COM AMHS/2

INTERNATIONAL CIVIL AVIATION ORGANIZATION

RLA/06/901

SECOND WORKSHOP / MEETING OF SUPERVISORS / OPERATORS OF COM AMHS CENTERS (COM AMHS/2)

SUMMARY OF DISCUSSIONS

(Teleconferences, 25 to 27 May 2021)

The designation used and the presentation of the material in this publication do not imply the expression of any opinion on the part of ICAO regarding the legal status of any country, territory, city or area, or of its authorities, or the delimitation of its frontiers or boundaries.

INDEX

HISTORY OF THE WORKSHOP/MEETING

ii-1 WORKSHOP/MEETING DETAILS

The Second Workshop/Meeting (Virtual) of Supervisors/Operators of AMHS Centers of the SAM Region, was held through teleconferences (Zoom), from 25 to 27 May 2021.

ii-2 OPENING

Mr. Francisco Almeida, CNS Regional Officer of the ICAO South American Regional Office, welcomed the participants, highlighted the topics to be addressed and desired success in the deliberations. He then opened the workshop/meeting.

ii-3 LANGUAGES

The working languages of the workshop/meeting were Spanish and English (simultaneous interpretation). The documentation was presented in both languages.

ii-4 PARTICIPANTS AND ORGANIZATION

The Meeting was attended by representatives of the 13 States of the Region (Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, France, Panama, Paraguay, Peru, Suriname, Uruguay and Venezuela) and ICAO Officers, totaling 59 people. The list of participants appears on page iii-1.

Mr. Francisco Almeida, CNS Regional Officer, acted as Secretary of the Meeting.

LIST OF PARTICIPANTS

ARGENTINA
1. Marcos Lemos
2. Jorge Daniel Ramos
3. Nestor Eduardo Mansilla
4. Pablo Quiroga
5. Antonio Gonzalez
6. Claudia Bilt
7. Rhael Sananes
8. Daniel Candil
9. Gisela Aguero
10. Gustavo Denami
11. Diego Biani
12. Barbara Militello
13. Vicente Fernando Cáceres

BOLIVIA
14. Ana María Tovar
15. Florentino Flores
16. Fernando Quispe
17. Javier Campos
18. Mijael Vargas

BRAZIL
19. Lucio Cavalcante
20. Anderson Barros

CHILE
21. Jorge Poblete
22. Juan Brito

COLOMBIA
23. Wilbert Hernández Rodríguez
24. Teddy Dennis
25. Luis Ramírez
26. Claudia Pilar Sepúlveda Caballero

ECUADOR
27. José Paredes
28. Darwin Yazbeck

FRANCE
29. Igor Bordelais

PANAMA
30. Daniel de Ávila
31. Edgar Roca

PARAGUAY
32. Andrea Melissa Villar
33. Luz Ferreira
34. Rodrigo Martínez
35. Edilberto Astorga Ramírez

PERU
36. Zonia Obregón Egoavil
37. José Yataco
38. Gabriela Mogollón
39. Henry Loza
40. Adolfo Jiménez
41. Raúl Anastacio Granda
42. Carlos Silva
43. Mike Moisés Valera Ríos
44. César Carranza

SURINAME
45. Jurgen Cicilson
46. Sharita Radjie
47. Sjiefajet Hoeseni

URUGUAY
48. Alicia Padilla
49. Mary Casaña
50. Henry Díaz
51. Andrés Barboza

VENEZUELA
52. Maricel Berroteran
53. Sabrina Rodríguez
54. Wilfredo Aldana
55. Freyman Cabezas
56. Ilse Barrios
57. Marla Sánchez

ICAO
58. Francisco Almeida
59. Javier Vittor

Agenda Item 1: Approval of the agenda and meeting schedule

1.1 Under this agenda item, the Meeting adopted the agenda and schedule of the workshop/meeting, which are included as **Appendices A and B** of this part of the Summary of Discussions.

APPENDIX A

RLA/06/901 REGIONAL PROJECT

SECOND WORKSHOP/MEETING OF SUPERVISORS/OPERATORS OF COM AMHS CENTERS OF THE SAM REGION (COM AMHS/2)
(Teleconferences, May 25 to 27 2021)

PROVISIONAL AGENDA

Agenda Item 1:	Adoption of the agenda and schedule of the meeting
Agenda Item 2:	Presentation of contingency plans for message service prepared by SAM Region States
Agenda Item 3:	Review of routing and exchange tables of updated information on AMHS addresses attributed in each State
Agenda Item 4: (AMC)	Updating information at EUROCONTROL's AMHS Address Management Centre
Agenda Item 5:	Other issues

EXPLANATORY NOTES OF THE PROVISIONAL AGENDA

Agenda Item 1: Adoption of the agenda and schedule of the meeting

The Provisional Agenda and the Schedule proposed by the Secretariat for the Workshop/Meeting, will be submitted for consideration and approval by the participants.

