

INTERNATIONAL CIVIL AVIATION ORGANIZATION

Seventh Meeting of Civil Aviation Authorities of the SAM Region (RAAC/7)

(Salvador, Bahia, Brazil, 1-3 July 2002)

Agenda Item 4: Transition to the CNS/ATM systems

b) **Multinational systems and services - South American Digital Network (REDDIG)**

PREPARATION OF STUDIES ON MULTINATIONAL SYSTEMS AND SERVICES

(presented by the Secretariat)

Summary

This working paper presents information about the current status of planning of multinational facilities/services in the Region and proposes measures to the meeting for furthering these matters, examining possible areas in which these multinational facilities/services may be established. It also puts forward actions to encourage the preparation of studies and implementation of these systems.

References:

- CAR/SAM Regional Air Navigation Plan (FASID and Basic ANP);
- GREPECAS/10 Report;
- Report of the CAR/SAM/3 RAN Meeting (Doc. 9749);
- Summary of Discussions and Conclusions of the RAAC/6 Meeting;
- Report of the Tenth Air Navigation Meeting (Doc. 9583);
- Report of the FANS Phase II/4 Meeting (Doc. 9623);
- UNDP/ICAO LAR/98/019 Regional Technical Co-operation Project Document;
- Manual on Air Navigation Services Economics (Doc. 9161/3);
- ICAO Policies on Airport and Air Navigation Service charges (Doc. 9082/6);
- EUR ANP (Doc. 7754); and
- Report of the CNS/ATM/IC/6 Meeting.

1. Introduction

1.1 The Tenth Air Navigation Conference (September 1991), on approving the concept of CNS/ATM systems, also recognised that while those systems would be extremely beneficial for international civil aviation, they would require the implementation of institutional agreements different from those used thus far by most of the States to implement the services/facilities recommended in the ICAO Air Navigation Plan, which are based on bilateral agreements and whose situation regarding charges is considered to be generally balanced.

1.2 Although bilateral agreements continue to be the common practice for implementing the Air Navigation Plan, technological breakthroughs and the multinational nature of the ICAO CNS/ATM systems require a different type of organization for the implementation and future management of airport and air navigation systems, together with large investments that will require exploring new financing mechanisms and sources.

1.3 The Sixth Meeting of Civil Aviation Authorities (RAAC/6), held in Panama (August 1999), recognised that new institutional agreements were needed to implement elements of the CNS/ATM systems and that the economic, political and institutional implications must be assessed through the use of scenarios. In this way, the States can be proactive in the development of implementation, management and operational programmes, instead of reacting too late to situations that could be beyond their control.. In this connection, the aforementioned RAAC/6 meeting formulated Conclusions 6/7 – Guidelines for multinational facilities and services, and 6/8 – Development of scenarios for the provision of facilities and services. The RAAC/6 meeting also considered that a high-level Regional Working Group on institutional matters (RAAC/6 Conclusion 6/9) should be established to deal with the cited Conclusions 6/7 and 6/8. Comments on the Conclusions formulated by RAAC/6 can be found in WP/15.

1.4 The CAR/SAM/3 Regional Air Navigation Meeting, on reviewing the CAR/SAM regional plans, recommended that the CNS/ATM systems required by the ICAO CAR/SAM Regions in the medium and long terms should be a part of those plans. In doing so, it acknowledged the need to have multinational facilities and services for the implementation of the recommended CNS/ATM systems. In this connection, considering the guidelines on multinational facilities and services developed by ICAO for the EUR Region, it drafted the CAR/SAM guidelines on this subject as part of the relevant texts on regional and global planning for CNS/ATM systems (CAR/SAM/3 Recommendations 13/1 and 13/2).

2. Current status of multinational facility and service planning in the CAR/SAM Regions

2.1 The CAR/SAM FASID Document contains the General Guidelines for the establishment and provision of multinational facilities/services, which were updated by the GREPECAS/10 Meeting. These updated guidelines are attached as **Appendix A** to this working paper.

2.2 A multinational facility/service is defined in the guidelines of Appendix A as:

"Facility/Service specifically identified as such and included in the ICAO CAR/SAM Regional Plan to provide services to international air navigation in the airspace extending beyond that which is the responsibility of a single State according to the CAR/SAM Regional Plan."

2.2.1 In light of the foregoing definition, it should be noted that the multinational facilities/services could take many forms according to the agreements reached for their implementation; they could differ in scopes in terms of the air navigation facilities/services. Thus, for example, a multinational facility/service could be agreed upon under the collective financing of States and cover only communication systems to provide support to operational services, as in the LAR/98/019 project to implement the South American Digital Network (REDDIG) or, using multinational communication systems, they could provide region-wide operational services, such as the services of a future Regional Air Traffic Flow Management (ATFM), using the REDDIG platform.

2.3 As for the multinational systems/services to support air navigation in the CAR/SAM Regions, there is a communication system in place today to support the dissemination of WAFS products, known as ISCS, which was one of the first systems of its characteristics to be implemented in the CAR/SAM Regions. On the other hand, the aforementioned regional technical co-operation project for the implementation of the REDDIG is being carried out in the SAM Region, financed collectively by the States. In the CAR Region, a satellite network known as MEVA, whose restructuring is being studied with a view to interconnecting it with REDDIG, is being operated under an agreement with a service provider. Also to be found in the CAR Region is COCESNA, an inter-governmental organisation made up of the Central American countries for the purpose of providing air navigation services in this Sub-region. A number of different multinational facilities/services are supplied under its aegis to support air traffic services in the CENAMER FIR.

