

# Complexity and risks in managing the airspace

## Safety margins under constraints

Urs Lauener, COO

Skyguide: Providing Air Traffic Management Services  
Ensuring safety within constraints, not setting the constraints

skyguide



Our raison d'être  
Safe, orderly and expeditious flow of air traffic

skyguide



Prevent collisions between aircraft



Prevent collisions between aircraft on the manoeuvring area and obstructions on that area



Expedite and maintain an orderly flow of air traffic



Provide advice and information useful for the safe and efficient conduct of flights

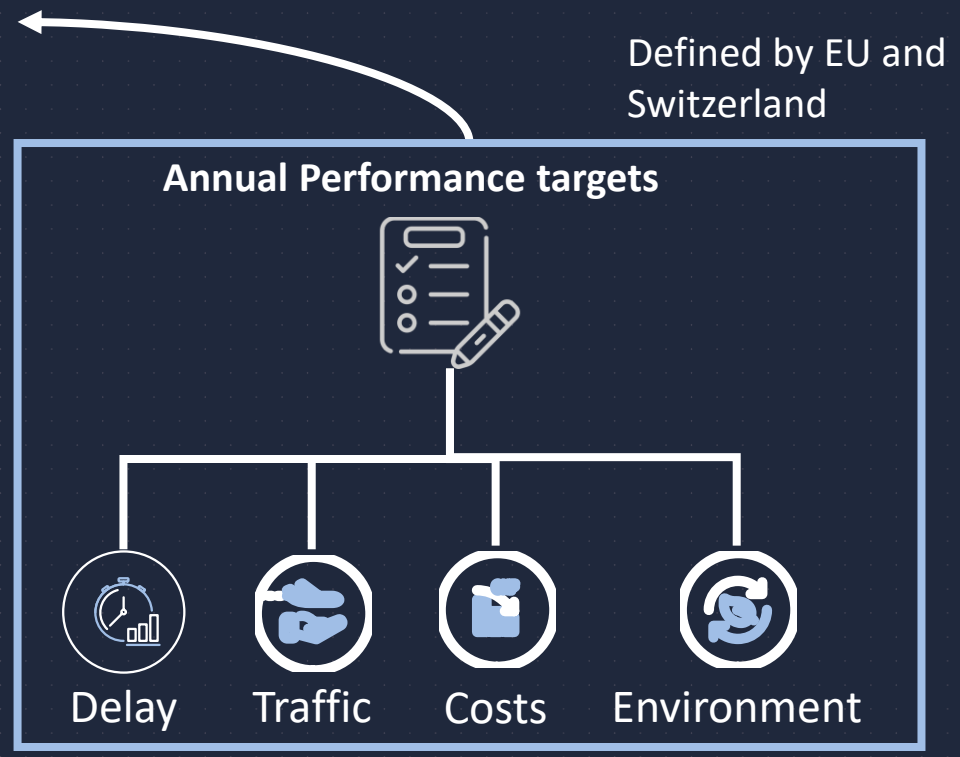
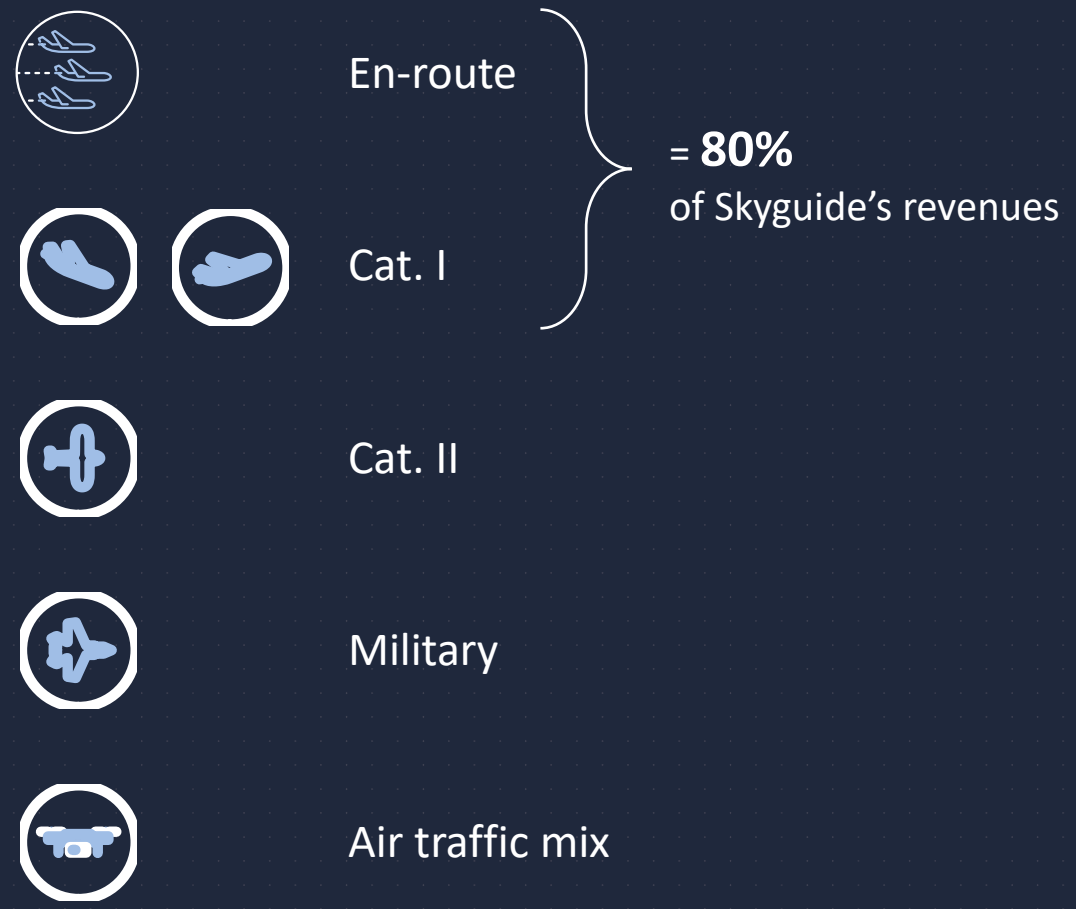


Notify appropriate organizations regarding aircraft in need of search and rescue aid, and assist such organizations as required



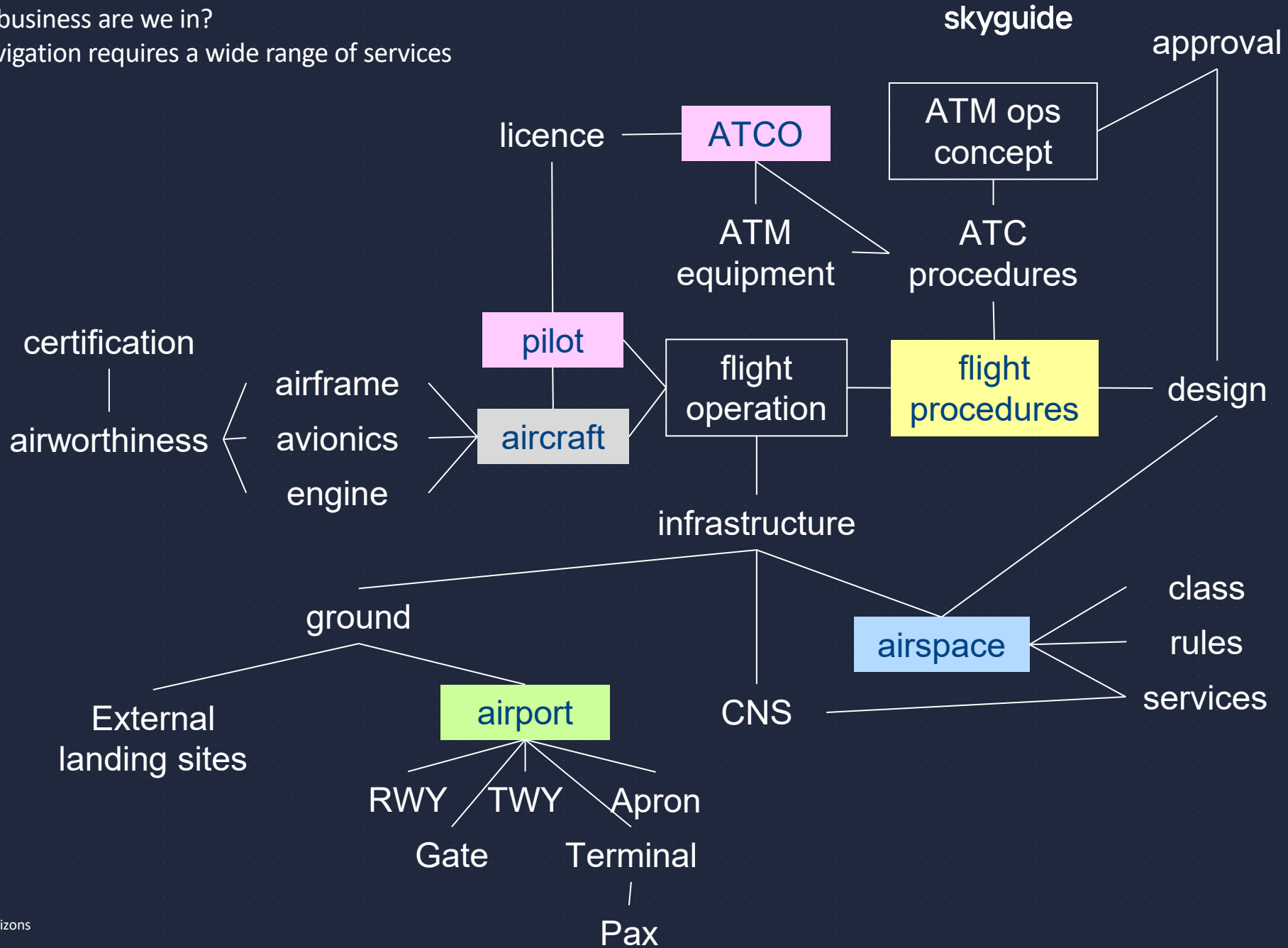
A regulated business model  
Ensuring safety with strict financial resources targets

