

# Demonstration at Nice Airport - DSNA

## April 2019



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## ➤ SESAR Solutions:

- #53: Departure Management Synchronised with Pre-Departure Sequencing
- #22: Automated Surface Routing and Planning, Automated Assistance to Controller for Surface Movement Planning and Routing
- #02: Airport Safety Nets for Tower Controllers

COMMISSION IMPLEMENTING REGULATION (EU) No 716/2014  
of 27 June 2014



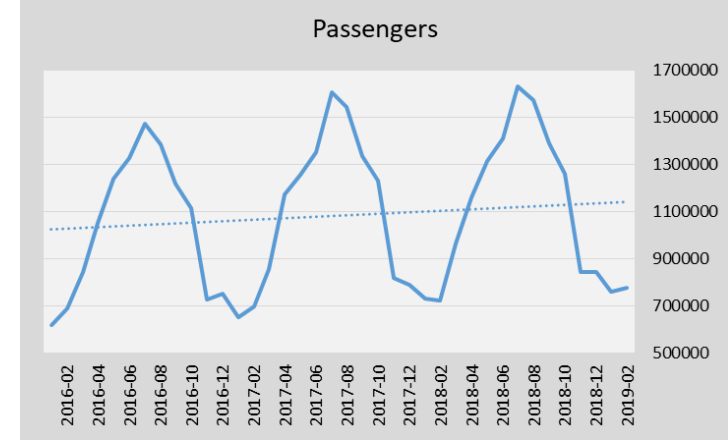
shall be operated at the following airports : [...] **Nice Cote d'Azur**

- To assess readiness, identify risks, assess potential gap between the development and deployment phases
- In a closer to operational environment (beyond real-time simulations)
- Lessons learnt from SESAR1 : high variability over the different airports (e.g. layout, operations)

# Nice Airport

Some operational specificities:

- Highly geographically constrained
- High seasonal traffic
  - 150,000 IFR flights / year
  - Up to nearly 700 flights a day (summer)
  - Inverted doublet (inner RWY for landing, outer for take-off)



INSEE statistics





## Airport Safety Nets

Leader of Airport Safety Support Tools from 2010 (SESAR)

Deployment of RunWay Status Lights at Paris-CDG with ADP (2016)

A-SMGCS Runway Monitoring and Conflict Alerting deployed at CDG, ORY, NCE



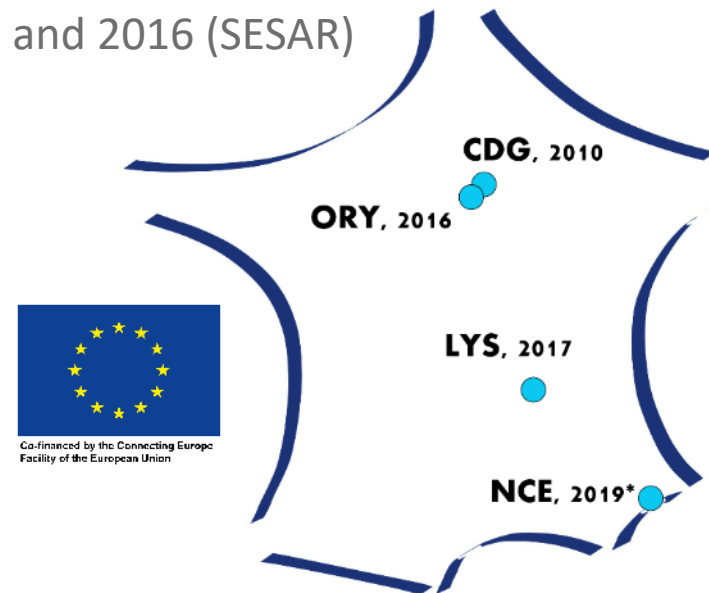
RWSL ©DSNA

## Routing&Planning

Leader of Surface management area between 2010 and 2016 (SESAR)

## Departure Management

ACDM airports (DMAN in operation in CDM mode)



