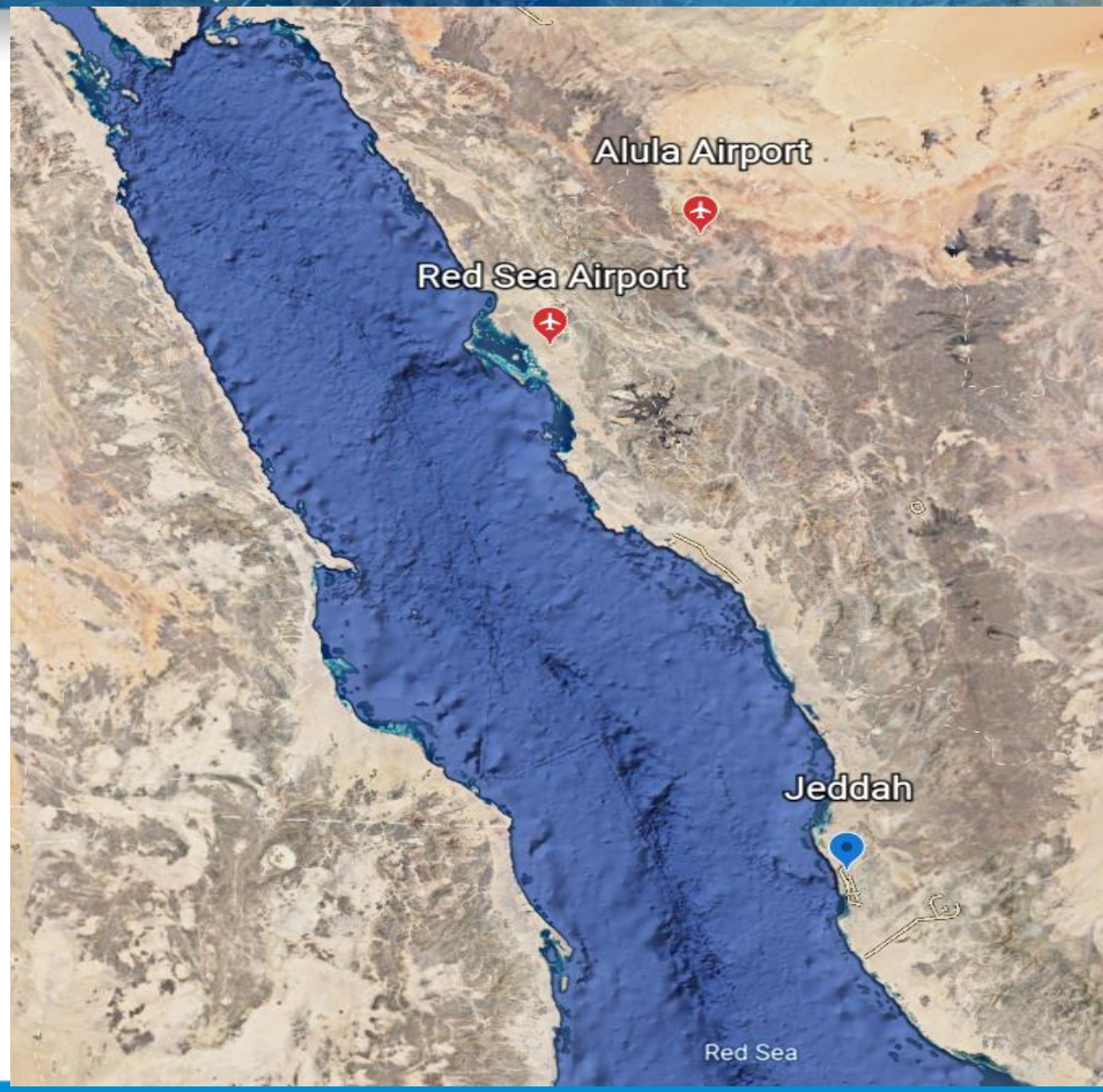
Virtual Tower System is going to be deployed and operated at the following two airports:

1- Alula Airport (Remote Virtual Tower):

Alula Airport traffic will be controlled by Remote ATC Virtual Tower Centre located at Jeddah

2- Red Sea International Airport (Virtual Tower):

