

VLD01-W2



DREAMS

Second Runway Aiming Point (SRAP) Increased Second Glide Slope (ISGS)

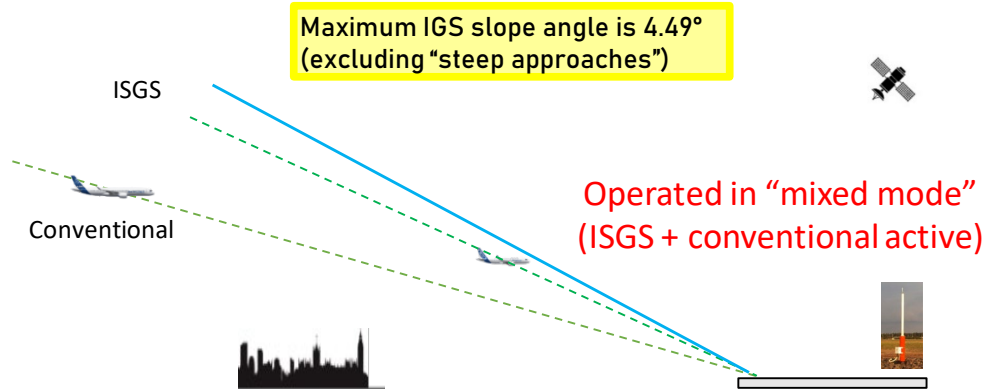
Frédéric Rooseleer / EUROCONTROL

21 October 2021

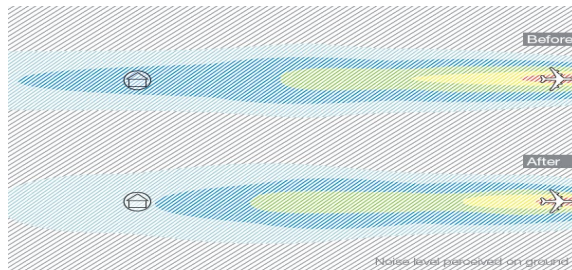


ISGS / SRAP / IGS-to-SRAP

PJ.02-W2- Increased Second GlideSlope (ISGS)



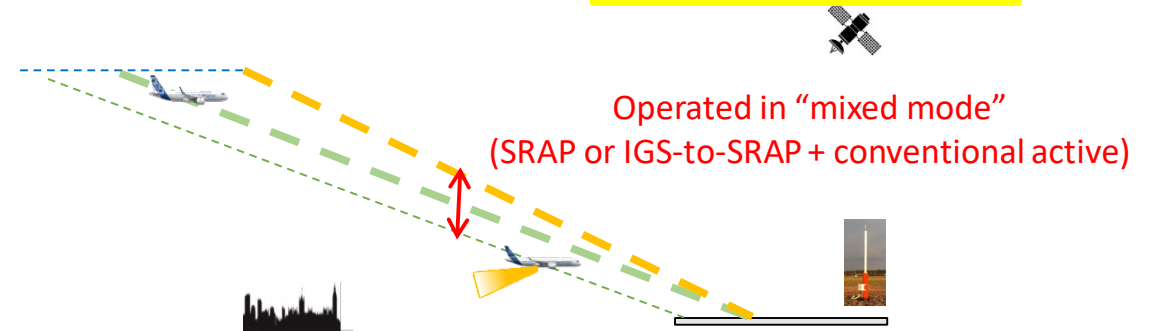
Noise Reduction



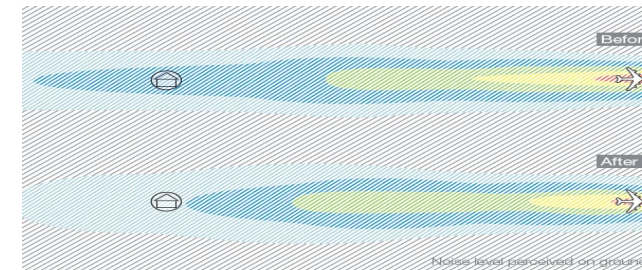
Second Runway Aiming Point (SRAP)

IGS-to-SRAP

Maximum IGS slope angle is 4.49°
(excluding "steep approaches")