Agenda Item 2: Presentation of contingency plans for message service prepared by SAM Region States

The States of the SAM Region shall submit the Contingency Plans prepared from the First Workshop/Meeting (Virtual) of Supervisors/Operators of COM AMHS Centres of the SAM Region (COM AMHS/1), held in September 2020.

Agenda Item 3: Review of routing and exchange tables of updated information on AMHS addresses attributed in each State

Under this agenda item, routing tables will be reviewed between COM Centers in the SAM Region and also with COM Centers in other regions. In addition, those responsible for the AMHS COM Centers shall share the information of the addresses valid in each State, including the information of the distribution lists (DL), in order to composing a regional database.

Agenda Item 4: Updating information at EUROCONTROL's AMHS Address Management Centre (AMC)

With the review of the routing tables done, participants will have the opportunity to update (online) the information at Eurocontrol´s AMHS Address Management Centre (AMC) and exchange experiences on the use of the resources available in the AMC web application.

Agenda Item 5: Other issues

Under this agenda item, participants will be able to discuss issues related to the message service, such as support for the GT Interop ATM/FPL Subgroup in mitigating flight plan errors and duplication, implementing Distribution Lists (DLs), and linking the message service to the AIDC implementation.

APPENDIX B

RLA/06/901 REGIONAL PROJECT

SECOND WORKSHOP/MEETING OF SUPERVISORS/OPERATORS OF COM AMHS CENTERS OF THE SAM REGION (COM AMHS/2)
(Teleconferences, May 25 to 27 2021)

TENTATIVE SCHEDULE

HOUR	**Tuesday** 25 May 2021	**HOUR**	**Wednesday** 26 May 2021	**HOUR**	**Thursday** 27 May 2021
08:45 09:00	Registration of participants	08:45 09:15	Agenda Item 2	08:45 09:15	Agenda Item 4
09:00 09:15	Opening				
09:15 10:00	Agenda Items 1 & 2	09:15 10:00	Agenda Item 2	09:15 10:00	Agenda Item 4
10:00 10:10	***Breake***	10:00 10:10	***Break***	10:00 10:10	***Break***
10:10 11:10	Agenda Item 2	10:10 11:10	Agenda Item 3	10:10 11:10	Agenda Item 5
11:10 12:10	***Lunch Break***	11:10 12:10	Lunch Break	11:10 12:10	***Lunch Break***
12:10 13:00	Agenda Item 2	12:10 13:00	Agenda Item 3	12:10 13:00	Agenda Item 5
13:00 13:10	***Break***	13:00 13:10	***Break***	13:00 13:10	***Break***
13:10 14:00	Agenda Item 2	13:10 14:00	Agenda Item 3	13:10 13:20	Closing Session

Agenda Item 2: Presentation of the Contingency Plans for the message service prepared by SAM Region States

2.1 Under this agenda item, each State presented the drafting stage of its contingency plans for the COM AMHS Centers of the SAM Region.

2.2 Most States have already prepared a contingency plan, but they are in the stage of approval by the authorities. The Secretariat has observed that it is important that States share their plans with adjacent centers for review and comments that may improve the procedures adopted.

2.3 A situation that occurred a few days before the COM AMHS/2 Meeting has contributed to several States reviewing their contingency plans. The AMHS Center in La Paz presented a fault, losing the P1 AMHS connections with the centers of Brasilia, Ezeiza and Lima.

2.4 In the REDDIG nodes there are still the serial boards that were used to connect the old AFTN Centers. One possibility to address this contingency situation in Bolivia could be the establishment of AFTN terminals in La Paz, connected to the AFTN sections of the Brasilia and Ezeiza Gateways (MTCU). The Brasilia and Ezeiza centers would divert all traffic directed to Bolivia (SL *) through these AFTN connections. Figure 1 presents the outline of this proposed solution.

