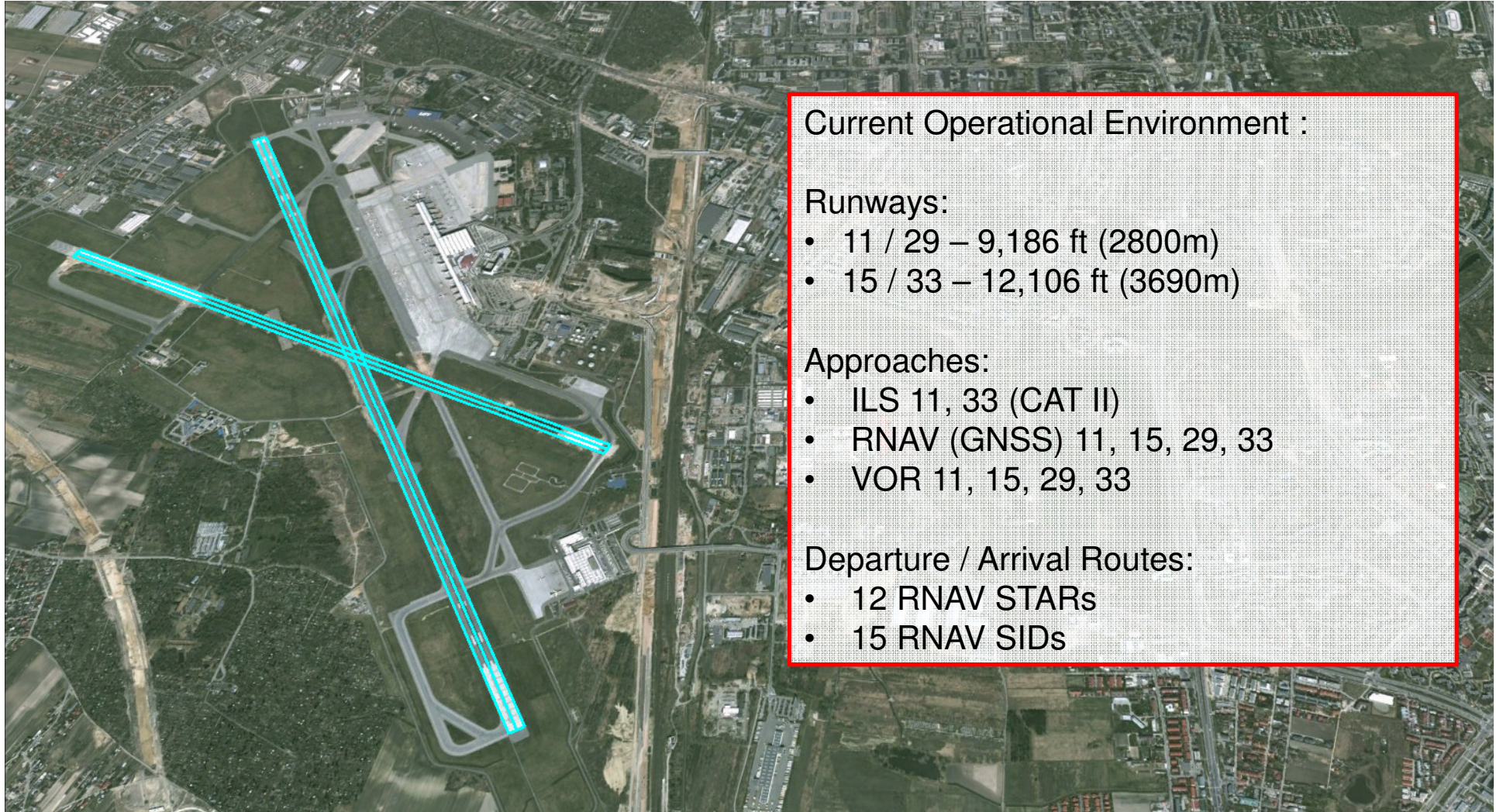


PBN Concepts – Warsaw, Poland

WAW Current Operational Environment



Current Operational Environment :

Runways:

- 11 / 29 – 9,186 ft (2800m)
- 15 / 33 – 12,106 ft (3690m)