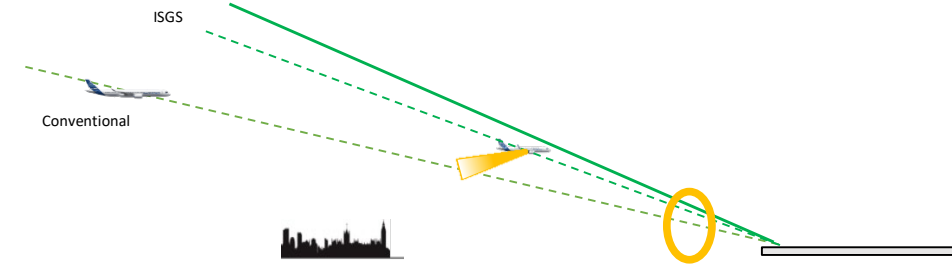
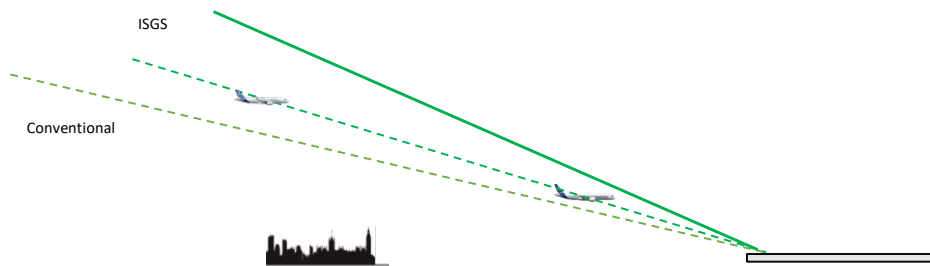


Noise Reduction
Throughput gains (wake separation)
Flying time reduction / ROT
optimisation



ISGS Applicability

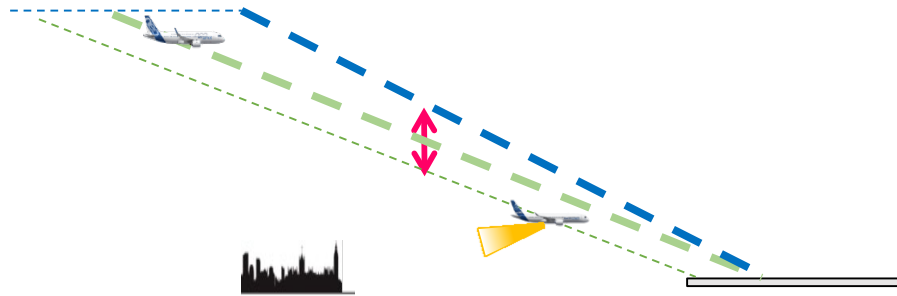
→ For off-peak & night traffic conditions



- Due to configuration with separation increases, ISGS operations are compatible with reduced traffic pressure
- The losses are lower when combined with a more “refined” separation scheme (i.e. RECAT)



SRAP / IGS-to-SRAP Applicability



→ For peak traffic / airport hubs

Example : THR d=1100m and GBAS (Dh=45m)

N°2 ABOVE / N°1 BELOW	S	UH	LH	UM	LM	L
SUPER	3	4	4	4	4	5.5
UPPER H		3	3	3	3	4.5
LOWER H			(2.5)	(2.5)	(2.5)	3
UPPER M						(2.5)
LOWER M						(2.5)
LIGHT						(2.5)

→ Working methods: assign the Medium & Light to the upper glide

- Runway capacity benefits: between 2 and 6% (wrt traffic mix)
- Achieved with high % of usage of the SRAP glide (75% or more)
- Benefit larger when operating a “refined” separation scheme (i.e. RECAT)

(Wake minima safety case to be submitted to EASA)

How to operate?

Step 0: Publication and activation

- Published procedure,
- one per approach type + highlight characteristics
- Simultaneous Approach Procedures active
- Crew awareness

Step 1: Approach briefing

- Active procedures on ATIS
- Assess feasibility and brief most likely approach based on eligibility

Step 3: Proc. change?