skyguide



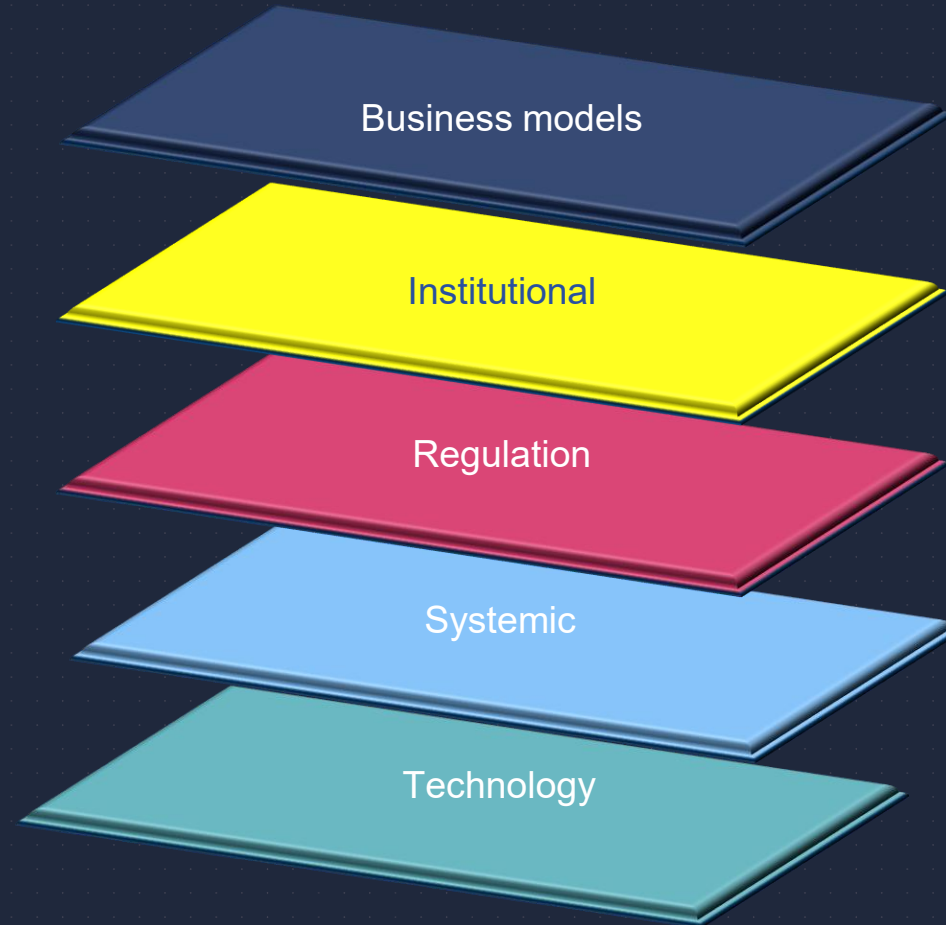
What business are we in?

Air navigation requires a wide range of services



Constraints & difficulties at all levels  
ANSPs need to operate within 5 complex zones

skyguide



Managing Europe's most complex airspace  
Switzerland is in the « core area » of Europe



