



## PROJECT REPORT

MESANGE

MESSAGERIE DE NOUVELLE GÉNÉRATION

Report on the design and implementation of a new message handling solution for DSNA and skyguide

# COMSOFT

13-05-2008

**MESANGE KICK-OFF**



COMSOFT was selected as supplier  
  
Contract was signed with DSNA and skyguide in Toulouse

19-12-2008

**FAT**



Completion of factory acceptance tests in Karlsruhe

12-01-2009

**TRAINING**

Start of operator/administrator training in Karlsruhe duration: 8 weeks

06-02-2009

**GENEVA**



Completion of hardware installations in Geneva

13-02-2009

**TOULOUSE**



Completion of hardware installations in Toulouse

20-02-2009

**BORDEAUX**

Completion of hardware installations in Bordeaux

16-10-2009

**SAT**

Site acceptance tests in Geneva and Bordeaux

**SPRING 2010**

**MESANGE GOES OPERATIONAL**

System acquires maturity and is taken into operational service

**2010**

**AMHS CONNECTION**

Operational AMHS connection between skyguide and DSNA

Subsequent trials with other European partners

**INTRODUCTION: THE MESANGE PROJECT**



On May 13th 2008 three players of the European ATC market signed a contract in Toulouse. Two of which were air navigation service providers (ANSP) the third one was a German ATC supplier. The German company was COMSOFT the two experienced customers were the ANSPs of France and Switzerland.

Before that date, DSNA and skyguide had known for a while that their current messaging systems were hit by obsolescence, and under no circumstances capable of migrating to AMHS, the future communication standard for aeronautical messaging. Due to the buoyant relationship of skyguide and DSNA both organisations knew of the counterpart's situation which was apparently similar. Striving after identical modifications, regarding the development of air traffic service operations, they considered to concentrate efforts in case they would find an appropriate supplier that catered for their individual needs. Their motivation for one thing was exploiting synergies and the consequentially reduced price. Finally they tendered mutually for the provision and design of a new AFTN/CIDIN/AMHS system which could be integrated into their individual environments. Once decided to cooperate they could further cement their already strong relations and exchange technical, commercial and project management expertise while collaboratively evaluating the candidate's products.

A predominant criterion for the evaluation and finally the selection was the systems' performance and its full compliance with the latest ground-to-ground communication standard AMHS (Air Traffic Service (ATS) Message Handling Services). This standard was defined by ICAO and its first specification released in 1998 and will in the long haul replace the currently common AFTN and CIDIN technology. Eventually, the ANSP team opted for COMSOFT's solution, because of its full integration concept regarding the usage of the disparate communication standards running on one platform. In total seven aeronautical message handling systems had to be assembled in Karlsruhe and installed in Bordeaux, Toulouse. Furthermore, several customised IP/Async concentrators had to be installed throughout France, in order to bridge the gap to the legacy AFTN technology.

Like many projects this one has received a name. It has been given the French name for blue tit, a very common species of singing birds in Europe. Despite having similar characteristics the connection is rather simple. The project's name is an acronym for the French term MESsAgerie de Nouvelle GEnération. Now, the little bird has become the mascot of the entire project.

## MESANGE

MESANGE has been a special project in many regards. Besides having the unique constellation of two customers another fundamental milestone in this project was a decisive factor for its success: the very extensive Factory Acceptance Tests. The FAT were a fruitful experience for all participants. For over six weeks the system was tested in every conceivable way and in active cooperation with the manufacturer COMSOFT. DSNA and skyguide had the opportunity to bring their system into perfection according to their personal preferences. In conclusion, the results were of utmost value to both the participants and the system. The combination of know-how of all evolved experts and valuable time spent together during this period of thorough testing has set a benchmark for collaborative and successful team work; both between ANSPs but also between COMSOFT and their customers. As a matter of fact it has also led to some welcomed improvements of the two product lines AIDA-NG and CADAS and DSNA and skyguide have received a supreme system in return with the utmost interoperability level.

The FAT was completed just before Christmas 2008 allowing for the scheduled training period to begin in January 2009. Already from February on the systems were delivered to their final destinations and installations were being conducted.



The mascot bird, mesange (fr.) = blue tit (engl.)



Members of the project team at COMSOFT



Project team from left to right: Michel Solery (DSNA), Giorgoi Vagni (skyguide), Jean-Marc Vacker, Jean-Yves Piram (both DSNA), Manfred Schmid, Andreas Böhm, Geza Szabados-Hann, Tina Jung, Frank Wöpfermann (all COMSOFT), Nicole Genotelle, David Gianola, Philippe Morio (all DSNA), Manfred Kissel (COMSOFT)



Cabinet layout

## ARCHITECTURE/LAYOUT

MESANGE is composed of the following COMSOFT products:

- AIDA-NG
- CADAS ATS
- CCMS
- ESMS (DSNA only)
- Email-Fax Gateway (skyguide only)
- Directory server

With AIDA-NG both administrations obtained COMSOFT's sophisticated aeronautical message handling system which has been purchased so far by more than 30 customers worldwide. The MESANGE system possesses fully redundant AIDA-NG servers equipped with a predefined number of serial and LAN interfaces. DSNA has adopted two independent locations where they had their equipment installed. The main site is Bordeaux where the operational, contingency and test and training systems are hosted. The second site is Toulouse where a test and development system has been deployed. The Swiss counterpart has opted for a single location. Skyguide operates with an operational, contingency and test and training system which are all deployed in Geneva.