- Reversion to conventional?

Step 2: APP initial contact

- Expected approach procedure
- Crew acknowledgment / rejection
- Record the selection

Step 4: Final APP

- Separation management (incl. wake)
- Manage speed profile

Step 5: Tower

- Monitoring
- Go-around management

At 1st contact with Tower : Traffic info on the preceding traffic glideslope
With LDG clearance: Reminder of which threshold (1st / 2nd)

ATC and Flight management – Key enablers

ATC ops:

- Managing Multiple active approach procedures
- Adapting and managing wake turbulence separation minima



Airports

- Visual aids / references
 - Slope indicators
 - Runway Markings
 - Approach Lightings



Flight ops/aircraft:

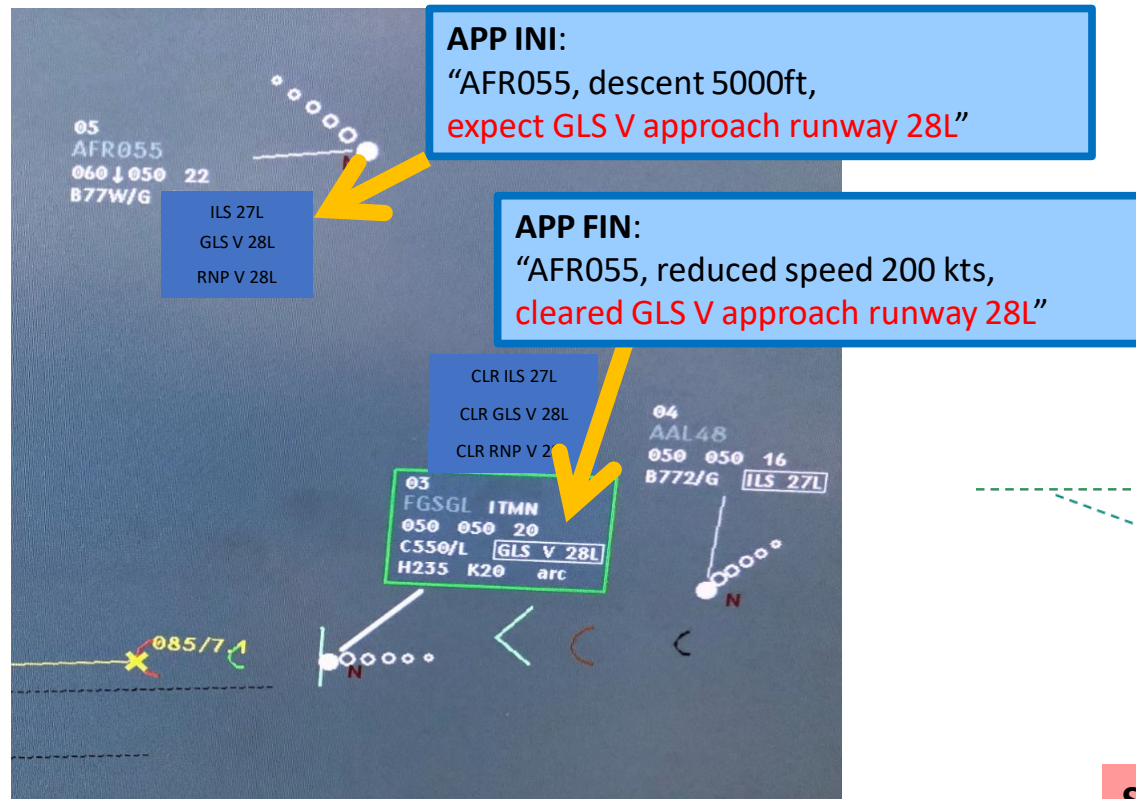
- Published Procedures
- Supported by various NAV means
- Flight management support?



