FCA

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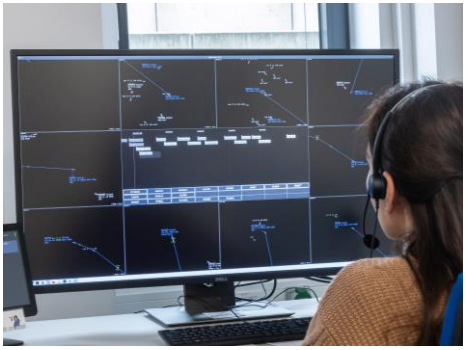
# Flight Centric ATC Validation Exercise 001: DLR & UkSATSE

## Summary

In the validation exercise EXE001 – DLR & UkSATSE, the Flight Centric ATC concept is investigated using the upper Ukrainian airspace as an example. Above FL275, a total of 21 sectors, currently controlled by four area control centers, are combined and designated as one single Flight Centric ATC airspace. In this airspace, air traffic controllers work in single person operations supported by various FCA-specific air traffic control tools, namely conflict detection and resolution, task manager, measuring tool, filtering, probing and short-term conflict alert.



## Validation Objectives

The exercise assesses the impact of introducing the Flight Centric ATC concept on operational and cost efficiency, environment, human performance and safety. It also demonstrates the feasibility of civil military coordination procedures. Further, a new FCA radar display and adapted FCA-specific air traffic control tools are validated. Automatic, dynamic allocation for FCA is investigated and advanced CPDLC adapted for use in FCA is applied.

DLR

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## Validation Use Cases

- Traffic Allocation in Flight Centric ATC
- Conflict Detection and Resolution in Flight Centric ATC
- Military Flight Transiting Flight Centric ATC Airspace
- Communication Failure in Flight Centric ATC
- Adverse Meterological Conditions in Flight Centric ATC
- Short-Term Conflict Alert in Flight Centric ATC

## Validation Platform

The exercise is carried out as a real-time simulation at DLR's Flight Centric ATC laboratory in Braunschweig. Five Flight Centric ATC controller working positions are available there for the exercise. The DLR simulation platform consists of TrafficSim (traffic generator, environmental data), allocation center, Skynet (radar interface) and a voice system.

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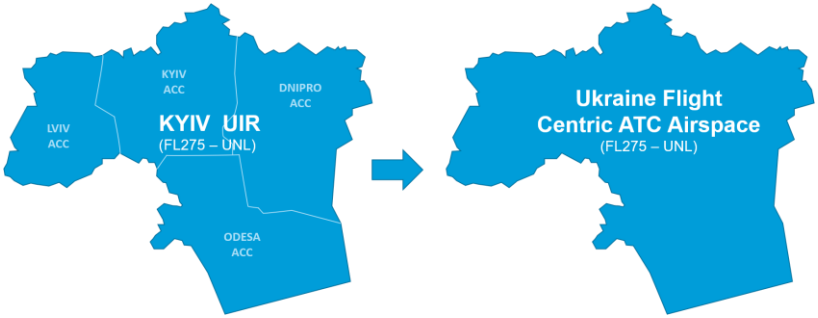
The SESAR 3 FCA project builds on the PJ.10-W2-73 FCA solution developed under the PJ.10-W2 project. Its goal is to advance the Flight Centric Air Traffic Control (FCA) concept from its current Technology Readiness Level (TRL) 6 (ongoing) to a full TRL 6. To achieve this, two exercises are planned within the SESAR 3 FCA framework: EXE001 (DLR & UkSATSE) and EXE002 (ENAIRE/CRIDA & INDRA).

EXE001 (DLR & UkSATSE) focuses on validating the FCA concept using Ukrainian FCA airspace, ranging from FL275 to unlimited, as an example. This validation takes place as a real-time simulation at DLR's Flight Centric ATC Laboratory in Braunschweig in November 2024. It is divided into two eight-day campaigns, each consisting of three days of system training followed by five days of validation runs. The first campaign is scheduled for November 4–13, 2024, and the second for November 18–27, 2024. Each campaign will have five participants, with a total of ten Ukrainian air traffic controllers involved in the validation.

During the exercise, both qualitative and quantitative data are collected. Qualitative participant feedback is gathered through questionnaires and debriefing sessions, while quantitative flight performance metrics, such as fuel consumption and number of conflict occurrences, are recorded. To allow for a thorough comparison between FCA and traditional sector-based operations, the exercise is supplemented by a fast-time simulation that runs the same validation use cases under conventional ATC operations. This helps analyze the performance differences between the two systems.

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