\* Planned 25/11/2019

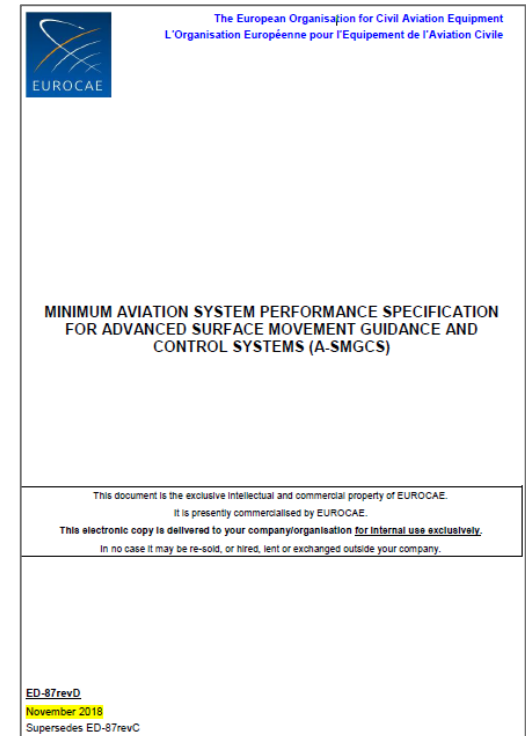
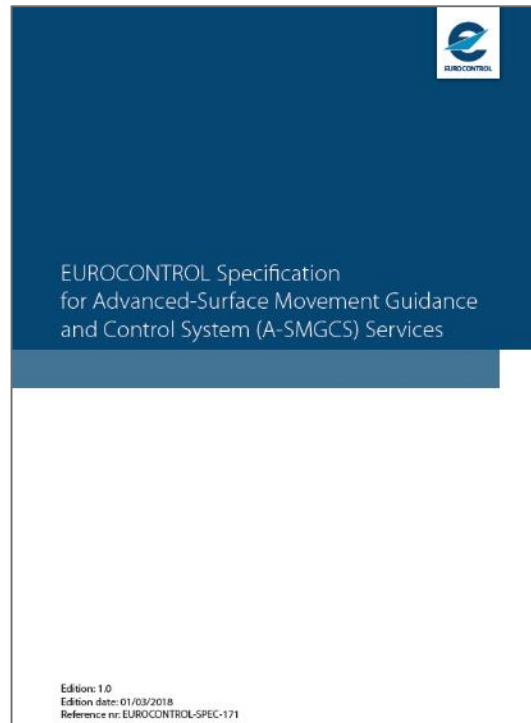
## Standardisation

Contributor to EUROCAE WG-41 (A-SMGCS)

 via the SESAR-EUROCAE MoC

Contributor to EUROCONTROL Airport Operation Team

In support to PCP deployment



# Recommendations from SESAR Development Phase

## Airport Safety Nets

- HMI usability to input clearances
- Only the most relevant alerts to the local operational context should be selected
- Deployment of alerts should be progressive
- Further assessment of the interactions between RMCA, CATC and CMAC
- Additional activities, particularly with real airport surveillance data and during a sufficiently long period recommended

## Routing

- working methods of controllers to be adapted if needed, and the controllers be trained on these new working methods.
- efficiency of HMI and routing integration in the CWP considered as critical for the acceptability by controllers.
- local operations and procedures to be considered

## Pre-sequencing

None

[https://www.sesarju.eu/sites/default/files/solutions/01\\_CN\\_Solution\\_02\\_Airport\\_Safety\\_Nets\\_for\\_ATC.pdf](https://www.sesarju.eu/sites/default/files/solutions/01_CN_Solution_02_Airport_Safety_Nets_for_ATC.pdf)

[https://www.sesarju.eu/sites/default/files/solutions/01\\_CN\\_Solution\\_22\\_ASMGCS\\_Routing\\_and\\_Planning\\_Function.pdf](https://www.sesarju.eu/sites/default/files/solutions/01_CN_Solution_22_ASMGCS_Routing_and_Planning_Function.pdf)



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## Demonstration layout

### 2 controller working positions

- Runway + Delivery/Ground

### Passive shadow-mode

### Sessions:

- Following actual clearances
- Testing the systems  
*e.g. no/wrong input of clearance to trigger safety nets*



