PRISMA

Modular ATM automation system

Scalable from stand-alone to fully integrated centre solution

Air Traffic Management

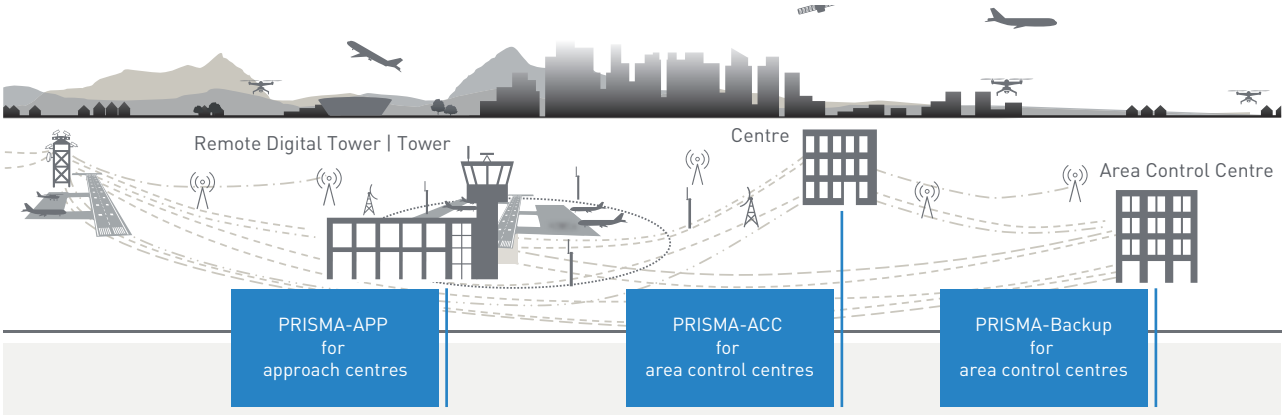
FREQUENTIS

FOR A SAFER WORLD

Covering a wide range of use cases

PRISMA is a scalable, fully functional ATM automation system, supporting all air navigation service functions, from pre-flight planning to real-time situational awareness including UTM traffic in a single, modern solution. PRISMA offers air traffic services, including approach control services, flight information services and alerting services, with an advanced feature set.

The modular nature of the system makes PRISMA suited for multiple use cases, such as tower, approach and backup/contingency system. PRISMA can be deployed as a stand-alone solution, as a complete ATM automation system or as a fully integrated solution based on the Frequentis MOSAIX platform for managing integrated ATM applications across controller working positions, control rooms and operational centres.



PRISMA application landscape

PRISMA-ACC: for reliability and accuracy

PRISMA-ACC is a full-featured modular ATM automation solution that ensures the safe and efficient provision of flight information services and alerting services. PRISMA-ACC is designed to continuously exchange flight and flow data, as well as aeronautical and weather data, with adjacent regions and external airspace users – thereby enabling collaborative operations. The solution comprises flight data processing systems (FDPS), a safety net system, a controller working position (CWP) composed of surveillance and flight data displays, control and monitoring displays, and a complete legal recording unit.

PRISMA-APP: synchronising en-route and airport operations

PRISMA-APP is a modular ATM automation system that processes and exchanges flight and surveillance data to facilitate the coordination of flights with third-party ATM systems servicing adjacent airspaces such as upper area control centres or towers. PRISMA-APP features a flight data processing system for the automated processing of flight data. This supports the provision of air traffic services (ATS) dedicated to the special conditions of time-critical and narrow airspaces such as for terminal radar approach control services that typically require fast and effective decision making.

PRISMA-BACKUP: ensuring business continuity

PRISMA-BACKUP is designed to help ANSPs boost safety and ensure business continuity. The solution can be used to extend an existing ATM automation system with contingency and fall-back capabilities, with the ability to take over operations seamlessly during planned or unplanned outages of the primary system. Additionally, PRISMA-BACKUP provides virtual-centre capabilities that enable ANSPs to achieve location-independent operations whereby any controller can control any flight from any site.

