



## INTERNATIONAL CIVIL AVIATION ORGANIZATION

### SOUTH AMERICAN OFFICE

#### ICAO SPECIAL IMPLEMENTATION PROJECT (SIP)

#### WORKSHOP ON THE DEVELOPMENT OF BUSINESS CASE FOR THE IMPLEMENTATION OF CNS/ATM SYSTEMS

(LIMA, 10 TO 14 NOVEMBER 2008)

### SUMMARY OF DISCUSSIONS

#### 1. INTRODUCTION

1.1 The workshop was conducted within the framework of Special Implementation Projects (SIPs) for the year 2008. The objective was to provide States in the South American Region, with a better understanding of developing business case for the implementation of CNS/ATM systems, using a progressive, cooperative, cost-effective approach leading to a seamless Global ATM system.

1.2 The workshop was attended by a total of 16 participants from 5 States. The list of participants and speakers is available in the **Appendix A** to this Report. Mr. Carlos Stehli, ICAO Deputy Regional Director, South American Region, opened the Workshop.

1.3 Mr. Chaouki Mustapha, Economist in the Air Transport Bureau and Mr. Hindupur Sudarshan, Regional Programme Officer in Air Navigation Bureau, ICAO Headquarters in Montreal, were the facilitators of the workshop.

#### 2. DISCUSSIONS

2.1 On the first day of the workshop, participants were provided with basic presentations, which covered technology and operational aspects of Global ATM systems, implementation considerations, and harmonization issues. The workshop noted that significant progress was being made to implement CNS/ATM systems worldwide including in the CAR/SAM Regions. The workshop recognized the importance of ongoing interregional coordination for ensuring the harmonized implementation of CNS/ATM systems so as to achieve a seamless and integrated Global ATM system.

2.2 On the second and third days, the workshop discussed the core subjects of business case development such as traffic forecasts, economic assessment, cost/benefit methodology, financial analysis and risk management. The workshop also received a report on

the outcome of the Conference of the economics of the airports and air navigation services (CEANS).

2.3 On the fourth day, the workshop attendees participated in the exercise for the development of business case for the implementation of CNS/ATM systems on the basis of guidance material developed by the ICAO Secretariat. Through the use of workstations and the business case software, the participants acquired a hands-on experience in the development of business case for the implementation of CNS/ATM systems.

2.4 On the fifth and last day the groups, who carried out the exercise, presented their outcome to the workshop in the standard format attached hereto (**Appendix B**). Subsequently, the workshop was provided with an overview of future developments, the work programme of the Air Navigation Commission (ANC) panels, environmental benefits of CNS/ATM systems and the follow-up action required by States in achieving a Global ATM system.

2.5 In the concluding session, participants expressed their appreciation for the format and content of the workshop, which demonstrated the importance of the development of business case for the implementation of CNS/ATM systems and for the conduct of the hands-on exercise using individual workstations. The workshop called upon ICAO to further improve the business case software so as to respond to user needs. Mr. C. Stehli, the Deputy Regional Director, thanked the attendees for their interest in the development of Business cases and closed the workshop.

### 3. RECOMMENDATIONS

3.1 As a result of discussions, the workshop developed the following recommendations, which are to be addressed by ICAO and States, as appropriate:

- 1) **States**, when implementing CNS/ATM systems leading to a Global ATM system, ensure that the facilities and services necessary to implement these systems are in accordance with the CAR\SAM Air Navigation Plan and ICAO Standards and Recommended Practices (SARPs) and Procedures for Air Navigation Services (PANS);
- 2) **States** adopt a performance based approach in developing the air navigation infrastructure on the basis of ICAO guidance material and ensure their alignment with the regional performance objectives. The performance framework should include identification of national performance objectives and completion of national performance framework forms
- 3) **ICAO** continues enhancing the ongoing intra and interregional coordination for planning, implementation and harmonization of a Global ATM system;
- 4) **ICAO** assists States in the development of business case for the implementation of CNS/ATM systems;
- 5) **ICAO** establish a list of generic cost of air navigation equipment and avionics; and

- 6) **States**, in the planning and implementation of CNS/ATM systems consider the development of business case using the ICAO guidance material available on ICAO-NET.

-----

**PROYECTO ESPECIAL DE IMPLANTACIÓN  
DE LA OACI (SIP)**

**TALLER SOBRE EL DESARROLLO DE UN CASO DE NEGOCIO  
PARA LA IMPLANTACIÓN DE SISTEMAS CNS/ATM**

**ICAO SPECIAL IMPLEMENTATION  
PROJECT (SIP)**

**WORKSHOP ON THE DEVELOPMENT OF BUSINESS CASE  
FOR THE IMPLEMENTATION OF CNS/ATM SYSTEMS**

**(Lima, Perú, 10 al 14 de noviembre de 2008) /  
(Lima, Peru, 10 to 14 November 2008)**

**LISTA DE PARTICIPANTES – PARTICIPANTS LIST**

**BOLIVIA**

Julio Fortún Landívar  
Director de Navegación Aérea  
Dirección General de Aeronáutica Civil  
Edif. Palacio de Comunicaciones  
Av. Mariscal Santa Cruz No. 1278, piso 4to.  
Casilla No. 9360  
La Paz

Telefax: +5912 211 4465  
E-mail: [jfortun@dgac.gov.bo](mailto:jfortun@dgac.gov.bo)  
Web: [www.dgac.gov.bo](http://www.dgac.gov.bo)