**10.7 Mio**

**72.5 %**

**2.5 Bn**

**+ 2.2%**

skyguide



IFR Flights



Flights without delay



Total number of passengers



Flights forecast for 2025-2031



**1'3 Mio**

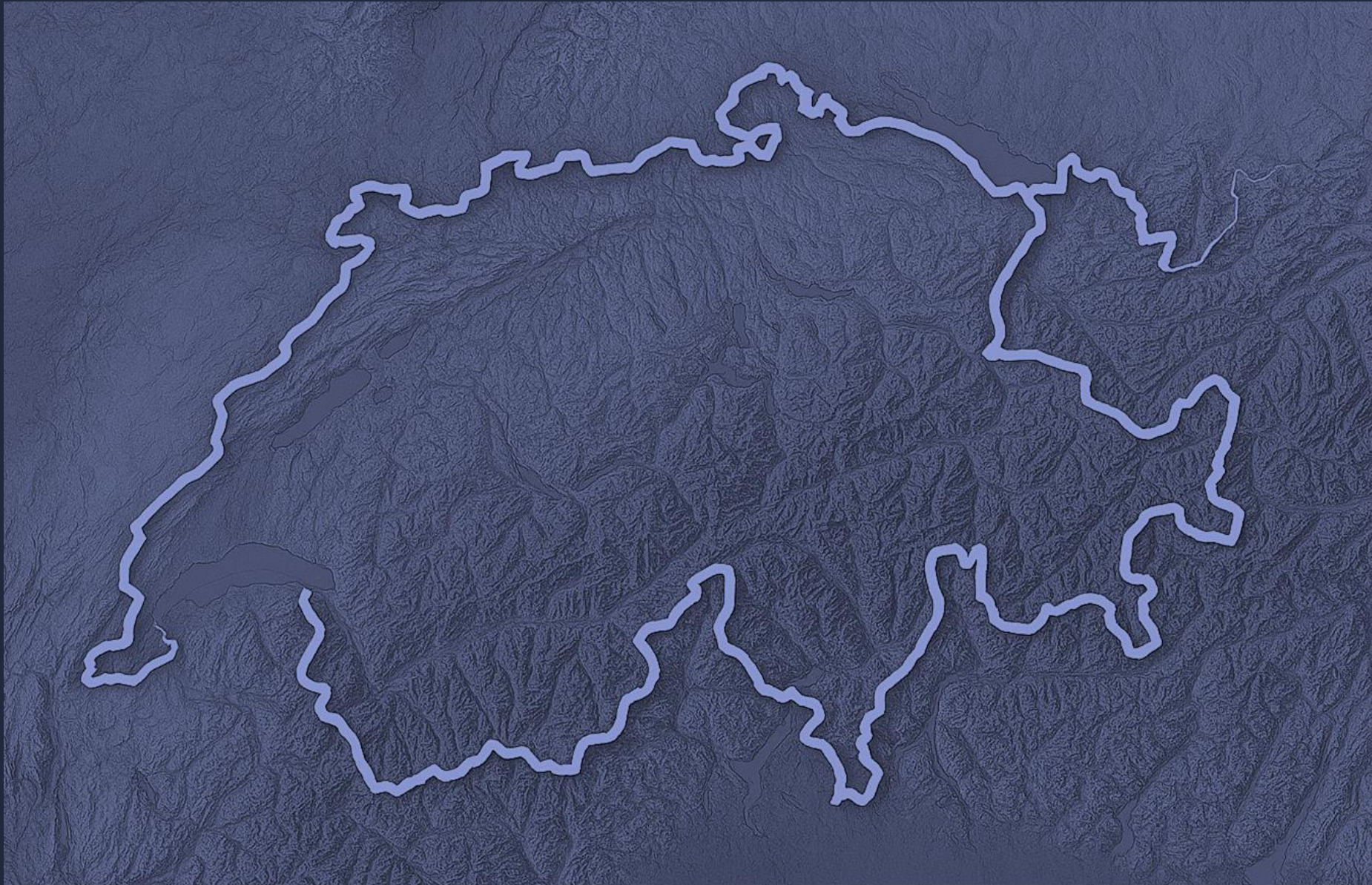
**95.3 %**

**58 Mio**

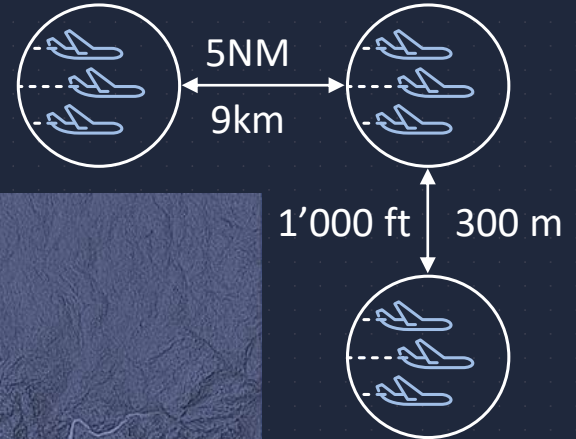
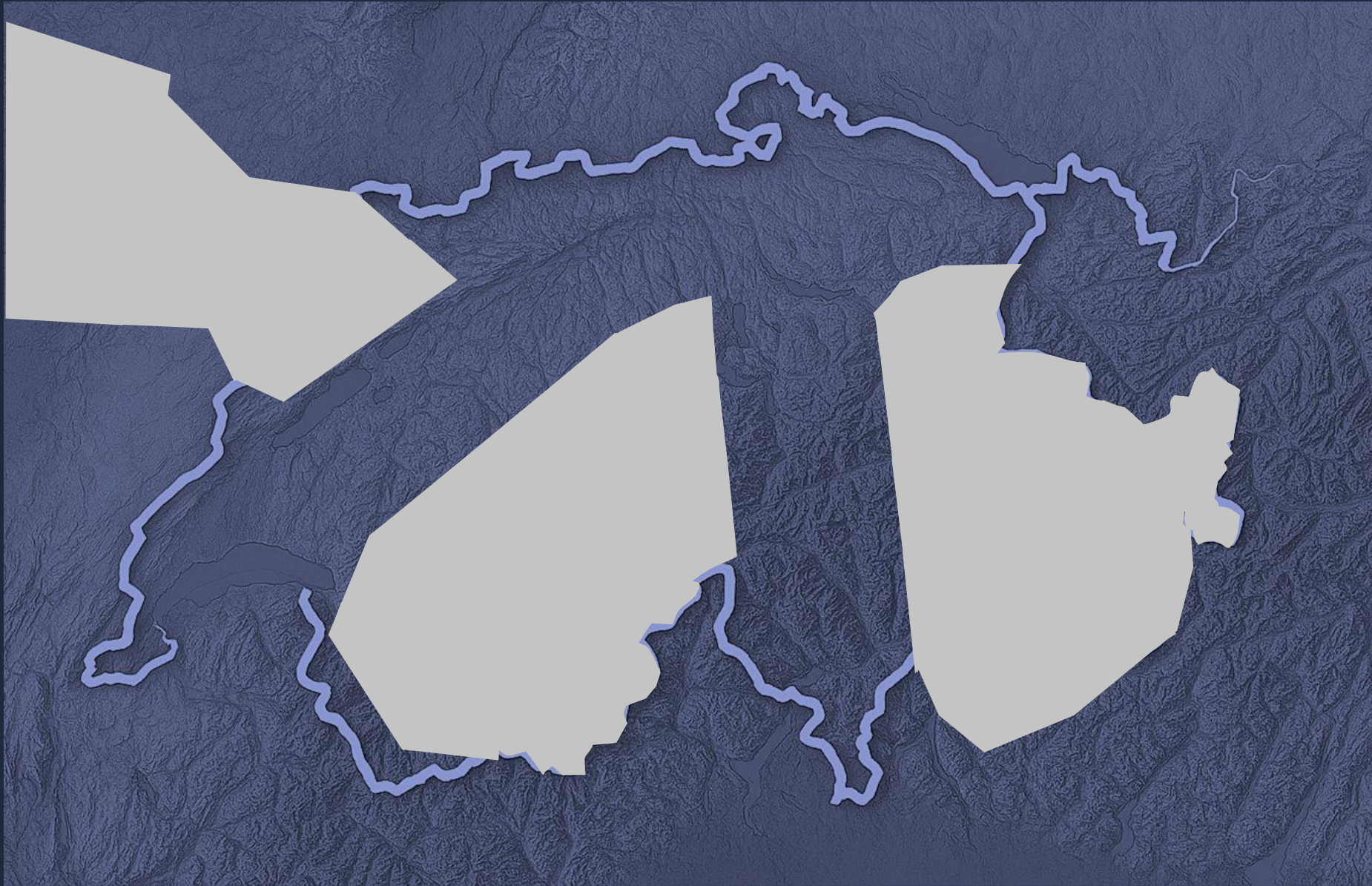
**+ 1.3%**

Managing Europe's most complex airspace  
Geography constraints

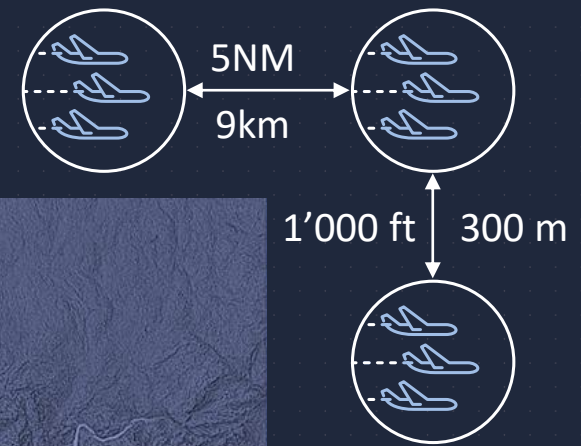
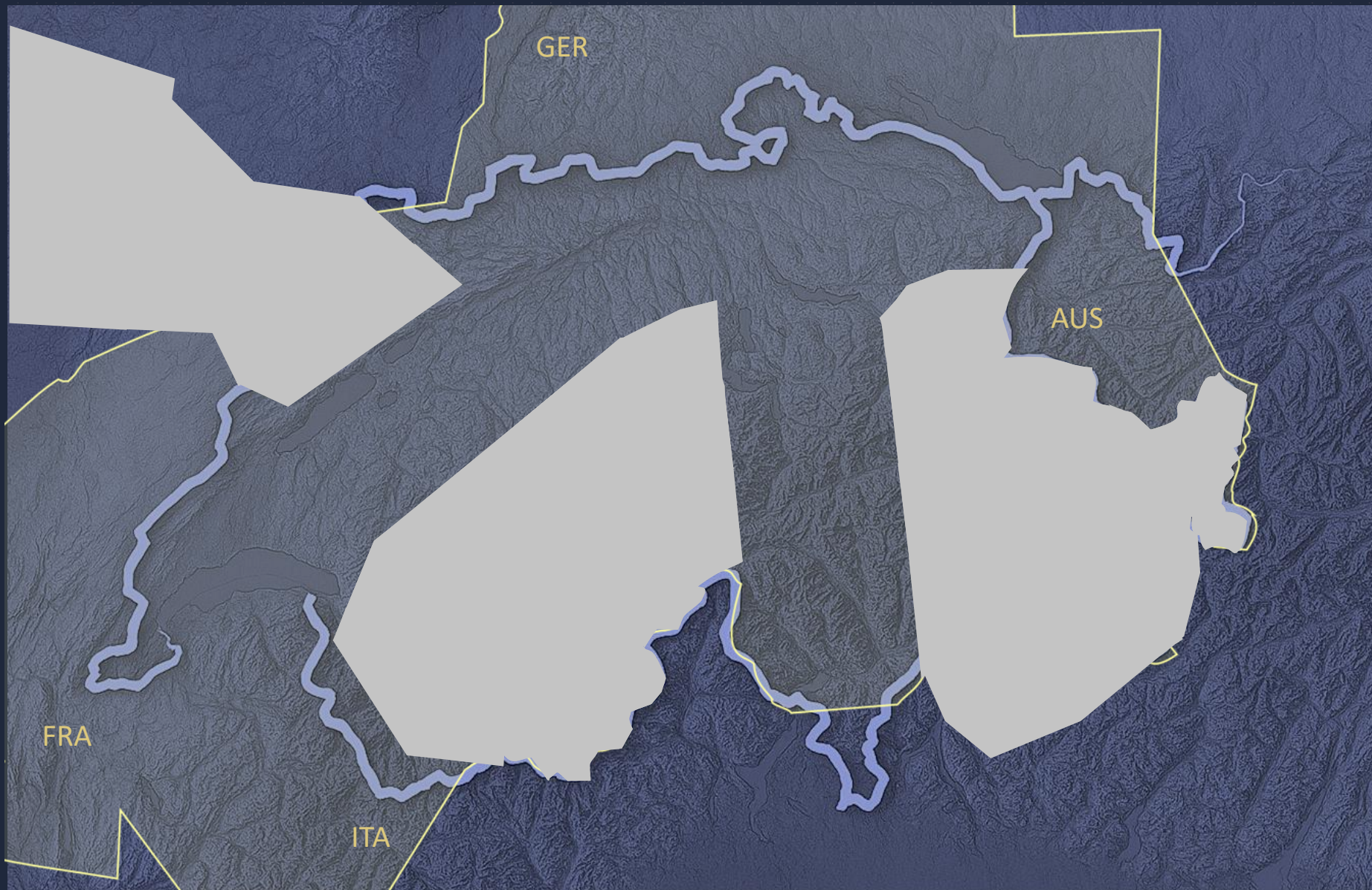
skyguide



