



Your partners in any weather



BHANSA Meteorological System

IFATSEA Euro-Conference 2026 | June 11 - 13, 2026, Sarajevo

30+ YEARS OF EXPERIENCE IN AVIATION



45

countries of
installation

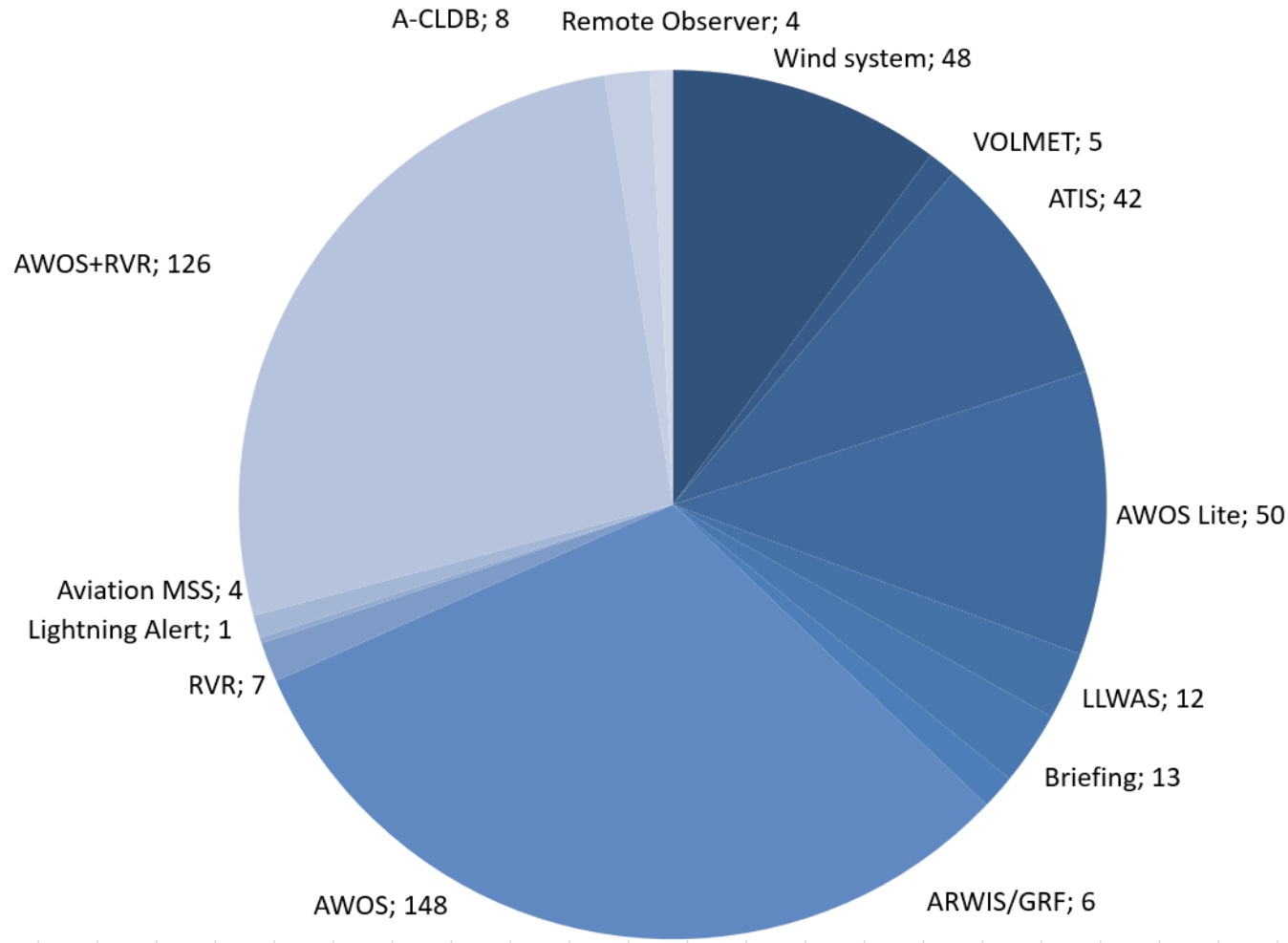
170+

completed
projects

470+

aviation weather
systems

MORE THAN 470 AVIATION SYSTEMS SINCE 1995 SERVING 200,000,000 PASSENGERS ANNUALLY



- **IMS AWOS: 148**
- **IMS AWOS + IMS4 RVR: 126**
- **Wind System: 48**
- **General Aviation: 50**
- **IMS ATIS: 48**
- **IMS VOLMET: 5**
- **IMS LLWAS: 12**
- **IMS RVR: 7**
- **IMS AERO CLDB: 8**
- **IMS ARWIS/GRF: 6**
- **IMS Pilot Briefing: 13**
- **IMS Aviation MSS: 4**
- **IMS ALAS: 1**
- **IMS Remote Observer: 4**

TENDER 1-25-16-4-5009-6/22 PUBLIC PROCUREMENT OF THE NEW METEOROLOGICAL SYSTEMS FOR BHANSA

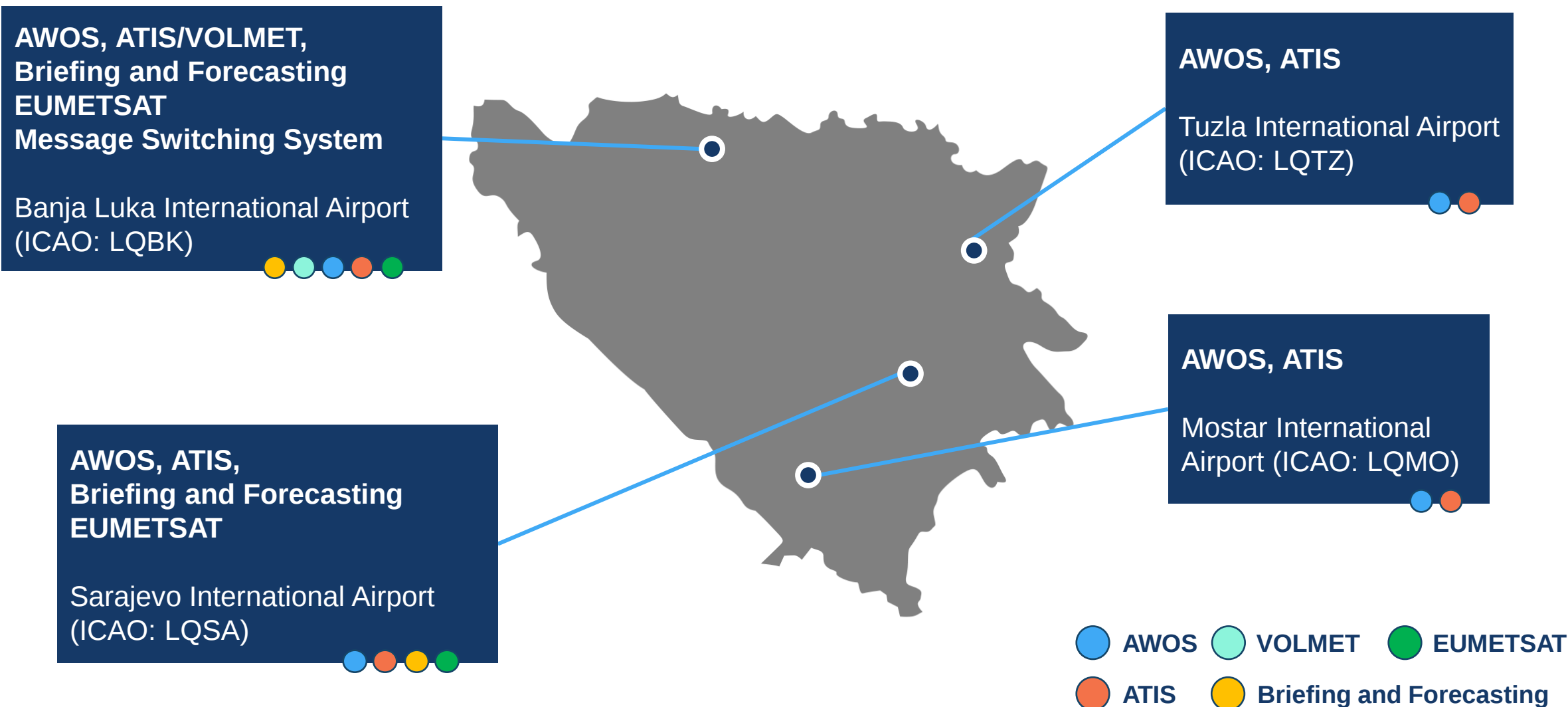
Subject:

1. System for collection, processing and distribution of meteorological data for MW and meteorological forecast services at Airport LQs (**hereinafter referred to as: MET system**)
2. Automated Weather Observing System (AWOS) for Airports LQBK, LQSA, LQTZ, and LQMO (**hereinafter referred to as AWOS systems**)



AGENCIJA ZA PRUŽANJE USLUGA U ZRAČNOJ PLOVIDBI BOSNE I HERCEGOVINE
АГЕНЦИЈА ЗА ПРУЖАЊЕ УСЛУГА У ВАЗДУШНОЈ ПЛОВИДБИ БОСНЕ И ХЕРЦЕГОВИНЕ
BOSNIA AND HERZEGOVINA AIR NAVIGATION SERVICES AGENCY

