Maastricht Upper Area Control Centre

# ATM DATA AS A SERVICE (AdaaS) – Towards the concept of data centres

The ATM Data as a Service (AdaaS) project is a study conducted by EUROCONTROL's Maastricht Upper Area Control Centre (MUAC) and Slovenia Control to investigate the extent to which ATM data services can be provided by an ATM Data Service Provider's interoperable ATM system to one or more civil Air Traffic Service Units. Co-financed by the European Union's Connecting Europe Facility (CEF) to the tune of € 2.45 million, the three-year AdaaS project aims to contribute to the Single European Sky by deploying new technologies and best practices and moving closer to the concept of data centres. The project is monitored by the Innovation and Networks Executive Agency (INEA).

Successful shadow operations

Kicked off in 2015, the first phase of the study was to develop and deploy a prototype which could support the provision of ATM data, in an operational ATM environment, from an ATM Data Service Provider to one or more civil Air Traffic Service Units. It concentrated on how an existing air navigation service provider's information and communications infrastructure should be upgraded to receive data from an ATM Data Service Provider.

Following the development of the prototype, shadow operations of live air traffic under the responsibility of Ljubljana Area Control Centre were successfully conducted in June 2016 at Slovenia Control, using the remote data provided by the operational ATM system at Maastricht.

Shadow operations of ATM Data as a Service (AdaaS) at Ljubljana Area Control Centre, June 2016.
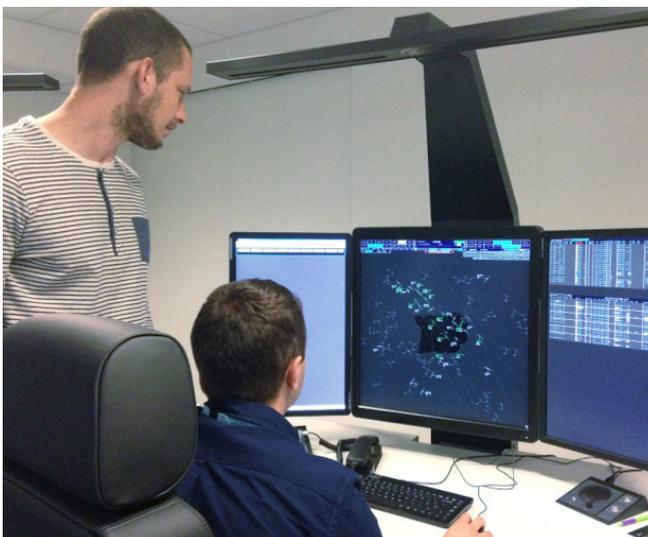
With the successful completion of these shadow operations, expert teams from both air navigation service providers were able to overcome, in a limited time-period, the operational and technical challenges inherent to such an innovative approach in the ATM environment.

The AdaaS Demonstrator uses local radars, tracking and safety net services, but is fed by remote flight data processing system services from MUAC. In addition, the MUAC controller working positions and human-machine interface were deployed within Slovenia Control.

INNOVATIVE BREAKTHROUGH

The AdaaS project represents an innovative leap forward in the ATM environment and promotes EU-wide cooperation. When implemented, the concept will introduce new services and lead to increased interoperability. The final objective is to collect all the information and expertise required to support further implementation by other European air navigation service providers, laying the foundations of SESAR's Virtual Centre concept.

With the deployment of interoperable technologies and best practices between two geographically remote air navigation service providers belonging to two different Functional Airspace Blocks, the ADaaS project meets the objectives of the Single European Sky to transform and defragment the European ATM system for greater efficiency. A previous iteration was successfully implemented in 2012 with the Shared ATS System between EUROCONTROL MUAC and its Dutch military partner - the Royal Netherlands Air Force.

Open Controller Working Position Interface

Phase 2 of the ADaaS Demonstrator aimed to develop and test the use of an Open Controller Working Position Interface between the MUAC Flight Data Processing System (MUAC FDPS) and the Slovenia Control controller working positions/human-machine interface (SCL CWP).

A service-provider independent definition of the Open CWP service was defined; this service includes correlation, flight data distribution and flight data management, and supports sectorisation.
It conforms with the (draft) EUROCONTROL SWIM specifications:

- EUROCONTROL specification for SWIM Technical Infrastructure Yellow Profile
- EUROCONTROL specification for SWIM Information Definition
- EUROCONTROL specification for SWIM Service Description

It is this Yellow SWIM Profile compliant Open CWP Service that was successfully demonstrated in the Phase 2 Shadow Operations in March 2017.

Final distributed architecture

The final architecture of the demonstration (Phase 3 of the ADaaS Demonstrator) developed a distributed Flight Data Processing System in two locations (MUAC and Slovenia Control - SCL) and seamlessly served controller working positions/human-machine interfaces either remotely or locally.
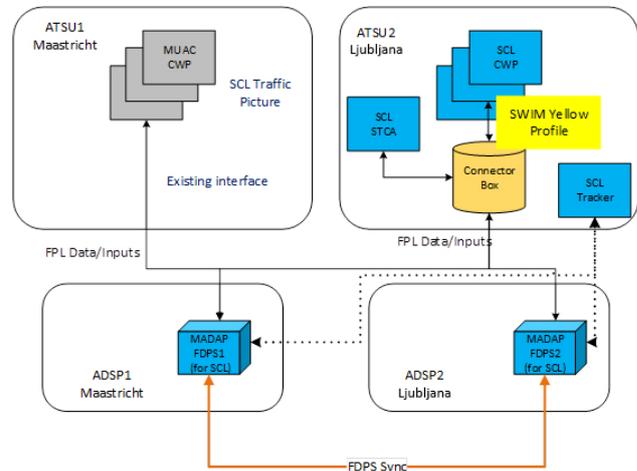
ADaaS Demonstrator – Phase 3 – Distributed FDPS - Overview

Phase 3 of the ADaaS Demonstrator was successfully completed with shadow operations in October 2017.

Phase 3 provides essential data on how to deploy a state-of-the-art data centre from which an ATM data service provider (ADSP) can deliver services to Air Traffic Service Units (ATSUs) with proper contingency and disaster recovery. The focus of the last shadow was on seamless transition of ATM data services, which allowed switchovers of remote and local flight data processing systems without any impact on operations.

Cost-benefit analysis

Finally, the cost-benefit analysis of the ADaaS project demonstrated cost-benefit advantages of the concept for the air navigation service providers, the airspace users and additional parties. The future deployment of the new concept demonstrated offers the cost reductions through shared investments and lower operating costs, as well as additional benefits in terms of greater reliability and redundancy, enhanced interoperability and greater performance to meet the targets set under the Single European Sky legislation.