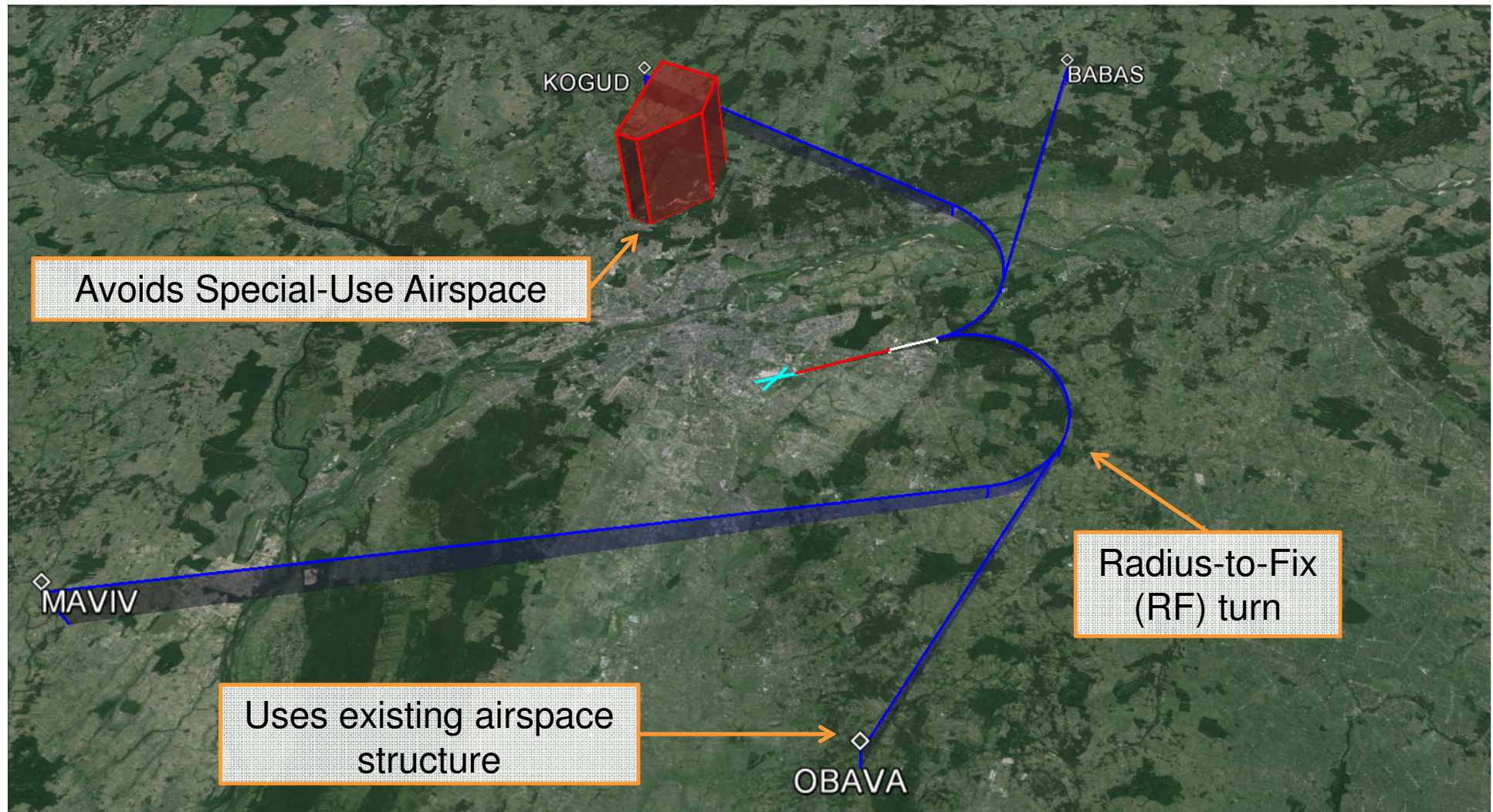
Approaches:

- ILS 11, 33 (CAT II)
- RNAV (GNSS) 11, 15, 29, 33
- VOR 11, 15, 29, 33

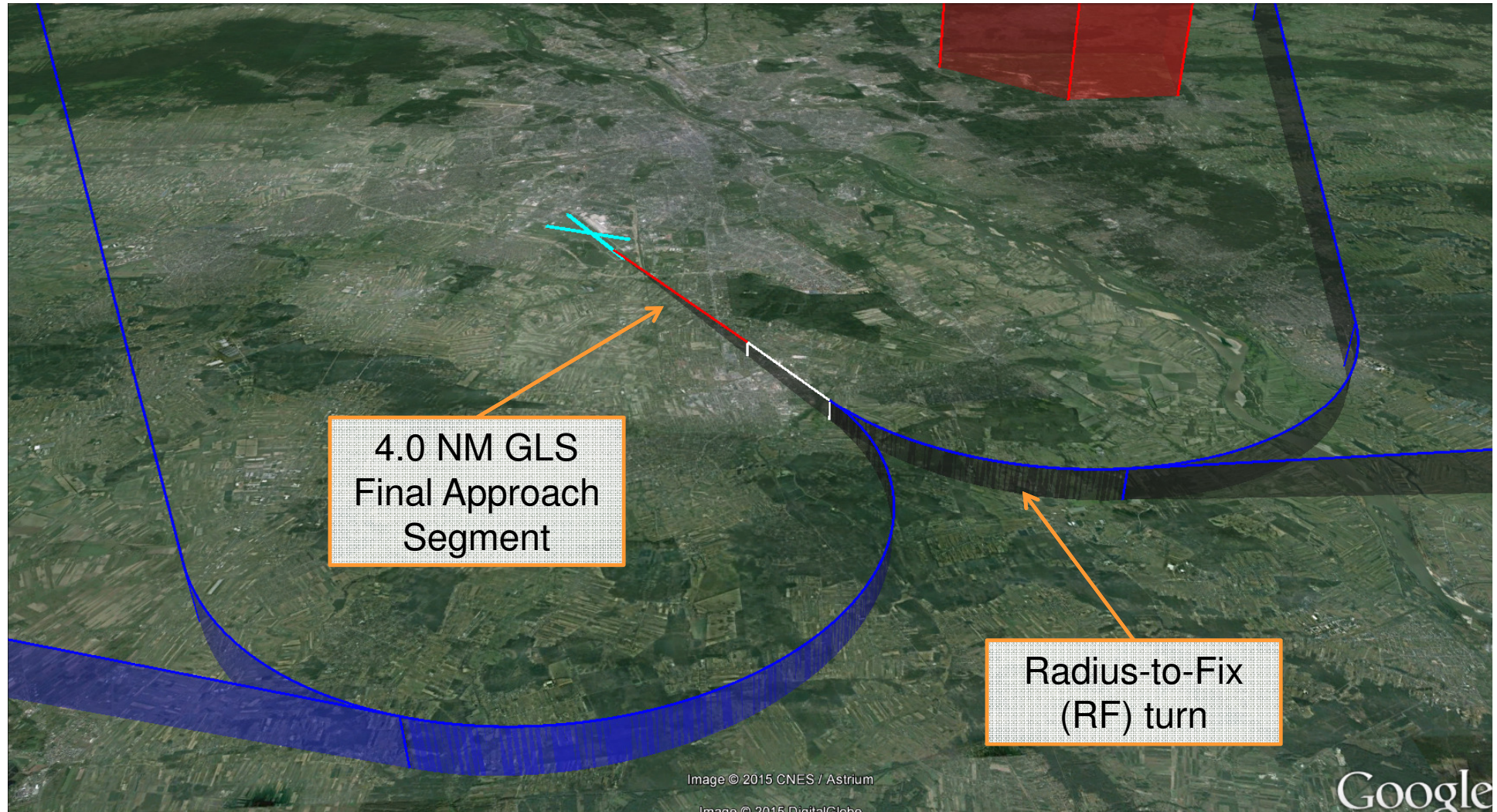
Departure / Arrival Routes:

- 12 RNAV STARs
- 15 RNAV SIDs

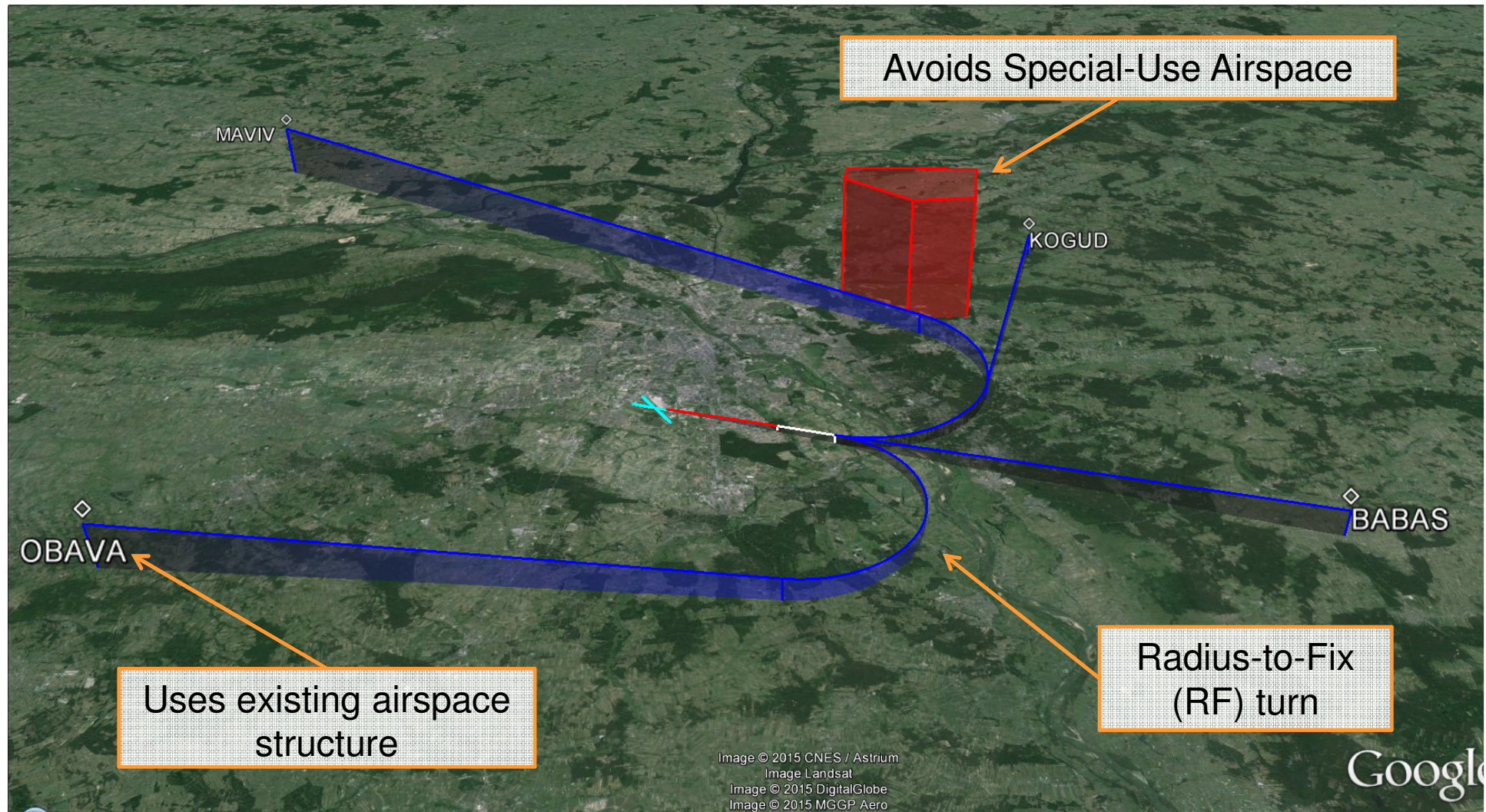
WAW Concept GLS 33



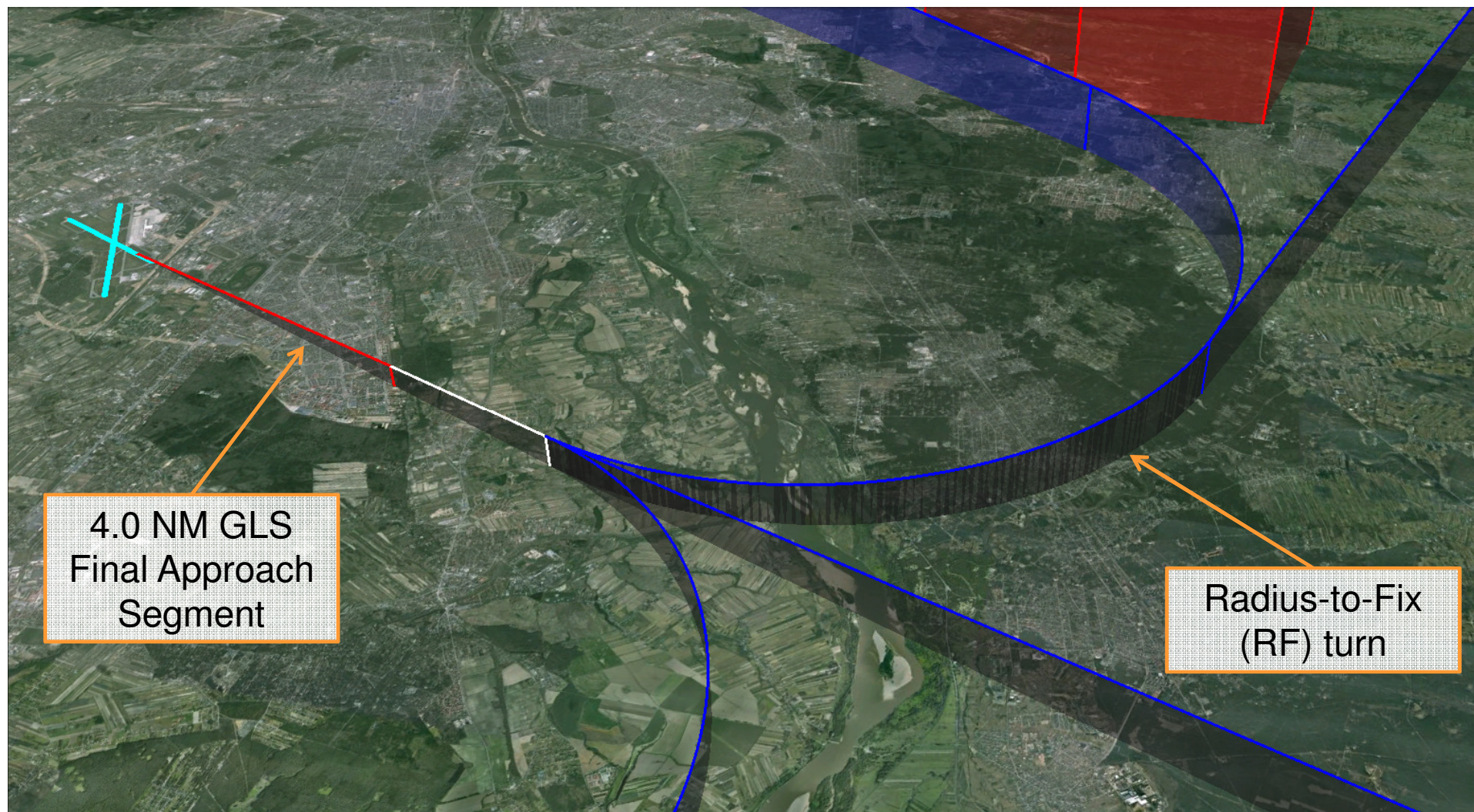
WAW Concept GLS 33



WAW Concept GLS 29