AVIATION METEOROLOGICAL SYSTEMS FOR BHANSA



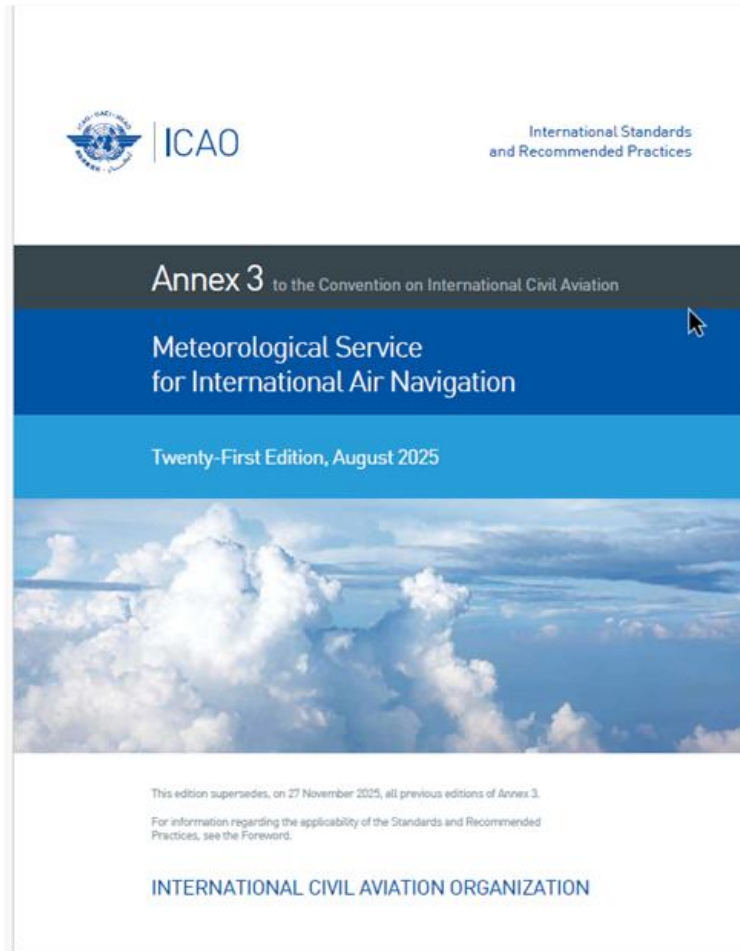
PROJECT GOALS AND TIMELINE



- MET Systems shall be designed to operate 24 hours a day, 365 days a year.
- AWOS system architecture shall be scalable in order to support **ICAO CAT I** to **CAT IIIB** operations
- All software shall meet the **SWAL 4** safety level
- Compliance with applicable **ICAO, WMO, Eurocontrol, EASA, EC** standards
- **IWXXM, SADIS, AMHS, EUMETSAT MSG/MTG**
- **Tender award to consortium MicroStep-MIS/UNIS Telekom: April 17, 2023**
- **Contract: May 16, 2023**
- **Phase 1 (AWOS, ATIS) Site Acceptance:**
 - **AWOS** May 2024
 - **ATIS** May 24, 2024
 - **VOLMET** June 26, 2024
- **Phase 2 (Forecasting System) Site Acceptance: November 26, 2024**

COMPLIANCE

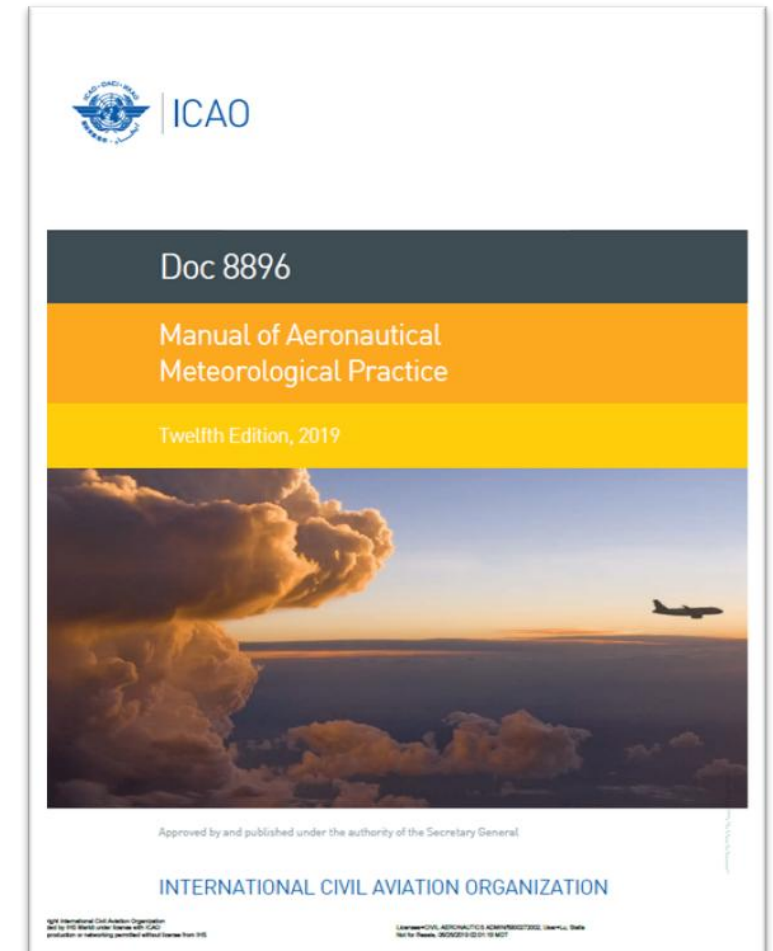
IMS4 complies with ICAO (International Civil Aviation Organization), WMO (World Meteorological Organization) and EUROCAE requirements and recommendations.



ICAO Annex 3 (2025)

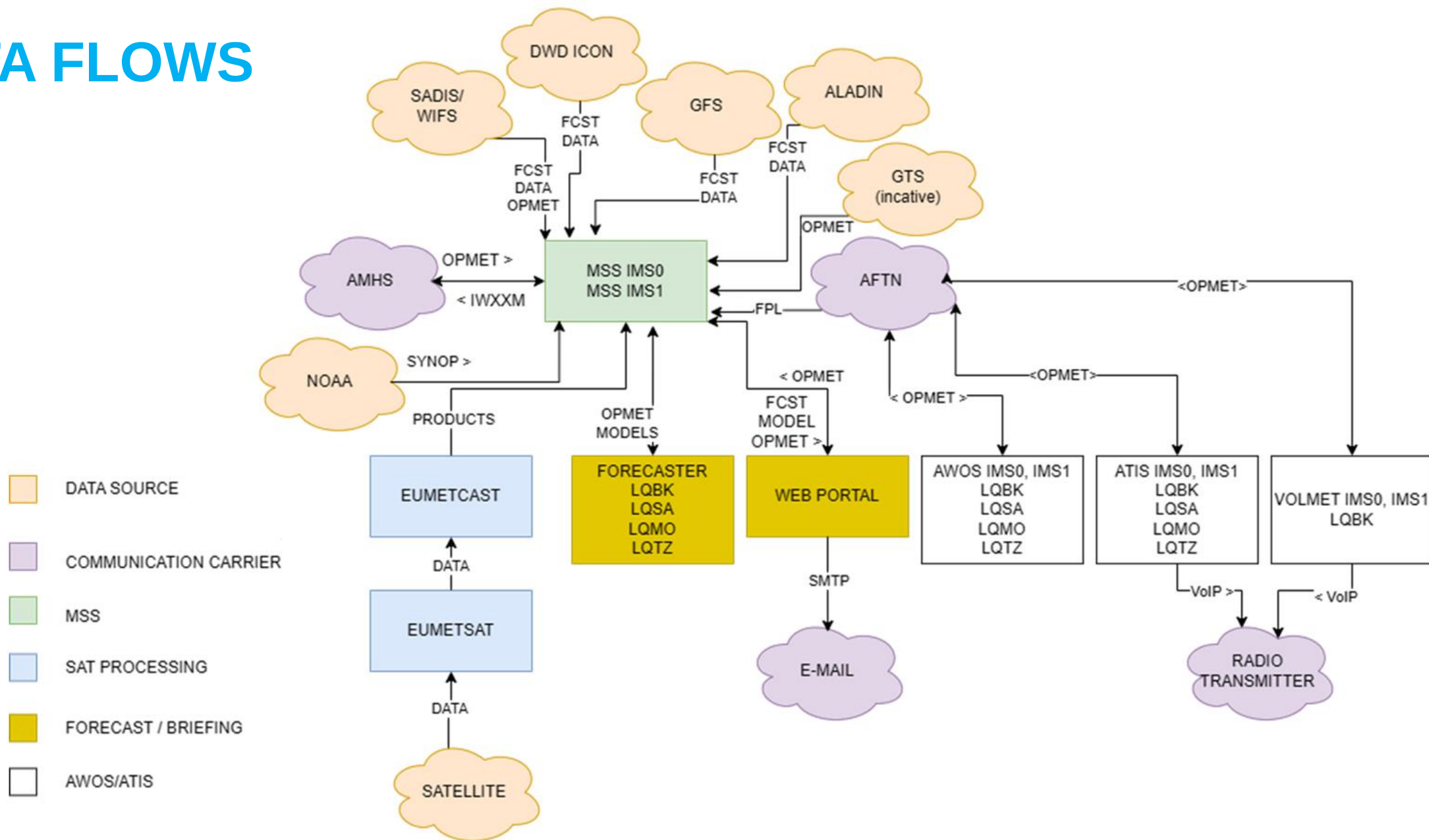


ICAO Doc 10157 PANS-MET (2025)



