

A photograph taken from the perspective of someone looking out of an airplane window. The wing and a large engine of the aircraft are visible in the foreground on the left. Below the clouds, a vast expanse of water is visible. The sun is low on the horizon, creating a bright glow and long, golden rays that filter through the clouds. The sky is a clear, deep blue.

# Airbus Fleet Readiness for SBAS

EGNOS Annual Workshop  
Italian Space Agency, Roma, 24-25 Sept 2019

Mathieu HIALE-GUILHAMOU – Navigation Systems  
24<sup>th</sup> Sept 2019

**AIRBUS**

# SLS function for SBAS Landing System

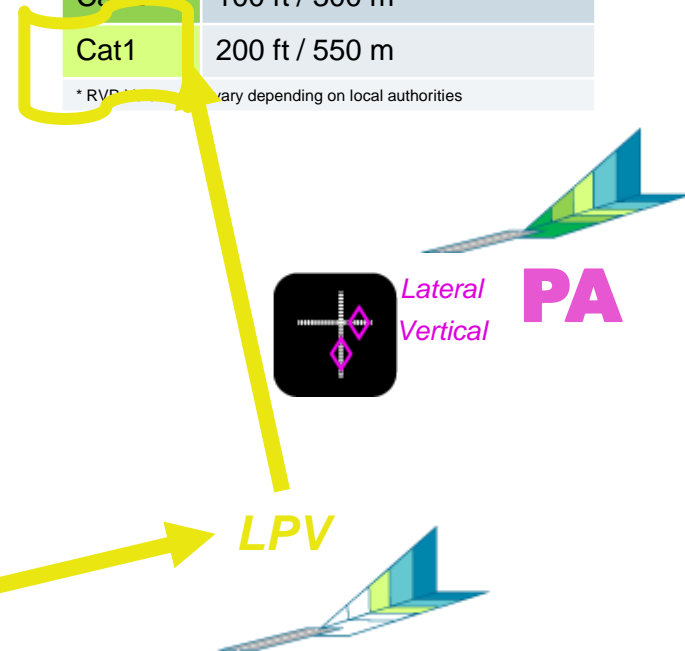
- **Technology based on differential GPS to fly RNAV (GNSS) approaches:**

- in an ILS look-alike way
- With geometric vertical guidance (no baro VNAV issue with cold temperature)
- With LPV minima (performance equivalent CAT I ILS: down to 200 ft)

- **No local ground infrastructure:**

- GPS augmentation based on geostationary SBAS satellites (e.g. **EGNOS** or WAAS)
- Secured Final Approach Segment extracted from Navigation database

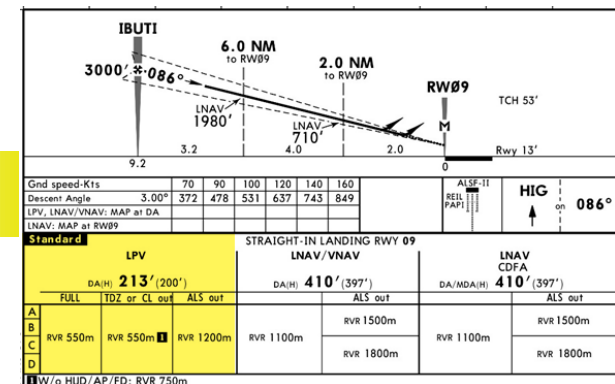
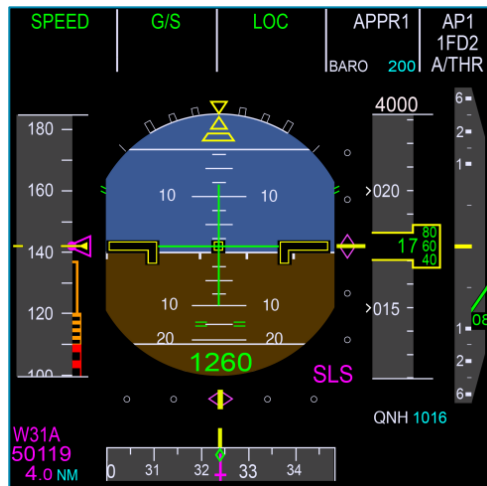
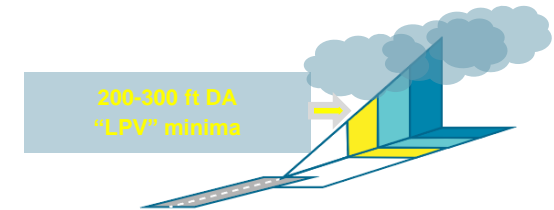
Operations	Minima / RVR*
Cat 3B	< 50 ft or No DH / 75 m
Cat 3A	50 ft / 200 m
Cat 2	100 ft / 300 m
Cat1	200 ft / 550 m
* RVR may vary depending on local authorities	



