LEADINSKY

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SECURITY & INFORMATION SYSTEMS

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NEW GENERATION AIR TRAFFIC CONTROL SYSTEM

- Designed, implemented and deployed to fully respect air traffic safety requirements
- SESAR compliant: improved safety and performance through integration of SESAR solutions
- System architecture designed for each customer/ environment: from small Airports or Approach Control Units to very large nationwide ATM systems, integrating remote towers and A-SMGCS
- All features implemented to reduce the ATCOs workloads (DMAN, Surface Manager, Terminal Data Link Services, SCA, Runway Manager and Airport Performance Monitoring)
- A modular and flexible solution able to implement any local procedure and site-specific requirement
- Supports the increasing complexity of air traffic control through the integration of heterogeneous data sources into a single traffic picture
- Provides an accurate, continuous and consistent update of trajectory data after controllers' inputs thanks to sophisticated prediction algorithms
- Integrates all the surveillance data (PSR, SSR, M-SSR, SMR, ADS-B, MLAT, WAM, ADS-C) and uses Virtual Tracks (FPT) to fill the surveillance gaps
- Operational Display System (ODS) easy to use (one click away)
- Seamless integration with ARTAS to ensure the highest level of accuracy and reliability
- Supports civil-military coordination within a continuum airspace and two-ways interoperability for civil and military missions
- Efficient and effective fall-back and disaster recovery systems designed to enhance safety and reliability
- Advanced ATC tools (Monitoring Aids, Conflict Detection & Resolution, Arrival Manager, Airborne Separation Assistance Systems, Time Based Separation, I4D)
- Dependable voice and digital communication systems
- Fully integrated datalink applications regulated by international standards to support air ground communication (AFN, CM, CPDLC, ADS-C, DCL, D-ATIS) and data exchange
- Increased enroute and airport performance and safety by means of innovative SESAR solutions (i.e. Departure Manager, Surface Manager, Surface Control Area and Runway Manager)

A reliable, dependable system. The best choice for Air Navigation Service Providers and Air Traffic Controllers.

LeadInSky (New Generation Air Traffic Control System) is the latest generation of ATC Systems, an evolution of SATCAS merged with a SESAR compliant solution. LeadInSky has been designed on solid cornerstones in order to meet the most demanding operational requirements and integrates a wide range of innovative products and tools.

- Fully redundant system from basic hardware component to sophisticated software implemented logics to reduce risk and increase system availability
- Easy to maintain in order to reduce the life cycle costs
- High performance and capacity figures
- Compliant with latest international standards
- Developed leveraging an installed base in over 150 countries.

THE CONTEXT

The progressive growth of air traffic with a trend of around 6% more flights each year calls for more efficient operations and improved technology through a new generation of ATM Systems.

This is why currently Air Traffic Control is moving towards strategic Air Traffic Management, while Air Navigation Service Providers need to be supported in improving their services in terms of efficiency, safety and environmental impact.

In order to face this increasingly complex scenario, the company has developed LeadInSky to provide seamless support to ATM, by integrating the most advanced solution for Ground and En Route ATM based on the new operational concepts derived from international R&D programmes, such as SESAR.

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In this respect, LeadInSky has been designed as a distributed system where:

- High Availability is achieved by fault tolerance mechanism implemented through HW and SW redundancy. Fault Detection functions permit standby roles to take over any application switch over. Several degraded mode solutions are also applied to minimize the impact of services unavailability on the ATC operation
- High Performance is achieved through the balanced distribution of the computational load on HW resources. The availability on each system node of the up to-date set of ATC information (replicated database) is also an enabler for higher performance
- Usability and modifiability are achieved separating the ATC business applications from the general purpose ones (e.g. middleware). Moreover, every user interface is separated from the other applications and supplied with a comprehensive set of customisation tools allowing its perfect adaptation to the operational environment
- Interoperability is achieved through the SWIM BOX which enables the system to receive aeronautical and meteo information data from a generic source.

FALL BACK & DISASTER RECOVERY SOLUTIONS

Multilevel fallback logics are implemented providing high availability of data processing and consistency through different levels of redundancy. Local hardware or application switch over are managed through hot/stand-by configurations, available from any central processing unit.

Radar data are distributed for multiradar processing and for direct access as well, providing the powerful capability to maintain track/flight plan correlations after any system state transition. Most of flight data management, performed by centralised applications during nominal operation, can also be executed in degraded mode at any controller working station, satisfying elementary requirements for safe air traffic navigation.

LeadInSky can also be configured in order to accomplish “Fall Back” or “Disaster Recovery” tasks. An Operational-to-Fall Back logic aligns operational configuration, flight and surveillance data.

Complete and immediate recovery of air traffic control capability is thus guaranteed in case of total failure of the operational system.

An Operational-to-Disaster Recovery logic is available as well. Through a complete alignment of operational configuration, flight and surveillance data, an immediate and full recover of air traffic control capability is possible at a remote location in case of disastrous events affecting the operational site.

These solutions have been built to never let you down. No data lost and no gap in airspace control if and when a failure occurs. In case of total shut down of one operational site, another can immediatley acquire control. Safe operations are continuosly ensured throughout the airspace.

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LEADINSKY: A GLANCE INTO THE FUTURE

LeadInSky is continuously under improvement due to its involvement into large European research and development projects, such as is today SESAR and in the future will be SESAR 2020.

LeadInSky will be enhanced in different functional areas by the SESAR 2020 funding:

- PJ01 and PJ02 to address new concepts of AMAN, coupling AMAN/DMAN, and ASAS, as well as TBS tools
- PJ10 and PJ11 to enrich the advisories to ATCO detecting and managing the mid term conflicts, as well as Safety Net tool increasing the situation awareness and support to ATCO in taking decisions in presence of critical conditions
- PJ18 to increase trajectory prediction into the FDP by the implementation of:
  - New sharing mechanism for SBT/SMT and RBT/RMT
  - Full 4D operation to harmonize the trajectory prediction among the different ATC stakeholders.

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SIS MM08612 1-17