ICAO Doc 8896

DATA FLOWS



AERONAUTICAL METEOROLOGICAL MESSAGE SWITCH

IMS UGTB

Conversion Status

Server 08:17:48 UTC RUNNING

Status

Login © 2022 MicroStep-MIS

PREVIEW

MESSAGE DETAIL

START CONVERSION

Settings

From Time: 19.07.2024 05:17

To Time: 19.07.2024 08:17

Last hour

Last 3 hours

Last 12 hours

Load

Search:

Input message	Output message	Time	Conversion	Type	IWXXM version	Status
SAGG31 UGTB 190530	LAGG31 UGTB 190530	19.07.2024 05:	TAC_TO_IWXX	METAR	v.3.0	SUCCESS
SAGG41 UGTB 190530	LAGG41 UGTB 190530	19.07.2024 05:	TAC_TO_IWXX	METAR	v.3.0	SUCCESS
SAGG41 UGTB 190600	LAGG41 UGTB 190600	19.07.2024 06:	TAC_TO_IWXX	METAR	v.3.0	SUCCESS
SAGG31 UGTB 190600	LAGG31 UGTB 190600	19.07.2024 06:	TAC_TO_IWXX	METAR	v.3.0	SUCCESS
SAGG31 UGTB 190630	LAGG31 UGTB 190630	19.07.2024 06:	TAC_TO_IWXX	METAR	v.3.0	SUCCESS
SAGG41 UGTB 190630	LAGG41 UGTB 190630	19.07.2024 06:	TAC_TO_IWXX	METAR	v.3.0	SUCCESS
WAGG31 UGTB 190657	LWGG31 UGTB 190657	19.07.2024 06:	TAC_TO_IWXX	AIRMET	v.3.0	SUCCESS
WAGG31 UGTB 190700	LWGG31 UGTB 190700	19.07.2024 06:	TAC_TO_IWXX	AIRMET	v.3.0	SUCCESS
WAGG31 UGTB 190701	LWGG31 UGTB 190701	19.07.2024 07:	TAC_TO_IWXX	AIRMET	v.3.0	SUCCESS
FCGG41 UGTB 190700	LCGG41 UGTB 190700	19.07.2024 07:	TAC_TO_IWXX	TAF	v.3.0	SUCCESS
SAGG41 UGTB 190700	LAGG41 UGTB 190700	19.07.2024 07:	TAC_TO_IWXX	METAR	v.3.0	SUCCESS
SAGG31 UGTB 190700	LAGG31 UGTB 190700	19.07.2024 07:	TAC_TO_IWXX	METAR	v.3.0	SUCCESS
SAGG31 UGTB 190730	LAGG31 UGTB 190730	19.07.2024 07:	TAC_TO_IWXX	METAR	v.3.0	SUCCESS
SAGG41 UGTB 190730	LAGG41 UGTB 190730	19.07.2024 07:	TAC_TO_IWXX	METAR	v.3.0	SUCCESS
SAGG41 UGTB 190800	LAGG41 UGTB 190800	19.07.2024 08:	TAC_TO_IWXX	METAR	v.3.0	SUCCESS
SAGG31 UGTB 190800	LAGG31 UGTB 190800	19.07.2024 08:	TAC_TO_IWXX	METAR	v.3.0	SUCCESS

Show conversion details

4.1 GE 20230726

Contact us

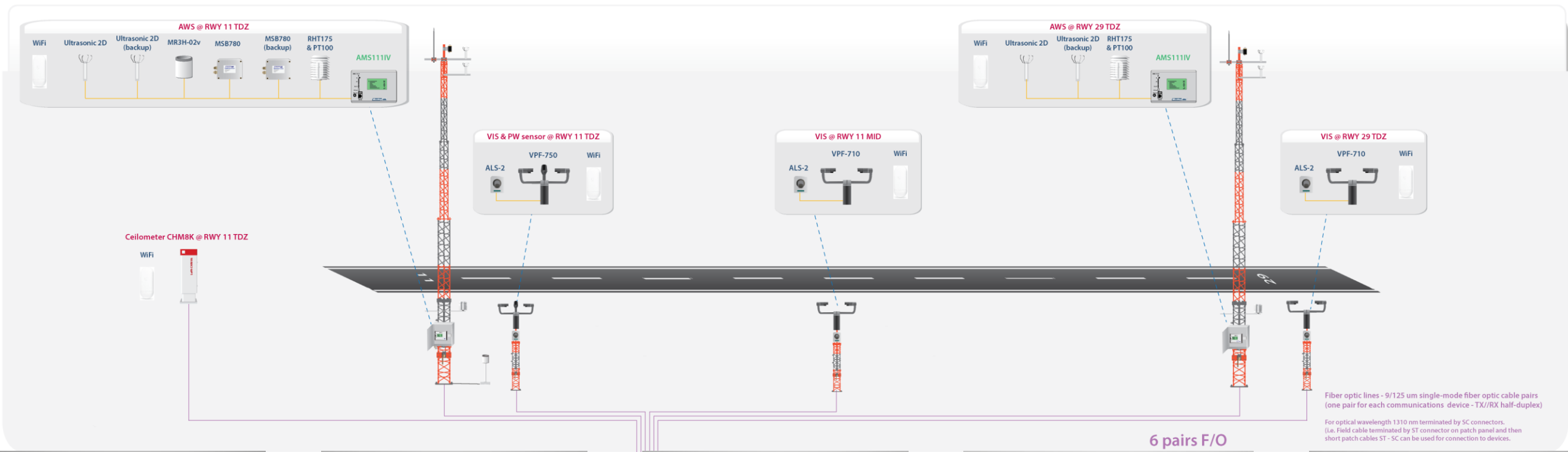
Not logged

Scheme Default

Browser 19.07.2024 10:17:49 LT 19.07.2024 08:17:49 UTC

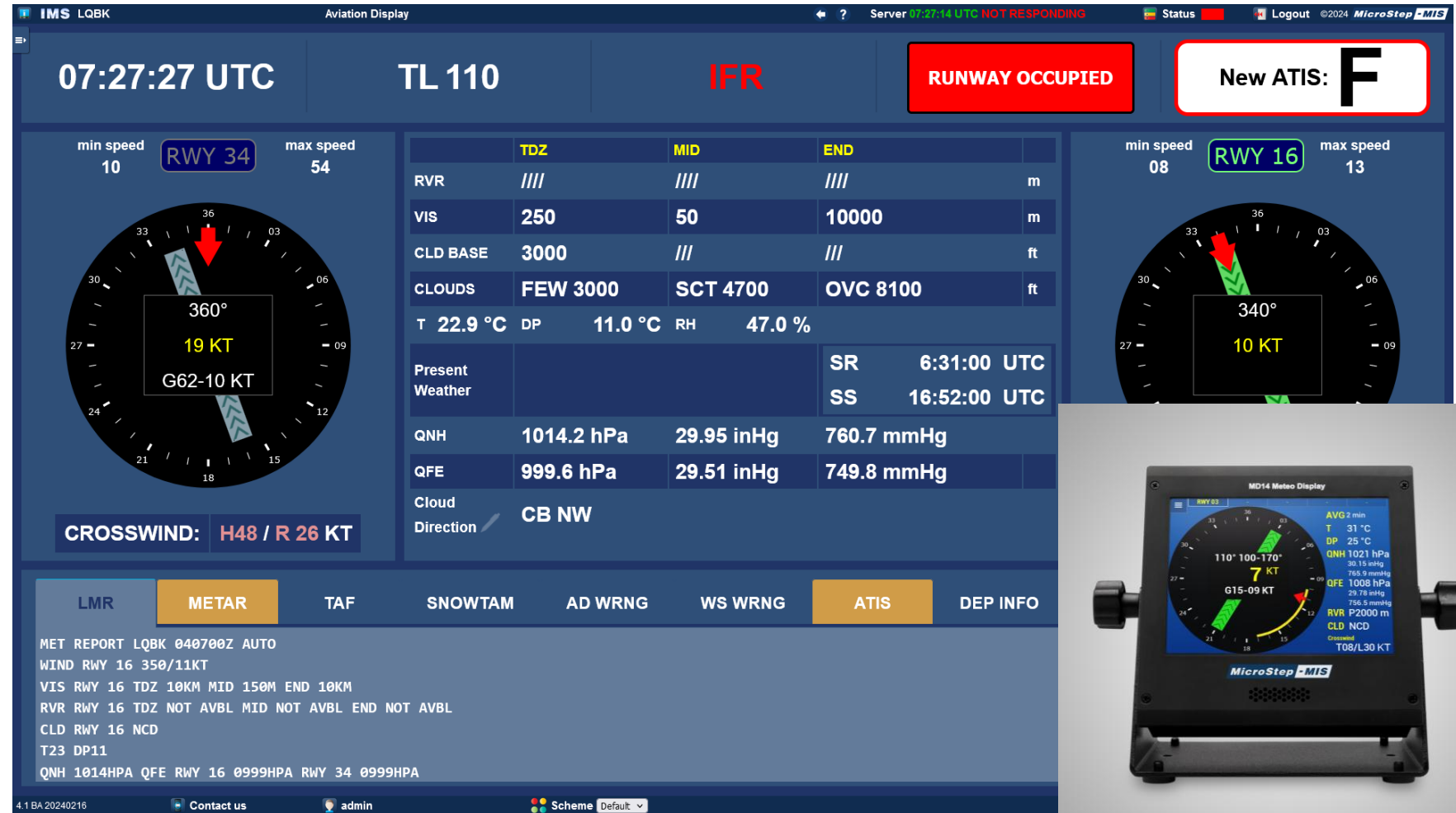
- ICAO AFTN, AMHS and WMO GTS message switching functionality fully incorporated.
- Local data switching among AWOS, ATIS, VOLMET, Briefing and Forecasting System
- TAC to IWXXM bi-directional conversion
- SADIS
- EUMETSAT
- NWP models: DWD-Icon, Aladin, GFS, NOAA
- OGIMET data
- Forecast e-mail dissemination

