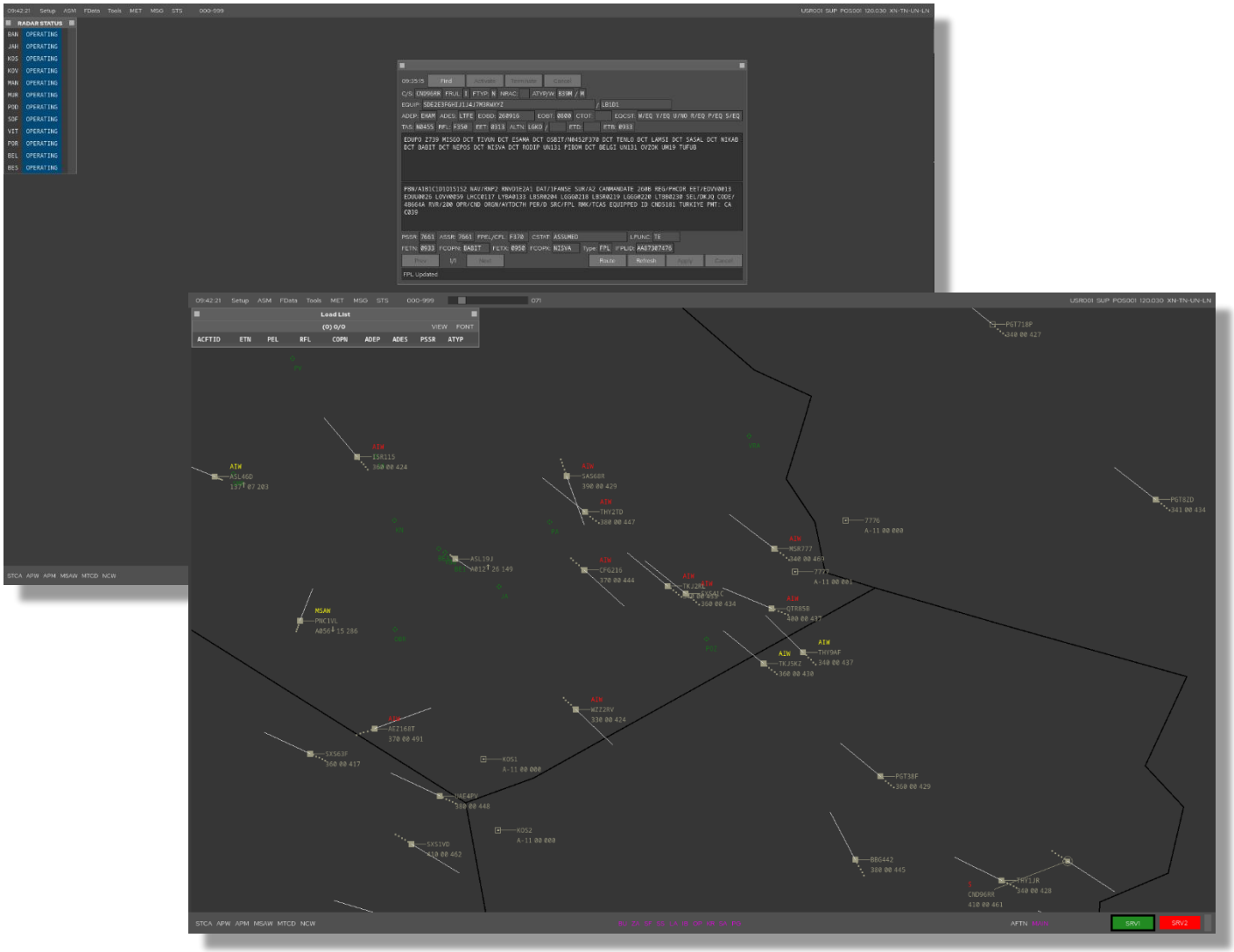
Contingency System

The complete contingency/fallback solution

Based on our well-established operational system which supports En-route, Approach and Tower/Ground operations



- ***Runs continuously in parallel with, and independently of the main ATM system***
- ***HMI identical to main ATM system***
- ***Resilient to circumstances that cause the main system to fail***
- ***Aligned with main ATM system – same correlation data, clearances, flight jurisdiction***