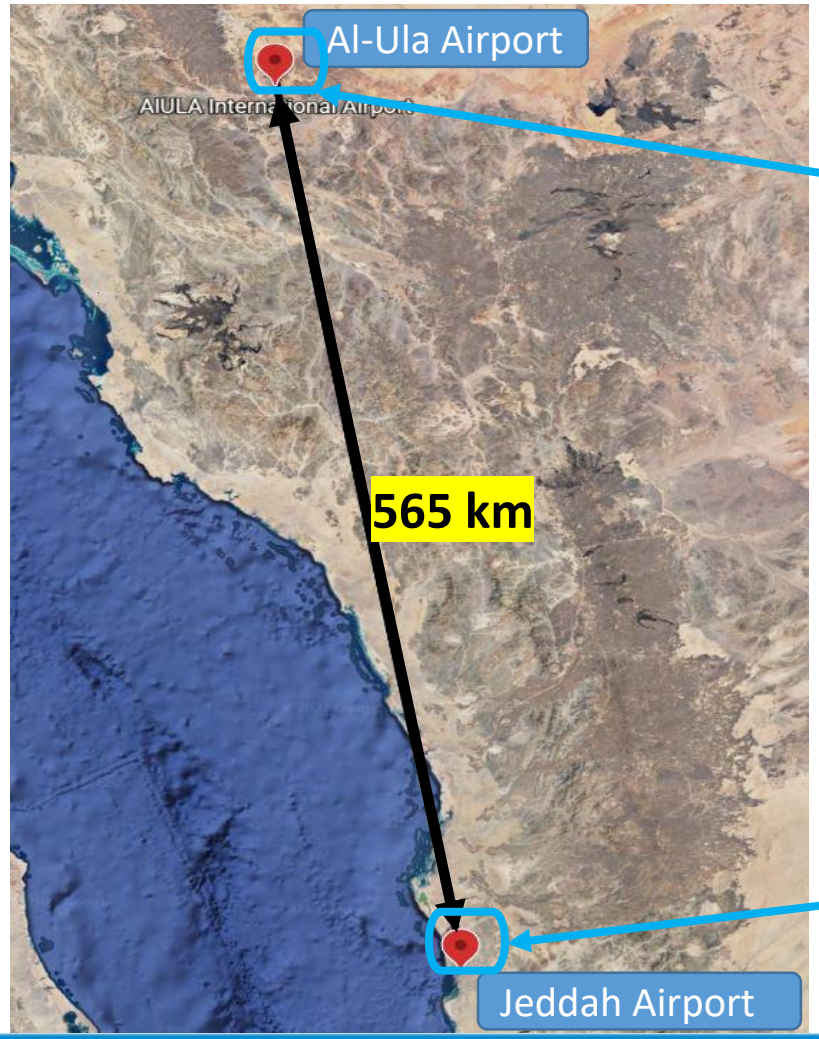
Red Sea Digital Tower Centre will be located at the airport



Alula International Airport

Alula Remote Virtual Tower Centre

Alula airport traffic will be controlled by Remote ATC Virtual Tower Centre at Jeddah through a camera system installed at the airport and connected remotely to the Remote ATC Virtual Tower Centre

