PROJECT

SAMS

Advanced Surface Movement Guidance and Control System

**Funding:** European (4th RTD Framework Programme)

**Duration:** Jan 1998 - Dec 1999

**Status:** Complete with results

**Background & policy context:**

Air traffic has grown at an average rate of 5% over the last 15 years, increasing the pressure on all aspects of Air Traffic Control (ATC). Capacity limitations at airports are a major bottleneck, with several main hubs and medium or small sized airports facing constraints due to a lack of potential for expansion and environmental policy issues. While there is little chance to significantly enlarge existing airport infrastructures, the increasing number of aircraft movements (i.e. take-offs, landings and related taxiing) needs to be handled more efficiently by better utilisation of runways, taxiways and aprons.

**Objectives:**

SAMS aimed to design and develop an evaluation platform for Advanced Surface Movement Guidance and Control Systems (A-SMGCS), which are intended to improve ground handling capacities of airports. The main objectives of SAMS were to:

- allow for real-time, man-in-the-loop evaluation of new technologies to enhance tarmac utilisation;
- simulate typical air/ground environments on airports;
- allow for simulation of advanced ground handling procedures under all-weather conditions;
- involve the two principal categories of users - pilots and controllers - in the evaluation of new SMGCS by integrating a cockpit (Boeing 747) and a control tower simulator;
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**Related Projects:**

Related Transport RTD projects

- ARAMIS - Advanced runway arrivals management to improve airport safety and efficiency.
- DA VINCI - Departure and arrival integrated management system for co-operative improvement of airport traffic flow.
- DEFAMM - Development of demonstration facilities for airport movement guidance control and management.

**Parent Programmes:**

[FP4-TRANSPORT - Specific research, technological development and demonstration programme in the field of transport, 1994-1998](#)

**Institute type:** Public institution

**Institute name:** European Commission; Directorate-General for Energy and Transport (DG TREN; formerly DG VII)

**Funding type:** Public (EU)

**Partners:**

NA
Key Results:
SAMS has:

- Developed the so-called SAMS platform - an Advanced Surface Movement Guidance and Control System (A-SMGCS) integrating human/machine interfaces (HMI) with a cockpit simulator and a tower simulator, both backed by several datalinks providing all relevant information for real-world simulation.
- Performed simulations with the A-SMGCS platform at Amsterdam-Schiphol and London-Heathrow airports, with interconnection to DERA's LATCH aircraft simulator at Bedford, UK and DLR's ATS tower simulator at Braunschweig, Germany.
- Gathered a variety of comments, observations and proposals for improvement of the simulation tools from potential end users, such as air traffic controllers and pilots. Feedback covered the handling aspects of new components (HMI), technical and operational issues, and the realism and transferability of performed simulations.
- Evaluated the benefits and technical feasibility of an A-SMGCS multi-site, real-time, man-in-the-loop simulation platform, in particular highlighting the use of expensive simulation components that are typically scattered across several European research facilities.

Policy implications

The availability of a simulation platform capable of integrating various simulation tools for man-in-the-loop runs is considered vital for further research and development on novel surveillance, guidance and control systems for surface traffic at airports. The SAMS project has established a first such platform, which should be the basis for future activities aiming at increased safety and efficiency in airport surface traffic. More in-depth evaluation and assessment of advanced SMGCS should be based on the SAMS experience, as well as taking into account shortcomings of this novel approach.

Documents:
- sams.pdf (Final report)

STRIA Roadmaps: Network and traffic management systems
Transport mode: Air transport
Transport policies: Decarbonisation, Societal/Economic issues