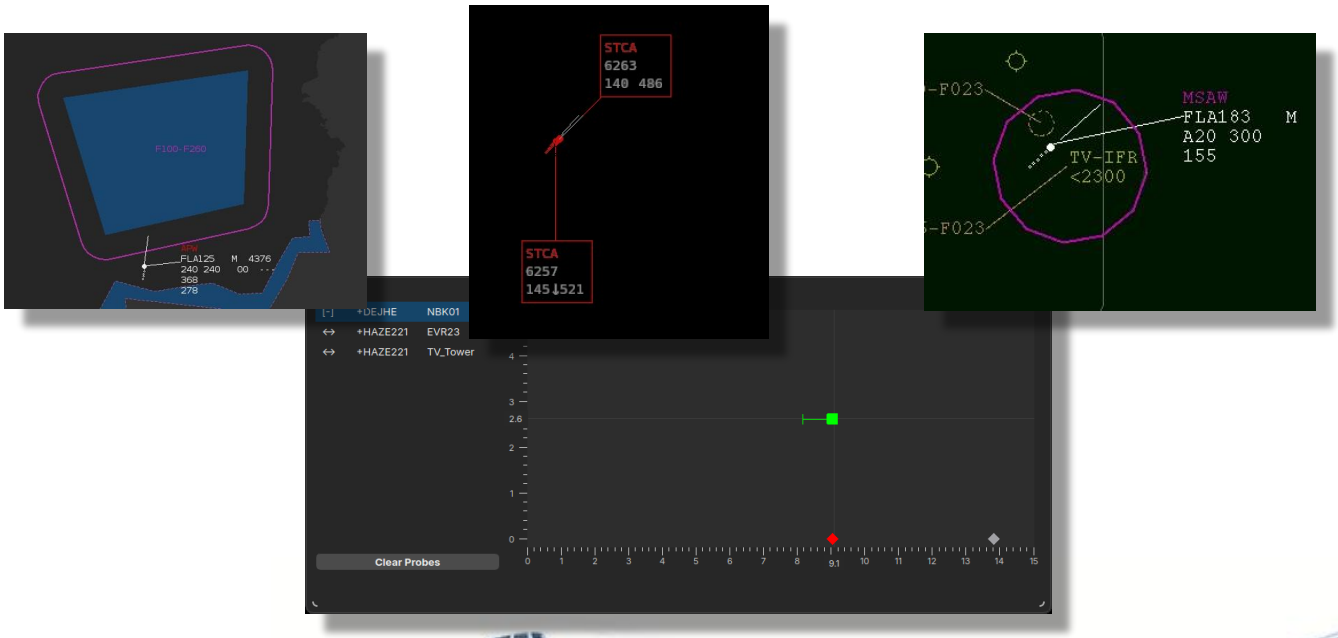


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Overview

The contingency system applies the following principles:

- **Individually adapted HMI**
  Mirrors main ATM system. This minimises the need for training on FBS, stress and risk for controller mistakes at emergency switchover to FBS.
- **Shared equipment**
  Same monitor, keyboard and mouse as the main ATM system
- **Adapted functions**
  Behaviour and tolerances match the main ATM system, e.g. safety nets
- **Separate FPL database**
  Provides the capability to work independently, i.e. without receiving data from the main system. In this mode the contingency system automatically processes ATS messages.
- **Qualifies as a main ATM system**
  if it is implemented with redundant configuration regarding server and other equipment which enables availability requirements
- **Mitigation of system errors; high availability**
  Achieved by hardware redundancy on server and communication level, fault tolerant duplicated servers, redundant network configuration
- **Upgradeable to a full ATM system**
  since it is essentially a parallel version of SiATM's full-scale, state-of-the-art main operational ATM system, *ATRACC*