VLD room in Nice Tower

## VLD performed in April :

15 Air Traffic Controllers from Nice (valid licence with unit endorsements)

1-day sessions including training, runs, debriefings and questionnaires

Human Factors and Safety Nets/Routing experts support





Only aircraft taken into account (no vehicles/helicopters)

Shadow-mode :

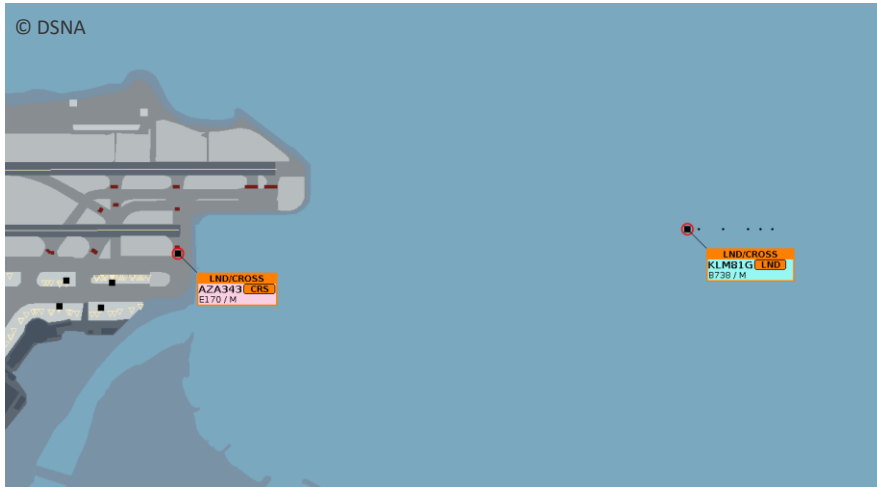
- does not enable to see the impacts of pre-sequencing → will be hard to conclude on the benefits of Solution #53
- Is not representative of the actual workload
- Introduces a delay in the clearance inputs
- Limited training
  - Quick familiarisation on the overall Controller Working Position
  - Some specificities not integrated sometimes (e.g. holding points shortcuts)
  - Leaflet in support
- Tight schedule for integration and testing
  - Doublet back in operations from 2-April
  - Some data inputs available only from March
  - Some new stands in operations in April





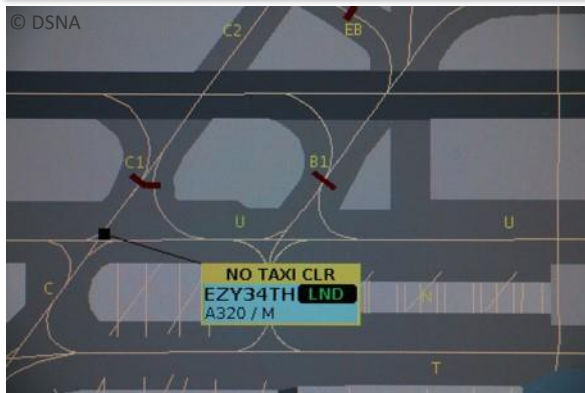
## Detection of Conflicting ATC Clearances

6 Alerts/16



## Conformance Monitoring

12 Alerts/16



Selection of alerts based on safety and operational expertise

## Integration with Runway Monitoring and Conflict Alerting

“[New] alerts shall be implemented as an additional layer on top of the existing A-SMGCS Level 2 alerts”

And

Management of alert priorities

## Implementation of Predictive Indications



## The system computes a route for each aircraft



- Departing and arriving aircraft
- Integrating constraints (e.g. wingspan limitations)