Flexible PRISMA ATM modules

The PRISMA product family offers a full range of ATM modules designed to match the most varied application scenarios, ranging from stand-alone solutions to integrated surveillance data and flight plan data processing systems.

PRISMA's fully expandable and modular system design enables the continuous addition of functionality, supporting a buy-as-you-grow approach. Based on extensive experience in advanced air traffic automation systems our PRISMA solution can be easily integrated with 3rd-party control environment, legacy and web-based environments.

PRISMA can vertically integrate information along the complete surveillance data chain: from multiple sensor sources, to leading European trackers like ARTAS or multi sensor data fusion systems. Ultimately it presents different views of this data, guaranteeing seamless situational awareness during all phases of flight.

PRISMA ATM automation modules are designed by controllers for controllers, and driven by ATC operational experts. The system design is based on recommended practices and is compliant with ICAO and Eurocontrol standards. Ongoing development is aligned with future operational demands such as the ICAO ASBU initiative and the SESAR virtual centre framework.

Flight data processing system (FDPS)

The FDPS module for the automated processing of flight plan data and surveillance data for air traffic services. FDPS offers the option to forecast routes, calculate estimated times of arrival and validate distances between targets.

Safety nets (SNET)

The SNET functionality comprises short-term conflict alert (STCA), minimum safe altitude warning (MSAW), area proximity warning (APW), clearance level adherence monitor (CLAM), approach path monitoring (APM) and route adherence monitoring (RAM) all designed to assist the ATCO with optimal situational awareness. The SNET module allows displaying prominent visual and aural warnings, as well as a graphical representation of the conflicts.

Controller working position (CWP)

The high-performance, flexible and configurable HMI for an integrated presentation of all flight plan and surveillance data (ADS-B, multilateration, radar, ADS-C and pilot position reports) provides seamless air/ground awareness on one screen.

PRISMA CWP in combination with other Frequentis ATM modules forms a fully integrated surveillance data processing system.

Air situation display (ASD)

The Air situation display (ASD) is a cost-efficient awareness display system ASD features one main traffic window including weather information, enabling the controllers to stay focused on the traffic in the assigned area. Additional support windows provide workflow-oriented information, to significantly reduce controller workload.

Optimised situational awareness by seamless integration

In their everyday work air traffic controllers are often confronted with multiple stand-alone applications from different vendors. Simultaneously they have to deal with a number of different systems providing relevant information. This is extremely time-consuming and can become an important factor especially in times of high traffic load, which already increases operators' stress levels considerably.

With PRISMA we have developed a workflow-oriented controller working position, which combines all essential information into one HMI that improves situational awareness and ensures fast reaction times.

Selected references

Based on PRISMA's versatile architecture many application scenarios and areas of use are possible. Below, some references for the most common system configurations are shown.

Approach automation solution for Naviair at Billund airport in Denmark

The approach solution is designed to autonomously process flight plan and surveillance data for air traffic services within a terminal manoeuvring area. PRISMA's automated functions for radar control of airborne traffic are added to the remote digital tower services expanding the limits of the ATC tower jurisdiction for reduction of operational costs.

Tower, approach and en-route system at Jakarta Soekarno-Hatta airport in Indonesia

PRISMA acts as main ATM system at Jakarta service centre. The ATM en-route and approach contingency system ensure stability, safety and efficiency of air traffic control services at the airport and the surrounding terminal airspace. The system is equipped with the latest technology such as pro-active controller support and SNET functions that help controllers identify potential hazards, improving air traffic safety. Additional controller working positions in the tower provide joint situational awareness across all flight phases.

En-route system with approach backup capability at Sheikh Zayed Centre for GCAA in Abu Dhabi

This solution pairs processed surveillance data with up-to-date flight plans and presents the result as one piece of integrated information to the air traffic controller. This pioneering system comprised the first operational arrival management (AMAN) solution in the Middle East, together with departure flow management and SNET modules. The online data interface allows for automatic exchange of data necessary for the coordination of flights and produces an accurate picture, while simplifying the entire procedure.

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