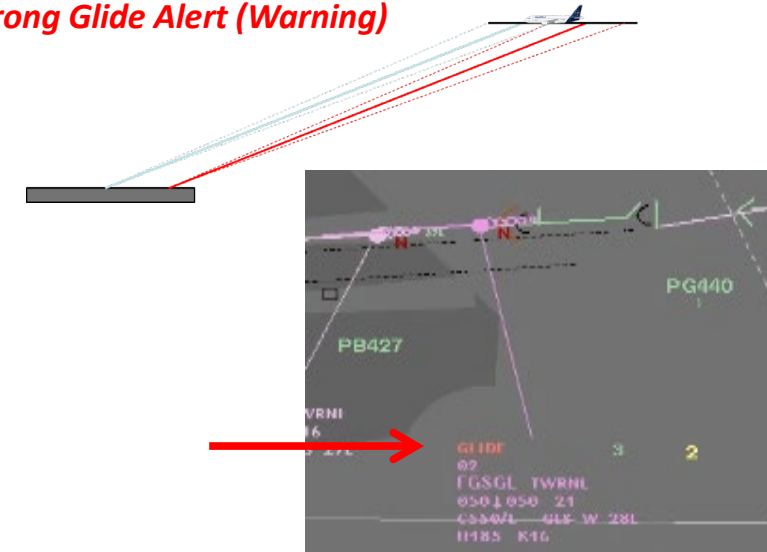
ATC management

HMI / Separation Delivery tool / Safety net / Go-around

→ Expected procedure **pre-defined/proposed** in the label



Wrong Glide Alert (Warning)