2.4 Conclusion 6/8 of RAAC/6 recommends the development of scenarios to assess problems related to the implementation, management and operation of CNS/ATM systems. In this regard, GREPECAS, through the LAR/98/003 regional technical co-operation project, is preparing a consolidated list of CNS/ATM requirements as part of Phase IV of this project and based on the analysis of 18 traffic flows considered in the ATM part of the FASID. Said project is also developing a CNS/ATM Planning and Evaluation Tool (PET) for simulating scenarios for technical, operational, institutional and financial analyses (cost-benefit analyses), including the determination of the most critical elements of the scenario. The LAR/98/003 project is preparing a Seminar on institutional matters in Honduras (3-7 June 2002), where issues of interest to the CAR/SAM Regions will be addressed in order to generate an exchange of ideas based on the material to be presented at the seminar. To the extent necessary, the results of the discussions in the Honduras Seminar will be presented to the Meeting for analysis.

2.5 The GREPECAS CNS/ATM/IC Subgroup, now disbanded, had determined, through the Institutional Aspects Task Force, that there was a need to examine institutional arrangements with regard to the following systems:

- a) GNSS-based systems;
- b) digital communication networks;
- c) management of main traffic flows; and
- d) calibration of radio aids.

2.5.1 With the restructuring of GREPECAS pursuant to Decision 9/20 of the GREPECAS/9 Meeting, the CNS/ATM/IC Subgroup, together with the COM and ATS Subgroups, were disbanded to create the current ATM/CNS Subgroup mechanism, to which the Institutional Aspects Task Force was transferred. The cited ATM/CNS Subgroup has not considered since GREPECAS/9 whether to study institutional arrangements on multinational systems/services in the aforementioned areas.

3. Discussion

3.1 The CNS/ATM systems, in view of their characteristics, such as the use of satellite technology, extensive use of data links through an aeronautical inter-network, extensive use of ATM automation processes and coverage of large geographic areas extending beyond national boundaries, are appropriate for the establishment of institutional arrangements to implement multinational facilities/services. This could be the only viable solution for meeting the requirements of the Air Navigation Plan in a cost-efficient and systematic way. In this connection, and bearing in mind what was already identified by the aforementioned Institutional Aspects Task Force, the meeting could consider studying several possibilities for multinational systems to support the implementation of CNS/ATM elements. Accordingly, the following alternatives are presented for examination by the meeting:

- a) Multi-service/multi-protocol voice and data digital networks as communication platforms that would make it possible for cost-efficient operation of current and future communications needed by the air navigation plan, with a view to implementing ground and ground-air applications that are compatible with the ATN inter-network in order to facilitate the development of ATM automation.
- b) ATM automation for centralised management, whose development could be considered as of the implementation of a Regional Air Traffic Flow Management (ATFM) Unit that could be established based on the support of digital network platforms and automatic flight plan processes, which the AFTN could support until another type of messaging (ATSMHS) service is established.
- c) SBAS augmentation in keeping with the results of the planning of regional augmentation through Regional Project LAR/00/009, which would make it possible to establish corrective advisories in the CAR/SAM Regions in order to provide NPA navigation and, if feasible, APV-1 navigation, with the corresponding operational parameters.
- d) AIS/data base automation systems to facilitate implementation of the integrated automated AIS system, as recommended in the CAR/SAM Air Navigation Plan.
- e) A regional programme for the implementation of Flight Tests for conventional and satellite-based aids that would facilitate the cost-efficient application of the ICAO SARPs in this area through agreements for regional collaboration and sharing of the resources of the flight testing units.

- f) Aeronautical Mobile-Satellite System (AMSS) that would facilitate the implementation of data-links for ADS/CPDLC in remote areas (oceanic and continental).
- g) Airspace Safety Monitoring and Management Agency that would make it possible to ensure fulfilment of the necessary requirements for RVSM and RNP implementation in the CAR/SAM Regions (Conclusions 10/12, 10/13 and 10/14 of the GREPECAS/10 Meeting).

3.2 The foregoing possible multinational systems could evolve in the future toward a unified agreement for developing a Eurocontrol- or COCESNA-type regional inter-governmental organisation in the Region. The establishment of a Unified Area Control Centre for the Region could be considered in the long run within this evolution, resting on the development of services through an aeronautical inter-network (ATN, for example) on an appropriate digital communications platform, in such a way that it can meet the operational requirements of the future regional ATM.

3.3 In this connection, it is important to take note of the role of GREPECAS in the matter, since, as stated in the guidelines set out in Appendix A, GREPECAS plays an active and vital role in promoting, assessing, co-ordinating with interested States, acknowledging the projects for multinational systems and generating amendments to the Air Navigation Plan. In this respect, GREPECAS has already examined some systems that could be considered multinational, thus providing support for the development of the South American Digital Network (REDDIG) and regional testing of GNSS augmentation. At the GREPECAS/10 Meeting, matters related to the establishment of a Regional Central Unit for Air Traffic Flow Management were discussed. It was noted in this regard that this subject was included in the working programme of the ATM Committee of the CNS/ATM Subgroup and that it was given high priority in the work of the cited Subgroup.