FIELD MEASUREMENT SYSTEM

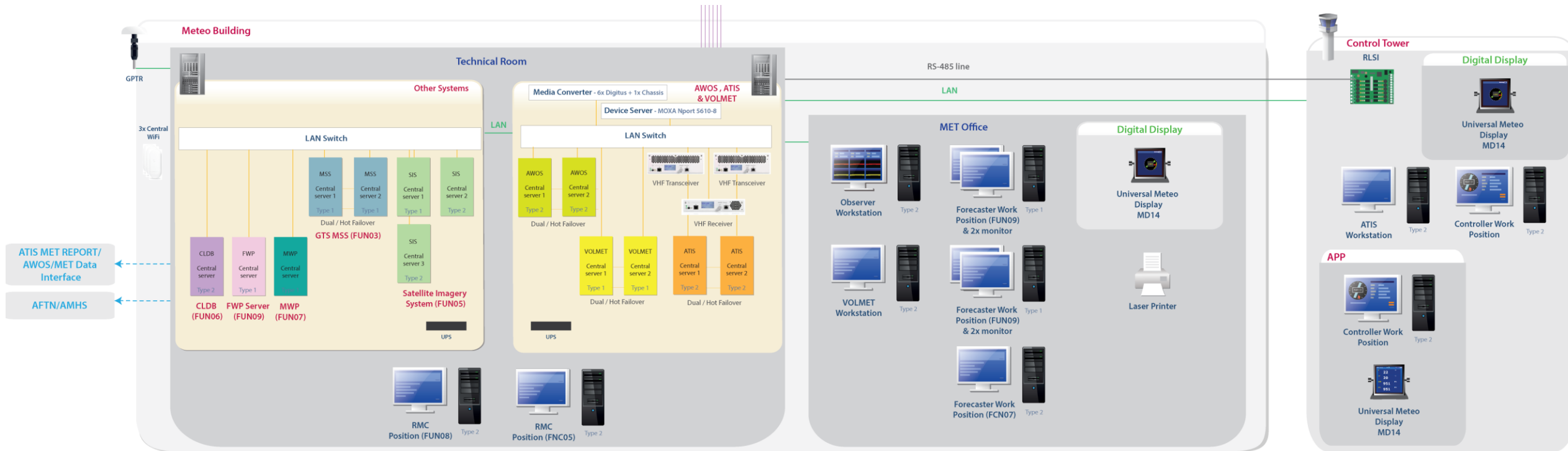


IMS AWOS SOFTWARE: ADAPTED TO BHANSA PRACTICES

- Custom display
- Sunset/sunrise information from AIP documentation
- Custom MET REPORT editor in order to support local reporting practices (especially in LQSA)
- Additional QC rules for METAR, MET REPORT, TAF, WS WRNG, AD WRNG editors
- Integration of WS WRNG and METAR



BANJA LUKA: ICT + SOFTWARE



2x AWOS server
2x ATIS Server
2x VOLMET server

2x Aviation Message Switching System Server
3x Satellite Imagery System Servers
3x Forecasting and Climatological Database Servers

Duplicated communication from sensors (fibre optic, Wifi)
AWOS, ATIS/VOLMET, Forecaster working positions

IMS4 ATIS/VOLMET



VOLMET BANJA LUKA

Dual hot-failover system

VOLMET Broadcast:

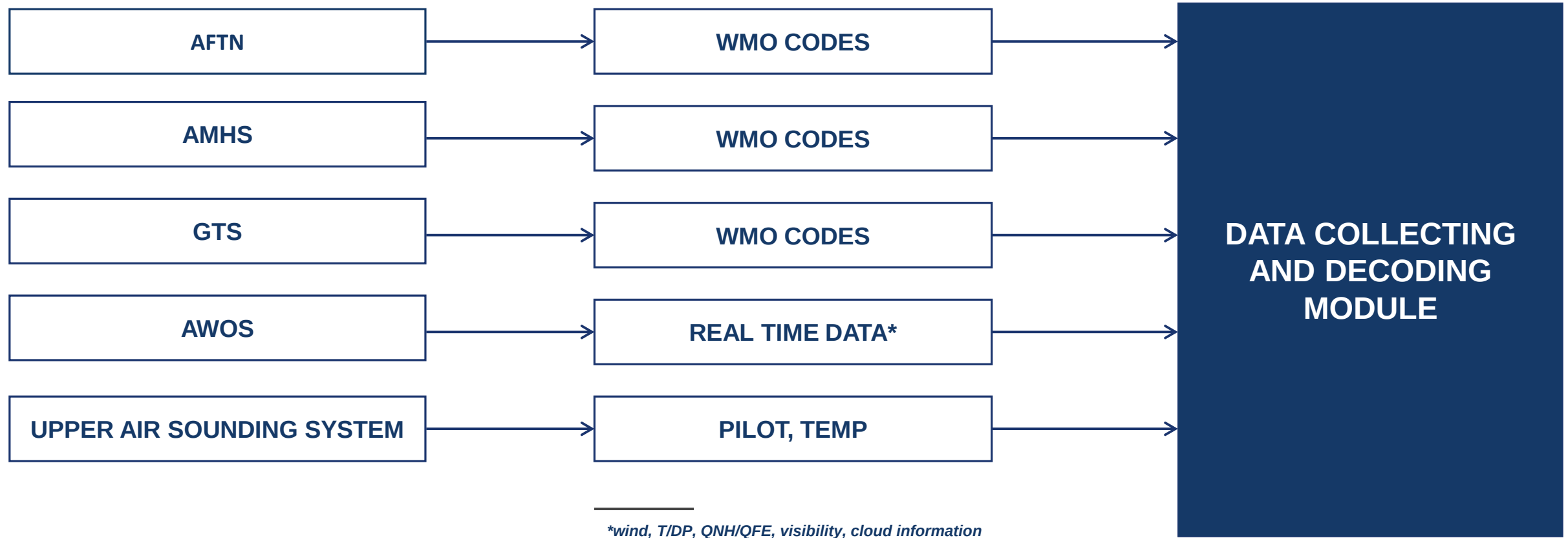
- **METAR:**
 - LQBK (Banja Luka), LQTZ (Tuzla), LQSA(Sarajevo), LQMO (Mostar)
- **TAF:**
 - LQBK (Banja Luka), LQTZ (Tuzla), LQSA(Sarajevo), LQMO (Mostar)
- **SIGMET/SIGMETVA LQSB**



AERONAUTICAL CLIMATOLOGICAL DATABASE



AERONAUTICAL CLIMATOLOGICAL DATABASE



IMS AERO CLDB

Aerodrome climatological summaries:

- for planning of aerodrome operations
- indicate probability of occurrence of low visibility, low cloud base etc. throughout year and for specific hours a day

ICAO/WMO prescribed forms (MODEL B, C, D, E)

AERODROME CLIMATOLOGICAL SUMMARY TABULAR FORM										MODEL B	
AERODROME:		LQBK		MONTH:		November		PERIOD OF RECORD:		2024-2025	
TOTAL NUMBER OF OBSERVATIONS:		1659									
LATITUDE:		445559N		LONGITUDE:		171659E		ELEVATION ABOVE MSL:		122M	
FREQUENCIES (PER CENT) OF VISIBILITY BELOW SPECIFIED VALUES (IN METRES) AT SPECIFIED TIMES											
TIME (UTC)		VISIBILITY									
00											
01											
02											
03											
04											
05											
06											
07											
08											
09											
10											

AERODROME CLIMATOLOGICAL SUMMARY TABULAR FORM										MODEL C	
AERODROME:		LQBK		MONTH:		November		PERIOD OF RECORD:		2025-2026	
TOTAL NUMBER OF OBSERVATIONS:		625									
LATITUDE:		445559N		LONGITUDE:		171659E		ELEVATION ABOVE MSL:		122M	
FREQUENCIES (PER CENT) OF THE HEIGHT OF THE BASE (IN METRES) OF THE LOWEST CLOUD LAYER OF BKN OR OVC EXTENT BELOW SPECIFIED VALUES AT SPECIFIED TIMES											
TIME (UTC)		VISIBILITY									
		< 30 (100 ft)	< 60 (200 ft)	< 90 (300 ft)	< 150 (500 ft)	< 300 (1000 ft)	< 450 (1500 ft)				