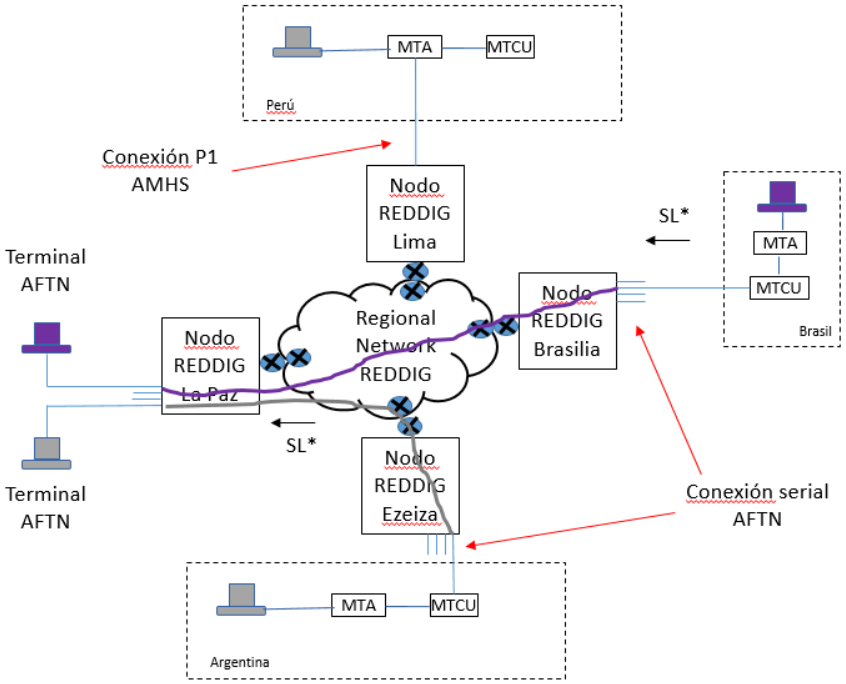

Figure 1 – Proposal for a contingency solution for the COM AMHS Center in La Paz

2.5 If this solution is used, the third adjacent center (Lima) should redirect the Bolivia message traffic to one of the two other adjacent centers (Brasilia or Ezeiza).

2.6 The solution adopted by the Bolivian administration was to install, as an emergency, an AMHS system developed by Skysoft. A P1 AMHS connection was established with the COM AMHS Center in Ezeiza and two terminals (UA) were installed to receive / transmit AMHS messages. The other adjacent centers (Brasilia and Lima) redirected traffic destined for Bolivia, via the Ezeiza MTA. Figure 2 presents the contingency solution adopted by the Bolivian administration.

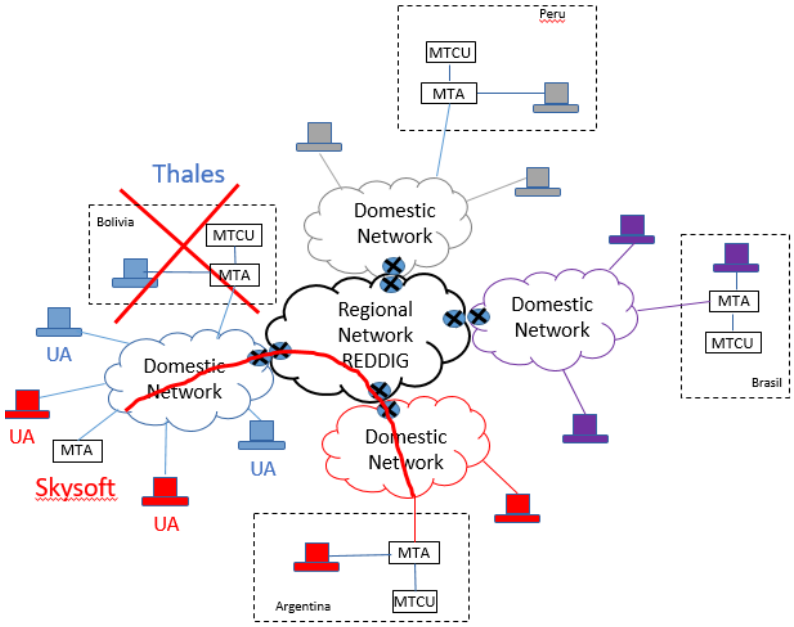

Figure 2 – Contingency solution adopted by the COM AMHS Center of La Paz

2.7 This solution is close to the implementation of centers with redundancy, with the difference that, normally, the two centers (main and redundant) are from the same manufacturer. Figure 3 presents the COM AMHS Center concept with redundancy. In some implementations, the redundant center is offline, being activated in a few minutes in case of failure of the main center. Normally, the redundant offline center is used to carry out training or connection tests, without affecting the operation of the main center.

