



Meteorological SWIM Subscription
and Request Services

SWIM in a BOX

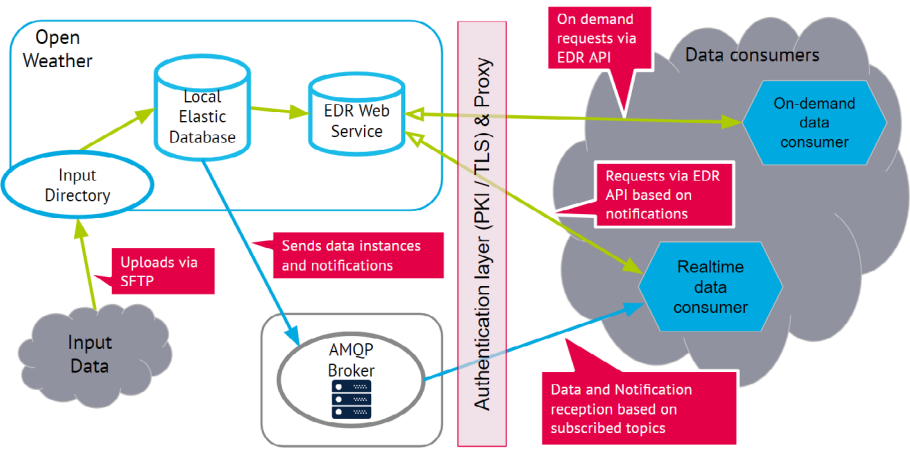
Publish
weather
data on
SWIM

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OVERVIEW

SWIM in a Box is a comprehensive, ready-to-deploy solution designed to meet the evolving needs of aviation meteorological data management that delivers compliance with the EU Common Project One (CP1) directive. Seamlessly integrating with SWIM-compliant infrastructures, this solution publishes real-time meteorological data, including METAR, TAF, and SIGMET, via secure interfaces for subscriptions and requests such as AMQP and OGC EDR, in compliance with SWIM TI Yellow Profile. With built-in authentication, monitoring, and regular updates to accommodate future standards, SWIM in a Box ensures your aviation systems stay ahead of regulatory changes while offering 24/7 support for operational continuity.



PUBLISH-SUBSCRIBE DATA DISSEMINATION

“SWIM in a Box” ingests IWXXM meteorological data, such as METAR, SPECI, TAF, and SIGMET, and disseminates it using the AMQP 1.0 protocol in alignment with the SWIM Technical Infrastructure Yellow Profile (TI YP). The system employs an AMQP broker supplied within the box, enabling real-time publish-subscribe messaging. This ensures that meteorological data is distributed efficiently and securely to subscribed systems, allowing for timely updates and access to critical weather information.



METEOROLOGICAL SERVICES

Range of SWIM meteorological services, including

- IWXXM METAR-SPECI Subscription and Request Service
- IWXXM TAF Subscription and Request Service
- IWXXM SIGMET Subscription and Request Service



RESTFUL REQUEST SERVICE

SWIM Request Service through its RESTful API

- Implemented using the OGC Environmental Data Retrieval (EDR)
- Allows users to query meteorological data (METAR/SPECI, TAF, SIGMET)
- Flexible and on-demand access
- Data can be retrieved in multiple formats (IWXXM, GeoJSON, Zipped IWXXM)
- Query options based on locations, bounding boxes, polygons, ICAO codes, and trajectories



AUTHENTICATION AND AUTHORIZATION

Authentication is handled via digital certificates, ensuring secure, encrypted communication.

- EACP Family 5.1.1 for common PKI use
- EACP Family 5.2.1 supports localized PKI for private networks