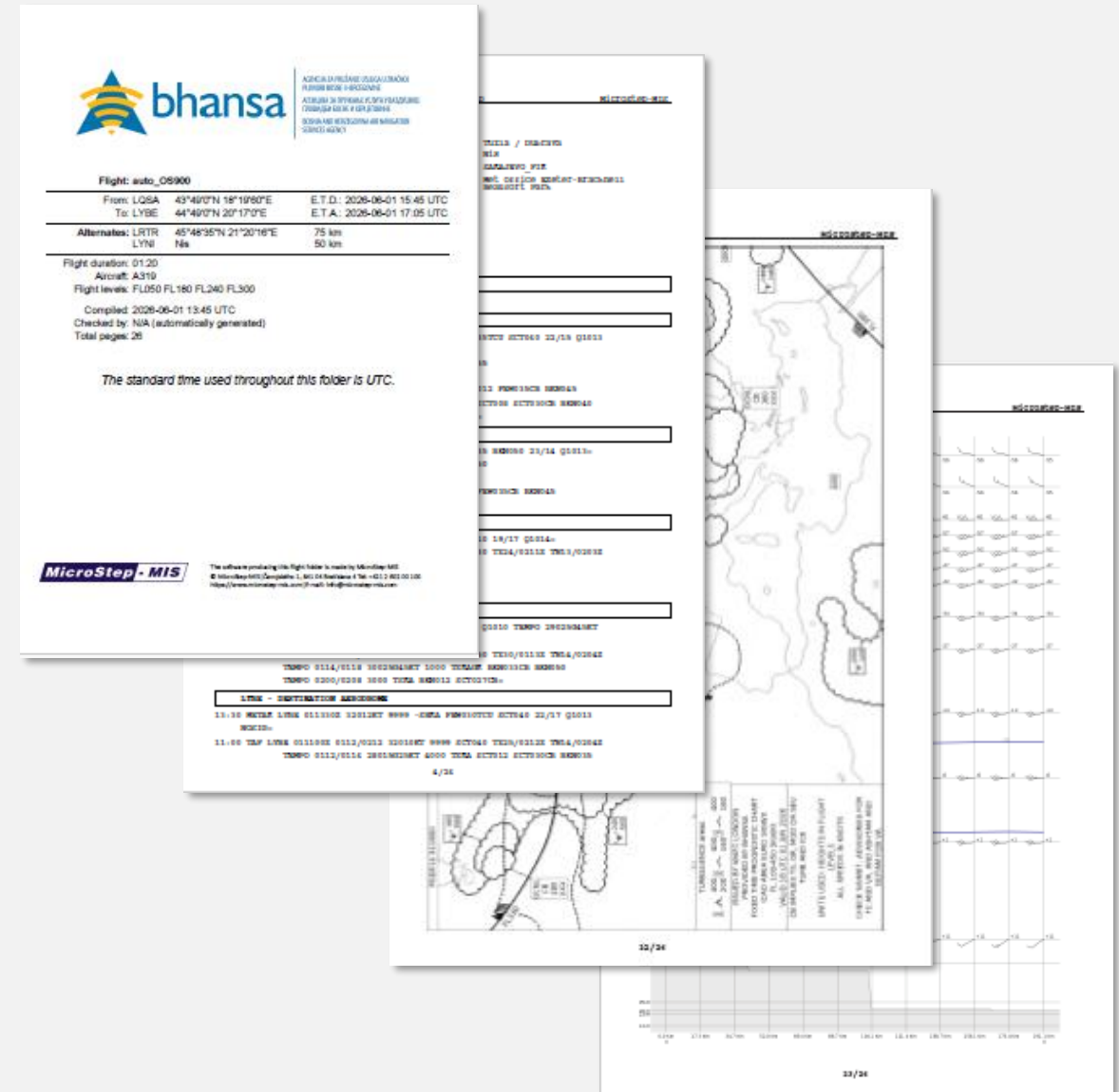
AERODROME CLIMATOLOGICAL SUMMARY TABULAR FORM										MODEL D			
AERODROME:		LQBK		MONTH:		April		PERIOD OF RECORD:		2025-2026			
TOTAL NUMBER OF OBSERVATIONS:		2140											
LATITUDE:		445559N		LONGITUDE:		171659E		ELEVATION ABOVE MSL:		122M			
FREQUENCIES OF OCCURRENCE OF CONCURRENT WIND DIRECTION (IN 30° SECTORS) AND SPEED WITHIN SPECIFIED RANGES													
WIND DIRECTION		WIND SPEED (KT)											
		1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	>50	TOTAL
CALM													98
VARIABLE													
35-36-01		124	78	13	1								216
02-03-04		101	75	1									177
05-06-07		53	33										86
08-09-10		36	7	1									44
11-12-13		101	24	2									127
14-15-16		231	91	16	3	2	1						344
17-18-19		47	34	9	6	1	1						98
20-21-22		25	19		1								45

IMS PILOT BRIEFING



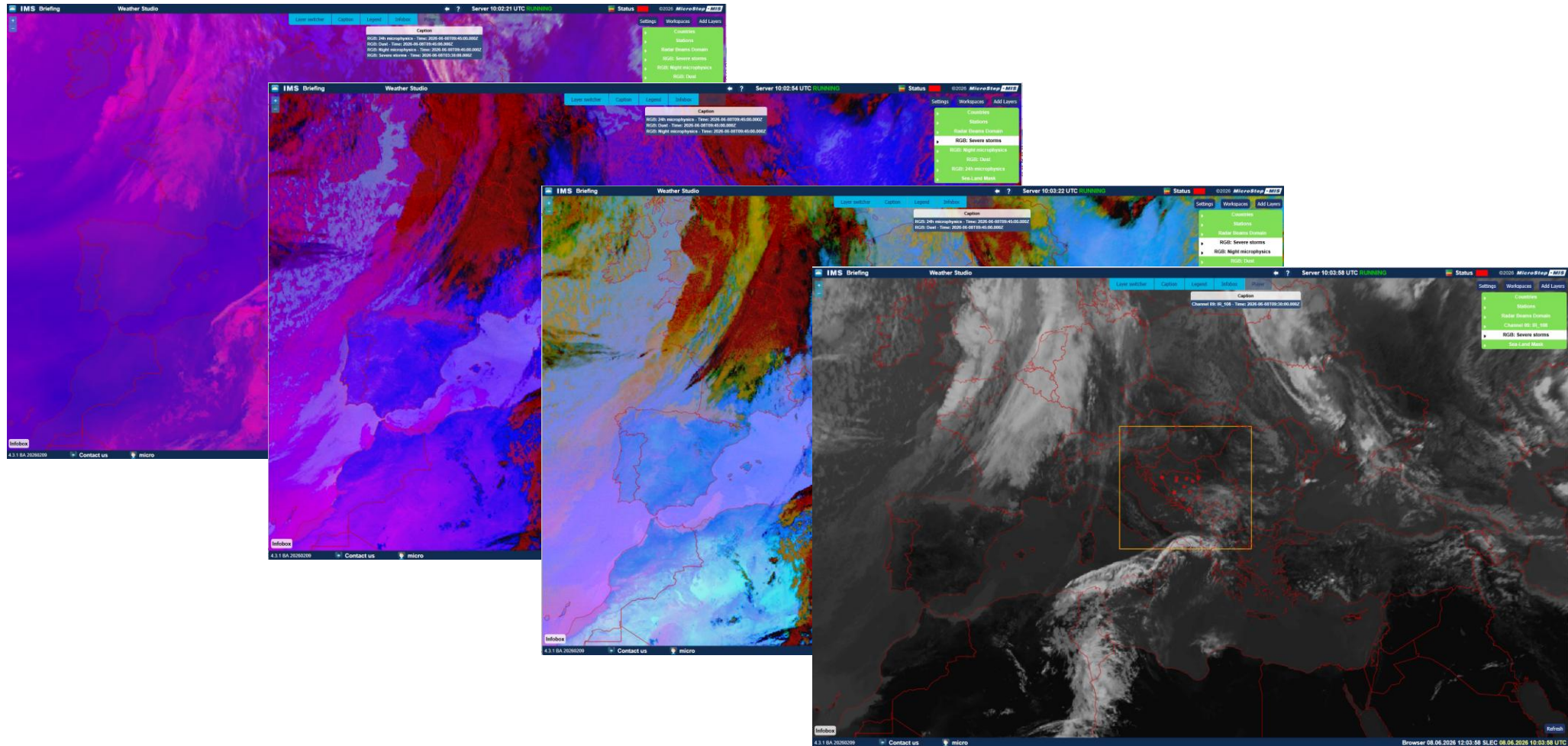
PRE-FLIGHT DOCUMENTATION

- ✓ Actual SADIS / local OPMET data at the departure, arrival and alternative aerodromes and FIR:
 - METAR/SPECI
 - TAF
 - SIGMET, VA SIGMET, TC SIGMET
 - GAMET
 - AIRMET
 - AIREP
- ✓ Advisory information:
 - Tropical Cyclone Advisories (TCA)
 - Volcanic Ash Advisories (VAA)
 - Space Weather Advisories (SWA)
- ✓ SIGWX charts from WAFS
- ✓ Wind and temperature charts from WAFS
- ✓ Compliant with ICAO / WMO / EU / ISO regulations





IMS SATELLITE WEATHER DATA



IMS SATELLITE WEATHER DATA

Generation of the products:

- **MSG 0° – Single-band channels**

- 01: VIS006, 02: VIS008, 03: IR_016, 04: IR_039, 05: WV_062, 06: WV_073, 07: IR_087, 08: IR_097, 09: IR_108, 10: IR_120, 11: IR_134, 12: HR

- **MSG 0° – RGB composites**

- Natural colors, Airmass (mid-latitudes), Airmass (tropics), Dust, Day microphysics, Night microphysics (mid-latitudes), Night microphysics (tropics), 24h microphysics, Severe storms (mid-latitudes), Severe storms (tropics), Ash, Snow, HRV Fog, HRV Clouds

- **MSG RSS (Rapid Scan Service) – Single-band channels**

- 01: VIS006, 02: VIS008, 03: IR_016, 04: IR_039, 05: WV_062, 06: WV_073, 07: IR_087, 08: IR_097, 09: IR_108, 10: IR_120, 11: IR_134, 12: HRV

All products available as JPG and GeoTiff (ready to be used within OGC compatible map server)

IMS AVIATION FORECASTING



IMS AVIATION FORECASTING

Operation of Aerodrome Meteorological Office (**AMO**) at the regional, national and international airports or Meteorological Watch Offices (**MWO**):

- processing, creating, editing and issuing the standard operational forecasts and warnings:
 - TAF
 - AD and WS WARNING
 - GAMET
 - SIGMET
 - AIRMET
 - AIREP
 - and other (local requirements)



TEMPLATES FOR OPMET DATA (TAF)

TAF Editor is for issuance of:

- regular TAF
- corrected (TAF COR)
- amended (TAF AMD)
- TAF cancelations (CNL)

Two-step Quality Control:

- The basic syntax check is performed when the user enters the data into the template
- After the message is coded, the list of errors is presented, and the coded message is previewed.