Sep ≤ RECAT minima → Go-around for #2



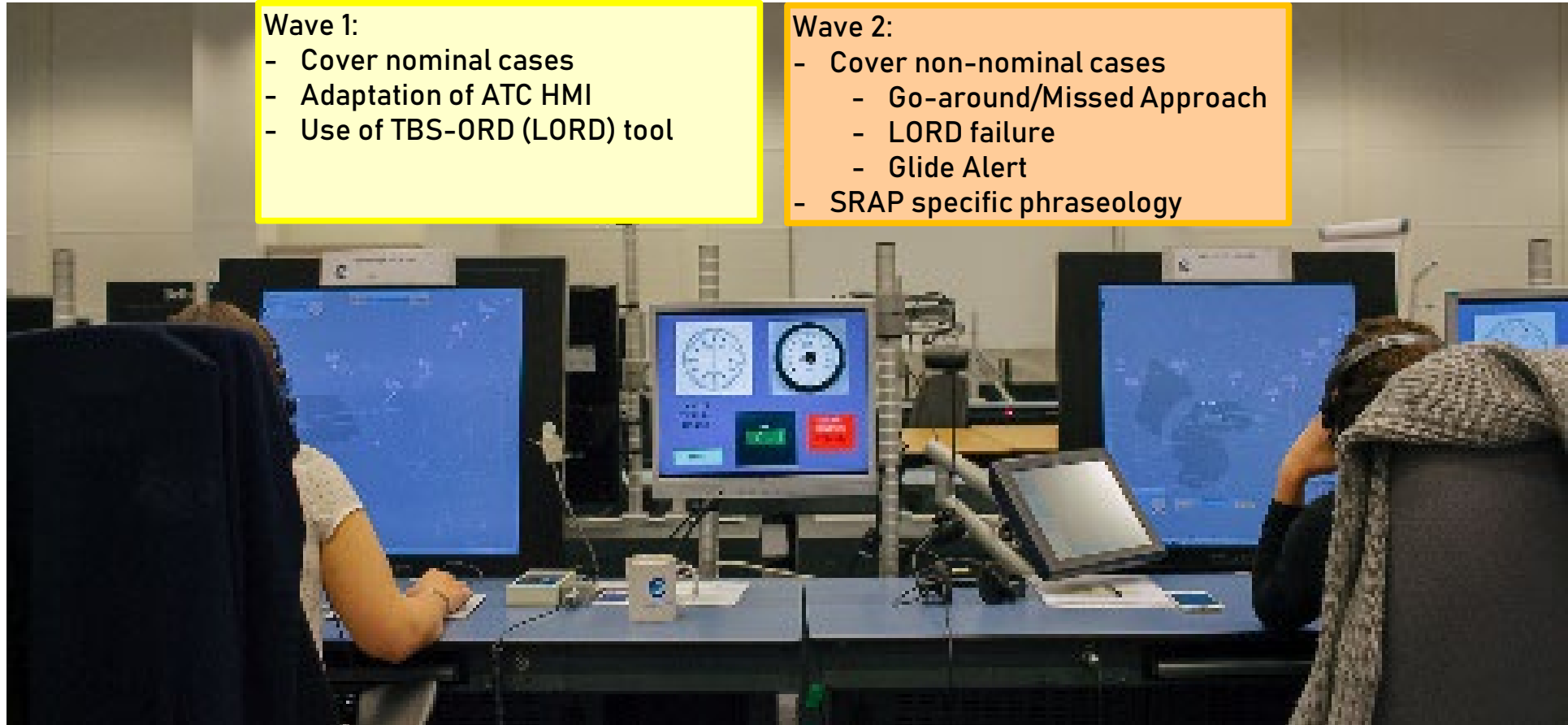
ATC Real-Time Simulation

Wave 1:

- Cover nominal cases
- Adaptation of ATC HMI
- Use of TBS-ORD (LORD) tool

Wave 2:

- Cover non-nominal cases