On top of that, the nine redundant concentrators in France are a derivative of the AIDA system with limited functionality and modified software. They manage the collection of data from AFTN terminals in the country which are not yet adapted to today's data transfer capacity.

CADAS, COMSOFT's Aeronautical Data Access system, comes with a large number of licenses for each country allowing uncomplicated web-based user access from any CADAS client PC in France and Switzerland with the respective access rights. Its static databases are AIXM and ARINC 424 compatible and CADAS-ATS the application for Flight Plan Management and the generation of NOTAM messages are in full accordance with the respective ICAO requirements.

CCMS is the COMSOFT Configuration Management Suite and configures the system for use with any other application, either from COMSOFT or from other manufacturers. Besides assisting the configuration and restoration of settings by providing scripts, it also maintains the environment. It comes with a most user-friendly graphical user interface, which is highly welcomed by its attending operators.

The Directory Server is based on X.500 technology and stores data such as addresses of all clients on the network. Directory services are closely linked to AMHS, and its use is essential to deploy many of the services defined in AMHS.



CADAS FPL form

ESMS, the Enhanced System Management Station for air traffic control environments, is basically monitoring software and has been implanted in the French infrastructure. With a considerable amount of additional hardware and a more branched network DSNA opted for a monitoring and control system. From a central location all main systems, concentrators, routers and the performance of the network can be supervised and if necessary controlled.

The Email Fax Gateway is used to send AFTN messages via fax. Prior to sending the messages are being converted into the according email format.

### System components:

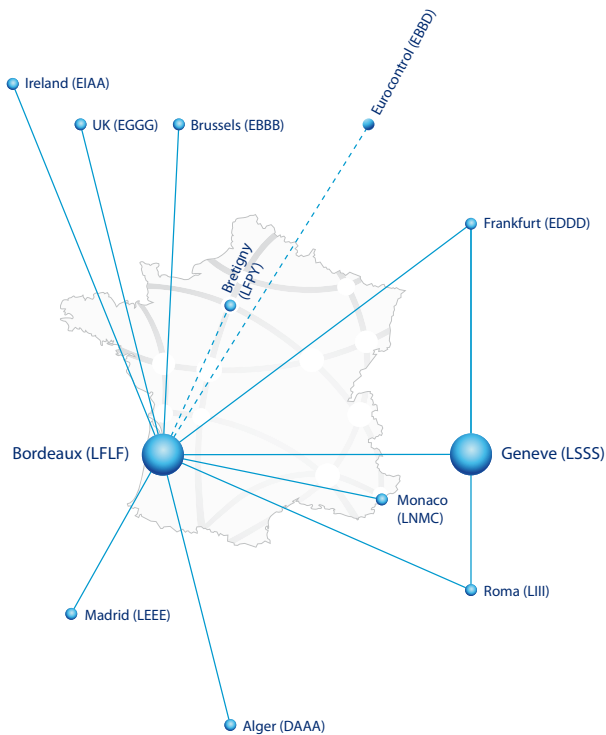
	FRANCE	SWITZERLAND
MESANGE systems (incl. AIDA-NG, CADAS-ATS, CCMS, EFG)	Bordeaux (3) Toulouse (1)	Geneva (3)
Interfaces: serial redundant AFTN/CIDIN/AMHS	10	60
Concentrators  Serial interfaces of concentrators	9 up to 80	—
ESMS	1	—
CADAS-ATS clients	200	200
Protocol/Messaging Support	AFTN over CIDIN, X.25, ASYNC and TCP/IP; X.400 over TPo/X.25 and TCP/IP; X.500 Directory Services	



Visit at COM Centre



Demo system setup



International links of the MESANGE AIDA-NG Systems

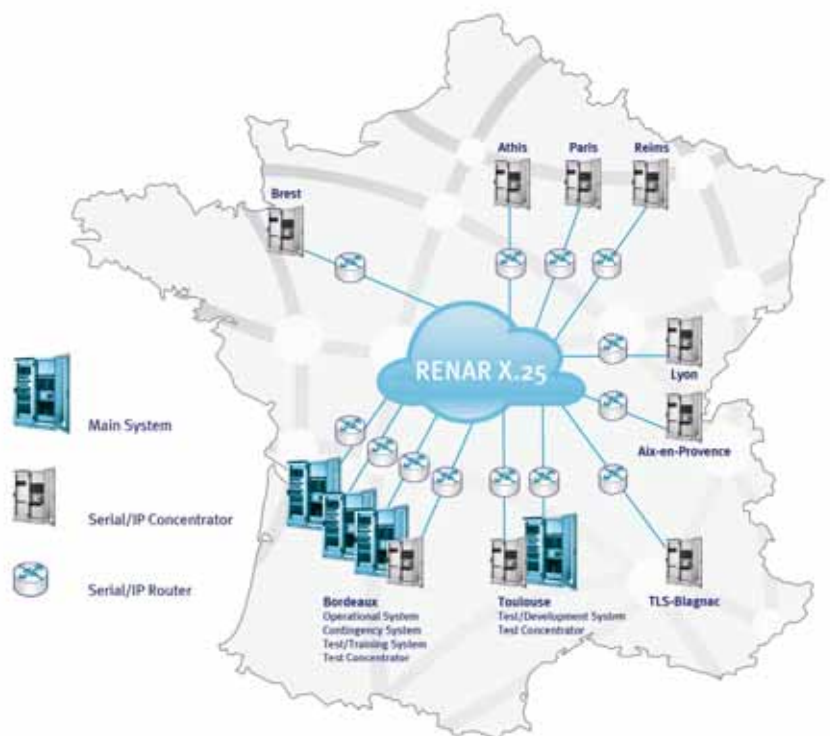
Concentrators have been installed at the following sites:

- Brest
- Paris
- Athis
- Reims
- Lyon
- Aix-en-Provence
- Toulouse-Blagnac
- Toulouse
- Bordeaux

## Concentrators – specialities of the French network

In order to take advantage of the potential of the high speed communication and processing messaging systems a number of concentrators had to be deployed with the purpose to collect messages from slow, asynchronous lines and forward them over a high speed link to the main AIDA-NG system in Bordeaux. From a technical point of view concentrators operate with a modified version of the AIDA software and use the current X.25 RENAR network to send data through the country. RENAR, however, is envisaged for replacement within the next few years. In line with the trend of the aeronautical industry the technology will be migrated from X.25 to IP-based technology. As of today bridging the gap between the IP data processing of the concentrators and the serial line of the X.25 network a conversion between the two standards is necessary which is done by means of routers connected to every concentrator site.

All concentrators are remotely supervised by ESMS.



AIDA-NG Systems and Concentrators in France

## OUTLOOK

As one of the next steps both ANSPs envisage performing AMHS interoperability and pre-operational tests between France and Switzerland in order to start off the migration from AFTN to AMHS. Upon completion most neighbouring countries - including EUROCONTROL's CFMU in Brussels - are due connecting.

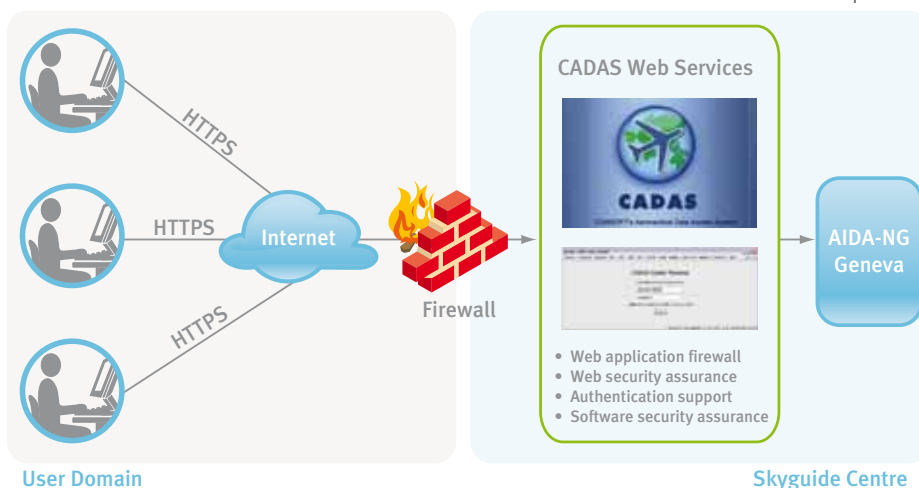
Another pending issue that arose in the context of an extensive study of skyguide's Information Communication Technology (ICT) committee after the commission of the new messaging infrastructure is to make CADAS services available over the public Internet. This requirement was not an issue for the initial MESANGE project but it gained momentum in the light of increasing security awareness paired with the intention to exploit the benefits of the public Internet for ATC services as well. COMSOFT - already pioneering in this domain - can offer a full range of security related enhancements which are to be implemented in the course of 2010.

As a result, the network infrastructure and the MESANGE system in Geneva itself will be optimised in terms of IT security meeting the increasing requirements on web-based applications. For this reason, the Swiss ANSP prolonged their collaboration with COMSOFT to install and fine-tune the crucial CADAS security package and finally prepare the Geneva system for the planned access of several hundred users via Internet.

CADAS has already proven in related projects that its IT security package fully meets the current requirements with regard to communication over Internet which is a means that has gained more and more popularity. Apart from the general ICAO recommendations and Internet Best Practises, the OWASP Application Security Verification Standards (ASVA) stipulated by skyguide were met in the course of this project. Skyguide's elaborate firewall technology completes the entire package supporting the protection of contents from unauthorised access.

*„This unique composition of two ANSPs is an ideal approach to guarantee interoperability between the corresponding partners.“*

Manfred Schmid, Managing Director, COMSOFT GmbH.



Secured internet access to MESANGE services

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