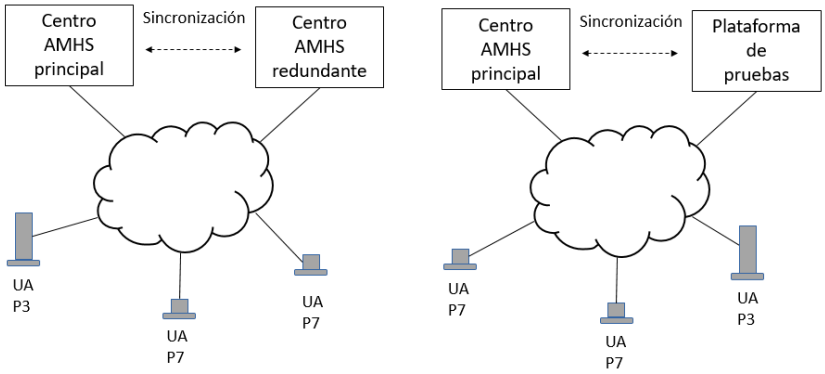

Figure 3 – COM AMHS Center concept with redundancy

2.8 Some administrations implement an AMHS center and a test platform with the same characteristics as the main center but usually with less capacity, which can also be used in contingency situations.

2.9 The administrations of the COM AMHS Centers of the SAM Region should consider the implementation of their COM AMHS Centers with a redundancy solution to increase service availability.

2.10 Likewise, those responsible for the COM AMHS Centers must consider all the existing possibilities to mitigate a contingency situation, even using AFTN terminals, as described in item 2.4.

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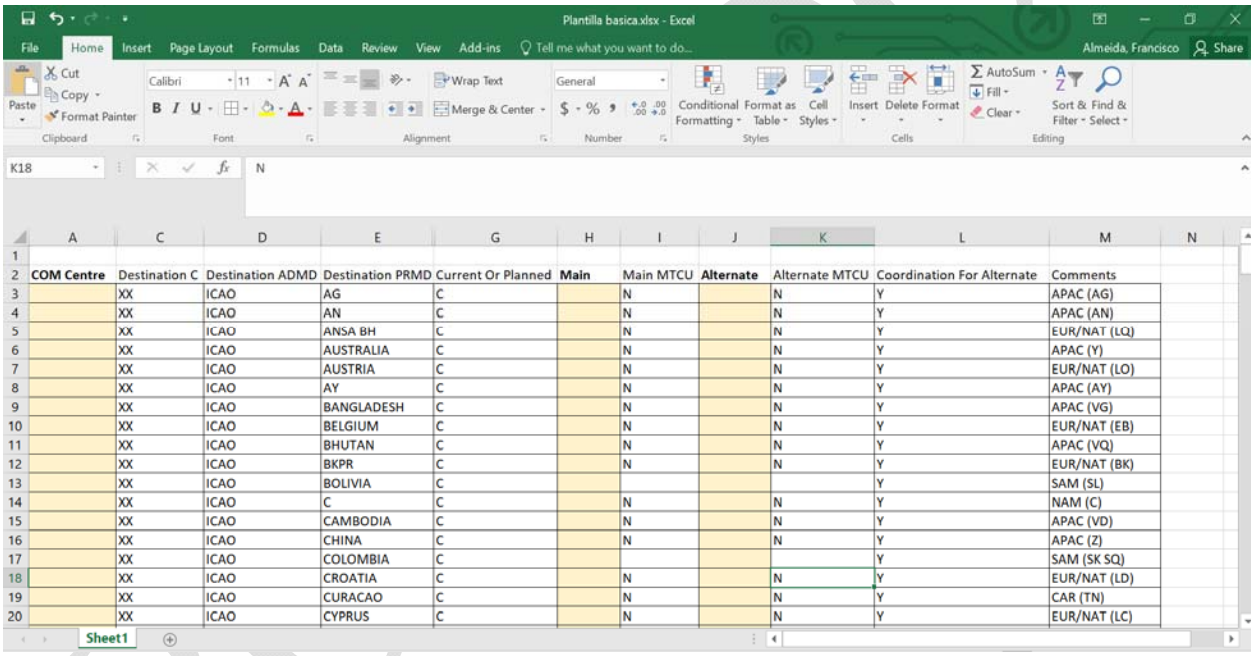
Agenda Item 3: Review of the routing tables and exchange of the updated information of the AMHS addresses attributed in each State

3.1 Under this agenda item, it was indicated the need for the CCC Operators (formerly AMC External Operators) of each COM AMHS Center in the region, to update the information in the existing database in the web application of the AMHS Management Center AMHS (AMC) of Eurocontrol (https://ext.eurocontrol.int/amc/index.do).