The screenshot shows the TAF Editor interface for a regular TAF. At the top, there's a header with "Term: 2300", "UTC", "Suspicious entries: 1", and a red warning box stating "Wind direction: The value must be from range 0...360 °". Below this is a "Load TAF from previous term" button. The main form contains fields for "TAF LQBK" (012300), "Z", "NIL", "0200 / 0224", "VRB", "Wind direction" (390), "Wind speed" (05 kt), "Wind gust" (kt), "CAVOK", and "Prevailing visibility". There are also dropdowns for "Phenomena" (moderate) and "Cloud layers" (SCT-3,4 oktas). At the bottom, there are fields for "TX" (25), "TN" (12), and "Z".

The screenshot shows the TAF Editor interface for a corrected TAF. The "TAF LQBK" field is 011700, and the "Z" field is checked. The "Wind direction" is 160, "Wind speed" is 05 kt, and "Wind gust" is kt. The "CAVOK" field is checked, and "Prevailing visibility" is 9999. A "Code Preview" window is open, showing the following text: "Section 1: Cloud height missing", "FTQB50 LQBK 011700 CCA", "TAF COR LQBK 011700Z 0118/0218 16005KT 9999 SCT//", "TX25/0214Z TN12/0204Z", and "PROB30 TEMPO 0118/0120 33015G25KT 4000 TSRA FEW030CB BKN040-". The "Correct data" and "Send" buttons are at the bottom right of the preview window.

TAF VERIFICATION: MAY 2026 ACCURACY 93%

On-line real time verification of the actual TAF forecast against the METAR/SPECI observations - automatic comparison based on Attachment B PANS-MET: Operationally desirable accuracy of forecasts.

TAF accuracy for May 2026: overall **93%**
(while ICAO minimum is 80%)

- Online color alerts for the forecaster (in the form of the hourly color code bars) upon discrepancy between actual TAF and METAR/SPECI
- Long-term calculation of the **TAF forecast's accuracy**
- TAFs verification results in Excel tables and PDF

Forecast	TAF LQMO 160500Z 1606/1706 03012KT 9999 SCT050 TX20/1614Z TN11/1704Z TEMPO 1606/1618 03017G35KT=			
Observations		Taf Amendment Criteria	Status	
	METAR LQMO 161000Z 02017G27KT 9999 FEW055 19/02 Q1006=	Forecast OK		
	METAR LQMO 160930Z 03013KT 360V060 9999 FEW055 19/01 Q1007=	Forecast OK		
	METAR LQMO 160900Z 03016KT 360V060 9999 FEW055 18/01 Q1006=	Forecast OK		
	METAR LQMO 160830Z 03017G30KT 360V060 9999 FEW055 SCT090 18/02 Q1006=	Forecast OK		
	METAR LQMO 160800Z 35007G21KT 270V040 9999 FEW055 SCT085 17/01 Q1006=	Forecast OK		
	METAR LQMO 160730Z VRB05KT 9999 FEW055 SCT080 17/01 Q1006=	Forecast OK		
	METAR LQMO 160700Z VRB04KT 9999 FEW055 SCT080 16/01 Q1006=	Forecast OK		
	METAR LQMO 160630Z 35008KT 310V040 9999 FEW055 SCT080 BKN090 16/01 Q1006=	Forecast OK		
	METAR LQMO 160600Z VRB08G20KT 9999 FEW055 BKN080 15/M01 Q1006=	Forecast OK		
Status		Taf Desirable Accuracy		
Forecast INVALID according to given criteria		Element	Compliance/Required	State
		WindDir	78% / 80%	
		WindSpeed	78% / 80%	
		Visibility	100% / 80%	
		CloudAmount	100% / 70%	
		CloudHeight	100% / 70%	
		Phenomena	100% / 80%	

TEMPLATES FOR OPMET DATA (SIGMET / AIRMET)

Tips: Tab=Forward Shift+Tab=Back Enter=Confirm F1=Help F12=Code

< Term: 1850 UTC > Suspicious entries: 0

Header

Validity Start: 311200

Validity End: 311600

Validity Period: 04h 00m

Status Indicator:

Phenomena

Phenomenon: MTW

Phenomenon Description: SEV

Phenomenon Report Type: FCST

AT:

Location

Type: POLYGON

Start Drawing

Clear Drawing

Preview:

WI N4443 E01614 - N4441 E01712 - N4352 E01656 - N4443 E01614

Layer switcher

Caption

Legend

Infobox

Caption

SIGMET - Term: 01/06/2026 18:00:00 UTC

EMBD+TS OBS TOP FL390 WKN

EMBD TS OBS TOP FL390/NC

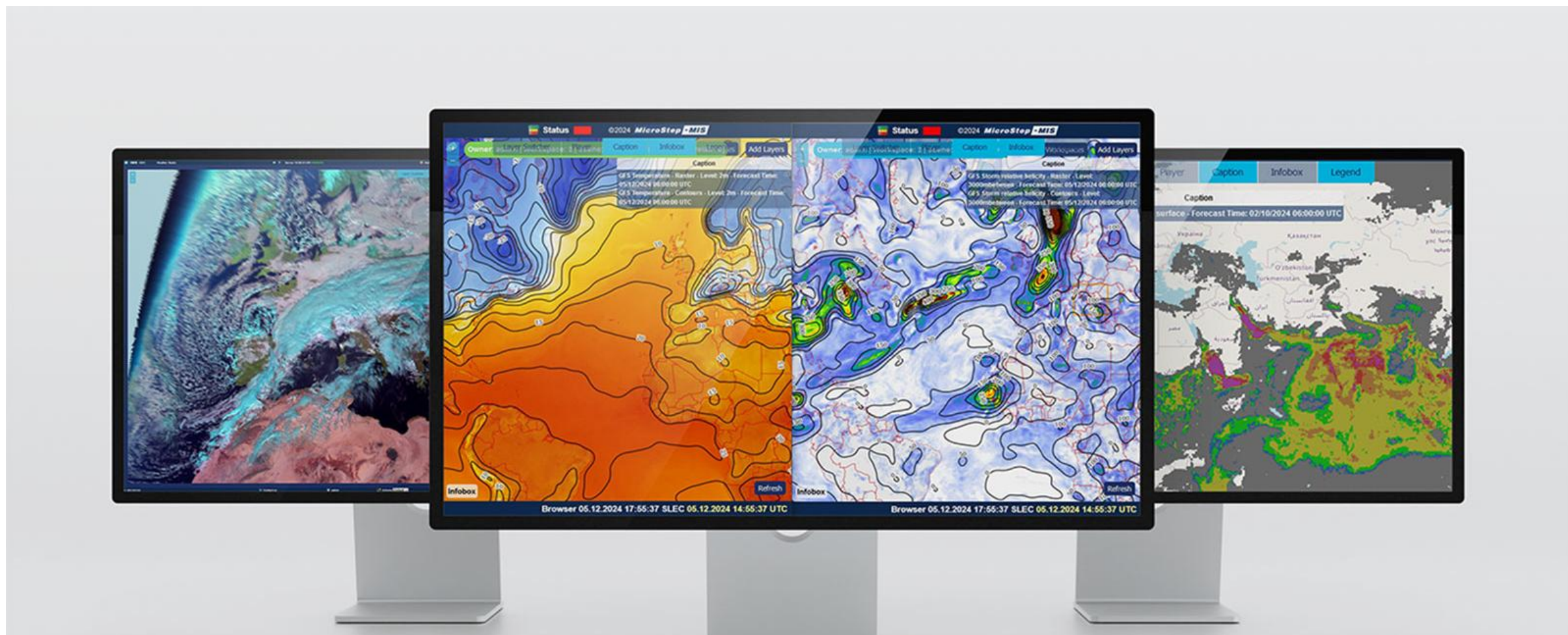
Infobox

Latitude: 44° 40' 43" N

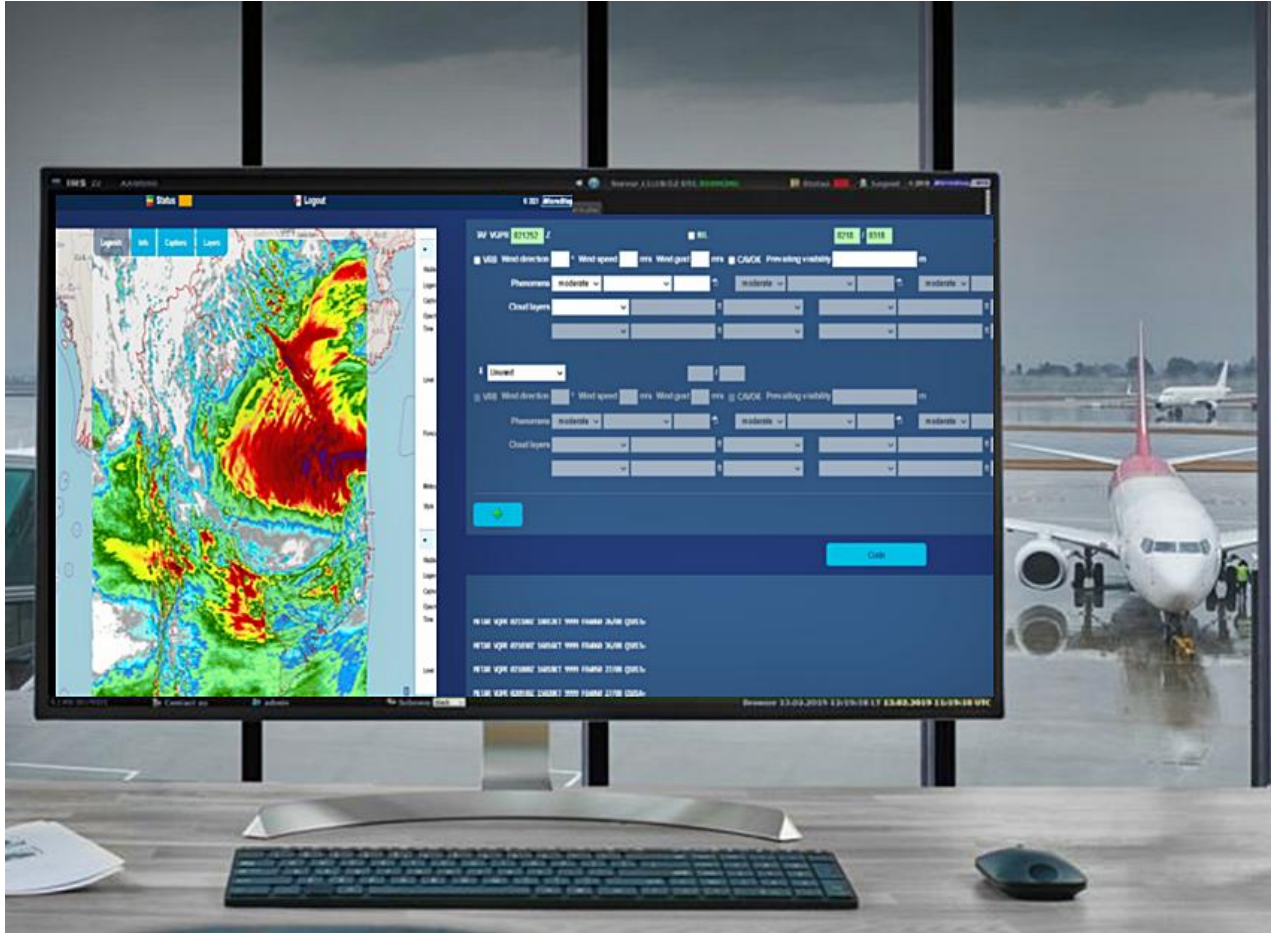
SIGMET Editor with the function of drawing SIGMET polygons:

- WS SIGMET
(weather phenomena)
- WV SIGMET (volcanic ash)
- WC SIGMET
(tropical cyclone)
- SIGMET CNL

IMS WEATHER STUDIO



IMS AVIATION FORECASTING



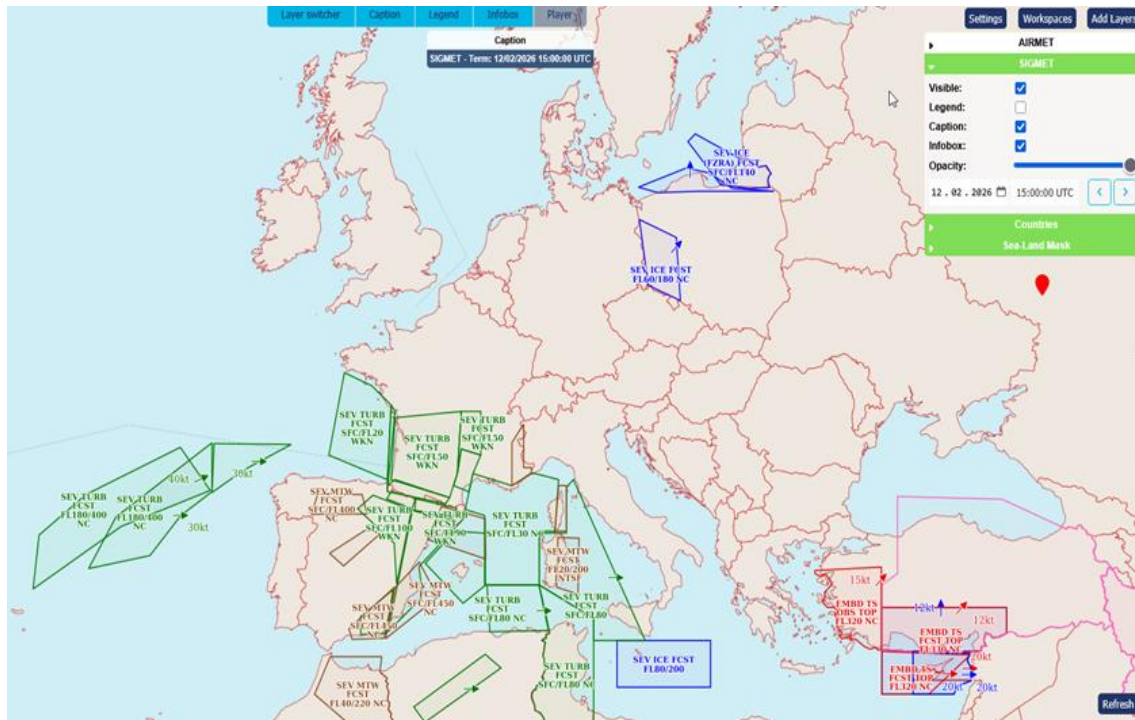
Could be either standalone or partly integrated within IMS4 AWOS

ICAO Annex 3 (2025) and PANS-MET compliant:

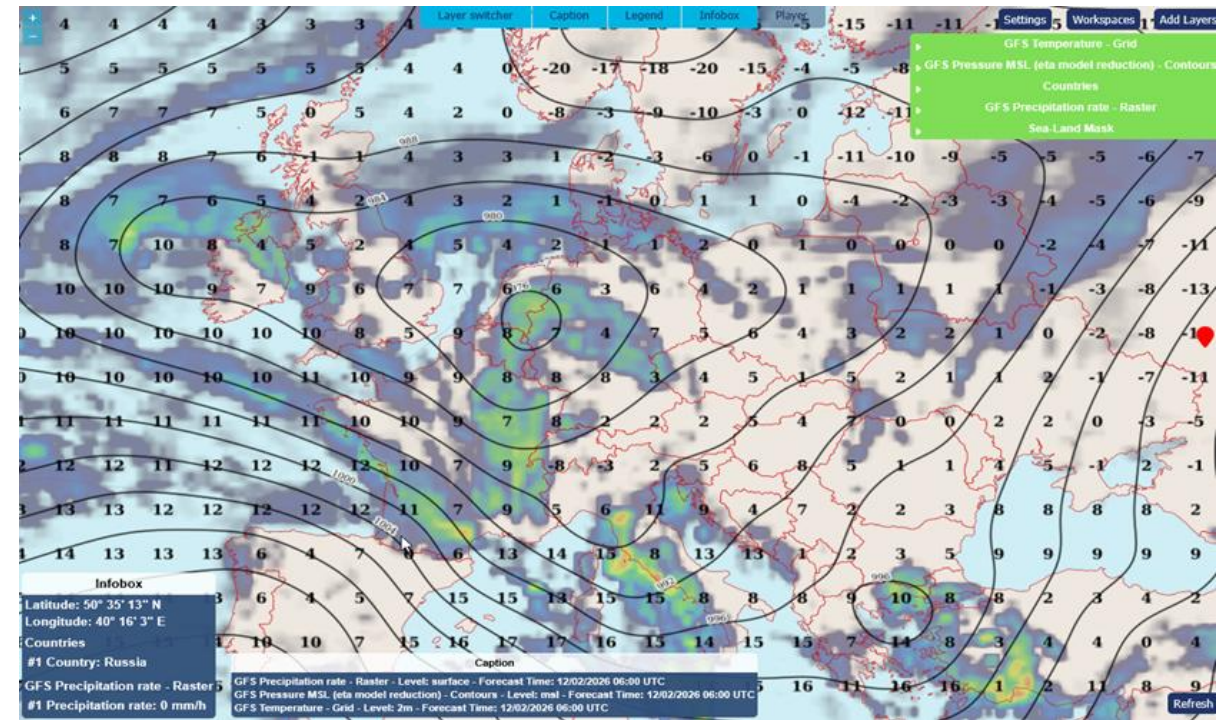
- ✓ Chapter 6 Annex 3: Aerodrome and en-route meteorological forecast information
- ✓ Chapter 7 Annex 3: Meteorological information containing advisories, alerts, warnings, and notices
- ✓ Chapter 4 PANS-MET: Aerodrome meteorological forecast information
- ✓ Chapter 5 PANS-MET: En-route meteorological forecast information
- ✓ Chapter 6 PANS-MET: Meteorological information containing advisories, alerts, warnings, and notices
- ✓ Appendix 4, 6, 7, 8 PANS-MET: Technical specifications related to: TAF, GAMET, SIGMET, AIRMET, AD, and WS Warnings, AIREP