 - Go-around/Missed Approach
 - LORD failure
 - Glide Alert
- SRAP specific phraseology



ISGS PAPI

Dual PAPI
(standard colours)

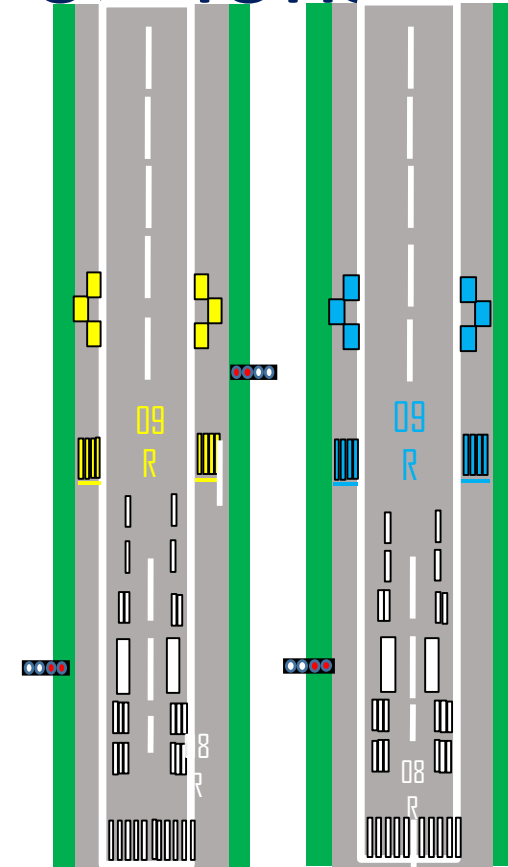
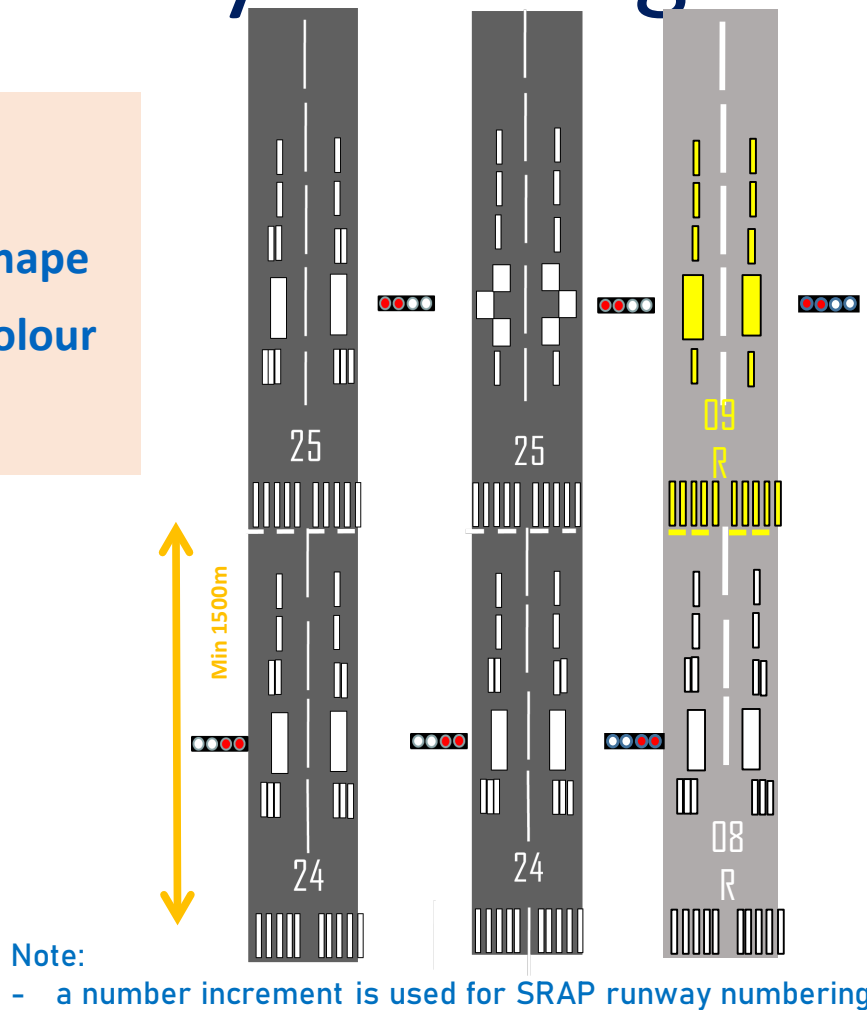