3.3.1 Based on the above, it would be very convenient for the implementation of the CNS/ATM systems recommended in the FASID if GREPECAS were to establish concrete plans to have the ATM/CNS Subgroup conduct studies on institutional arrangements for multinational facilities/services by applying the criteria established in the guidelines of Appendix A. In doing so, GREPECAS could take into account the systems listed in paragraph 3.1 above that complement and enlarge upon the systems identified by the Institutional Aspects Task Force. In this connection, the meeting could consider the possibility of formulating the following Conclusion:

CONCLUSION 7/X - STUDY BY GREPECAS OF MULTINATIONAL FACILITIES/SERVICES

That GREPECAS establish plans as soon as possible for conducting studies of possible multinational facilities/services based on the General Guidelines on the establishment and provision of multinational facilities/services that could be used for the timely and systematic implementation of the CNS/ATM systems recommended in the CAR/SAM FASID.

3.4 Once the studies of multinational systems conducted by GREPECAS are available, it would be advisable to examine them in the light of the possibilities for their implementation that civil aviation authorities could identify in co-ordination with users and other counterparts interested in the implementation of the CNS/ATM systems. In this connection, it is important to recognise the contribution that the high-level Regional Working Group on Institutional Matters recommended in RAAC/6 Conclusion 6/9 could make. In this respect, the meeting could consider valid the cited Conclusion 6/9, which ICAO would consider once the findings of GREPECAS on the study of the multinational systems mechanism are available.

3.4 On the other hand, and with respect to the identification, in the Air Navigation Plan, of the multinational facility/service, it should be noted that at the present stage of FASID formulation, the identification of the multinational system in this document is not clearly established. Thus, for example, for ATS speech communication services, the FASID mentions the future REDDIG only in the column under Remarks of Table CNS 1C– ATS Speech Circuits. Nevertheless, considering that the multinational facility/service should be an integral part of the Air Navigation Plan (see definition in paragraph 2.2 above), it would be advisable to study a more appropriate way to describe it, and, to the extent necessary and based on the evolution of the Plan and of the multinational system, the corresponding amendments should be permitted. One way to do this could be, for the multinational aeronautical communication system for the AFS, for example, to introduce an appropriate table showing the main general technical characteristics and services by Network Node in a new section of the FASID, which could be known as CNS Multinational Facilities/Services. By way of example, the meeting could examine the Table shown in the attached **Appendix B** and, in this sense, formulate the following Conclusion:

CONCLUSION 7/X - PROPER IDENTIFICATION OF MULTINATIONAL FACILITIES/SERVICES IN THE FASID

That the ICAO SAM Regional Office, in order to plan better the CAR/SAM multinational facilities/services within the FASID, request the GREPECAS mechanism to study an appropriate way to present the multinational facilities/services in that document in order to facilitate their identification and description and the processing of future amendments affecting those multinational systems in connection with the evolution of the Air Navigation Plan.

4. Suggested action

4.1 The meeting is invited to consider the information presented in this working paper in order to develop measures that will make it possible to study and implement in the CAR/SAM Regions multinational systems that will facilitate the timely and systematic implementation of the CNS/ATM systems and services recommended in the Regional Air Navigation Plan. In this connection, the meeting could, among other things, consider formulating the Conclusions proposed in this working paper.

APPENDIX A*FASID CAR/SAM – GEN II-S***ATTACHMENT 2 TO APPENDIX A
(APPENDIX TO DRAFT CONC. 6/2)****3.3 General Guidelines on the establishment and provision of multinational facilities/services in the CAR/SAM Regions****3.3.1 General**

3.3.1.1 When implementing facilities and services States will wish to explore the possibilities for the establishment and provision of a multinational facility/service and the following guidelines are available in that regard.

3.3.2 Introduction

3.3.2.1 These guidelines were developed by the CAR/SAM/3 RAN Meeting (1999), Recommendation 13/2 pursuant to Recommendation ANSEP/2-3 approved by the ICAO Council at the sixth meeting of its 146th Session.

3.3.2.2 They reflect relevant ICAO provisions and established policies on the Organization's regional planning for and implementation of facilities/services required for air navigation applicable in the CAR/SAM Regions. They also recognize the principle that costs may be recovered for facilities and services provided for and implemented under the CAR/SAM Regional Plan as approved by the Council according to the principles set forth in the *Statements by the Council to Contracting States on Charges for Airports and Air Navigation Services* (Doc 9082, paragraph 34 (ii) refers) and the more detailed guidance material in the *ICAO Manual on Air Navigation Services Economics* (Doc 9161).

3.3.3 Defining Multinational Air Navigation Facilities/Services

3.3.3.1 It is expected that multinational air navigation facilities/services will, for some time, continue to be the exception rather than the rule within the CAR/SAM Regions. Because of their uniqueness, their impact on the system as a whole as well as their implications for users and providers of the multinational facilities/services, need early recognition by GREPECAS or other implementation group. Defining a multinational CAR/SAM air navigation facility/service in the following way would facilitate such identification in a rational manner:

- A facility/service specifically identified as such and included in the ICAO CAR/SAM Regional Plan for the purpose of serving international air navigation in airspace extending beyond the airspace serviced by a single State in accordance with the CAR/SAM Regional Plan.