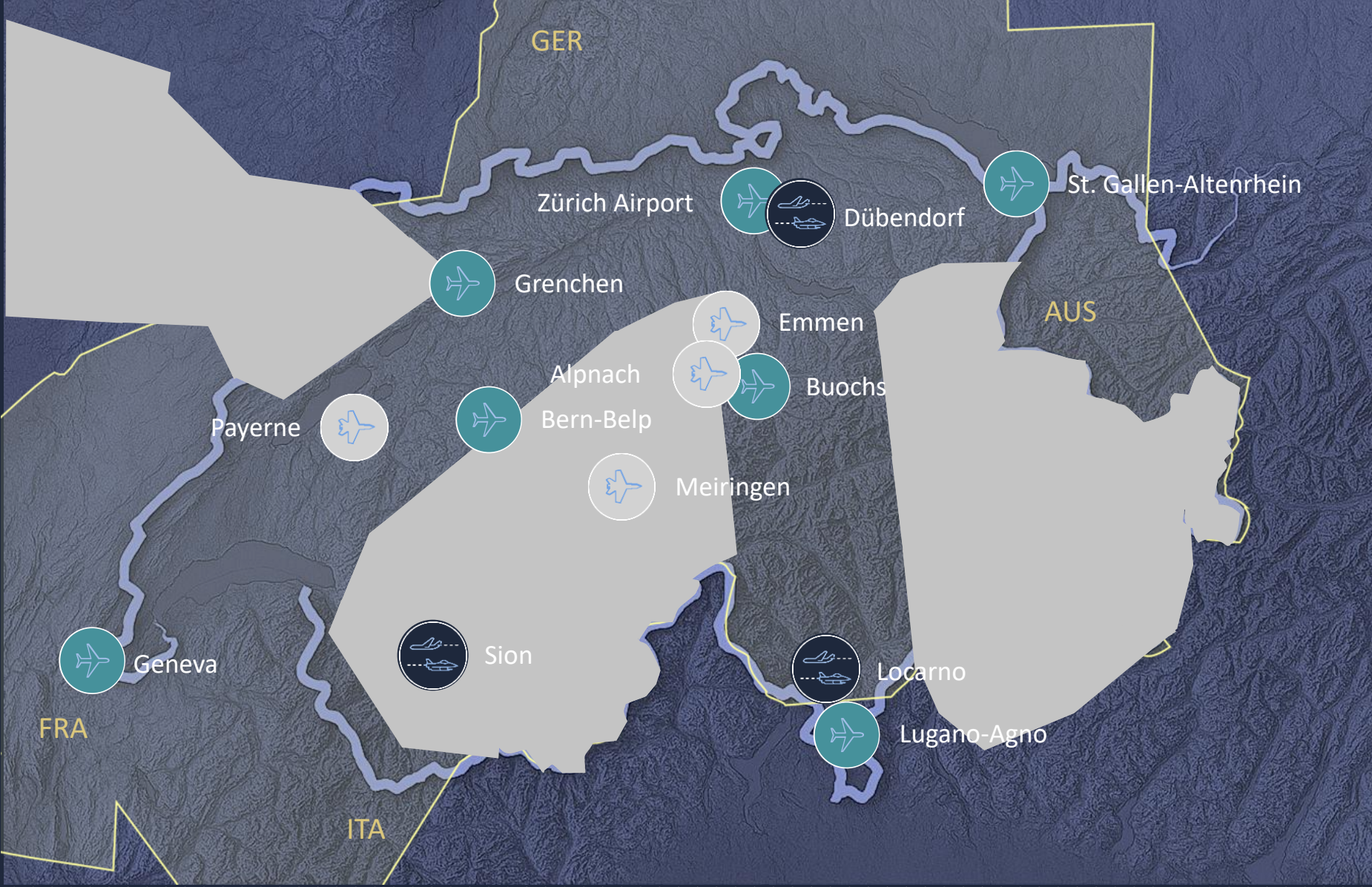
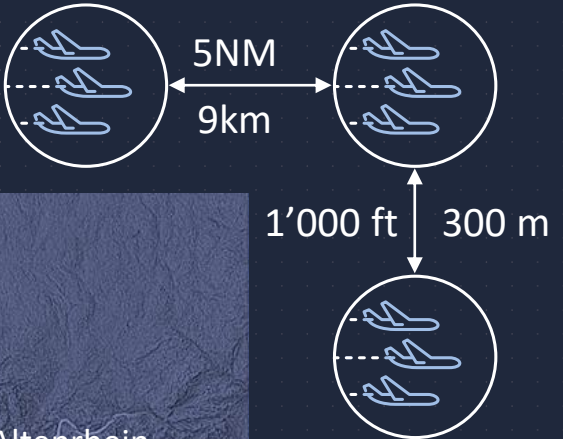
Managing Europe's most complex airspace  
Limited airspace for civil aviation