3.2 It is important that all CCC Operators access the application in the first 7 days of each AIRAC cycle, to make the necessary changes, regarding to each COM AMHS Center in the region.

3.3 The Secretariat indicated that the best way to update the AMHS routing information is to send an Excel table to the AMC Operator, when an AIRAC cycle begins. Figure 3-1 presents a basic template to be filled with the AMHS routing information. This template will be circulated among the Workshop/Meeting participants and will be available on the event website.



	A	C	D	E	G	H	I	J	K	L	M	N
1												
2	**COM Centre**	Destination C	Destination ADMD	Destination PRMD	Current Or Planned	**Main**	Main MTCU	**Alternate**	Alternate MTCU	Coordination For Alternate	Comments	
3		XX	ICAO	AG	C		N		N	Y	APAC (AG)	
4		XX	ICAO	AN	C		N		N	Y	APAC (AN)	
5		XX	ICAO	ANSA BH	C		N		N	Y	EUR/NAT (LQ)	
6		XX	ICAO	AUSTRALIA	C		N		N	Y	APAC (Y)	
7		XX	ICAO	AUSTRIA	C		N		N	Y	EUR/NAT (LO)	
8		XX	ICAO	AY	C		N		N	Y	APAC (AY)	
9		XX	ICAO	BANGLADESH	C		N		N	Y	APAC (VG)	
10		XX	ICAO	BELGIUM	C		N		N	Y	EUR/NAT (EB)	
11		XX	ICAO	BHUTAN	C		N		N	Y	APAC (VQ)	
12		XX	ICAO	BKPR	C		N		N	Y	EUR/NAT (BK)	
13		XX	ICAO	BOLIVIA	C					Y	SAM (SL)	
14		XX	ICAO	C	C		N		N	Y	NAM (C)	
15		XX	ICAO	CAMBODIA	C		N		N	Y	APAC (VD)	
16		XX	ICAO	CHINA	C		N		N	Y	APAC (Z)	
17		XX	ICAO	COLOMBIA	C					Y	SAM (SK SQ)	
18		XX	ICAO	CROATIA	C		N		N	Y	EUR/NAT (LD)	
19		XX	ICAO	CURACAO	C		N		N	Y	CAR (TN)	
20		XX	ICAO	CYPRUS	C		N		N	Y	EUR/NAT (LC)	

Figure 3-1 – Exported information for an electronic template

3.4 Column A (all lines) will contain the 4-letter indicator of the COM AMHS center that is updating the information. Columns H and J are the main and alternate adjacent centers, respectively, for message routing.

3.5 The AFTN routing table (COM 6 List), which is available on the workshop website, can be used as a reference for the preparation of AMHS routings.

3.6 Once the electronic template has been completed, it must be sent to the AMC Operator via email, within the appropriate period of the AIRAC cycle.

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Agenda Item 4: Update of information in the AMHS Address Management Center (AMC) of EUROCONTROL

4.1 During the AMHS Advanced Course (Virtual, May 17 to 21, 2021), the Instructor (Mr. Manuel Garcia) provided a form for each COM Center in the Region to report the data of each center, in order to establish a standard on how to enter the information in the AMC database. **Appendix A** of this part of the Summary of Discussions presents the form to be filled up by each AMHS COM Center of the SAM Region.

4.2 During the Workshop/Meeting, it was agreed that the forms discussed during the Advanced Course on AMHS would be used as standard. Figure 4-1 presents the information entered referring to the COM AMHS Center of Caracas for the ***Persons & Contacts*** tab.