# SLS function for SBAS Landing System

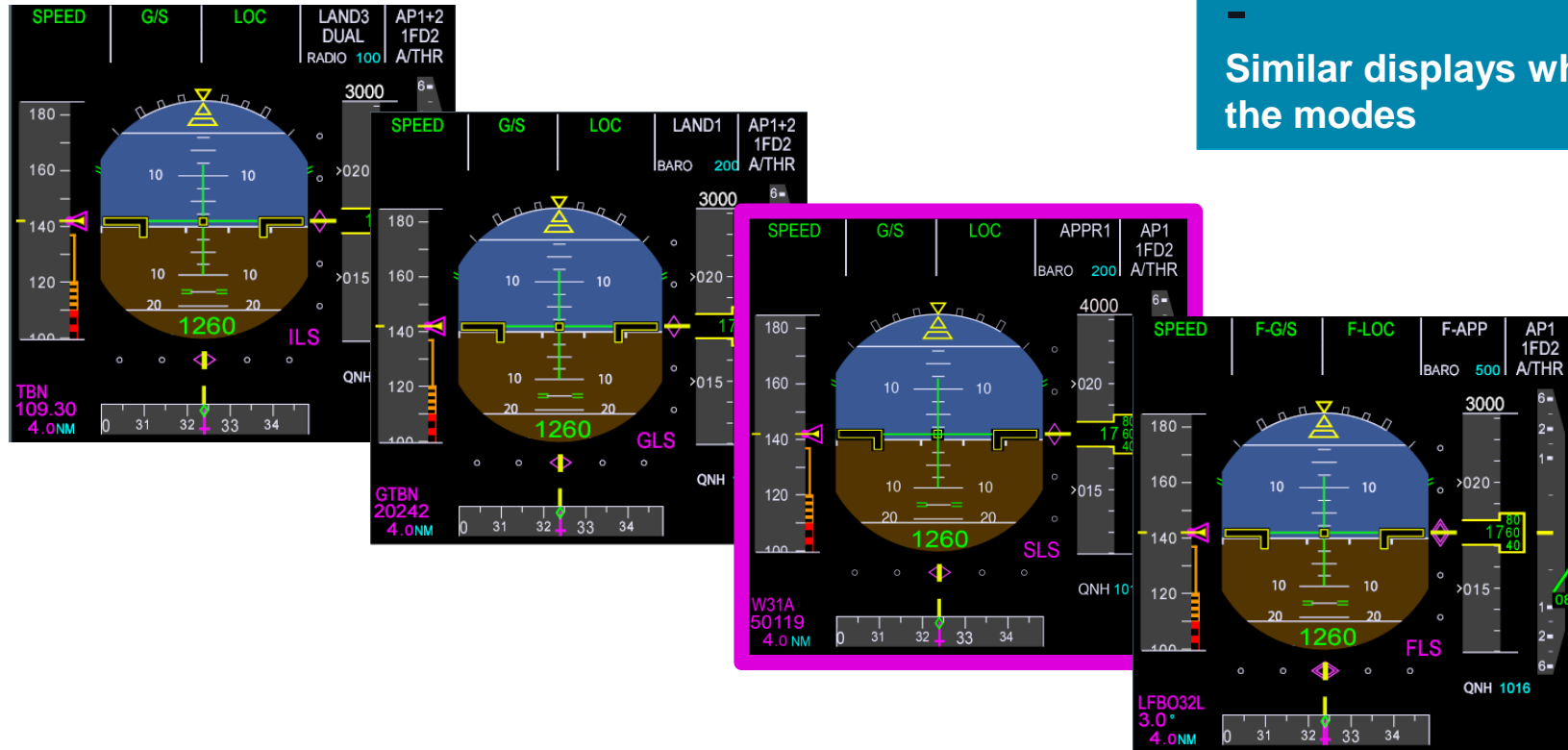
- **LPV minima:** on RNAV (GNSS) approaches charts
- **EGNOS** is the European enabler

PERFORMANCE EQUIVALENT CAT I ILS DOWN TO 200 FT





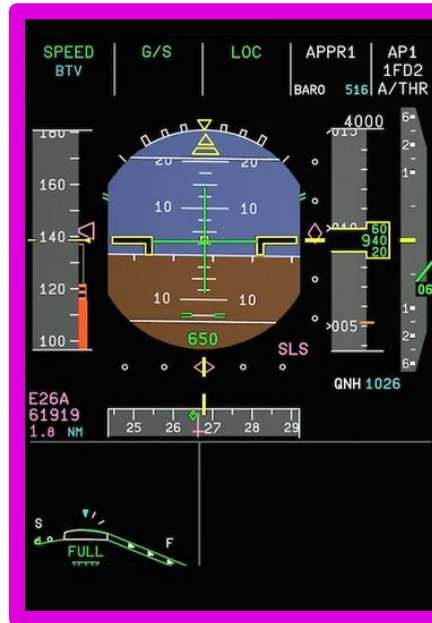
# Airbus xLS Concept



# A350 Format Display – overview before video

## PRIMARY FLIGHT DISPLAY

- Short term data
- Attitude information (artificial horizon)
- Altitude, speed, Vertical Speed, Heading
- Guidance modes at the top (vertical, Lateral, Thrust)
- Weather/Terrain information



## NAVIGATION DISPLAY

- medium-long term data
- Flight plan information
- Approach name at the top
- Weather/Terrain information



# SLS Video



# Airbus Fleet Readiness review for A320/A330/A350/A380

SLS function



**A220**

LPV capability

Since 2016: Basic on all aircraft



**A320**

2020: SLS Cat I



**A350**

Since 2014: SLS Cat I



**A330**

2021: SLS Cat I



**A380**

2021: SLS Cat I



**Beluga-XL: 2020: SLS Cat I**

## CONCLUSION



01

### PRECISION APPROACH SERVICE

Currently down  
to CAT I minima



02

### ILS LOOK-ALIKE CONCEPT

No specific  
training  
Same SOP



03

### DEVELOPING WORLDWIDE

Wide area coverage  
No need for local  
infrastructure  
Perfect Backup or  
complement to ILS



04

### GROWTH POTENTIAL

Extension possible to  
Autoland,  
SA Cat1,  
Cat2

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Thank you