Managing Europe's most complex airspace  
Cross-border coordination



Managing Europe's most complex airspace  
Cross-border coordination

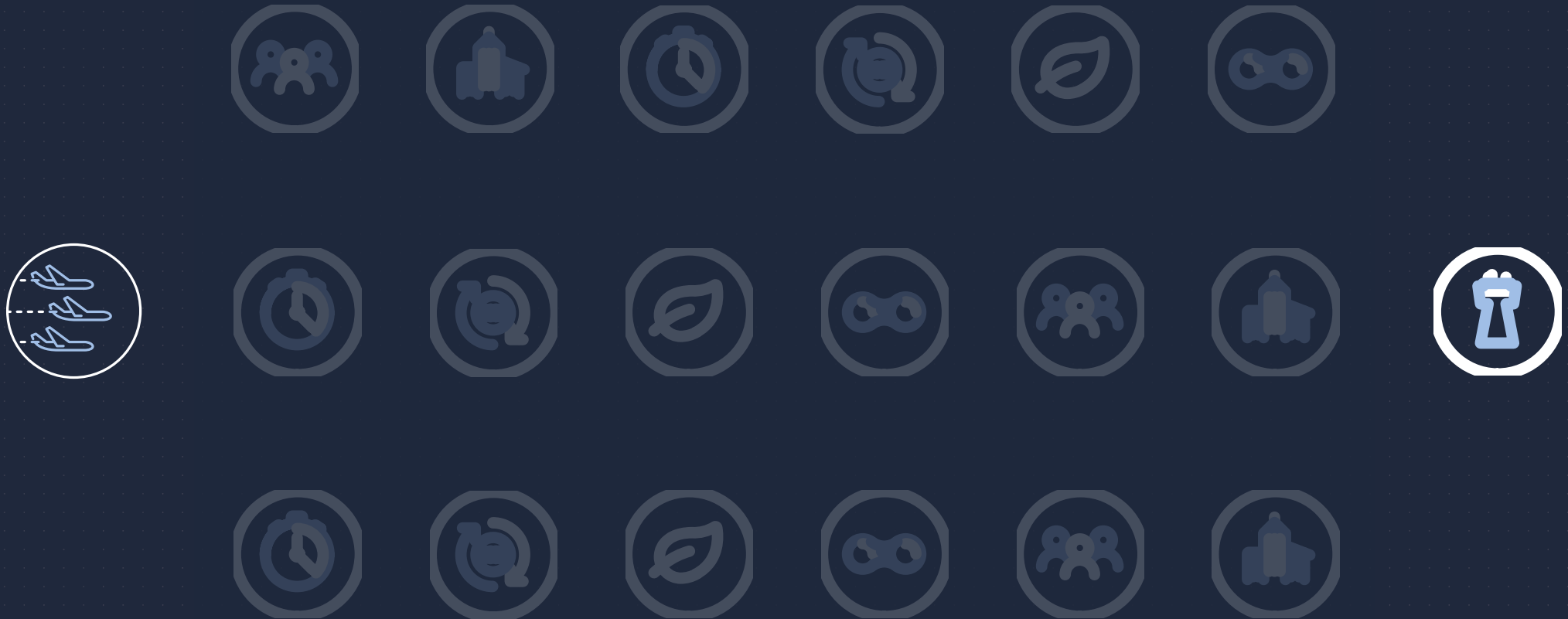


- civil
- military
- mixed

Political frame conditions

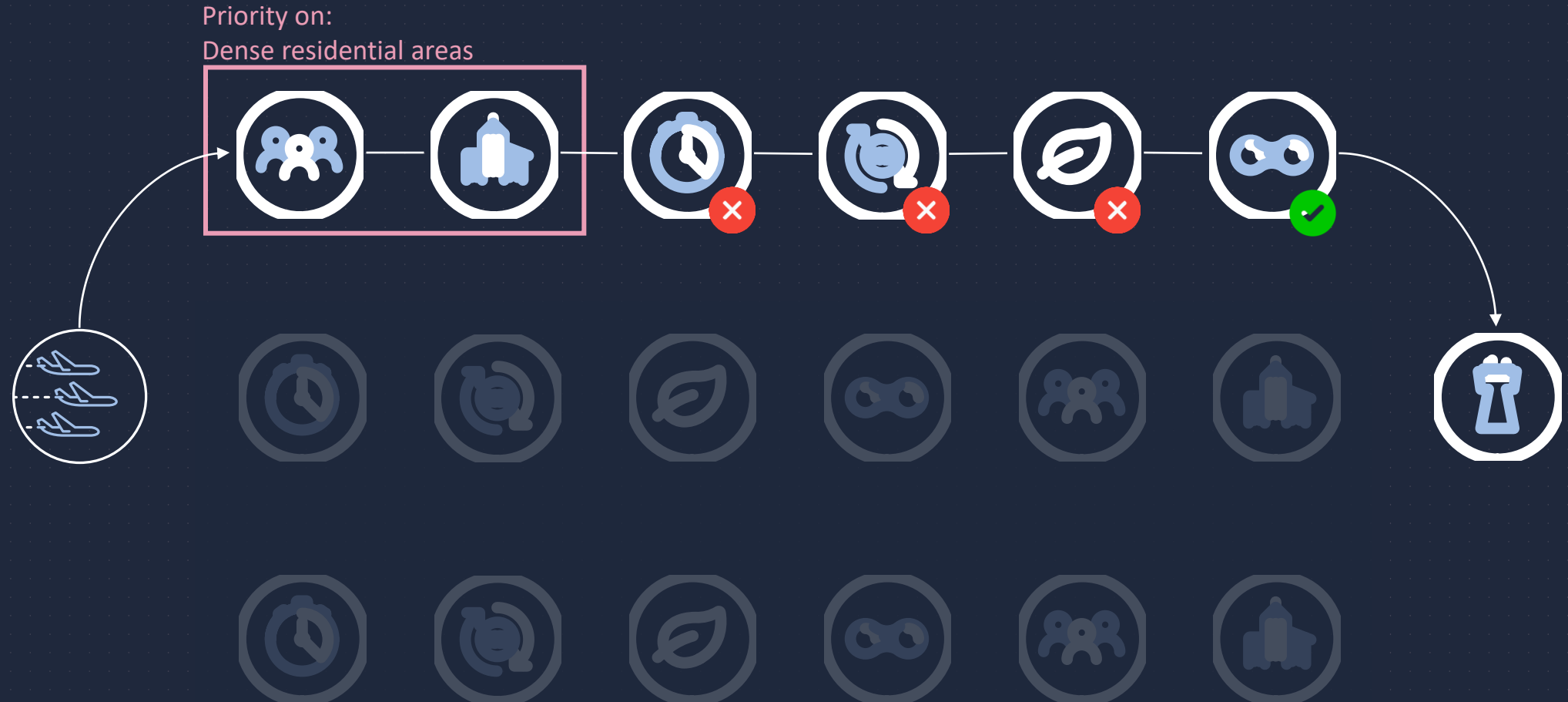
Contradictory mandates increasing operational complexity

skyguide



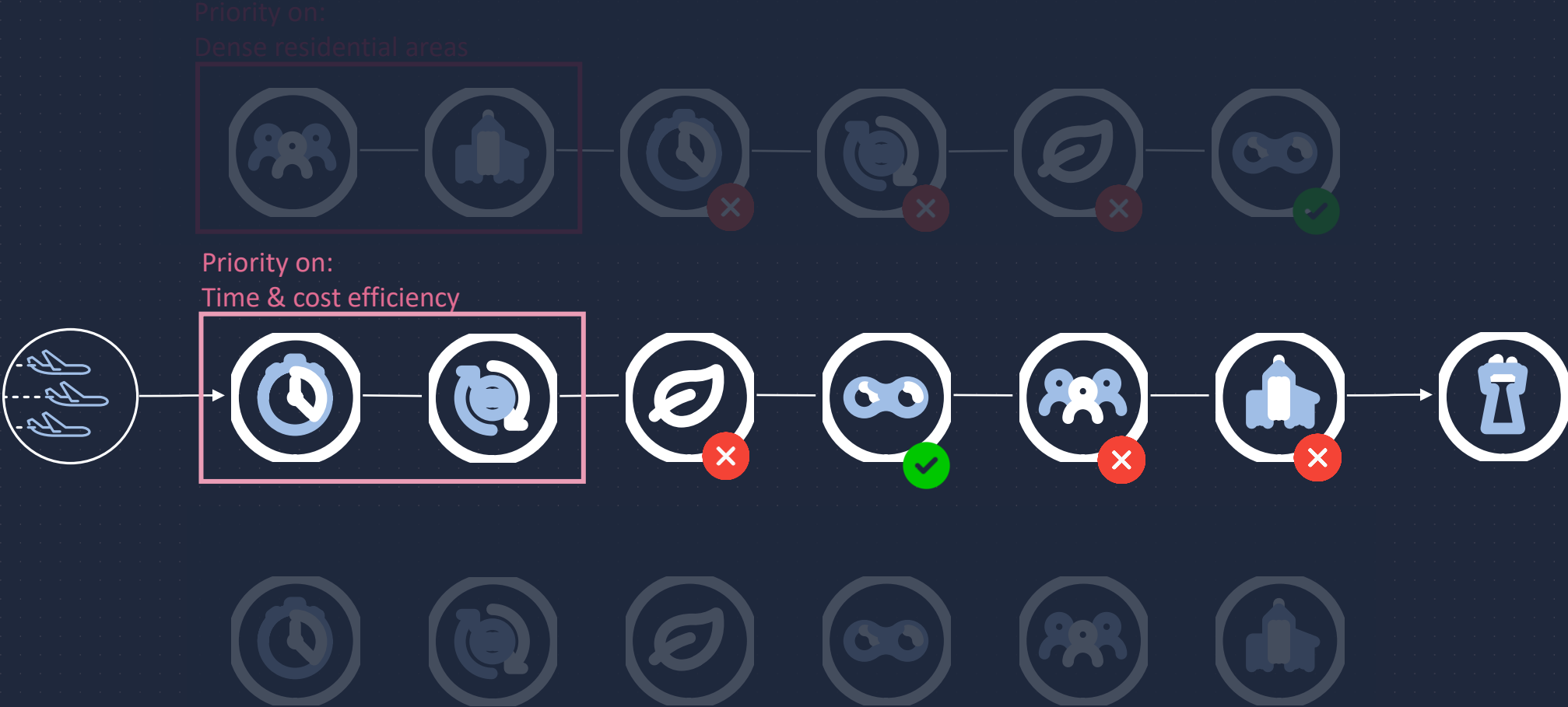
Political frame conditions  
Contradictory mandates increasing operational complexity

