# AIRPORT INTEGRATED MANAGEMENT SYSTEM

AIMS (Airport Integrated Management System) has been designed to provide an advanced Support System to Operations Management in terms of processes and information for coordinating the overall airport activities through the real-time integration and correlation of all airport related systems.

The current technological framework among airport stakeholders is completely fragmented. Each stakeholder provides its own services: managing resources, sharing information, taking decisions in different ways; they also use different communication tools and ICT systems that are not harmonized or interconnected with the ones used by different airport operators.

This fragmentation is the major obstacle to total efficiency of the airport. Moreover, communication flow is limited, involving few stakeholders without a consistent integrated information.

Given such situation, any critical event occurring at the airport can increase the complexity – and inefficiency - of the airport's overall operation. Enhanced processes and data sharing techniques are needed to improve interoperability. In addition, information flows should be combined in order to provide a synoptic common view, correlating systems and decision effects.

## THE SOLUTION

Within this context, the AIMS solution represents an overall ICT system able to provide airport stakeholders with increased efficiency and predictability in their operational activities, also fostering a stronger integration with Air Navigation Service Provider processes.

Thanks to this holistic approach, the system will provide airport operators with a platform through which they can obtain situational awareness of problems and can agree joint decisions, by evaluating which systems could be affected and defining trade-off actions when necessary.

LEONARDO
SECURITY & INFORMATION SYSTEMS

leonardocompany.com

# AIMS

AIMS is also intended in the frame of a Total Airport System, in which airport process chains and their mutual outcomes are integrated with ATM processes.

## THE SYSTEM

Based on a System of Systems approach, AIMS provides a collaborative working integrated environment, to define suitable intervention and agree on the best procedures to be applied. AIMS manages the different airport information flows by means of two major elements:
- An integration platform enabling real-time information exchange among systems and subsystems
- An advanced Collaborative Decision System providing a common picture to support the daily activities of airport operators

**The Integration Platform**
The integration platform incorporates airport systems and COTS hardware, using a modular and scalable architecture suitable for airport growth and able to integrate heterogeneous information coming from different airport sub-systems. This solution improves the management of airport resources and processes, then the overall efficiency of the whole system.

The integration platform is based on SWIM (System Wide Information Management), the network structure that enables seamless information sharing between air transport stakeholders, such as Airport Operators, Airlines and Air Navigation Service Providers (ANSP). The SWIM role is widely recognized within both SESAR and NEXT Gen initiatives. The integration platform allows to define a common language based on a data model able to represent heterogeneous data into a unique logical view.

The middleware platform supports information exchange, data management and interoperability between systems, also developing specific interfaces to ensure their smooth integration with new or existing legacy systems within the framework.

## COLLABORATIVE DECISION SYSTEM (CDS)

The AIMS CDS is the core element that provides airport operators with a global view that improves situational awareness and supports the achievement of joint decisions. Based upon a service-oriented architecture, CDS collects and analyses information, displays resulting data in a virtual situation room where airport operators and stakeholders collaborate to develop, coordinate, maintain and communicate real-time joint plans in their specific area of responsibility.

The overall coordination of all airport activities guarantees resource management, performance of short and long time operations and the Collaborative Decision Making process. To this aim, CDS performs the following main activities:
- Collect all the essential data from airport daily operations through the integration platform
- Consolidate, process, analyse and distribute the different amount of data pertaining to all systems (handling, apron, passenger flow management, baggage handling, vehicle and aircraft fleet, security) involved in the airport operations
- Enable the interoperability between ATM and airport processes
- Identify potential real-time bottlenecks and implement proactive solutions to prevent operational disruptions, by supporting the collaborative decision-making process among airport stakeholders

## KEY POINTS

Focused on the improvement of airport operational efficiency in the frame of a total airport management concept, the AIMS solution features the following key points:
- Consistent use of the overall information and knowledge provided and circulated between airport operators and stakeholders, through interoperability and secure interconnections
- Management of overall airport operations and support to resources optimal allocation between the airport operators based on Collaborative Decision Making
- Capability to support airport growth, with a service oriented approach
- Improved situational awareness through the common operational picture