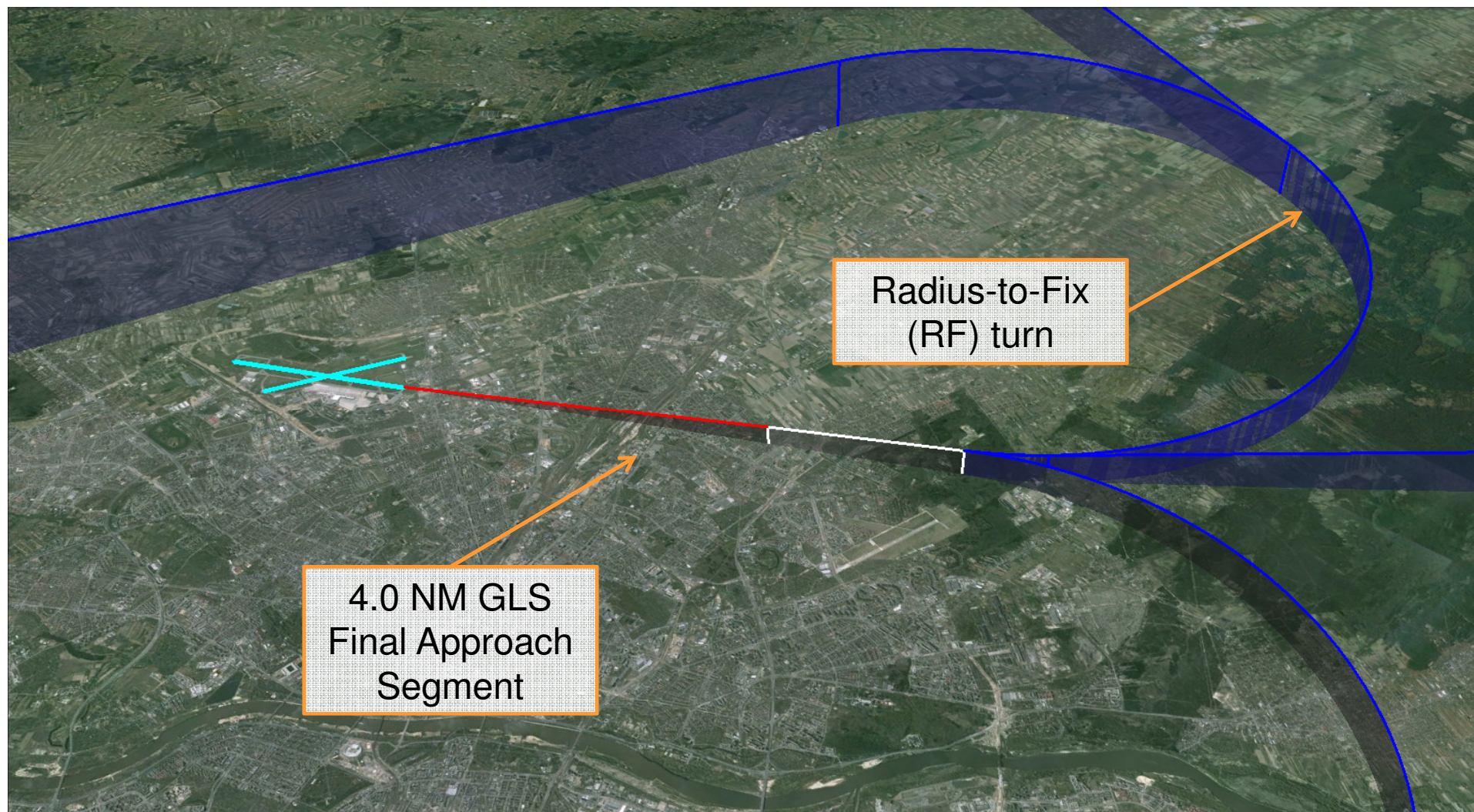
WAW Concept GLS 29



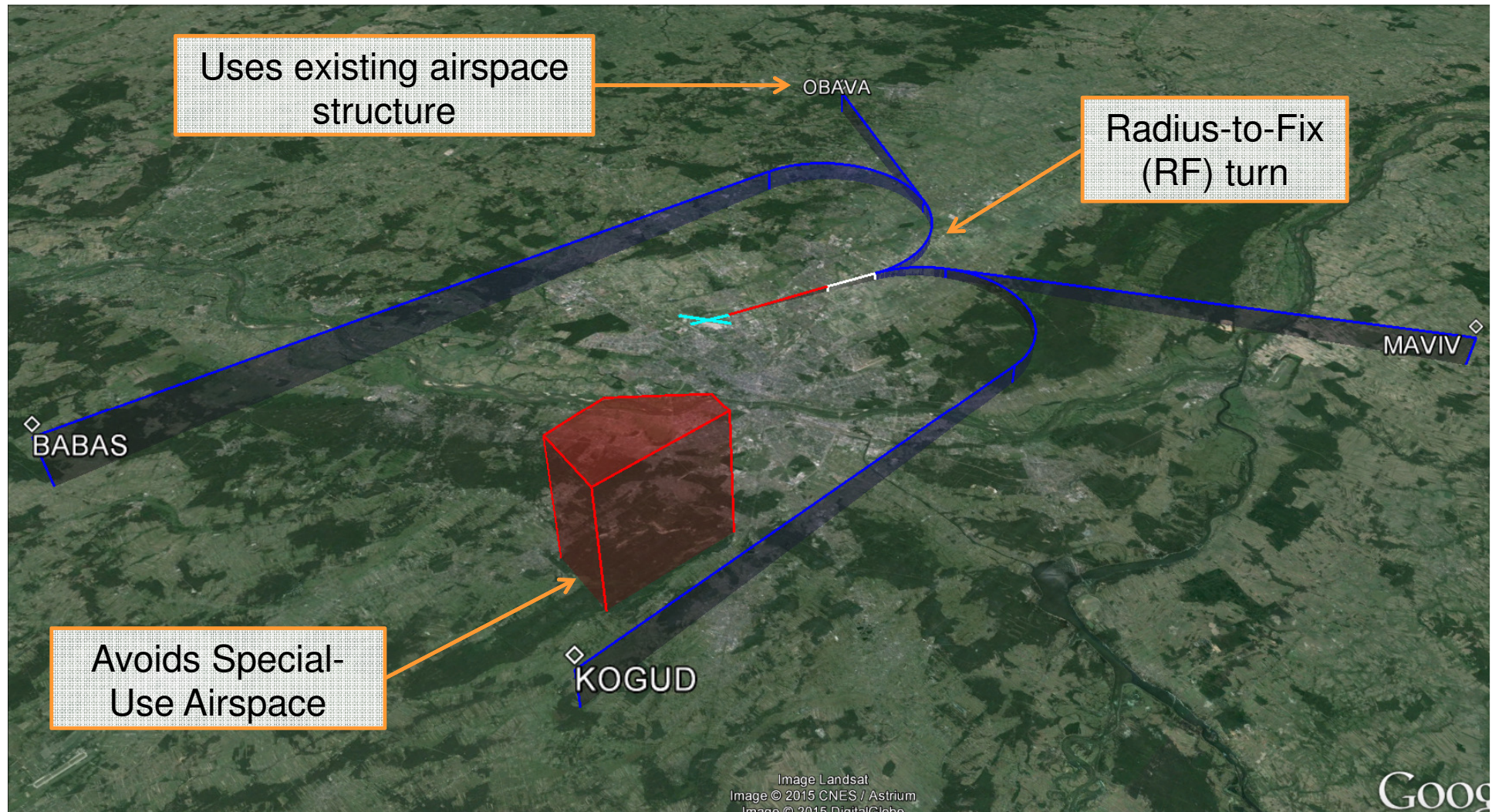
WAW Concept GLS 15



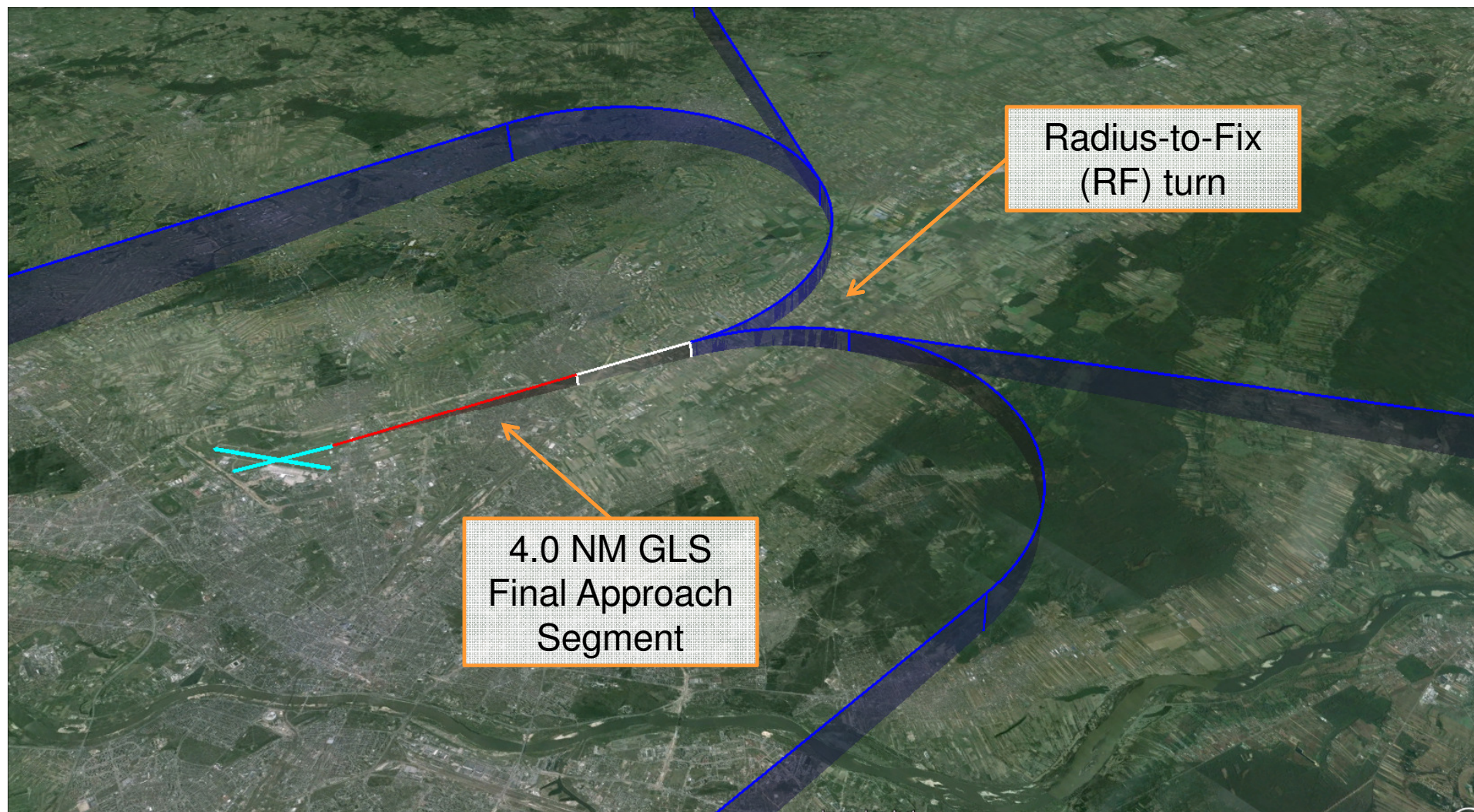
WAW Concept GLS 15



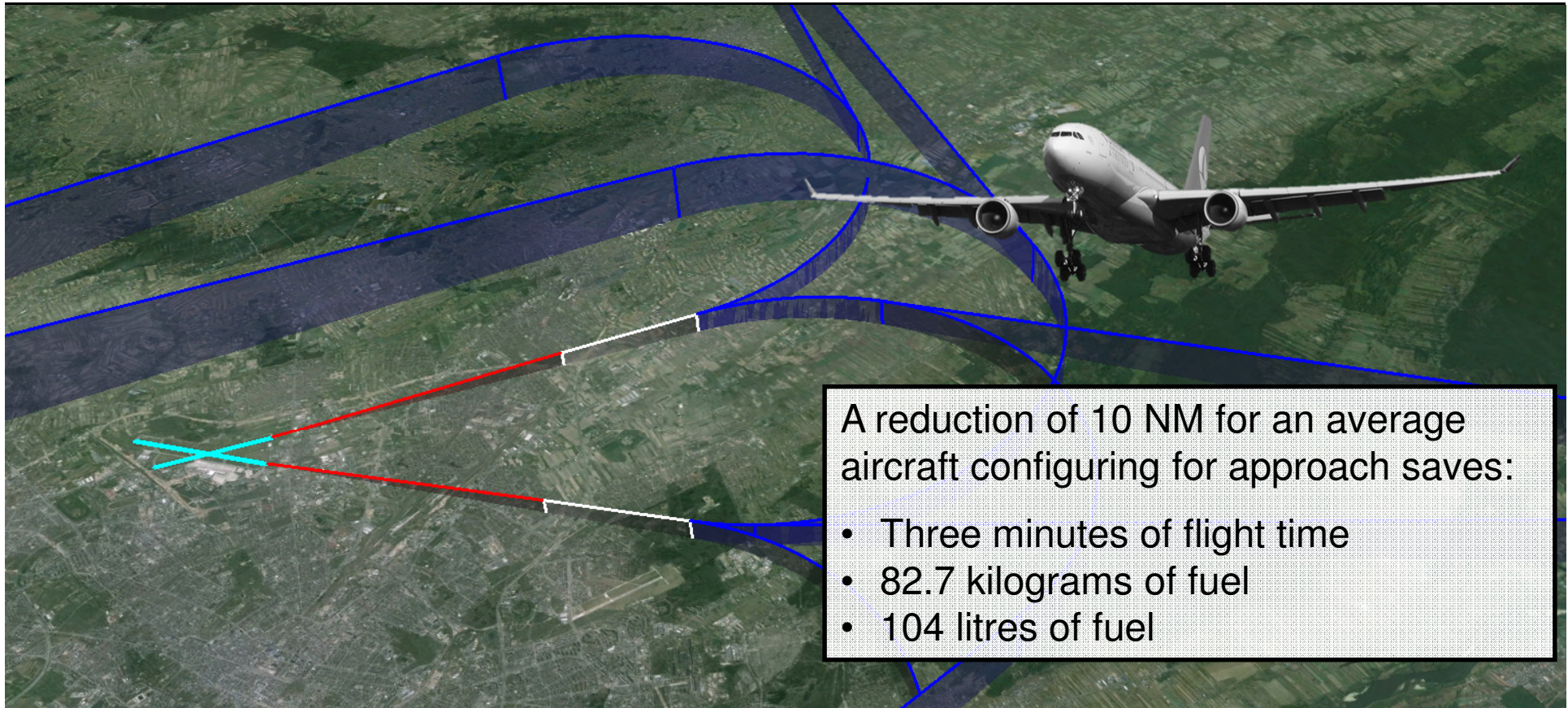
WAW Concept GLS 11



WAW Concept GLS 11



PBN Fuel Savings



A reduction of 10 NM for an average aircraft configuring for approach saves:

- Three minutes of flight time
- 82.7 kilograms of fuel
- 104 litres of fuel

RNAV (RNP) can curve the final approach to begin on the downwind leg and provide lateral and vertical guidance to the runway end or to a GLS intercept.