3.3.3.2 The purpose of a multinational facility/service to serve international air navigation in airspace extending beyond the airspace serviced by a single State is a useful and qualifying element. It is a crucial criterion in that it unambiguously discards other possibilities which the machinery for regional planning and implementation of requirements for facilities/services provides for under Article 28 of the Convention, in accordance with Standards and Recommended Practices and relevant Assembly Resolutions, e.g. establishment of an operating agency, and as a last resort, joint financing under Chapter XV of the Convention. While in any such case States would individually remain responsible under Article 28 for the provision of facilities/services within the area of their jurisdiction, a “multinational” facility/service by its very nature would extend beyond the individual airspace of a State.

3.3.3.3 In ICAO rules and procedures the term “facility/service” for air navigation is well understood. Contrary to the term “project” or any other term which may relate only to certain segments or phases of an undertaking, it does not exclude research, development, operation and eventually the phasing out of a joint venture. In this context, there is therefore no need to depart from the well known term “facility/service” for air navigation. There is, however, room for amplifying the definition by additional elements in order to dissociate the common undertaking from those facilities/services which are provided by one State only.

3.3.4 **Applicability of ICAO provisions**

3.3.4.1 Pursuant to Article 28 of the Convention and in line with the ICAO policies concerning the formulation of regional plans and their implementation, every multinational installation/service will appear in the regional plan as established by Council. In turn, when establishing the cost basis for route facility charges, the Council approved principles are to be applied, i.e. the costs to be taken into account should be those assessed in relation to facilities and services provided for and implemented under the CAR/SAM Regional Plan.

3.3.5 **CAR/SAM Regional Plan**

3.3.5.1 Regional plans for facilities, services and procedures are established by the Council, normally on the advice of Regional Air Navigation Meetings. Between such meetings plans are updated, on an *ad hoc* basis, through the Procedures for the Amendment of Approved Regional Plans. In both cases an experimental procedure based on Recommendation No. 2 of the Conference on the Economics of Route Air Navigation Facilities and Airports (1973), applies as follows: in case of an objection to the inclusion of facilities/services in the plan raised by a State on the grounds that facilities/services are not required for international civil aviation, to the extent feasible, costs of the facilities/services questioned are evaluated.

3.3.5.2 The CAR/SAM Regional Planning and Implementation Group (GREPECAS) as well as all parties to the regional planning processes for the continuous management of the CAR/SAM Air Navigation Plan, should continue to pay due regard to the operational requirements, expected technical progress, the likely financial implications for users and providers, and possible alternative solutions and operational cost/benefit considerations.

3.3.5.3 The process for development and implementation of multinational facilities/services would be similar to that concerning the inclusion of any facilities/services in the CAR/SAM Regional Plan and would have the general objective of ensuring continuous and coherent development of the CAR/SAM Regional Plan as a whole and possible benefits of joint action by participating States.

3.3.6 **Planning and Development of a Multinational Air Navigation Facility/Service in the CAR/SAM Regions**

3.3.6.1 The following guidelines constitute a step by step process for the development of a multinational air navigation facility/service in the CAR/SAM regions. The following paragraphs provide comments on the various stages.

- A. The need for a multinational air navigation facility/service may originate from either:
 - a) the CAR/SAM Regional Planning and Implementation Group (GREPECAS); or
 - b) a State or a group of States.
- B. The installation/service proposals should be supported by documentation related with the following aspects:
 - a) aim of the proposal and operational and technical justifications;
 - b) financial implications and cost/benefit relationship;
 - c) management implications; and
 - d) alternative solutions.
- C. The proposal will be evaluated by GREPECAS, particularly with respect to its justification, acceptability and cost/benefit relationship.
- D. If a similar agreement has been reached within GREPECAS, the latter will proceed through the Caribbean and South American Regional Office, to carry out the following:
 - a) consult with the States directly interested, as well as the States to use them, on the possibility of providing multinational installations/services; and
 - b) evaluate again the proposal on the basis of comments formulated by said States and decide whether the proposal should continue or not.
- E. GREPECAS elaborates, having consulted all interested parties, a complete proposal for amendment to the CAR/SAM regional plan, which will be effected in accordance with the procedure approved by Council.

Comments on the procedure

3.3.6.2 From the basic elements of definition, and from its evident consequence, which is the whole integration of the proposal for a multinational CAR/SAM installation/service in the ICAO planning and implementation processes for the CAR/SAM Regions, it can be deduced that:

A. The ICAO CAR/SAM air navigation multinational installation/service proposals can originate from:

- a) the CAR/SAM regional planning and implementation Group (GREPECAS); or
- b) a State or group of States.

3.3.6.3 Within this context, it can be recalled that GREPECAS carries out, at all moments, an active role. The permanent regional planning and coordination mechanism supposes, in effect, this prior requirement that permits to provide, at all times, a reaction adapted to CAR/SAM specific needs, and which appears, on the other hand, in the objectives of the Group, such as:

- a) ensure the continuous and coherent development of the CAR/SAM regional plan as a whole and in relation with those of the adjacent regions; and
- b) identify specific problems in the air navigation field and propose interested parties, in an appropriate manner, measures to solve them.