Dual PAPI
(standard /alternative colours)



SRAP Runway Marking design options

- Case of SRAP > 1050m
- Aiming point shape
- Aiming point colour
- TDZ



Case of SRAP < 1050m

- Aiming point colour?

SRAP / IGS-to-SRAP Approach Lighting System (CAT I)

Steady (static)



Switching (dynamic)

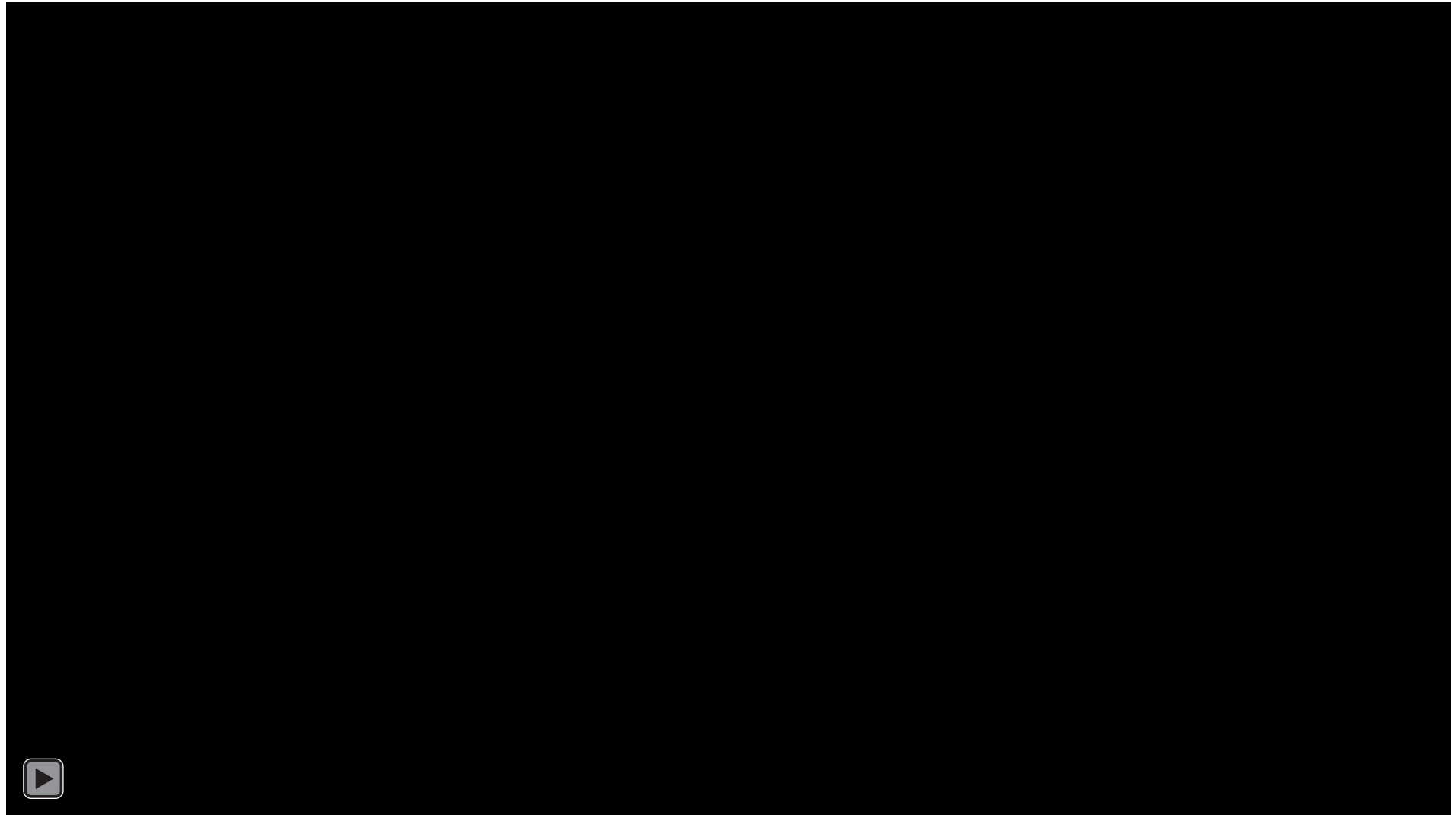


ON for 1st THR



ON for 2nd THR

Flight Simulation – SRAP Approach Lighting System (Dynamic)



Pilot Evaluation (Y2021)

- Pilots found overall acceptable and feasible to fly, and could see these concepts implemented
- Aiming Point ICAO duplication with single stripes and Aiming point chequered was preferred
- Marking in white
- No disturbances by second marking for the additional threshold
- Switching light configuration was preferred



VLD1-W2

ISGS & SRAP Flight trials with GBAS / SBAS

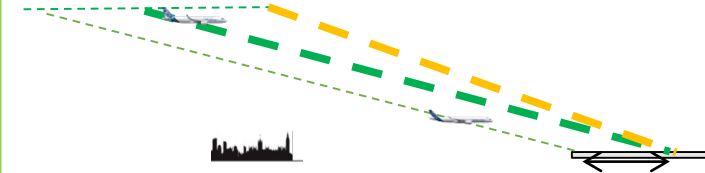
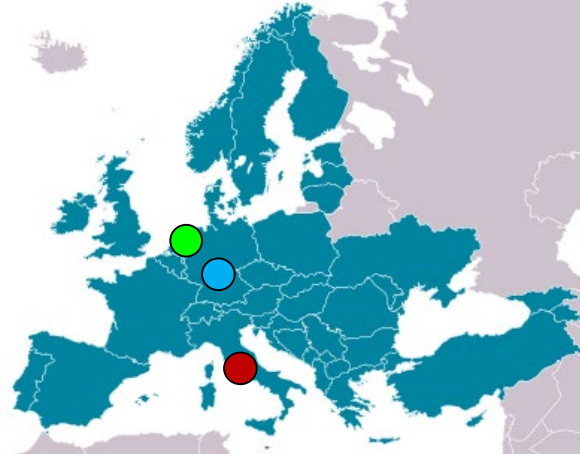


RNP SBAS with
3.9° and 4.4°



GLS CAT II with
3.2°

- Twente
- Frankfurt
- Roma Ciampino



Twente (EHTW)

Approach to RWY05



Twente (EHTW)

Approach to RWY06



Twente Demo

GLS Z RWY06 (3.0deg)



GLS X RWY06 (3.5deg)



CEF call

Call launched for series of pilot Digital Sky
Demonstrators

Sep. 20, 2021

Interested by ISGS or SRAP with GNSS
and prepare deployment through
large-scale flight demonstrations?

Contact:

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**Thank you very much
for your attention!**

