COMSOFT

atm automation solution

PRISMA

ATM AUTOMATION SOLUTION

HIGHLIGHTS

- Powerful and highly flexible ATM Automation Solution for En-Route, Approach and Tower Control
- User friendly, adaptable and scalable system for all data processing functions
- FDPS with dynamic flight profiles, inter-sector coordination, accurate estimations, revision management and traffic forecast
- State-of-the-art multi-sensor SDPS, supporting PSR, SSR, Mode S, ADS-Band WAM sources
- Complete set of innovative ground-based Safety Net functions
- Data, voice and screen content recording, and replay
- Integrated electronic strip subsystem
- Sophisticated Arrival Management
- Integrated Flow Management Capability
PRISMA is an advanced and powerful modular solution for ATM automation. Consisting of highly sophisticated modules with outstanding performance and functionality, COMSOFT offers an innovative ATM automation system for area control centres, approach units and tower control.

PRISMA’s open and modular architecture allows for individual and optimal site-specific tailoring and easy integration into all kinds of environments. Its advanced components with standard interfaces ensure the smooth and swift integration.

By means of advanced algorithms PRISMA provides highly accurate information to connected systems contributing to collaborative decision making at airport level, as well as for the purpose of air traffic flow and capacity management.

The method

Its modular design allows PRISMA to be adapted to different environments, from stand-alone flight plan processing for supporting procedural control, to an integrated ATM automation incorporating radars, Multilateration clusters and ADS-B Sensors, and fully automatic flight plan data processing (FDPS) and surveillance data processing system (SDPS).

PRISMA enables the ANSP to interface with airports and Airline Operation Centres (AOC) for the information exchange, contributing to a collaborative decision-making process.

PRISMA features a comprehensive set of Safety Net functions, traffic statistics and traffic forecast.
PRISMA FUNCTIONALITY

FLIGHT PLAN DATA PROCESSING SYSTEM

PRISMA’s flight plan data processing system (FDPS) manages the operational status of all flights of interest and under control of the ATCO, receiving and automatically processing flight plan messages from AFTN/AMHS networks. The PRISMA FDPS automatically extracts flight paths, calculates and updates flight profiles and applies an incremental online processing mechanism that guarantees an instant response to all human interactions, as well as quick adaptation to situational changes. With OLDI and AIDC interfaces, PRISMA FDPS improves coordination with adjacent ATS units, reducing controller’s workload.

PRISMA’s FDPS is hosted on fully redundant servers in order to guarantee utmost data availability in case of catastrophic failure of a server element, allowing the duplication of all major data sets, including the active flight data base, traffic statistics and dynamic profiles as well as forecasts for sectors, waypoints and airports, and ensuring seamless and transparent switchover in case of single-server failure.

FDPS Characteristics:
- Powerful redundant Flight Plan Data Processing for instant response
- Comprehensive and detailed
- Traffic forecast and statistics
- Billing data collection
- Internal and external coordination
- Interfaces for AFTN, AMHS, OLDI, AIDC
- Meteorological data processing
- Featuring RVSM and P-RNAV support
- Integrated performance monitor
- Multi-Aerodrome capability

PRISMA MULTI-SENSOR SURVEILLANCE DATA PROCESSING SYSTEM

The PRISMA multi-sensor surveillance data processing system handles data from all kinds of surveillance sources, such as conventional radar – including primary, secondary and Mode S radar, – ADS-B and Multilateration.

All data is processed by state-of-the-art interacting multiple model tracking algorithms, creating a consolidated, real-time air situation picture.

SDPS characteristics:
- Interacting multiple model tracking
- Support of:
  - Conventional PSR and (M)SSR
  - Mode S
  - ADS-B
  - Multilateration

COMSOFT’s integrated ATM solution including (left to right) the ARTAS tracker, PRISMA automation solution, CADAS user terminal, and ADS-B/WAM solution.
PRISMA FUNCTIONALITY

PRISMA SAFETY NETS

PRISMA Safety Nets support air traffic services, offering a crucial contribution to the safety of air traffic, alerting the ATCO’s to safety critical situations.

Powerful algorithms, based on probabilistic methods, achieve the best balance between in-time safety alarms and minimal nuisance alerts. In addition PRISMA includes situational safety nets that monitor aircraft movements and their adherence to given clearances.

Safety Nets Characteristics:

- Short Term Conflict Alert (STCA)
- Minimum Safe Altitude Warning (MSAW) with integrated Approach Path Monitoring (APM)
- Area Proximity Warning APW and Restricted Area Intrusion Alert (RAI)
- Advanced joint trajectory prediction model
- Probabilistic assessment of safety threat
- Route Adherence Monitoring (RAM) and Cleared Level Adherence Monitor (CLAM)
- MTCD – Meantime Conflict Detection

PRISMA ARRIVAL MANAGER

With the PRISMA arrival manager (AMAN) the full runway capacity is consistently utilised. Through clear indications in all phases of an inbound flight, the arrival manager assures that optimal landing times, under consideration of individual aircraft parameter and separation criteria, are achieved and delay times are kept to a minimum.

The AMAN’s business rules support any airport specific runway allocations and CDM constraints to be applied to inbound aircraft transparent to the controller, contributing not only to the efficiency of runway utilisation but to the performance of the airport as a whole.

INTEGRATION INTO EXISTING ENVIRONMENTS

Perfectly suited for integration and with the ability to effortlessly receive surveillance data from any tracking system, or flight plan data from any external source, are stand-out features of a system ready to enhance existing communication, navigation and surveillance infrastructures.
FLOW MANAGEMENT

PRISMA offers an integrated departure flow management that can be flexibly adapted to airspace constraints. It dynamically balances airspace availability and demand. Flow information can be shared through terminals, including internet with airports and airlines.

COMPLIANCE

PRISMA complies with internationally recognised standards that support ESARR conformant implementation and has been designed and developed in accordance with stringent mission critical system requirements rendering ATC services, thus significantly contributing to the safety of air traffic.

ASBU

PRISMA is fully compliant with ICAO Aviation System Block Upgrades, Block 0 and 1.

PRISMA Safety Net functions are also fully compliant with ICAO Aviation System Block Upgrades, Block 0 and 1.

REFERENCES

Controllers in the UAE have operated a PRISMA system since 2009, as a response to soaring air traffic numbers. They handle more than 700,000 flights per year.

Since early 2013 PRISMA has been the primary ATM automation system at Jakarta Airport, serving more than 1,200 daily movements and more than 200 overflights.

In 2014 Papua New Guinea also selected PRISMA for their main ATM system, allowing a user friendly and flexible system for all data processing functions.
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