IMS4 ATIS / VOLMET

Automatic Terminal Information Service / Flight Weather Report

The IMS4 ATIS / VOLMET system provides arrival, departure or combined ATIS and VOLMET broadcast and datalink services for airports from regional up to major international airports.

Fully automated and cost-effective operation

Analog or VoIP broadcast

Easy adaptation to various airport conditions and report composition rules

Intuitive, customizable and user-friendly interface

ICAO and WMO compliant

The system can be installed as a standalone or as an integrated part of the MicroStep-MIS Automated Weather Observation System (IMS4 AWOS) with permanent access to AWOS data. The open architecture allows easy expansion from the basic single channel system (combined departure and arrival ATIS service) up to the multi-channel ATIS / VOLMET system (separate broadcasting channels for airport with multiple runways, multi-channel service for group of airports etc.).

Software configuration allows easy adaptation to specific airport conditions, national rules, and voice report composition rules.

The variety of system options includes but is not limited to:

- multiple channels and / or multiple languages (English, Spanish, etc.)
- dual hot-failover configuration and / or redundant transmitter equipment as a guaranty of the highest possible system reliability;
- remote operator and control positions for convenient authorized access to the system;
- telephone interface for the preview of current broadcasted reports.

The IMS4 ATIS / VOLMET user interface is intuitive and easily operated. The fully automated mode allows cost effective operation without human intervention. The semi-automated or manual mode can be also configured for specific channels, if required, with visual and audible warnings announcing new data availability and new report compilation.

Operational and technical parameters

- Multi-channel design supporting any combination of ATIS / VOLMET services for a single airport or for a group of airports:
  - separate channels with independent configuration for arrival, departure or combined ATIS;
  - VOLMET channel(-s);
  - fully or semi-automatic or manual interactive mode of report composition selectable separately for each channel.
- preview and manual modification of report in code, text, and voice forms prior to broadcasting;
- the broadcasting of current report at each channel may be interrupted at any time manually and / or automatically upon arrival of important data;
- long-term storage of reports, data, statistics and log files including logs of raw data communication with 3rd party systems.

Automatic data processing

The IMS4 ATIS / VOLMET fully supports METAR / SPECI, METREP / SPECIAL, TREND, TAF, SIGMET, AIRMET, SNOWTAM, NOTAM, GRF/RCR codes, low level wind shear messages and other sources. The system automatically receives the codes, decompiles bulletins, recognizes, handles the validity of particular report (obsolete data, ahead-of-time data), and alerts the important or emergency data.

The quality control of the incoming data is performed automatically and generates an audio and visual alert in case of incorrect data are received. The invalid data can be inspected by user and returned to system.

In the automatic mode the data are converted into the high quality voice broadcast without human intervention, in manual interactive mode a visual / audio signal alerts user to confirm / validate received data.

The additional data (not available automatically from external data sources) can be entered manually through the data entry forms.

Speech synthesis

The IMS4 ATIS / VOLMET incorporates general purpose text-to-speech engine capable of synthesis of non-standard user input (free text option) with male and female voices. The messages to be included in VOLMET broadcast are synthesized independently.

Digital service

The system supports D-ATIS and D-VOLMET datalink service in ED-89A format via TCP or RS-232 (as option).

The IMS4 ATIS / VOLMET allows choosing pre-recorded or computer synthesized broadcast for each channel separately, including the option of alternating voices (for example male / female) at each update in order to attract attention to changes in broadcast.

Built-in message monitor

The built-in message monitor displays latest valid codes of particular type (METAR / SPECI, METREP, TAF, SIGMET, AIRMET, and SNOWTAM) for user-defined groups of airports. Clicking on the particular report on the screen the user obtains information about report source (channel, time of receiving, message bulletin) or history of reports for the particular location.

