

An aerial view from the perspective of someone on an Airbus aircraft. The left side of the frame shows the wing and a large engine. Below the aircraft, a vast expanse of white, fluffy clouds stretches to the horizon. The sun is positioned in the upper center of the image, creating a bright glow and casting long, soft shadows across 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
24th Sept 2019

AIRBUS

SLS function for SBAS Landing System

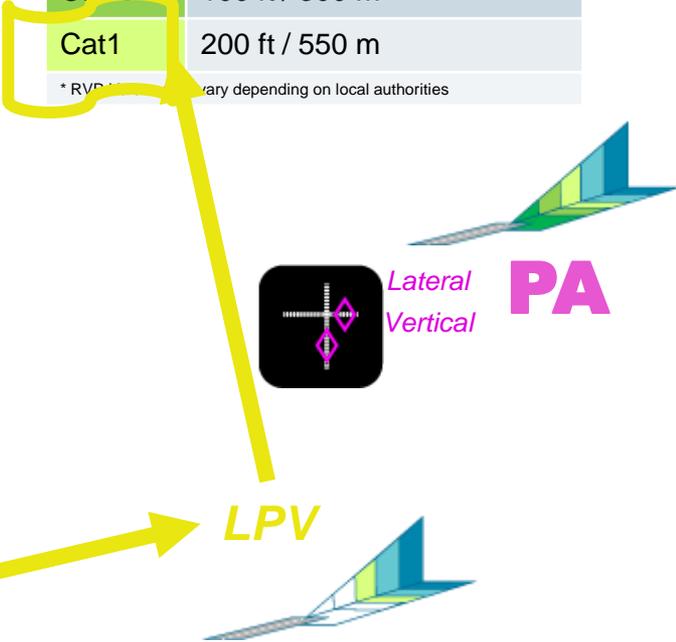
- **Technology based on differential GPS to fly RNAV (GNSS) approaches:**

- 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

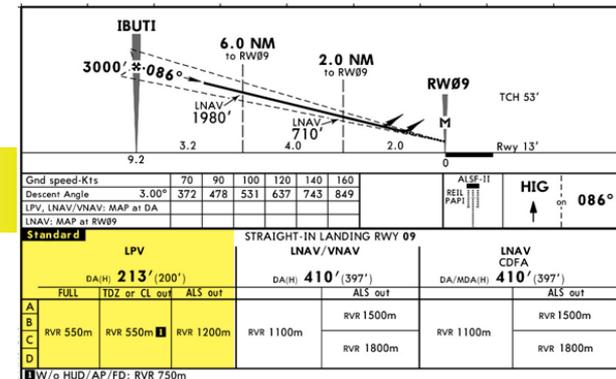
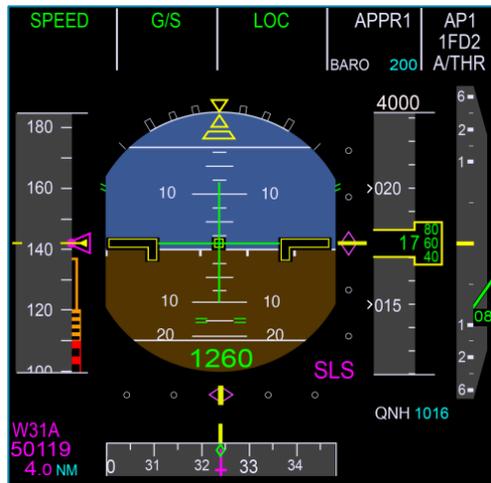
Operations	Minima / RVR*
Cat 3B	< 50 ft or No DH / 75 m
Cat 3A	50 ft / 200 m
Cat 2	100 ft / 300 m
Cat 1	200 ft / 550 m
* RVR may vary depending on local authorities	