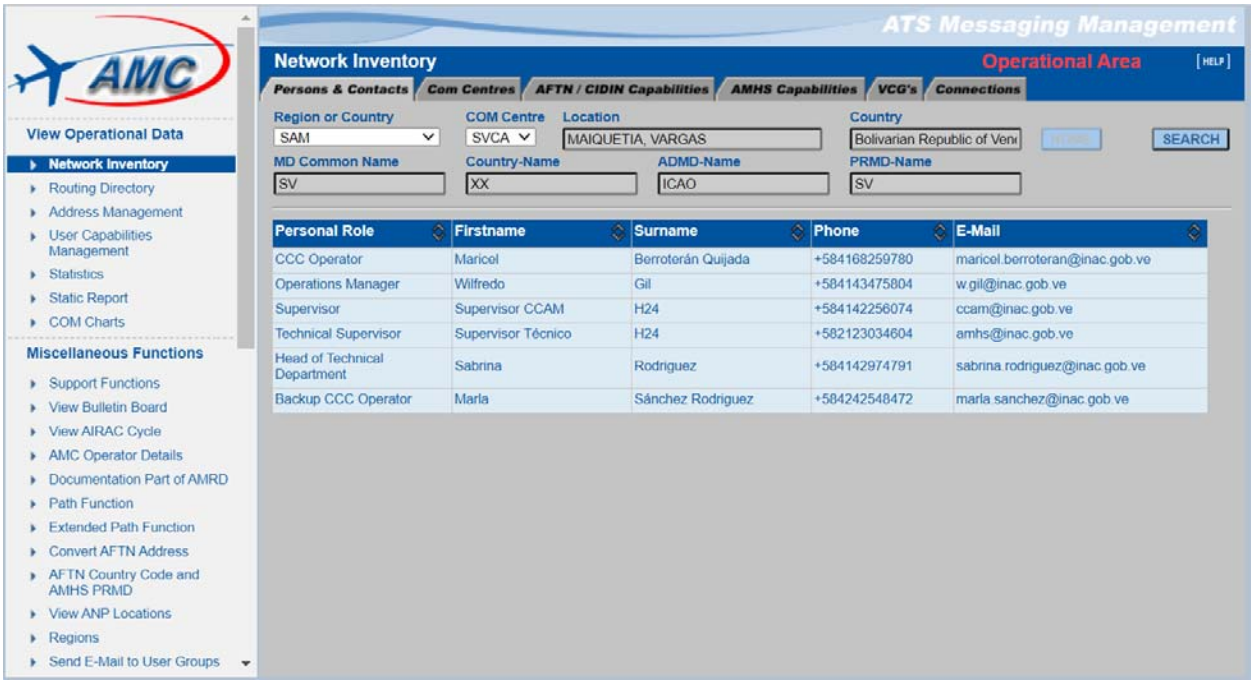

Figure 4-1 – Personnel and contacts of the COM AMHS Center of Caracas

4.3 As a good practice, it is convenient to inform the AMC Operator, via email, of the changes made to the database, through the AMC website.

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APPENDIX A

DATA COLLECTION COM CENTER (Name)

Network Inventory / Persons and Contacts.

Identify for each COM center the focal points along with the telephone and e-mail data for the following profiles:

- CCC Operator.
- CCC Backup Operator.
- Supervision H24.
- Technical manager.
- Operations manager

Network Inventory / AMHS Capabilities.

Identify for each COM center the following information:

- MTA Name: name of the MTA(s).
- Extended Encoded Information Types: support of the following types of information: IA5, FTBP (File Tranfer Body Part), General-Text Body Part (ISO 646) y General-Text Body Part (ISO 8859-1).
- Maximum Content Length: maximum message size that the MTA can handle.
- Currently Authorized Message Length: maximum message size that the AFTN/AMHS gateways can handle.

Network Inventory / Connections.

Identify for each COM center the following information regarding AFTN and/or AMHS connections with other international COM centers:

- Remote COM: collateral COM center with which an AFTN or AMHS connection has been established.
- Protocol: protocol used for the connection (AMHS/TCP-IP, AMHS/TP0-X,25, AFTN IP, AFTN, X25,…).
- Link type: type of link used (IPv4, IPv6, X.25,…).
- Capacity: available bandwidth for this connection.
- Supplier: name of the data network used (REDDIG, MEVA,…).
- Description: additional information about this link.

AMHS Addressing.

Identify for each COM center the following information regarding the AMHS addressing used in each country:

- Type of addressing used: CAAS o XF.
- PRMD (Private Management Domain): value of this parameter used for all addresses in each country.
- Organization name: value or values used in each country. If more than one value is used, the relationship between the AFTN (location indicator) and the 'organization name' value used must be identified.

Routing Directory.

Identify, if possible, the routing tables configured in each COM center, both in the AFTN module and in the MTA.

Agenda Item 5: Other business

5.1 Under this agenda item, the participants received other information related to the operation/implementation of the COM AMHS Centers.

Use of the Web Service

5.2 The participants of the workshop/meeting were informed that the current trend is that the data used in the aeronautical context is being exchanged, less and less, with text messages (AFTN/AMHS) and become more common the use of new formats and modern techniques of information exchange (database to database).

5.3 A widely used form of data exchange today is through a web service. A web service is an application that can be described, published, located through a network, generally the Internet.