3.3.6.4 The CAR/SAM planning processes and the GREPECAS working methods, as indicated in the Procedural Handbook, assure in a permanent and intensive manner the information from CAR/SAM member States, as well as the coordination with same. Even though to these procedures maximum transparency is inherent, special attention should be given from the beginning when they deal with multinational projects that can have vital repercussions for all interested parties. GREPECAS accepted the principle:

- that, upon elaborating a multinational installation/service proposal, it will act in close consultation with interested States and international organizations during the whole phase of its review.

3.3.6.5 In the introductory part of the CAR/SAM regional plan, the amendment procedures of approved regional plans and the permanent management of the CAR/SAM regional plan are described.

3.3.6.6 When a proposal is originated within GREPECAS or when it is submitted to its consideration by a State or group of States, basic information is required to permit a preliminary evaluation. Therefore, as a principle:

B. The installation/service proposals should be supported by documentation related with the following aspects:

- a) ***purpose of the multinational air navigation facility/service and its operational and technical justifications.*** This should include the overall plan and targets for the development and the establishment of the facility/service. The likely implications if any, on regulations, working-routines, equipment, premises and maintenance should be included. Information on the expected consequences on the overall CAR/SAM air navigation system or any part thereof should also be included;

b) ***financial implications and cost-effectiveness.*** Related information should include estimates of the total costs of the multinational facility/service covering, as required, research and development, implementation, operation and maintenance, administration, and capital costs; how all costs incurred prior to the operational phase will be financed; assessing savings which may accrue from the implementation of the facility/service (these can be measured in monetary and/or physical terms for example air traffic controller positions, communications facilities, etc.) and comparing these savings to the total cost estimates; proposals as to how cost shares of States participating in the provision of the project are to be determined. Also, assessment needs to be provided on impact on users from charges for the facility/service concerned;

c) ***managerial implications***

As a minimum, information should be included on the organization of the infrastructure (operational and administrative) and on personnel.

d) ***alternative solutions***

Even though normally it cannot be expected that all proposals submitted, from the outside, to the consideration of GREPECAS contain all the information necessary for a preliminary evaluation, GREPECAS should always take into account any possible option through which operational requirements can be satisfied in a more profitable manner. This information should form part of the documentation to be provided to the parties to be consulted.

3.3.6.7 Once the necessary information is available, the following phase should be initiated as soon as possible.

C. The proposal will be evaluated by GREPECAS, particularly with respect to its justification, acceptability and cost/benefit relationship.

D. If a similar agreement has been reached within GREPECAS, the latter will proceed through the Caribbean and South American Regional Office, to carry out the following:

a) consult with the States directly interested, as well as the States to use them, on the possibility of providing multinational installations/services; and

b) evaluate again the proposal on the basis of comments formulated by said States and decide whether the proposal should continue or not.

3.3.6.8 GREPECAS attributes, as well as the procedures adopted to carry out its activities, permit the Group to receive assessment with regard to economy, as required. GREPECAS will be the most indicated to establish the need for assistance as well as the manner it should take, upon examining a definite proposal for a multinational installation/Service.

3.3.6.9 Upon completing the preparatory work described above, the adding of an installation/service in the CAR/SAM regional plan is carried out as follows:

E. GREPECAS elaborates, having consulted all interested parties, a complete proposal for amendment to the CAR/SAM regional plan, which will be effected in accordance with the procedure approved by Council.

3.3.7 **Financial, managerial and other contractual aspects**

3.3.7.1 The participation of States in the provision of a multinational facility/service is based on the assumption that any State having supported and agreed to the implementation of such a facility/service and making use of it, should also shoulder its respective share of the costs involved. The participating States would need to formalize the terms under which the multinational facility/service is to be provided in an agreement. A primary aim of the agreement should be to ensure that the costs involved are shared among the participating States in a fair and equitable manner.

3.3.7.2 This part of the guidelines is concerned with the main contractual aspects, financial, managerial and other issues, that should normally be considered when initiating work on a potential multinational facility/service. The basic provisions that would need to be considered for incorporation in such an agreement are outlined, including provisions concerning cost sharing and cost determination. However, the guidance does not extend to the presentation of a draft model agreement or clauses, since circumstances related to the planning, implementation and operation of individual multinational facilities/services may vary considerably.

Note.— The guidelines generally refer to “agreement” as a generic term covering one or more agreements as the case may be.

3.3.8 **Types of agreements**

3.3.8.1 An agreement covering the development, implementation, operation and maintenance of a multinational facility/service could either take the form of a formal international treaty or an “administrative agreement”. Both forms establish an international obligation but a treaty requires the signature of the head of state or government and will also require the ratification or approval of the national legislative assembly, which, as a rule, is a time-consuming process. An “administrative agreement”, on the other hand, is at a lower level of requirement in respect of formalities and procedures than a treaty, can be signed by a minister or director of civil aviation or some other authorized person, and could be concluded by an exchange of letters or notes.