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

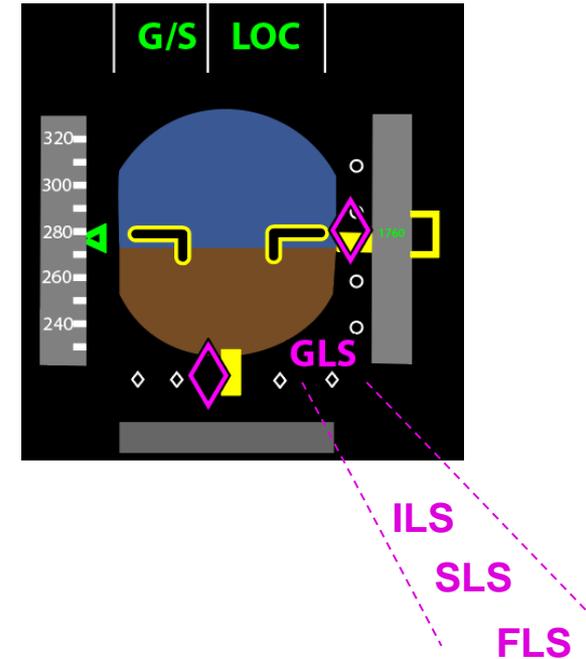


Airbus Strategy for Straight-In approaches

SLS is part of xLS concept and is now in service on A350

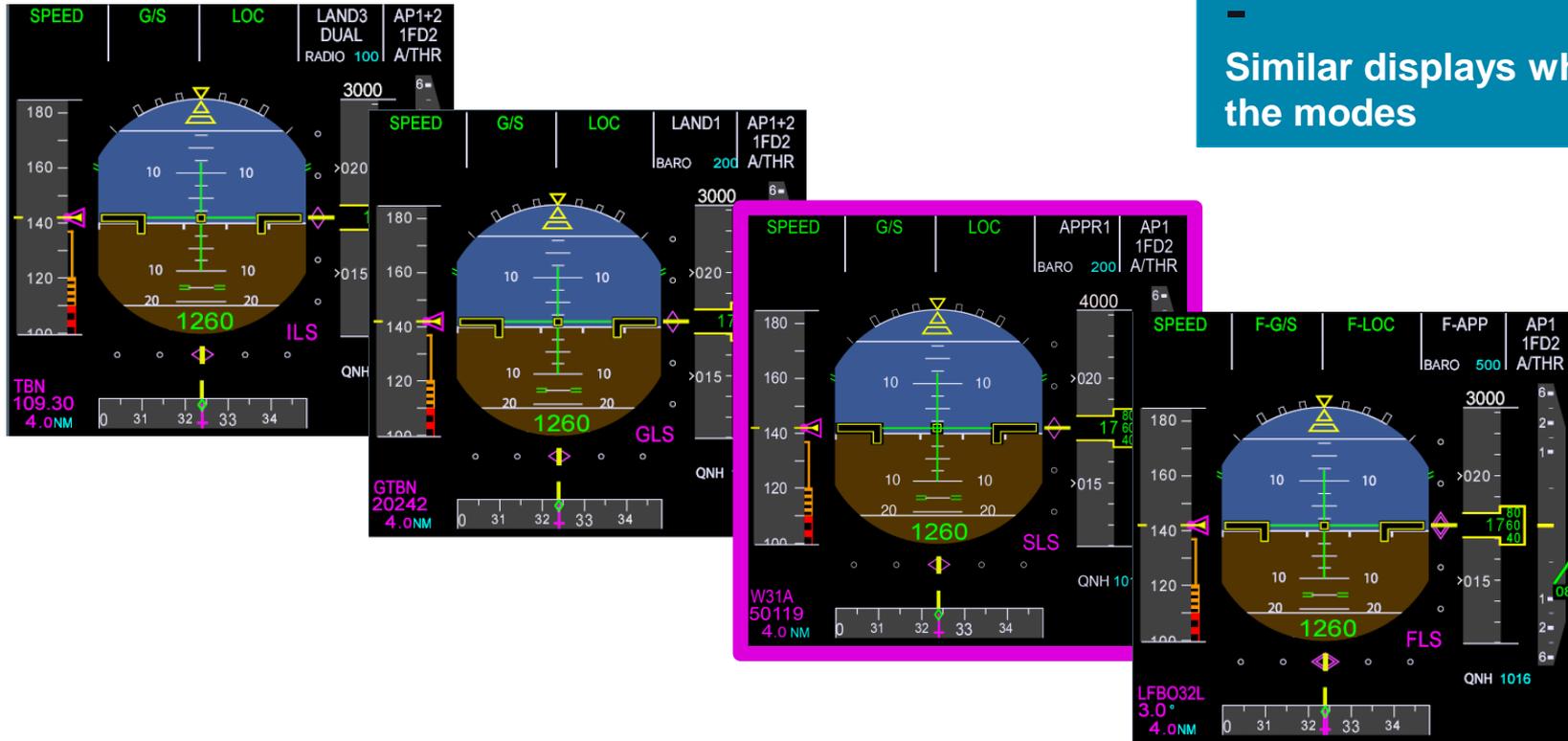
• Benefits

- No specific training as it relies on xLS concept
- Operational flexibility: the aircraft automatically selects the correct landing function, as soon as the pilot selects any approach



- Same ILS-lookalike HMI for all kinds of approach types
 - ❑ Flying the deviations (diamonds)

Airbus xLS Concept



ILS look-alike HMI
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Similar displays whatever the modes

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

Thank you