



Computer-assisted Approach and Landing Management for Zurich Airport



Zurich airport Kloten is a heavily frequented hub with three runways in operation. When rising air traffic brought the airport's runway capacity to its limits, Skyguide (at that time still swisscontrol) decided in April 1998 to upgrade its landing management with a Computer-assisted Approach and Landing Management (CALM) system developed by Barco.

Since March 2001, CALM supports the air traffic controllers at the approach control center and area control center in the planning and management of all inbound traffic to Zurich airport. CALM helps to smoothen the traffic flow at Kloten, to reduce the work load of ATC controllers, and to get the most out of the airport's capacity resources. CALM is based on Barco's commercial-off-the-shelf (COTS) arrival manager OSYRIS.

Smooth and efficient traffic flow



Solid realization, rapid implementation

When Skyguide ordered the system in April 1998, they attached much importance to customer-oriented project management and on-time implementation. Throughout the entire project a highly qualified project team of Barco guaranteed quick responding times, immediate support and solid solutions for every concern or change request. The CALM system was also integrated into Skyguide's training and simulation facilities in 2000. In March 2001 CALM went operational, to Skyguide's complete satisfaction.

CALM Functions

CALM supports the approach and en-route controllers in the planning and management of all inbound traffic to Zurich. The following tasks are automated by CALM:

- Planning and optimization of arrival sequences
- Scheduling of flights (definition of RTOs, requested time over)
- Generation of advisories for necessary time adjustments
- Calculation of departure times for regional flights.
- Calculation of arrival dependent departure times for Zurich

For its computations CALM combines radar data and flight plan data. It also takes into account the airspace structure, operational procedures, aircraft specific performance parameters and meteorological data.

Ref. CALM 02 - Oct '04

Technical information subject to change without prior notice

The results of the planning process are presented to the controller in the form of electronic flight strips displayed along a time line. The controller can simply accept the plans produced by the system, neglect, or modify them. CALM monitors the actual traffic evolution continuously and automatically adjusts its plans to the real situation.

CALM Benefits

- Silent coordination between area control center and approach control center
- Support of ground delay absorption
- Optimized runway utilization
- Training and simulation environment to train controllers, and to simulate and evaluate future scenarios.

CALM Architecture

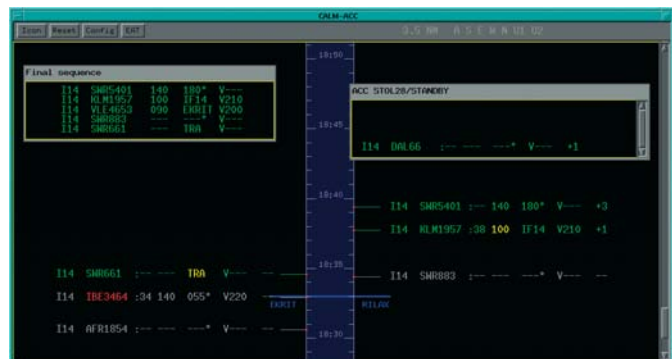
The entire CALM system encompasses:

- the sequencing & scheduling module,
- the trajectory engine including conformance monitoring,



- interfaces to the flight plan data system, the radar data system, and the Swiss met office server,
- OPSCENTER™ SYSTEM MANAGEMENT component for system supervision
- the CALM displays for the ACC, implemented on the ODS TOOLBOX®.

Due to its system architecture, CALM is configurable to cope with future changes in the airspace structure, operational procedures, extensions of the systems or modifications of the planning area.



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