skyguide



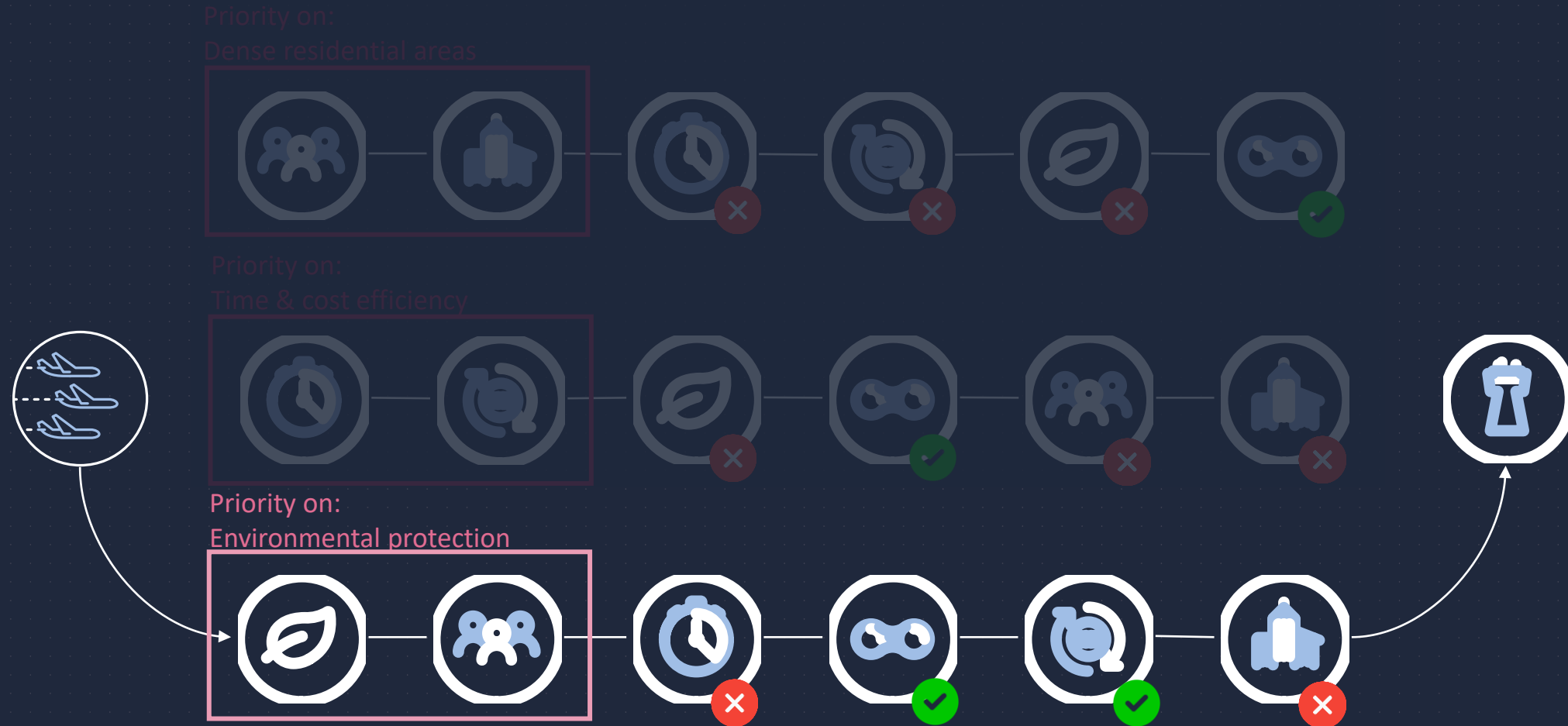
Political frame conditions  
Contradictory mandates increasing operational complexity

skyguide



Political frame conditions  
Contradictory mandates increasing operational complexity