MODULES FOR FORECASTERS - IMS WEATHER STUDIO

IMS Aviation Forecasting includes the Weather Studio module that visualizes meteorological information for the forecasts and warning preparations:



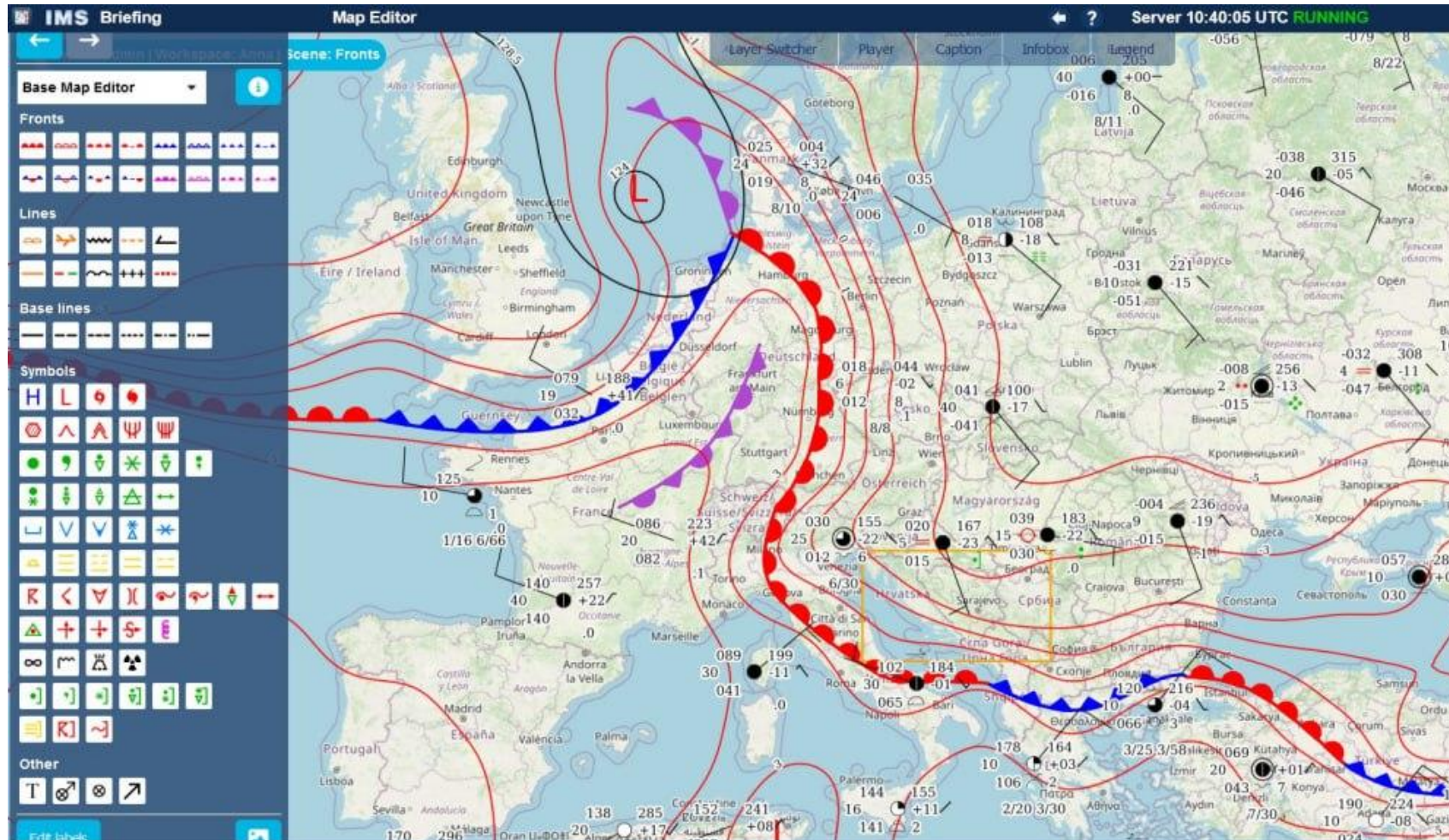
SIGMETs



NWP data

IMS WEATHER STUDIO - MAP EDITOR

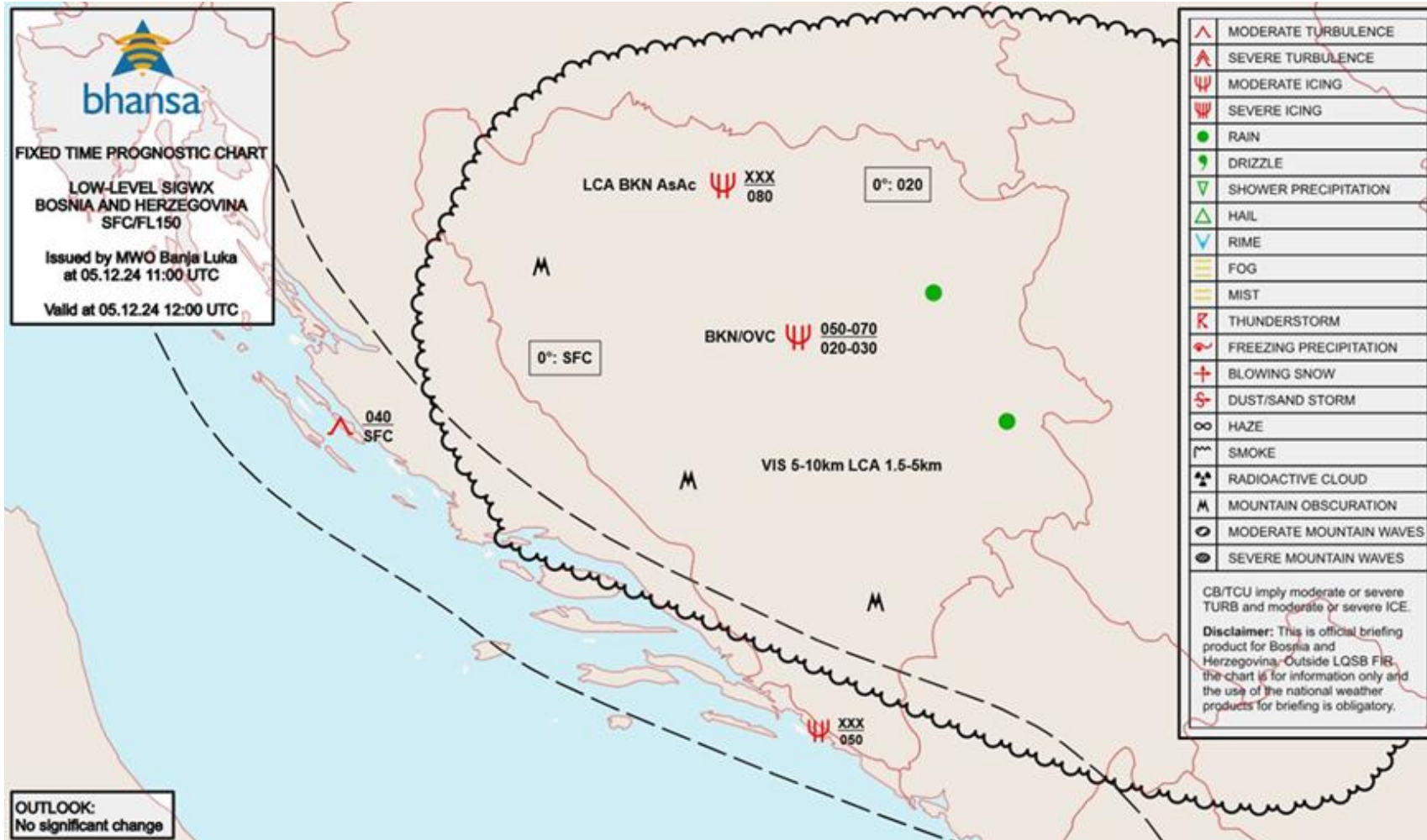
Map Editor is a part of the Weather Studio for drawing the different types of locally produced charts



- Frontal analysis based on any maps
- Wide choice of lines and symbols
- Wide range of possibilities for working with fronts – connecting, changing direction, adjusting, etc.
- Additional options in the form of text notes on the map
- Saving synoptic analysis for use in other sessions

LOW LEVEL SIGWX (MAP EDITOR)

for example, Low Level SIGWX charts:



- Drawing:
 - atmospheric fronts,
 - WMO/ ICAO complaint icons, lines,
 - specialized text
- Supports layers from models, satellites, and radars
- Fixed map area for consistency

PRESENTER

Martin Gažák

- 1999 Software Engineer
- 2005 Head of Software Department
- 2017 Chief Executive Officer



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