3.3.8.2 It is recommended that, whenever possible, the agreement be established in the form of an “administrative agreement” rather than a formal international treaty because this would allow the agreement to come into force with minimum delay and also permit greater flexibility in incorporating any subsequent modifications required. It is recognized, however, that in some States constitutional or legal circumstances may require the approval of the legislative assembly for financial obligations to be accepted by the State, particularly if these are of a substantial magnitude and/or extend over a period of time. Whatever form is used the agreement(s) should be structured to provide for easy subsequent amendments as developments may require. To this end, material of detail which is more likely to require modifications, and which will not affect the basic provisions of the agreement, should be contained in annexes or appendices.

3.3.8.3 It is further recommended that whenever possible only one general agreement (treaty/“administrative agreement”) be adopted covering all aspects of the facility/service concerned through all its phases. However, this may not always be possible. In certain circumstances it might be necessary or preferable to have more than one agreement (treaty/”administrative agreement”) differing in scope and content. In those circumstances the aim should be to cover as many aspects as possible in the “administrative agreement” and limit the use of the treaty to those aspects for which this form of agreement is essential for the States concerned. Recognizing this, one agreement for example, might cover the activities, including pre-financing, to be undertaken by those States that accept the responsibility for bringing the facility/service up to operational status, with another agreement to be concluded between all the States (including the first group of States aforementioned), which would use or be served by the facility/service once it became operational. In such circumstances the former agreement would be important because the first group of States would have to ensure the provision of funds from their own resources to ensure the implementation of the facility/service, since no inflow of revenues from charges on users (aircraft operators) would take place until the multinational facility/service becomes operational.

3.3.8.4 Another possible approach, if required by circumstances, would be for all the participating States to conclude an agreement covering, in general terms, their commitment to participate in the provision of the multinational facility/service, and then developing a separate agreement covering all aspects relating to the financing and operation of the multinational facility/service.

3.3.8.5 The various basic provisions that would normally have to be covered in an agreement of this nature are addressed below in the sequence they would usually appear, as follows:

- a) ***Objective of the agreement.*** In the introductory text the agreement should set out the objective underlying the participating States' decision to jointly arrange for the provision of the multinational facility/service concerned.
- b) ***Obligations of States party to the agreement.*** The agreement should at the outset briefly set forth the basic obligations of the participating States. These include the obligation (by a participating State or group of States individually or collectively or as assigned to an organization or agency) to establish and operate the facility/service concerned; the obligation of each participating State to pay its share of the costs involved; the obligation to observe ICAO policies and practices, including those addressing cost recovery by States from aircraft operators, etc.
- c) ***Definition and description of the facility/service.*** The agreement should contain a clear and accurate definition and description of the multinational facility/service to be provided and the functions it is to perform, including to the extent possible and desirable, the supporting services required. It may be advisable in certain cases to make specific reference to functions which the multinational facility/service will not be performing.
- d) ***Establishment and operation of the facility/service.*** The agreement should specify who will establish and operate the facility/service concerned, namely whether this is to be done by one State, two or more States, an existing international organization, an existing national or international agency, or a new agency to be established specifically for this purpose.

Note - The decision as to who should provide the facility/service could be influenced, in particular, by the anticipated capital investment and annual costs involved, as well as the extent to which the alternative providers (i.e. a participating State or States, international organization or agency) have been engaged in the function(s) concerned.

- e) **Legal capacity.** If an international organization or agency (as referred to in Assembly Resolution A22-19) is to establish and/or operate the facility/service concerned, it will have to be endowed with proper legal capacity to have the capacity to contract, to acquire and dispose of property and to institute and answer legal proceedings.
 - f) **Liability aspects.** Closely related to legal capacity are the liability aspects which may have to be addressed in the agreement. This involves such aspects as the determination of the extent to which liability is to be assumed in connection with the provision of the multinational facility/service. Other aspects also include whether the entity providing the facility/service concerned, whether an international organization agency or State(s), should alone assume such responsibility or whether this should be shared amongst all the participating States.
 - g) **Managerial aspects.** The nature of the governing body or bodies required to administer the agreement needs to be established and a description of their functions provided. Should a new agency be established to operate the multinational facility/service, this would need to be stipulated in the agreement, where reference should also be made to the functions and responsibilities of the executive head of the agency and to whom he or she would be responsible.
- 1) **Governing bodies and decision-making arrangements.** Voting arrangements should be specified. It would need to be decided whether each participating State should have equal voting power (as is for example the practice of ICAO). Alternatively, each State's vote may be weighed in accordance with a predetermined formula, which would need to be specified, for example, by determining the voting power according to that participant's share of total contributions to the facility/service or agency concerned. A maximum and/or a minimum limit may be set for the number of votes that can be assigned to any individual participant regardless of that participant's share of total contributions.

Another voting aspect which has to be decided on, and specified in the agreement, is whether a simple majority would apply in all cases or whether for particular issues a large majority vote (to be specified) or even unanimity would be required. Where different degrees of majority voting would apply depending on the matter or subject being voted on, these would also need to be clearly identified in the agreement.