skyguide

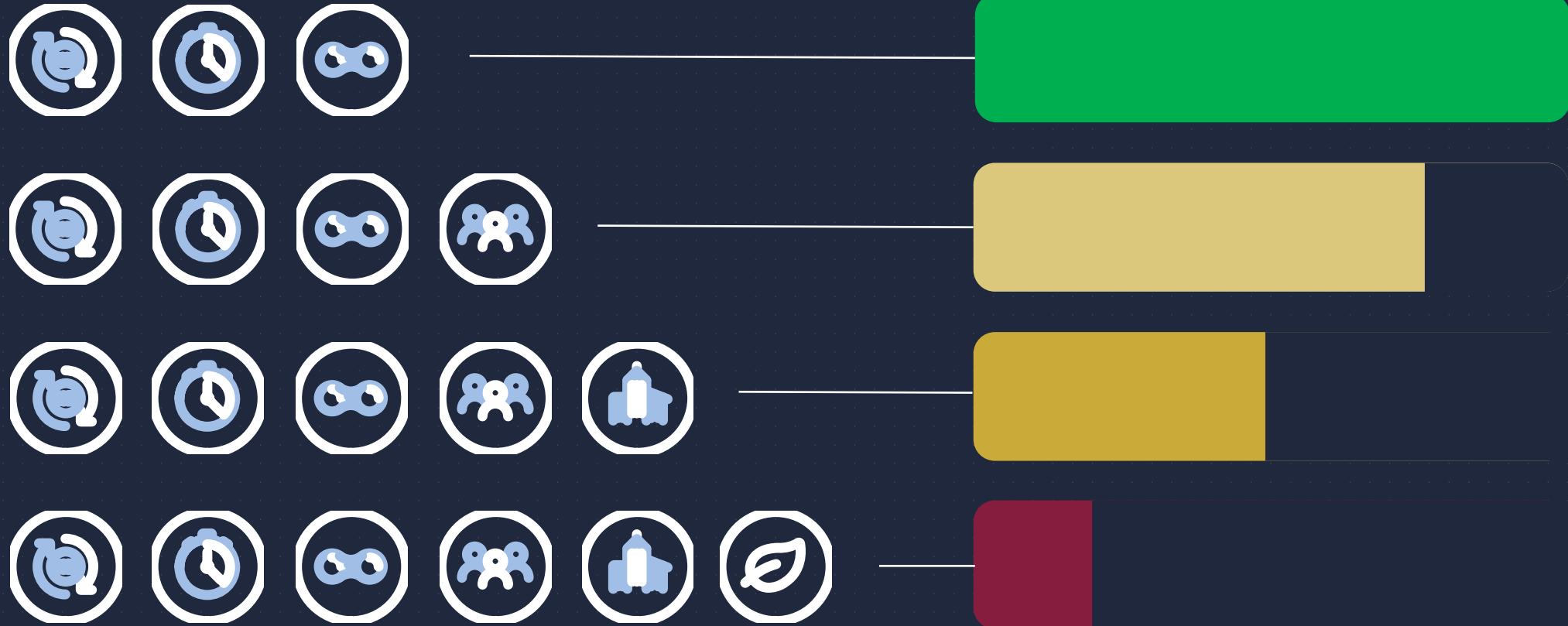


« Safety margin » jeopardized  
Compromise under limits

skyguide

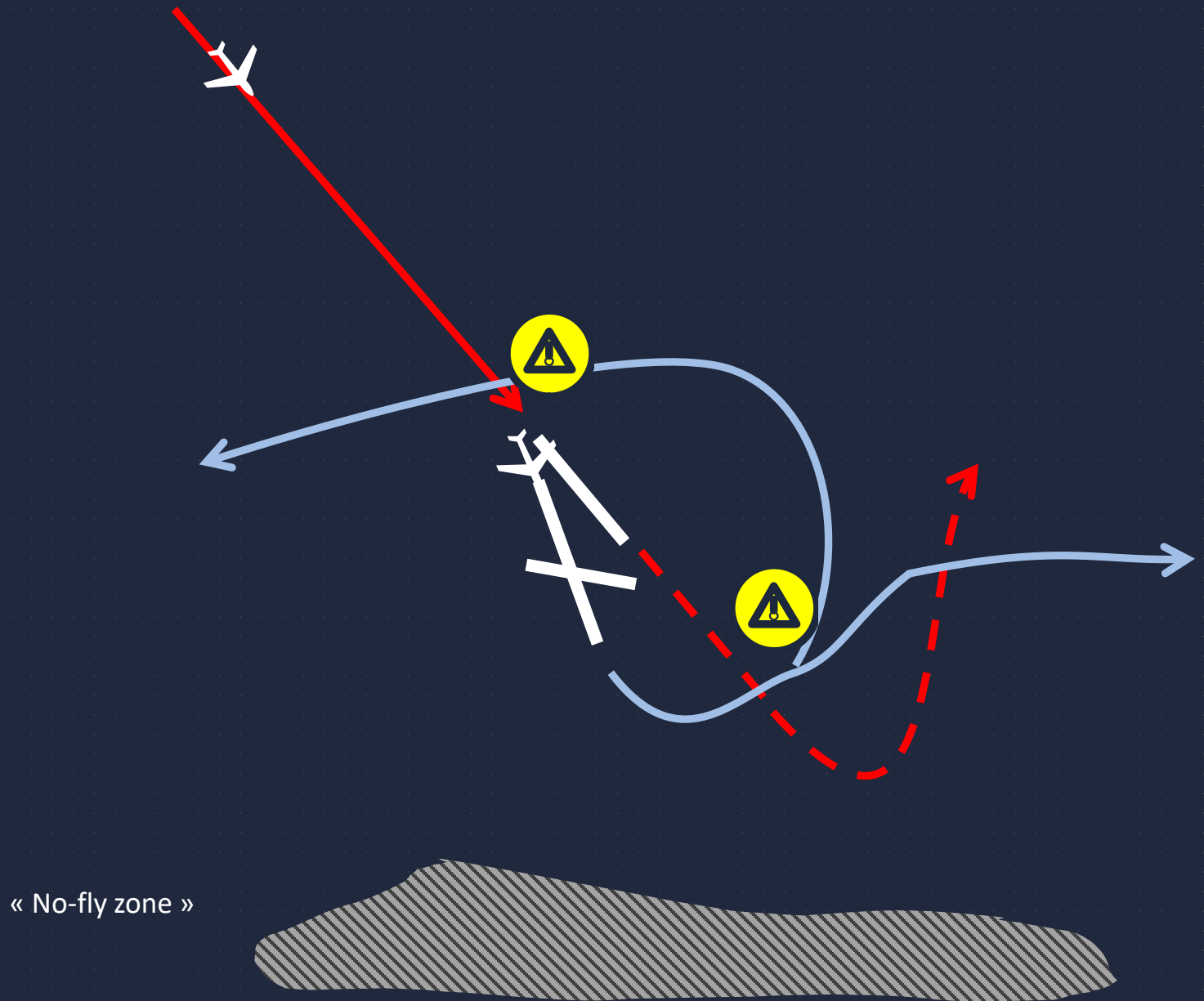
### Constraints

### Safety Margins



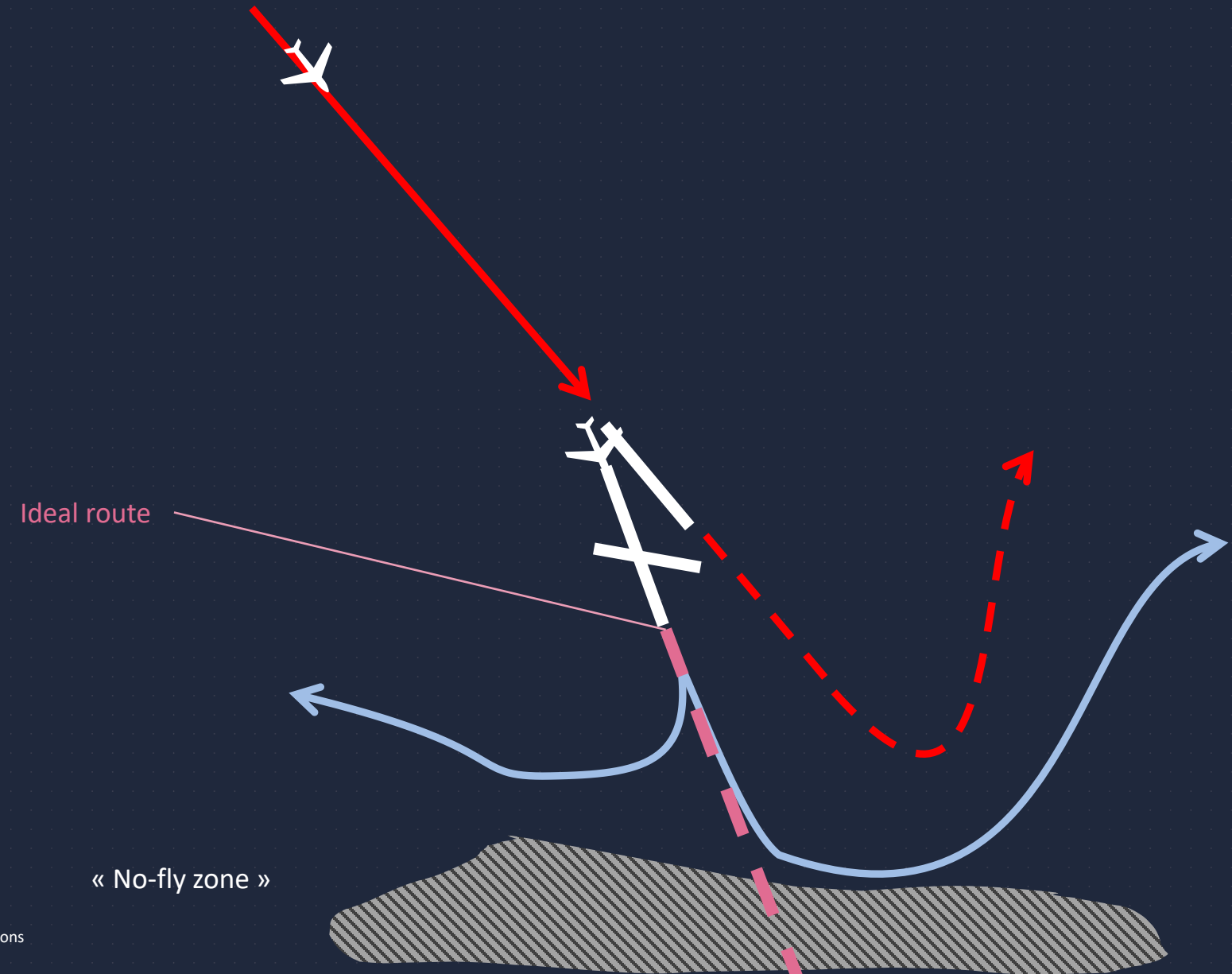
Complexity and constraints surrounding air traffic management  
Framework inherent risks lead to high complexity at Zürich Airport

skyguide



Complexity and constraints surrounding air traffic management  
Framework inherent risks lead to high complexity at Zürich Airport