ADMINISTRATION AND MONITORING

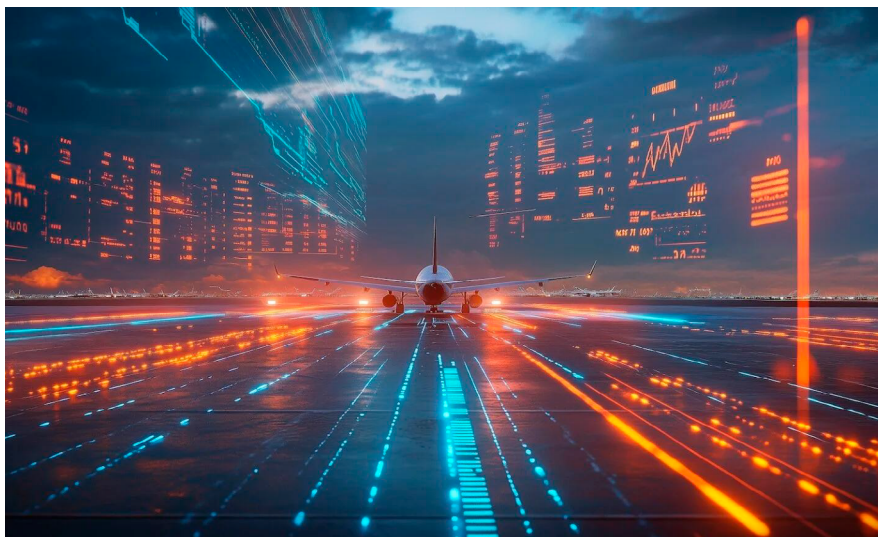
- Configure key system settings, such as security policies, certificate management, and CRL updates
- Real-time monitoring of system health, queue statuses, and data processing workflows
- Audit logging - all user actions and system changes are securely recorded for compliance and troubleshooting purposes



IWXXM DATA CONVERSION

“SWIM in a Box” can be optionally extended with a module for the IWXXM Data Conversion feature

- Converts traditional TAC formats into IWXXM 2023-1 compliant XML formats
- Allows system without the IWXXM support to publish data in SWIM-compliant environments



COMPLIANCE AND STANDARDS

“SWIM in a Box” ensures full compliance with a wide range of international aviation standards and regulations, providing seamless interoperability and security. The solution adheres to the following:

- **EU Regulation 2017/373:** Concerning aeronautical data and meteorological services
- **EU Regulation 2021/116 (Common Project One):** Addresses key operational needs
- **SWIM Technical Infrastructure Yellow Profile (SWIM TI YP):** Ensures compliance with SWIM messaging and infrastructure
- **EUROCAE ED-109 and ED-153:** Standards for software assurance and safety
- **Software Assurance Level (SWAL) 4:** Ensures reliability and safety in aviation software
- **ICAO Annex 3:** Standards for meteorological services in aviation
- **ICAO Doc 10003:** Guidelines for the digital exchange of aeronautical meteorological information
- **OGC Environmental Data Retrieval (EDR):** Standard for on-demand weather data retrieval
- **OASIS AMQP 1.0:** Publish-Subscribe messaging protocol used for real-time data exchange
- **EUROCONTROL SWIM Service Definitions:** Alignment with standardized SWIM IWXXM Subscription and Request Service models



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IBL Software Engineering builds its reputation on 45 years of tradition in the field of Meteorological IT development. Dating from its first Automated Meteorological Message Switching Systems, the branch in Frankfurt, Germany, was established in 1988, while the branch in Bratislava, Slovakia was opened in 1997. IBL Software Engineering is employing IT specialists working exclusively in the Meteorological IT Environment with a high level of professional expertise.

IBL Software Engineering is ISO 9001:2015, ISO 27001:2013, and ISO 14001:2015 certified in the scope of development, supplying, installation, and maintenance of software for meteorological information systems. As a representative of Hydro-Meteorological Equipment Industry it is recognized by WMO and IBL's experts are participating in the number of WMO Expert Teams. IBL pays close attention to the advancements in BUFR, IWXXM, Amendment 81, GRIB3, etc. and its products fully comply to the following standards:

- WMO Manuals on Codes 306, on Global Telecommunication System 386, on Global Data Processing System 485
- ICAO Annex 3 up to Amendment 81 and ICAO Regional SIGMET Guides as of 2023
- SADIS workstation requirements 1.1 April 2021

PRODUCT PORTFOLIO

If the integration of all meteorological data processing systems is the key factor for the effective operation of your business, then with the IBL product portfolio your integration efforts are minimized, because IBL systems are designed to closely cooperate to provide the desired synergy.