- 2) **Organization and staffing.** The agreement should refer to the manner in which the entity actually operating the facility/service would structure or organize its functions. This would apply in particular if the operation is to be assigned to a new agency. Various aspects of staffing (nationality, numbers and type etc.) will also need to be addressed and, as appropriate, incorporated in the agreement (or an annex to it). If the participating States agree that the multinational facility/service is to be provided by one State or by two or more States (each providing separate components or parts of the project involved), the nationality of staff should not give rise to any problems, and need not be covered in the agreement. However, operation by an international organization or agency, may require that certain stipulations be included in the agreement concerning the selection of qualified staff from participating States. Other aspects to be considered, aside from the number and types of staff, are the various elements of conditions of service including status to be accorded to any expatriate staff, tax exemptions, etc., which will reflect on the overall costs of the venture.
- 3) **Consultation.** Provision should be made in the agreement to ensure adequate consultation with States being party to the agreement but not represented on the governing body, and appropriate aircraft operators organizations. Such consultations should at least be undertaken in advance of any developments that could materially affect cost share to be allocated to these States, user charges, and the quality of the services provided.

h) **Financial aspects:**

- 1) **Pre-implementation considerations.** The determination and presentation of the costs attributable to the provision of the multinational facility/service concerned should proceed in a manner acceptable to all the participating States. In this context it should be noted that bringing the facility/service up to implementation status can involve the costs of implementation being financed by one or more of the participating States. However, once the facility/service has been implemented, these costs would be capitalized and then included as depreciation (together with accumulated interest) in the overall cost base to be shared among the States participating in the provision of the facility/service concerned.
- 2) **Cost determination.** In order to formalize the manner in which the costs to be shared should be arrived at, the agreement between the States participating in the provision of a multinational facility/service should contain clauses referring to the determination of the related costs. The agreement should also stipulate that the approach towards cost determination be based on that recommended in Chapter 4 of the ICAO Manual on Air Navigation Services Economics (Doc 9161). Should more comprehensive instructions, based on Doc 9161 be required, it is preferable that these be presented in an annex in view of their relative volume and detail, and also because it may be expected that they would

need to be updated and modified more frequently than the main text of the agreement. (Amendments to the annexes to the agreement would normally be subject to the approval of the governing body of the multinational facility/service).

In line with the approach adopted in Doc 9161, the annex would normally contain an inventory of the various components of the multinational facility/service (e.g. buildings, equipment, number of staff by function, etc.). It would also cover the determination of annual costs, i.e. operation and maintenance costs, administrative overheads, depreciation and/or amortization and cost of capital as well as special capital outlays. Finally, where a multinational facility/service or any of its components serve other than the multinational functions specified in the agreement (i.e. functions serving one State only, or non-aeronautical functions), instructions should be provided to ensure the accurate determination of the “multinational” costs to be shared among the participating States.

The agreement would also need to specify, normally in an annex, the basic format to be used for the presentation of the annual costs for approval. The scope and detail of the format will depend on the particular circumstances involved.

- 3) ***Cost sharing.*** Once a State has supported and agreed to the implementation of a multinational facility/service and making use of it, it would be expected to assume responsibility for its share of the costs involved. This basic obligation should be reflected in the agreement between the participating States.

The agreement should outline the procedure to be applied for determining the cost share to be borne by each participating State. Any cost sharing method should, to the extent possible, be equitable, simple and easy to apply. The question of equity should not only be considered in the context of the participating States, but also with respect to the final users (aircraft operators) since it may be assumed that in most instances the participating States would include the costs they incur in the cost base for their air navigation facility charges, where levied.

In general, it does not appear feasible to recommend one specific method or approach to cost sharing because the situation will vary, depending particularly, on the technical and operational characteristics of the multinational facility/service involved, the views or policies of the participating States on how costs should be shared, and the volume of these costs.

In the interest of equity, however, any method of cost sharing should, in principle, be based on the extent of the use of the multinational facility/service concerned by each participating State. Thus, the parameters or keys used to determine each State's cost share should reflect the extent of such use. However, if the use made of a multinational facility/service can only be measured by applying complex procedures and at a cost which is not commensurate with the costs to be shared, other methods of cost sharing based on readily available and relevant statistical data could be applied. Whatever method is selected it must provide for the just and equitable sharing of the costs involved.

A multinational facility/service might be operated by one or more States with other States contributing their share of the costs involved. In such circumstances, all the States concerned must decide whether or not the total costs should be subject to sharing or if any allowances should be made to reflect any tangible benefits accruing to the State(s) engaged in the actual operation of the facility/service concerned. Such benefits would usually be in the form of employment of nationals, contracts awarded to national companies, etc. with their associated multiplier effect on the economies of the State(s) concerned. It should be noted that the States actually operating the facility/service would, like other State(s) using it, be obliged to pay its (their) share of the total costs to be shared.

- 4) ***Recovery of costs from users.*** As a rule, a multinational facility/service would have to be “multinationally” financed or prefinanced by a State, group of States or by an agency as established under the authority of an agreement by States. However, any of these could recover the costs so incurred from users once the facility/service has been implemented. Nevertheless, States may also choose to recover less than full costs in recognition of local, regional or national benefits (Doc 9082, paragraph 35 (i) refers). Where an agency has been authorized to recover its costs through charges, the authorizing States would nevertheless need to make up for revenue shortfalls where, for example, the States had decided certain flights should either be exempted from or pay reduced charges.