skyguide

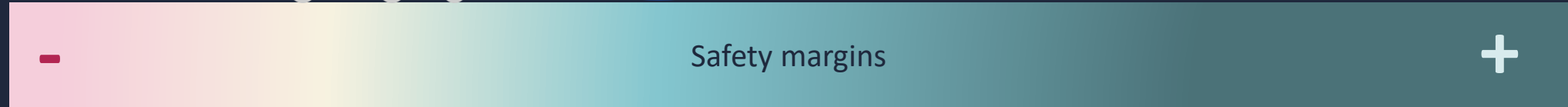


# Complexity and constraints surrounding air traffic management

## Safety at Zürich Airport

Our mandate:  
Safe, orderly, and expeditious flow of  
air traffic

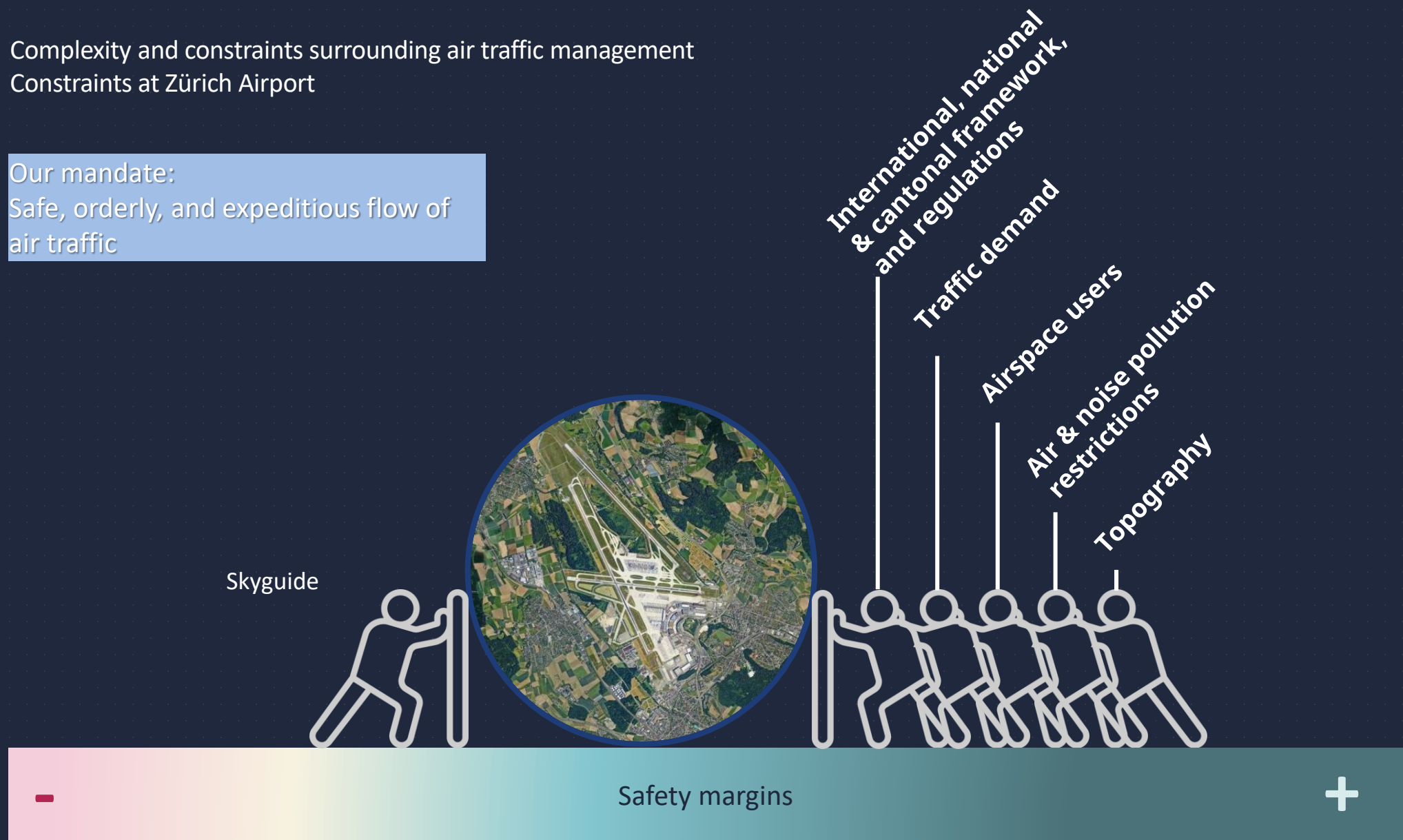
Skyguide



# Complexity and constraints surrounding air traffic management

## Constraints at Zürich Airport

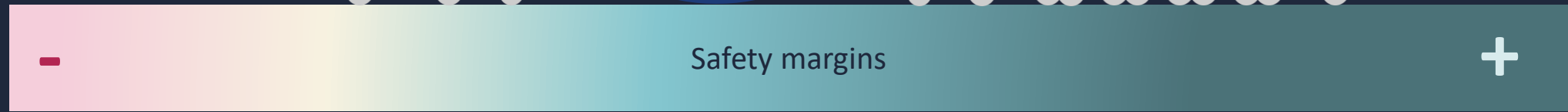
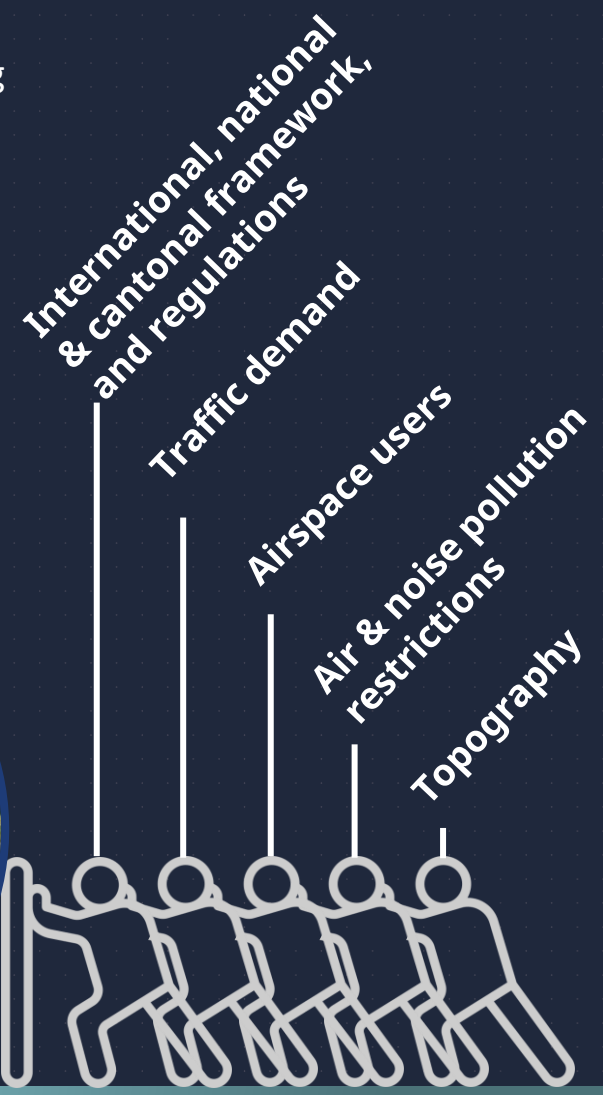
Our mandate:  
Safe, orderly, and expeditious flow of  
air traffic



# Complexity and constraints surrounding air traffic management Navigating the situation at Zürich Airport

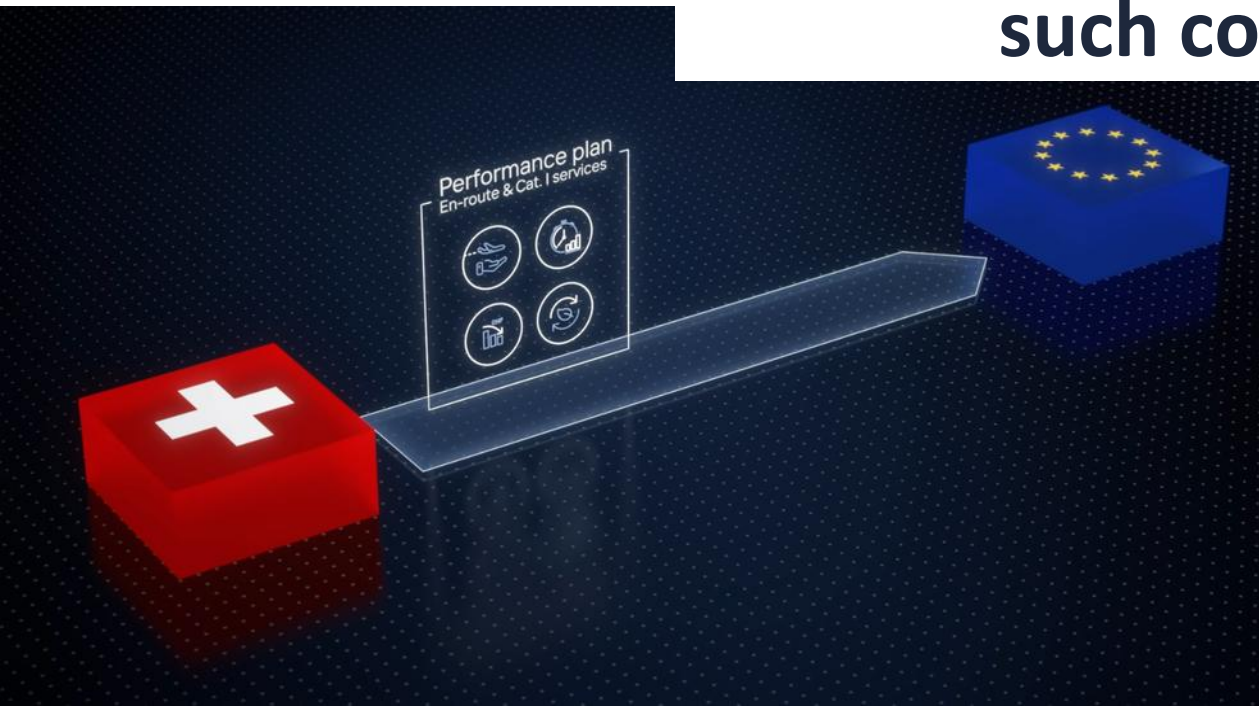
Our mandate:  
Safe, orderly, and expeditious flow of air traffic

Skyguide





## Maintaining safety margins under such constraints



A group of hands of various skin tones are stacked together in a circle, symbolizing teamwork, support, and connection. The background is a blurred crowd of people, and the entire image has a blue color cast.

**Now, answering  
your questions**

**and building  
connections!**