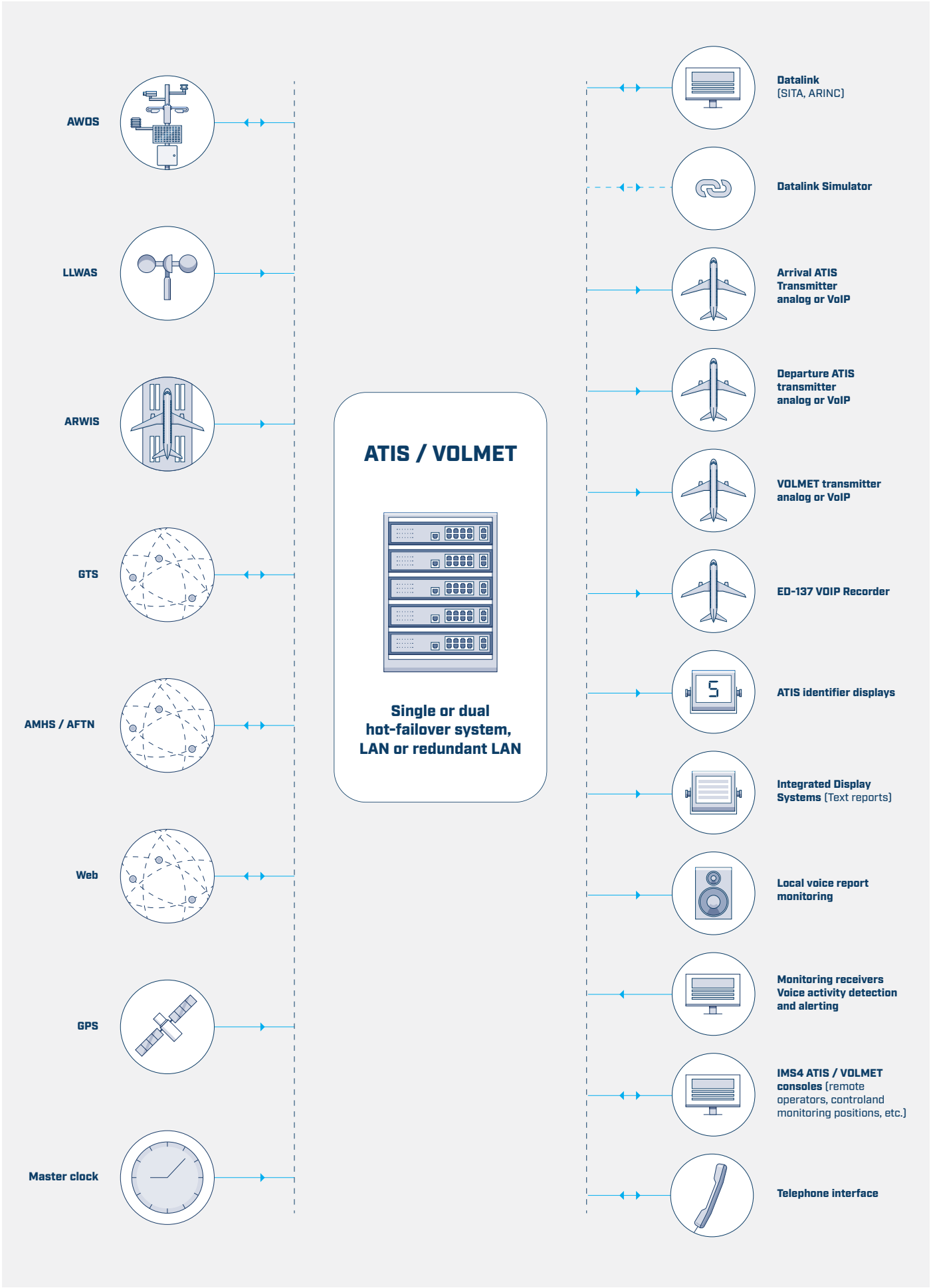
Human-machine interface-integrated web server

The human-machine interface benefits from the latest technology improvements. The IMS4 ATIS / VOLMET system incorporates the built-in web / application server, which provides local as well as remote users with the convenient web interface customized according to the needs of particular user, thus reducing difference between local and remote operator's positions to minimum.

The built-in security mechanisms provide user-configurable tools for limiting user access to particular system modules, channels, or even write access to the particular ATIS report elements according to the permissions related to user names, user roles or IP addresses of remote users. This in combination with web interface makes IMS4 ATIS / VOLMET and ideal system serving group of several airports without compromises in security and / or authorizations.

Modular and open system architecture

The IMS4 ATIS / VOLMET is built on the client / server architecture and uses commercial of-the-shelf components and industry proven technologies wherever possible. The system customizable and easily scalable to meet the future needs resulting from the expansion of airport operation or the regulation changes.