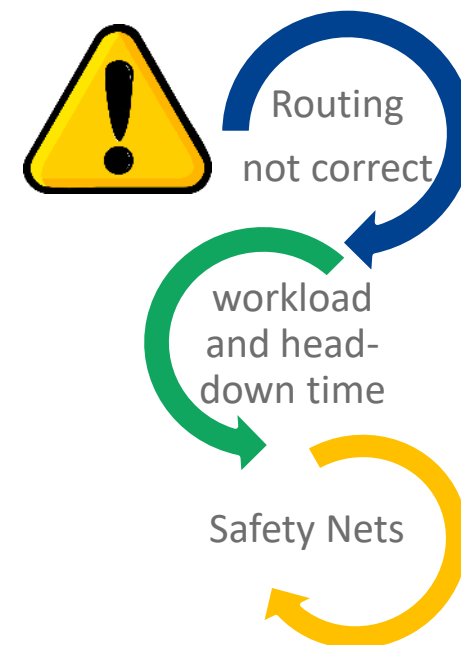
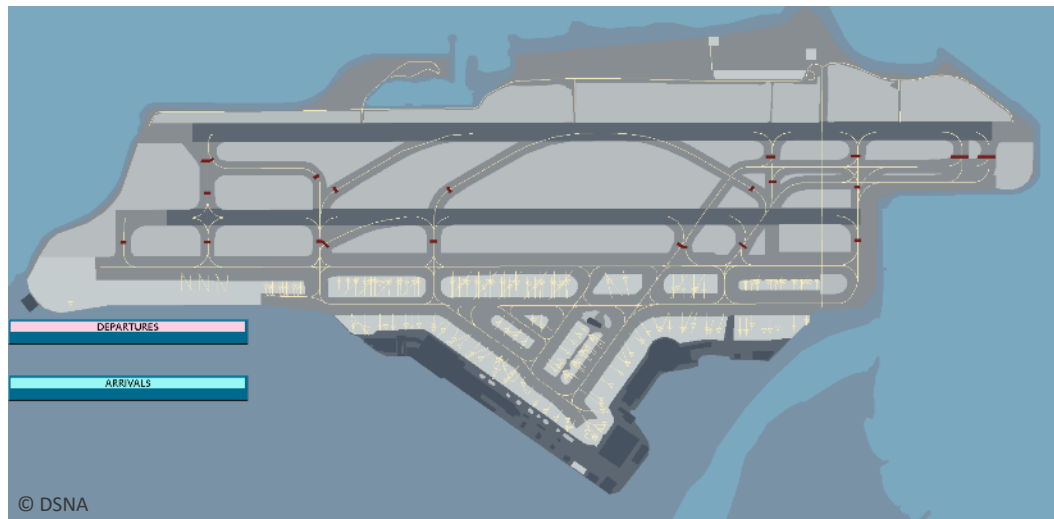
## The ATCo can modify the taxi route

- Graphically
- Using short cuts (e.g. holding points)



## The planned taxi times are sent to the DMAN

- Routing&Planning needs accurate, up-to-date and timely provision of layout data from the airport
- Not only maps but electronic data (TWYs, stands, possible junctions,...) + operational procedures associated (e.g. types of push-backs)



- Airport are constantly evolving, lots of construction works
- Manual laborious process for the VLD !
- **Pre-requisite (Airport Database and Network) before any deployment**

Need to cover all local operational use cases (e.g. taxi in two parts, part of RWY used for taxiing, non standard workflow)  
→ high complexity