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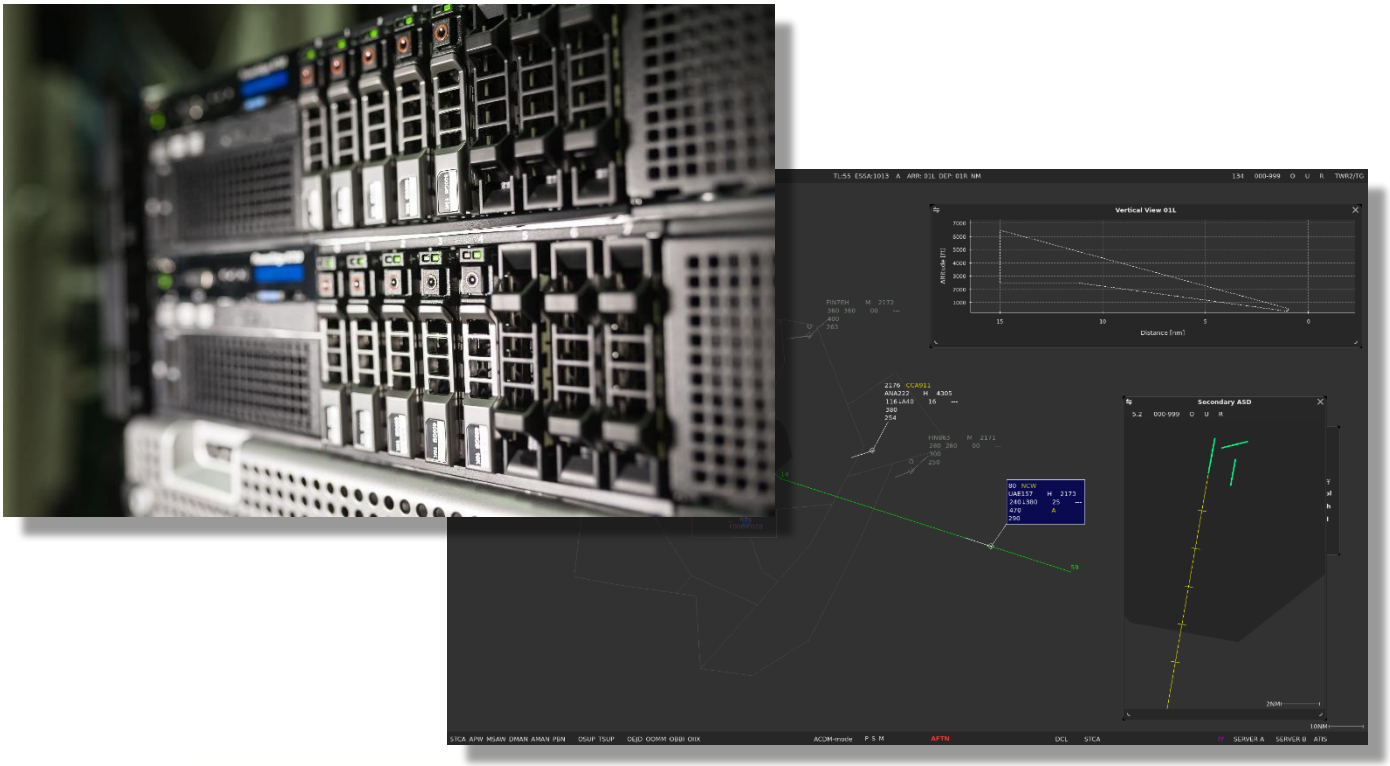
Technical Summary

The main purpose of the contingency system is to provide controllers with automatic support in case of:

- Sudden unexpected failure of the main ATM system
- Planned switch-off of the main ATM system for shorter periods
- Unavailability of the main ATM system for longer periods

The following main functionalities and technical aspects are included:

- Sensor data processing, with true multi sensor tracking
- Elementary and enhanced Mode-S
- Handling of flight plans adapted to what the main system can provide
- Full set of safety nets developed according to EUROCONTROL specifications
- Interface to the main system, AMHS/FTN, MET-services etc.
- Recording and playback, including voice
- Dual redundant or single configuration
- Standard SNMP monitoring can provide data to central monitoring systems
- Automatic adaptation to connected monitors, i.e. can use the same monitors as the main system via a KVM- switch
- COTS hardware and Linux operational system





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Implementations

HONG KONG

UFS is a contingency, test and development system for the Hong Kong ATM system for en-route and approach control.

It is mainly intended as a clear-the-sky system and consists of 100 working positions. It receives surveillance data from radar and ADS-B stations.



CROATIA

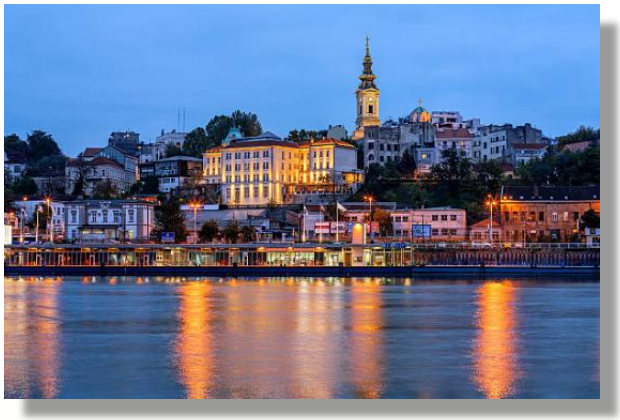


'ARES' is the contingency, test and development system for en-route and approach at five sites – Zagreb, Pula, Zadar, Split and Dubrovnik.

It receives surveillance data from radar, ADS-B and MLAT stations. ARES has redundant fault-tolerant system configuration. ARES is connected to the AFTN, processes flight plan data automatically and FPL data received from the main system is extensive. ARES consists of 70 working positions

SERBIA AND MONTENEGRO

'FASOS' is the contingency, test and development system in Serbia and Montenegro. It provides the full functionality of the main ATM system, together with additional capabilities for more than 70 working positions.



It can handle outages of the main system enabling normal traffic management in non-degraded conditions.

FASOS is connected to the AFTN and processes extensive flight plan data automatically. It provides multi sensor tracking, safety nets and has redundant fault-tolerant system configuration.



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