

Get an overview of all  
**Ground  
Movements**



# How does the ACEMAX A-SMGCS work?

## Are you ready?

Air traffic is on the rise but airports are not sufficiently prepared to deal with the rapid increase. A physical expansion of the airport's infrastructure is largely unrealistic due to a lack of space, and there are environmental regulations to consider when residential buildings are erected close to the airport. It is possible to cope with this situation by maximizing the capacity of existing runways and taxiways while at the same time maintaining the highest level of safety and efficiency. Being able to deal with bad weather and low visibility operating conditions is crucial for safety and capacity and this issue has to be addressed.

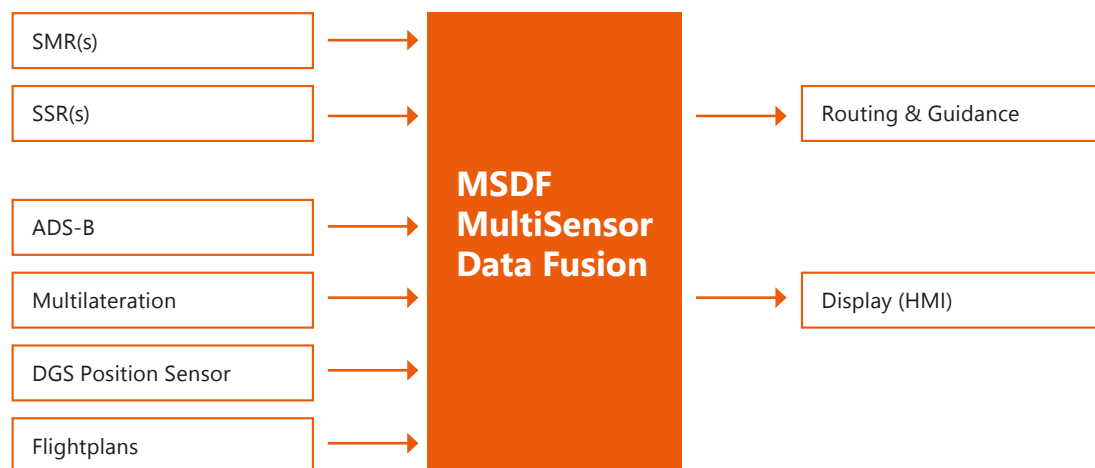
## The ADB SAFEGATE Solution

**ACEMAX** – as a part of ADB SAFEGATE Tower ATM package – is the key to reliable continuous service. ACEMAX not only supports high traffic capacity, it can also significantly increase the safety level at any airport under all weather conditions. The number of runway incursions, near collisions and similar unwanted situations can be significantly reduced when using ACEMAX as your A-SMGCS.

The ACEMAX Multi-Sensor Data Fusion (MSDF) is essential for accurate surveillance of all airport traffic. It combines data from multiple radars and other surveillance sensors into a reliable and precise presentation of the current traffic situation. Data from the following sensors can be integrated:

- ▶ Primary ground radar data (Surface Movement Radar, SMR) is used to detect aircraft and vehicles on the runways and taxiways. The extracted radar plots are incorporated to track all moving targets on the airport. Additionally, the filtered SMR video is displayed as well.
- ▶ Multilateration and ADS-B data can be integrated into ACEMAX to provide the position and identification of cooperative mobiles.
- ▶ Secondary Surveillance Radar (SSR) data can be used to seamlessly extend the tracker coverage beyond the Multilateration range.
- ▶ Docking and Guidance systems can be integrated for surveillance purposes to boost the tracker coverage and accuracy at the gate areas.
- ▶ Flight plans are automatically correlated to tracks, providing additional information such as aircraft types and stands.
- ▶ Vehicles equipped with Mode-S transponders can be automatically identified and enriched with additional information such as the vehicle class.
- ▶ Towing plans can be used to combine tug and aircraft tracks, presenting the most relevant information automatically.