AWOS
LLWAS
ARWIS
GTS
AMHS / AFTN
Web
GPS
Master clock
ATIS / VOLMET
Single or dual hot-failover system, LAN or redundant LAN
Datalink (SITA, ARINC)
Datalink Simulator
Arrival ATIS Transmitter analog or VoIP
Departure ATIS transmitter analog or VoIP
VOLMET transmitter analog or VoIP
ED-137 VOIP Recorder
ATIS identifier displays
Integrated Display Systems (Text reports)
Local voice report monitoring
Monitoring receivers Voice activity detection and alerting
IMS4 ATIS / VOLMET consoles (remote operators, controland monitoring positions, etc.)
Telephone interface

Interfaces

System Specification

- **Multichannel design - combination of ATIS and/or VOLMET channels for one or multiple runways and/or one or group of airports**
- **Selectable fully automated or interactive (semiautomatic) operation of particular channels**
- **Scheduled broadcast on each channel**
- **Configurable for various data sources**
- **LAN/serial interface to AWOS (MicroStep-MIS or 3rd party)**
- **AFTN interface (ITA-2, IA-5)**
- **AMHS interface (P3 protocol)**
- **GTS (Global Telecommunication System of WMO) interfaces - multiple protocols as defined by WMO (asynchronous lines, TCP sockets, file exchange based and FTP file transfer channels)**
- **Master Clock System or built-in GPS module for time synchronization**
- **LAN/serial interface to low-level wind shear alert system**
- **Telephone interface**
- **Automatic receiving, processing, validity handling and text-to-voice conversion of METAR / SPECI, METREPORT / SPECIAL, TREND, TAF, SIGMET, AIRMET, SNOWTAM, GRF**
- **Audio/visual signal upon arrival of invalid or significant data**
- **Advanced report composition control (editing, verification, and preview in text, mandatory or optional play back prior to broadcast)**
- **Manual or automatic (upon arrival of important data) interruption of broadcast at any time**
- **Airport radio broadcast**
- **Audio streaming over TCP/IP**
- **Analog (600 Ω, 0 dB) or EUROCAE ED-137 compliant VoIP broadcast**
- **PTT and audio level control**
- **Datalink (D-ATIS, D-VOLMET) - support of requests and contracts**
- **Errors in the datalink communicatin stored in logs and/or reported as alarm**
- **Alerts on pre-defined numbers of active contracts**
- **General purpose text-to-speech engine (synthetic voice, male/female)**
- **User selectable alternation of voices (male/female) at each update**
- **User editable glossary of standard phrases and abbreviations**
- **User configurable pronunciation**
- **User selectable speech rate**
- **User configurable order of WMO messages in VOLMET broadcast**
- **Free text option**
- **Airport / Tower closure message (with or without weather information)**
- **Possibility to insert user-recorded message into broadcast**
- **Export of ATIS, VOLMET text reports via AFTN, AMHS, or to AWOS, IDS**
- **Modular and open architecture**
- **Multiplatform: Linux or Microsoft Windows**
- **Single server (Windows or Linux) or dual hot-failover system (Linux)**
- **Broadcast not affected by fail-over**
- **Integrated web server**
- **Remote operator positions, remote control and maintenance positions**
- **Flexible security mechanisms of permissions based on user names, roles, IP addresses**
- **XML system configuration (input channels, output channels, system parameters) with web front-end**

- **Audio/visual alerts**
- **Archive of messages, text reports, datalink packets, log tiles with the user configurable retention period**
- **ATIS / VOLMET statistics**

System Options

- **VHF Transmitter/receiver equipment**
- **Multiple broadcast languages (English, Spanish, etc.) including language alternation option within the single broadcast channel**
- **Multiple HMI languages option**

Compliance with standards

The system is being developed since 2006 and adapted to the evolving regulations:

- ICAO Annex 3 Meteorological Service for International Air Navigation
- ICAO Annex 10 Aeronautical Communications
- ICAO Annex 11 Air Traffic Services
- ICAO Annex 15 Aeronautical Information Services
- ICAO EUR Doc 014 SIGMET and AIRMET Guide
- ICAO Doc. 4444 Air Traffic Management
- ICAO Doc. 9377 Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services
- ICAO Doc. 9694 Manual of Air Traffic Services Data Link Applications
- EUROCAE ED-89A
- EUROCAE ED-109A
- EUROCAE ED-137
- Eurocontrol ESARR-6 Software in ATM Functional Systems
- ARINC 623
- EU 923/2012
- EU 373/2017
- WMO No. 306 Manual on Codes
- WMO No. 386 Manual on Global Telecommunication System