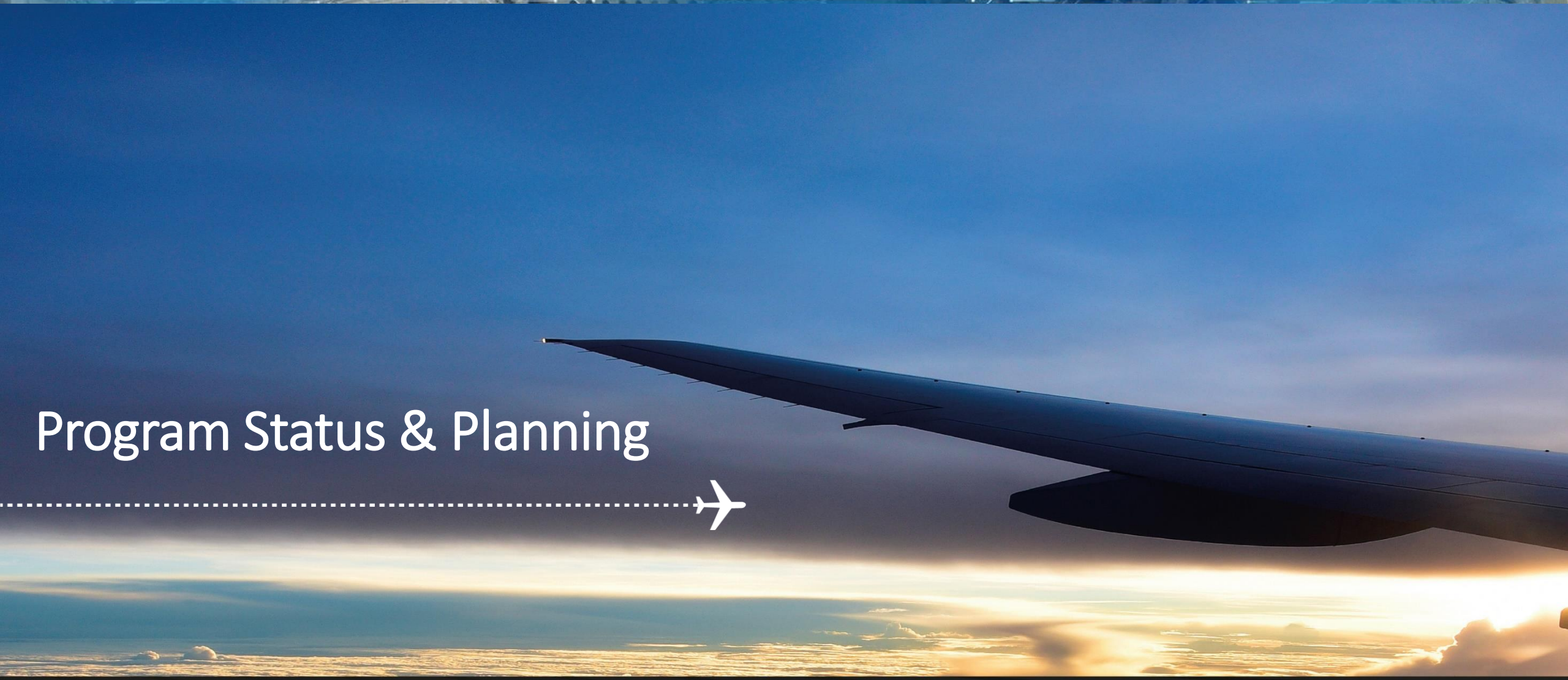


Red Sea International Airport

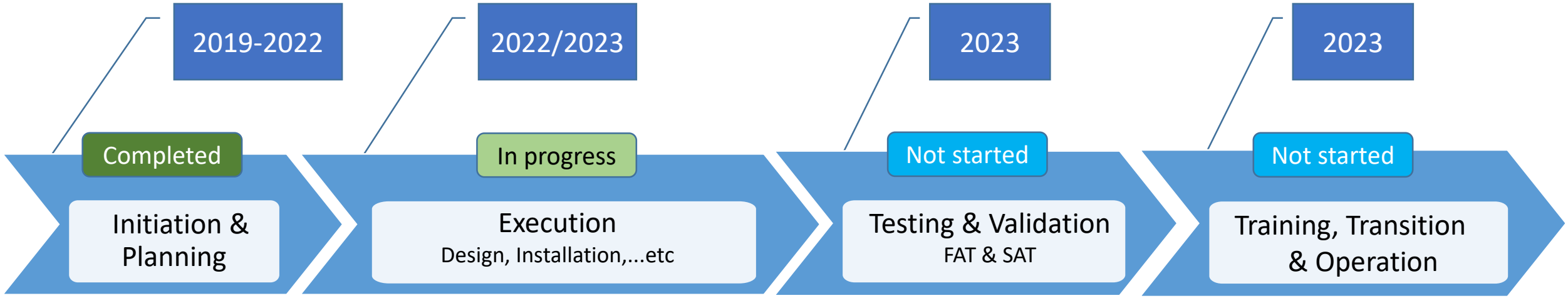
Red Sea Virtual Tower Centre

Both Virtual Tower Centre & Camera system will be located at the airport

Program Status & Planning



Program Implementation Plan Status



THANK YOU