## Introducing ACEMAX – an Advanced Surface Movement Guidance and Control System (A-SMGCS)



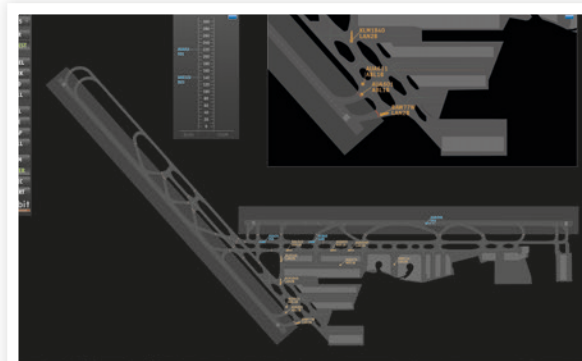
## Labelling and Tracking

**Incoming traffic:** SSR and/or MLAT data ensure that approaching aircraft are tracked down to the runway, where SMR data are seamlessly added to the fused system tracks. Cooperative tracks are automatically assigned to their flight plan data, providing a smooth and consistent aircraft movement display right to the designated parking position.

**Departing traffic:** Cooperative targets are automatically assigned to their flight plan data as soon as MLAT coverage is available. If this is not the case, targets can always be manually correlated via the drag-and-drop functionality from the flight plan list.

**Multi-User:** ACEMAX is a multi-user system, which means that correlations performed at any CWP will appear consistently on all other positions as well – even on remote displays at different units.

**HMI:** The HMI was developed in close cooperation with active ATCOs, working on a day-to-day basis with the ACEMAX system. Controller satisfaction from installations worldwide demonstrates the high usability of the system.

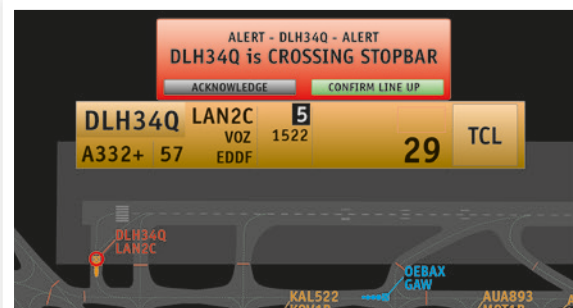


## SMR Video Extraction and Radar Tracking

SMRs are one of the most important surveillance systems at an airport. The ACEMAX radar extractor is capable of interfacing with all existing radars through a highly advanced and sophisticated Scan Converter hardware module that delivers the following features:

- ▶ The Scan Converter can be linked and adapted to analogue or digital radar interfaces, providing the customer with maximum flexibility regarding their choice of radar.

- ▶ The radar extractor generates output information (video and plots) that can be transmitted on conventional local area networks and requires little bandwidth compared to other video distribution systems.



## Safety Logic

During peak traffic, ATCOs require more assistance to avoid possible ground traffic conflicts. The ACEMAX tracking and labelling features ensure that a controller is provided with the proper information to reach a higher situational awareness. ACEMAX additionally provides conflict detection and safety net alerting features to support the day-to-day operations in a tower. The following provides an outline of the most prominent alerts:

- ▶ Stop bar crossing
- ▶ Runway incursion
- ▶ Area infringement
- ▶ Clearance adherence

This and many other features can be configured in accordance with local procedures and requirements.



## Key Features

- Open and modular architecture
- Extensive HMI, configurable at the CWP on a per-user and per-role basis
- Collaborative labelling - manually assigned labels are immediately visible on all CWPs
- Extensive logging and statistics of all activities
- Statistics functions are available enabling evaluation and optimization
- Data archive and replay functions
- HMI can be configured to meet the specific needs of any airport situation

- Easy-to-edit airport maps with own map editor
- EUROCAE ED-87 compliant with dedicated sensor analysis and evaluation tool chain

## Benefits

- Increased capacity and enhanced safety
- Capacity and safety can be maintained under all weather conditions
- Enhanced efficiency and safety when integrated with an Electronic Flight Strip System
- Easy expendable to meet and support future requirements and procedures



ADB SAFEGATE is a leading provider of intelligent solutions that deliver superior airport performance from approach to departure. We partner with airports and airlines to analyze their current structures and operations, and jointly identify and solve bottlenecks. Our consultative approach enables airports to improve efficiency, enhance safety and environmental sustainability, as well as reduce operational costs. Our portfolio includes solutions and services that harmonize airport performance, tackling every aspect of traffic handling and guidance, from approach, runway and taxiway lighting, to tower-based traffic control systems and intelligent gate and docking automation.

ADB SAFEGATE has 900+ employees in more than 20 countries and serves some 2,000+ airports in more than 175 countries.

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