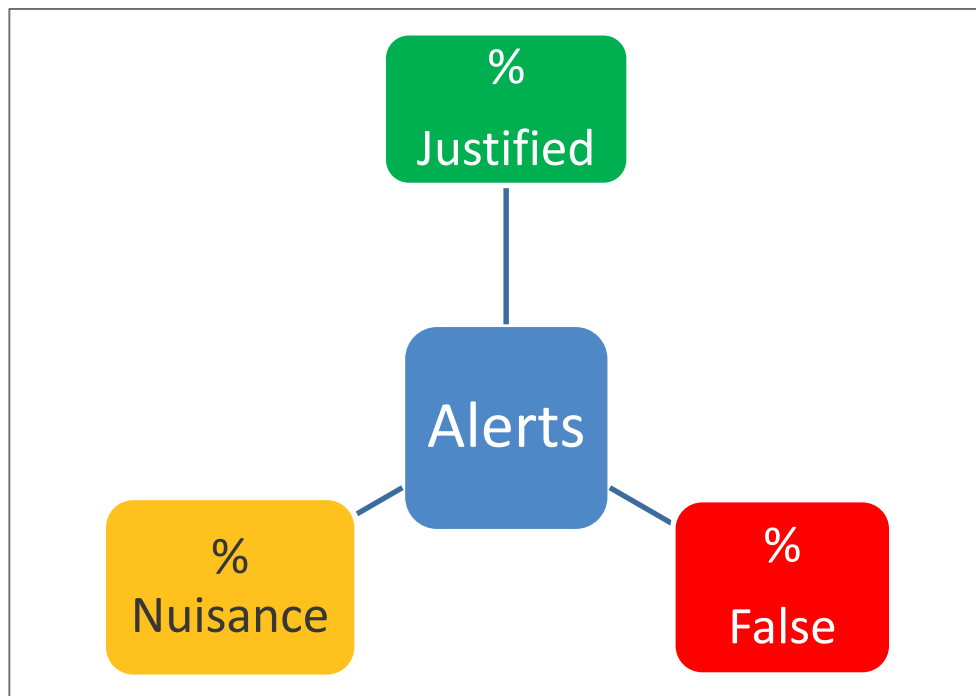
High variability of taxi times due to many factors (e.g. time to start taxiing after push-back, traffic interfering in peak hours, time to cross the landing RWY, taxi speeds)



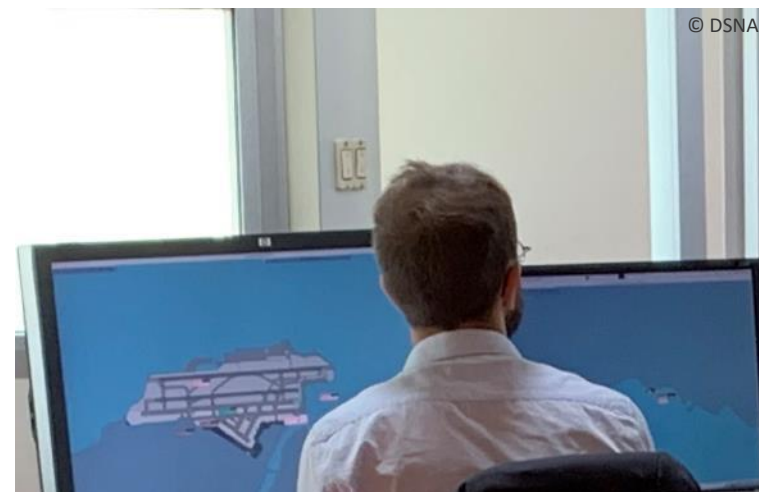
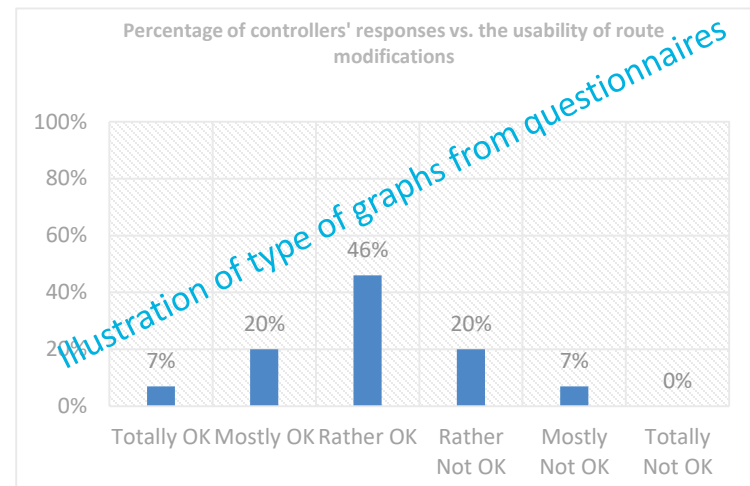


→ Analysis : on-going

- Questionnaires
- System Logs and expert analysis
- Consolidation with other demos



Analysis of the alerts triggered



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- The VLD was a very valuable means of assessing the solutions in close-to-operations situations on a PCP Airport
- Feedback from a significant sample of Air Traffic Controllers
- Good points raised before deployment, interesting complements, even as soon as from the preparation phase



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