Regional OPMET Data Base of Brasilia

5.4 The current Regional OPMET Data Base of Brasilia is an example of a web service implementation. Even though it maintains the possibility of sending and receiving meteorological information via the Aeronautical Message Handling Service (AMHS), a web server was implemented that provides the interconnection from system to system, allowing the exchange of information in a more effective way. Figure 5-1 describes the concept of the OPMET Regional Bank of Brasilia.

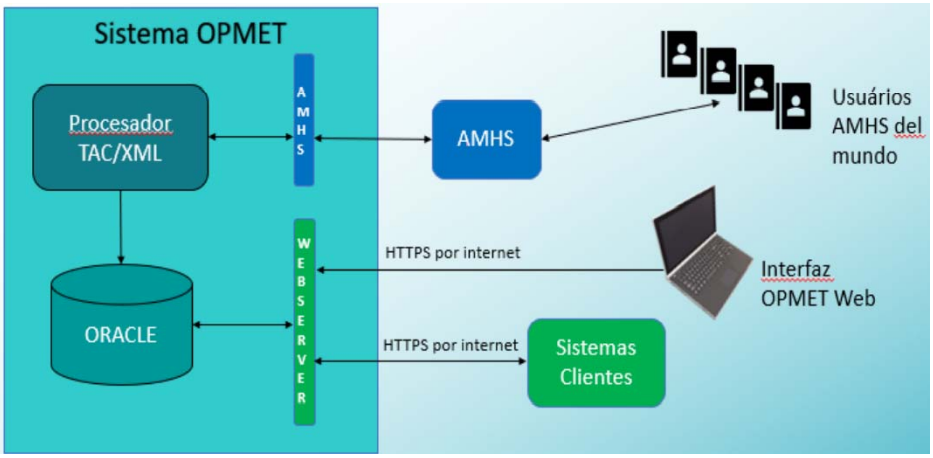

Figure 5-1 – Concept of the Regional OPMET Data Base of Brasilia

5.5 The systems can be connected through a private (Intranet) or public (Internet) network. The meteorological information received by the message service (AMHS) are encoded texts and the receiver needs to know the encoding used to understand the content. On the other hand, a system connected to the web server of the Regional OPMET Data Base system can provide its users with a more user-friendly presentation of meteorological information, using sensory resources (images, colors, sound, graphics, tables, etc.), allowing a better understanding of the transmitted information.

5.6 Figure 5-2 shows the presentation of meteorological information on the REDEMET website, through the use of a web service. It is important to observe the quality of the information provided with a graphic display of a map, a box with the meteorological information of the selected locality (SBFN

- Fernando de Noronha Island) presented in plain text (**Visibility**: Greater than or equal to 10 km, **Temperature**: 29 ºC, etc.), in addition to providing the local METAR and TAF encoded texts.