It would be up to each participating State to decide whether or not it wishes to recover its cost share from the users (aircraft operators). A State could either include these costs in its cost base for route facility charges (if it levies such charges), or, alternatively, recover the costs by levying a separate charge (normally a more complex and costly procedure to administer). While the recovery of such cost shares from users might normally not be referred to in an agreement on a multinational facility/service, the agreement could include a provision to the effect that such recovery must be based on Article 15 of the Chicago Convention as well as the principles and recommendations in Doc 9082.

If the participating States were to assign the operation of a multinational facility/service to an international organization or an international agency and decide that it should levy charges on aircraft operators for the purpose of full or partial cost recovery, this would need to be covered in the agreement. In such instances the agreement would usually also stipulate (probably in a separate annex) the charging formula to be used, reductions and exemptions granted, billing and payment arrangements, etc. Such procedures would, of course, need to conform with the provisions of Article 15 of the Chicago Convention and Doc 9082.

- 5) **Budgeting.** Proper financial control will require costs and revenues to be estimated in advance. The itemization of the costs should basically correspond with that used for the presentation of costs. This will enable actual costs to be compared with estimated costs, and actual revenues with those estimated.
 - 6) **Authority to approve the budget.** The agreement should also stipulate who has the authority to approve the budget and thus authorize the use of funds to meet operating expenses and capital expenditures. This authority would normally be vested in the governing body of the multinational facility/service concerned.
 - 7) **Financial auditing.** The financial audit function forms an integral part of the determination of the costs to be shared and the cost share to be borne by each participating State as well as of proper financial control. The agreement between States participating in the provision of a multinational facility/service should therefore specify that an annual financial audit be performed by a certified independent external auditor.
 - 8) **Taxation and other government levies.** The subject of tax exemptions and other aspects related to taxation will need to be addressed in the context of the overall operations of the multinational facility/service. Similarly, with regard to other government levies such as custom fees and duties, value added tax, etc., it may also need to be considered whether the import or export, purchase or sale of any equipment, supplies, etc., required for the operation of the multinational facility/service concerned should be exempted from all such levies in the participating States. The inclusion of clauses to that effect would be likely to require an agreement subject to ratification, such as a treaty.
- i) **Procedures for settlement of disputes.** The agreement should contain stipulations setting out the procedures to be followed for settlement or disputes between the participating States arising from the provision of the facility/service concerned. Regarding the settlement of disputes arising from different interpretations being given to the agreement, the States concerned would have to agree on the procedures for negotiation or arbitration and on the body to which an appeal for a final ruling could be made.

- j) ***Accessions, withdrawals, amendments to and termination of agreement.*** The agreement should contain provisions, including those describing the financial implications involved, to:
- cover the subsequent accession by any additional qualifying State(s) after the agreement is in force; and
 - specify the procedure to be applied when a signatory State wishes to withdraw from the agreement as well as procedures to follow in the event of termination of the agreement.

Similarly, the agreement should specify the procedures to be followed if amendments are to be made to the main text or to any Annexes (for which different procedures would normally apply).

APPENDIX/APENDICE B

**CNS MULTINATIONAL INSTALLATIONS/SERVICES
INSTALACIONES/SERVICIOS MULTINACIONALES CNS**

**SOUTH AMERICAN DIGITAL NETWORK - REDDIG
RED DIGITAL SUDAMERICANA – REDDIG**

1. **Main Characteristics /Características Principales**2. **Communications Services / Servicios de Comunicaciones**

NODES/NODOS	SERVICES (Situation to be implemented) / SERVICIOS (Situación a implantarse)										
	AFTN	ATS-D	ATS-A	ATN	SBAS Support/ Apoyo SBAS	SSR Data/ Datos SSR	ADM	Management/Gestión		MANT	Other/Otros
								NCC	MNS		
1	2	3	4	5	6	7	8	8	9	11	12
Ezeiza	X	X	X		X	X	X	X		X	
Santiago	X	X	X		X		X		X	X	
Montevideo	X	X	X			X	X		X	X	
Asunción	X	X	X				X		X	X	
La Paz	X	X	X		X		X		X	X	
Curitiba	X	X	X				X		X	X	
Recife	X		X				X		X	X	
Manaus	X	X	X				X		X	X	
Lima	X	X	X		X		X	X	X	X	
Bogotá	X	X	X		X		X		X	X	
Guayaquil	X	X	X				X		X	X	
Caracas	X	X	X				X		X	X	
Georgetown	X		X				X		X	X	
Paramaribo	X		X				X		X	X	
Cayenne	X		X				X		X	X	

APPENDIX C

REGIONAL GROUP OF HIGH-LEVEL SPECIALISTS ON CNS/ATM SYSTEM IMPLEMENTATION

Terms of reference

Taking into account the results of the studies on multinational facilities conducted by GREPECAS, to study the feasibility of implementing CNS/ATM systems in the SAM Region, taking into consideration the institutional, legal and economic aspects.

Work programme

- a) Review the different multinational facilities identified and studied by GREPECAS and their corresponding planning.
- b) Determine the most appropriate mechanism for the implementation of multinational facilities in the CAR/SAM Regions in line with the interests of the States, and the financial matters related to the implementation mechanism identified.
- c) Examine the legal matters related to the institutional aspects of each multinational facility.
- d) Set the foundations for multinational facility implementation, management, operation and maintenance agreements.