AEROWEB: A NEW MET WEBSITE FOR AERONAUTICAL USERS

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1 INTRODUCTION

Meteo-France has been developing over the last few years Aeroweb, a meteorological Internet service for flight preparation for aeronautical users. Recently, Web 2.0 has profoundly changed information access habits: users expect more customized and ergonomic websites. At the same time, new certification and traceability requirements now apply to flight documentation provided via Internet. To meet these new expectations, Meteo-France has developed a new release of its aeronautical system Aeroweb based on a Service-Oriented Architecture.

The new Aeroweb service makes meteorological flight documentation available to light-aviation users in less than a minute, by leveraging automatic calculation features and user-favorite settings. Commercial-aviation users also benefit from specific configuration features and scheduled email transmission.

2 A CUSTOMIZABLE MET WEBSITE FOR FLIGHT PREPARATION

2.1 For light aviation: one-click flight documentation

Light-aviation users are often in a leisure approach. They want their flight preparation to be as easy as possible. As a Weather Agency, Meteo-France’s goal is to provide these users with a tool that can generate the official meteorological flight documentation quickly and easily.

Aeroweb¹, Meteo-France’s met website for flight preparation, has been designed to achieve this goal (Fig. 1). It encompasses many functionalities that allow aviation users to get their documents in one click:

- Users can get an automatic flight documentation by providing their departure and arrival airports. The automatic flight documentation contains all meteorological data produced by airports located within 40 miles around the route (METAR, TAF, SIGMET…), the Significant Weather charts and the Wind-Temperature charts according to user preferences.
- A system of bookmarks and recent flights allows users to get in one click flight documentation for their favorite routes.

The flight documentation can be viewed on screen or converted to pdf for printing.

The Aeroweb website provides other functionalities to make life easier for light-aviation users:

- View of airport observations and forecast on a map
- Permanent view of the METAR, TAF and SIGMET data for the user preferred airport
- Forecast dedicated to visual flights
- Meteorological information for gliders

2.2 For commercial aviation: fully customizable flight documentation

Airline companies have needs that differ considerably from those of light-aviation users. Although these companies need the same kind of official meteorological data that light users need, airline companies have scheduled flights and need the flight documentation to be automatically generated at the scheduled time.

In order to meet these additional needs, Météo-France has developed a different version of Aeroweb, dedicated to commercial-aviation users.

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¹ https://aviation.meteo.fr
Commercial-aviation users can choose, for each flight:
- Met flight documentation contents
  - List of ICAO codes for METAR, TAF, SIGMET and similar messages
  - Domains and validity times for WINTEM and SIGWX charts
- The scheduled time for automatic production and printing

Once the commercial-aviation user has entered his schedule in Aeroweb, he/she no longer needs to refer to the Aeroweb website. Before each flight, he/she will automatically receive the meteorological flight documentation by email or in a printed form via a dedicated software.

3 SERVICE ORIENTED ARCHITECTURE (SOA)

3.1 A web service for third-party information systems
Aeroweb also provides a web service for third-party information systems. This service is available for all aviation users that need meteorological data for their own information systems: airline companies, aeronautical providers, flight schools, Civil Aviation Authority.

This web service enables users to get the following information:
- Met Airport Reports and Forecast (METAR, SPECI, TAF, SIGMET…)
- Significant Weather charts, Wind and Temperature charts (SIGWX, WINTEM)

Users can then merge the provided information into a flight documentation that contains non-meteorological data and display the resulting document on their website (Fig. 2) or other media.

The web service is available through an http request. For instance:

https://www.meteofrance.com/FR/aviation/serveur_donnees.jsp?
ID=user_code
&TYPE_DONNEES=OPMET (data type)
&LIEUID=LFPG|LFPO (location codes)
&METAR=yes
&TAF=no

The answer is given in XML format.

3.2 Generation of official aeronautical met data with the Synergie server
One of the important issues when making a flight documentation is to ensure that the met data is valid and up to date. In order to do this, two kinds of operations are required:
- Decode METAR and TAF data according to ICAO amendment 74\(^2\)
- Generate the WINTEM and SIGWX charts, based on official GRIB and BUFR data

Aeroweb does these operations with the Synergie server. Synergie is a software developed by Meteo-France for its weather forecasters. The Synergie software focuses on weather forecast. This enables the Aeroweb team to concentrate on web developments, and not on generating aeronautic charts. The link between Synergie and the web servers is done via a web service.

The met data are transmitted on a real-time basis by the Transmet messages switching system. For instance, an amendment to a TAF is immediately transmitted and provided to Aeroweb users within a few seconds.

4 CERTIFICATION AND TRACEABILITY REQUIREMENTS

New certification and traceability requirements now apply to flight documentation provided via Internet. ICAO has released a list of Guidelines on the Use of the Public Internet for Aeronautical Applications\(^3\). In addition, the European Community has recently increased the certification requirements for all the aeronautical providers, by a legislative approach: the Single European Sky (SES) initiative. All these actions are meant to provide a uniform and high level of safety over the skies, and are necessary to meet future capacity and safety needs.

4.1 Certification
Every Aeroweb component is regularly audited, for compliance with ICAO norms and recommendations:

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\(^2\) Amendment 74 on ICAO Annex 3 defines changes in METAR and TAF syntax and validity rules.
- The Synergie software has been audited by the ICAO World Area Forecast Centre of London for WINTEM and SIGWX generation.
- An internal audit checks the entire Aeroweb infrastructure every year.

4.2 Traceability
All flight documentation provided by Aeroweb is archived for at least 30 days to comply with ICAO requirements. In case of accidents, the French Civil Aviation Authority can access the archive for inquiry.

5 CONCLUSION

We believe that Aeroweb will encourage the migration of aeronautical culture from traditional tools towards web technologies. The one-click flight documentation fits the needs of light-aviation users who want fast flight preparation while the flight scheduling service is very practical for commercial-aviation users. The Internet allows fast and accurate access to aeronautical meteorological data from almost anywhere in the world and is likely to become the future of the diffusion of meteorological flight documentation.

6 GLOSSARY

ICAO : International Civil Aviation Organization
METAR : METeorological Airport Report (alphanumeric)
SIGMET : SIGnificant METeorological Information (alphanumeric)
SIGWX : Significant Weather charts
TAF : Terminal Aerodrome Forecast (alphanumeric)
WINTEM : Wind and Temperature charts

Figure 1 - Aeroweb Home Page for Light-Aviation Users
Figure 2 - Flight Documentation on a Flight School Website (via Aeroweb web service)