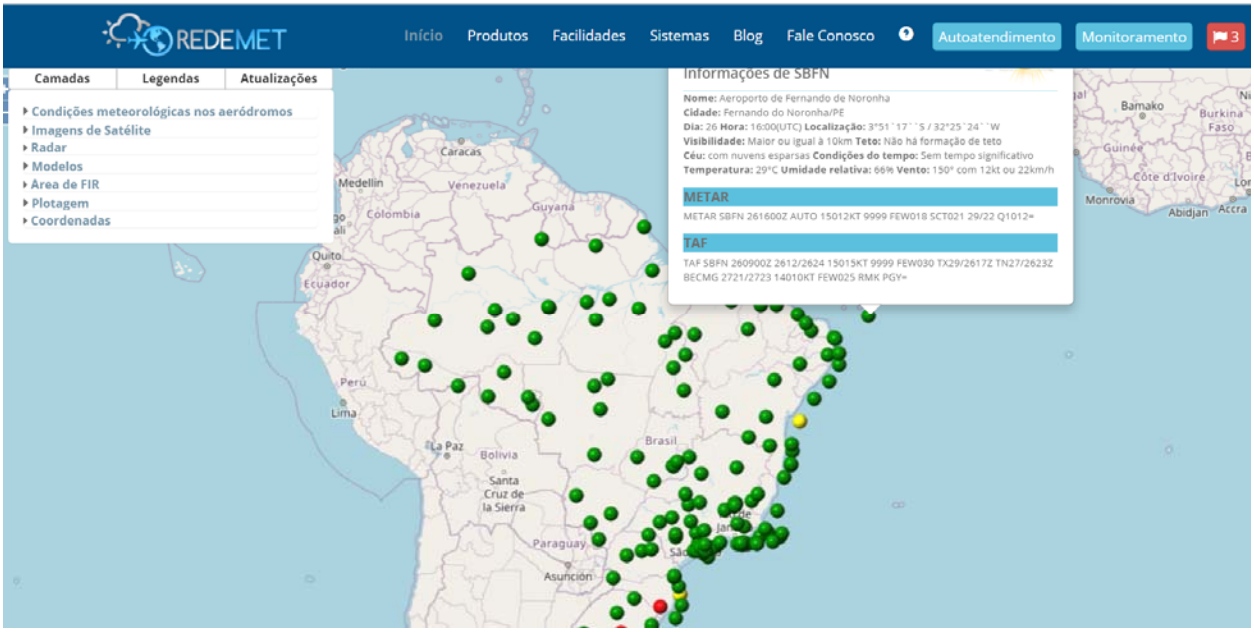

Figure 5-2 – Meteorological information presented on the REDEMET website

SWIM concept

5.7 The SWIM (System Wide Information Management) concept is made up of standards, infrastructure and governance that allow the management of ATM information and its exchange between qualified parties through interoperable services.

5.8 SWIM is considered as an ATS information repository and in this sense ICAO is supporting the joint efforts that SESAR and NEXTGEN are making to reach a global solution.

5.9 The SWIM infrastructure is a set of software components distributed in a network infrastructure that allows interoperability between ATM systems (civil and military), including aircraft. It provides connected systems with the technical means to support application services in the invocation of information services and non-functional services. All of these services are interoperable through the use of standard technology and a common data representation. Figure 5-3 presents the components of the SWIM concept.

AIRM (ATM Information Reference Model)

5.10 The information exchanged between interested parties must be defined, so that it can be used correctly by consumers and producers. AIRM (ATM Information Reference Model) is a reference model that helps to guarantee the harmonization of ATM information models, reducing costs in the exchange of information in different environments.

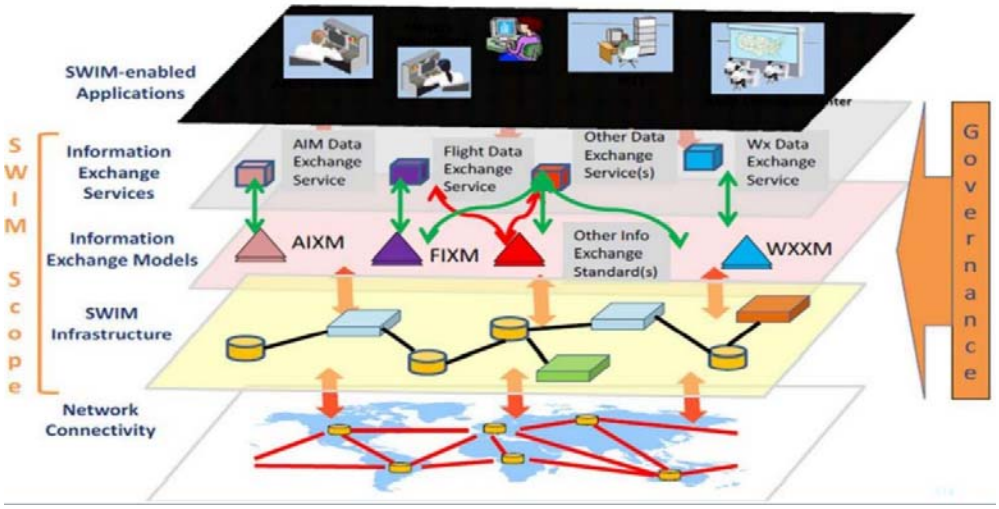

Figure 5-3 –SWIM Concept

5.11 The main AIRM information exchange models are:

- FIXM: Flight Information Exchange Model (globally standardized flow and flight information exchange model).
- AIXM: Aeronautical Information Exchange Model (AIS information exchange model in digital format).
- IWXXM: ICAO Meteorological Information Exchange Model (aeronautical meteorological information exchange model).
- AMXM: Aerodrome Mapping Exchange Model (information exchange model for aerodrome mapping database).

5.12 The AIRM information exchange models use XML/GML as the coding syntax for the information exchanged. XML is a markup language created by the World Wide Web Consortium (W3C) to define a syntax for encoding documents that humans and machines can read. It does this through the use of labels (tags) that define the structure of the document, as well as the way the document should be stored and transported.

5.13 The Geography Markup Language (GML) is the XML grammar defined by the Open Geospatial Consortium (OGC) to express landforms. GML serves as a modeling language for geographic systems, as well as an open exchange format for geographic transactions on the Internet.

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