- A GNSS approach with a 4 NM final would **save 10.6 NM per flight.**

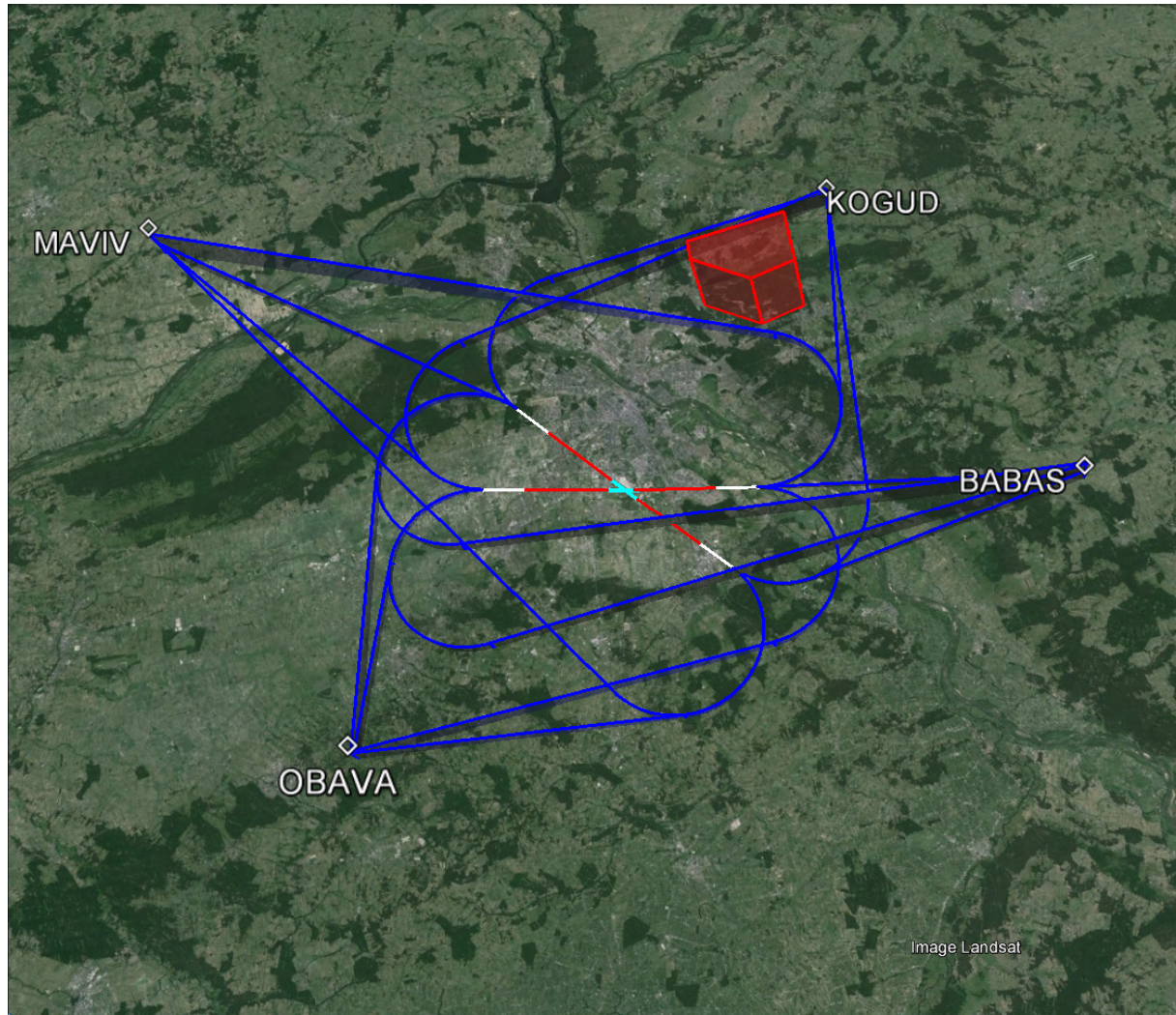
WAW Concept Overview

- Airspace Challenged Environment
- SmartPath Precision Final Landing minimums
- Coupled Automatic Landing



GBAS/GLS procedure will connect seamlessly into existing airspace structure using a Continuous Descent Approach STAR to provide a precision straight-in approach.

WAW Concept Overview



Improved Access to Airports & Airspace

Enabling better access to:

- Terrain challenged airports
- Congested airspace
- Airports in the vicinity of restricted airspace

Efficiency of Operations

- Time and fuel savings
- Shorter, more efficient routes
- Improved noise footprint

Stabilized Approach

- Defined lateral and vertical flight paths
- Enhanced situational awareness
- Guided missed approach procedures