Miguel Angel Castillo  
Jefe Unidad ATM/SAR  
Dirección General de Aeronáutica Civil  
Edif. Palacio de Comunicaciones  
Av. Mariscal Santa Cruz No. 1278, piso 4to.  
Casilla No. 9360  
La Paz, Bolivia

Tel: +5912 211 4465  
Fax: +5912 211 4465  
E-mail: [mcastillo@dgac.gov.bo](mailto:mcastillo@dgac.gov.bo)  
[migcass@yahoo.com](mailto:migcass@yahoo.com)  
Web: [www.dgac.gov.bo](http://www.dgac.gov.bo)

**BRASIL / BRAZIL**

Walcyr Josué de Castilho Araujo  
Comandante Grupo Especial de Inspección Vuelo  
DECEA  
Rio de Janeiro

Tel.: +5521 2101 6419  
Fax: +5521 2101 6420  
E-mail: [geiv@decea.gov.br](mailto:geiv@decea.gov.br)

Nilton de Faria  
Asesor CNS  
CTCEA  
Rio de Janeiro

Tel.: +5521 2103 7618  
Fax: +5521 2103 7699  
E-mail: [niltonfaria@decea.org.br](mailto:niltonfaria@decea.org.br)  
[niltonfaria@ctcea.org.br](mailto:niltonfaria@ctcea.org.br)

Sergio Luiz Conforto  
Asesor Economista  
CTCEA  
Rio de Janeiro

Tel.: +5521 2103 7658  
Fax: +5521 2103 7699  
E-mail: [sergioconforto@ctcea.org.br](mailto:sergioconforto@ctcea.org.br)

## NICARAGUA

Saiman Morales  
Inspector CNS  
Instituto Nicaragüense de Aeronáutica Civil  
Km. 11.5 Carretera Norte, Managua

Tel.: +5052 276 8580 ext. 1601  
Fax: +5052 276 8588  
E-mail: [capacitacion@inac.gob.ni](mailto:capacitacion@inac.gob.ni);  
[atm@inac.gob.ni](mailto:atm@inac.gob.ni);  
[siermmike73@gmail.com](mailto:siermmike73@gmail.com)

## PARAGUAY

Hernan Jhonny Colman Quintana  
Gerente de Navegación Aérea  
Dirección Nacional de Aeronáutica Civil (DINAC)  
Av. Mariscal López y 22 de Setiembre  
Edificio Ministerio Defensa Nacional  
Asunción, Paraguay

Tel.: +59521 205 365  
Fax: +59521 205 365  
E-mail: [gna@dinac.gov.py](mailto:gna@dinac.gov.py)

Carlos Pavetti Pellegrini  
Asesor CNS Presidencia  
Dirección Nacional de Aeronáutica Civil (DINAC)  
Av. Mariscal López y 22 de Setiembre  
Edificio Ministerio Defensa Nacional  
Asunción, Paraguay

Tel.: +59521 213 615  
Fax: +59521 211 615  
E-mail: [presiden@dinac.gov.py](mailto:presiden@dinac.gov.py)  
[carpavp@gmail.com](mailto:carpavp@gmail.com)

Maximina Urunaga de Toffoletti  
Subdirectora de Administración y Finanzas  
Dirección Nacional de Aeronáutica Civil (DINAC)  
Av. Mariscal López y 22 de Setiembre  
Edificio Ministerio Defensa Nacional  
Asunción, Paraguay

Tel.: +59521 204 206  
Fax: +59521 204 206  
E-mail: [maxi529@hotmail.com](mailto:maxi529@hotmail.com)

## PERU

Raymundo Hurtado Paredes  
Inspector Navegación Aérea  
Dirección General Aeronáutica Civil  
Jr. Zorritos 1203  
Lima

Tel.: +511 615 7880  
Fax: +511 615 7881  
E-mail: [rhurtado@mtc.gob.pe](mailto:rhurtado@mtc.gob.pe)

Fredy Núñez Munárriz  
Inspector de Navegación Aérea  
Dirección General Aeronáutica Civil  
Jr. Zorritos 1203  
Lima

Tel.: +511 615 7800  
Fax: +511 615 7881  
E-mail: [fnunez@mtc.gob.pe](mailto:fnunez@mtc.gob.pe)

Paulo Vila Millones  
Inspector de Navegación Aérea  
Dirección General Aeronáutica Civil  
Jr. Zorritos 1203  
Lima

Tel.: +511 615 7880  
Fax: +511 615 7881  
E-mail: [pvila@mtc.gob.pe](mailto:pvila@mtc.gob.pe)

Jorge Raez Ancaya  
Gerente Central Aeronavegación  
CORPAC S.A.  
Aeropuerto Internacional Jorge Chávez  
Complejo Radar  
Av. E. Faucett s/n, Zona Sur  
Callao

Tel.: +511 708 1145  
Fax: +511 414 1430  
E-mail: [jraez@corpac.gob.pe](mailto:jraez@corpac.gob.pe)

César Narvaja Romero  
Gerente Técnico  
CORPAC S.A.  
Aeropuerto Internacional Jorge Chávez  
Av. E. Faucett s/n, Zona Sur  
Callao

Tel.: +511 708 1186  
Fax: +511 414 1447  
E-mail: [cesar.narvaja@gmail.com](mailto:cesar.narvaja@gmail.com)

Javier Flores Castillo  
Jefe del Área de Planeamiento y Proyectos  
CORPAC S.A.  
Aeropuerto Internacional Jorge Chávez  
Av. E. Faucett s/n, Zona Sur  
Callao

Tel.: +511 708 1063  
Fax: +511  
E-mail: [jflores@corpac.gob.pe](mailto:jflores@corpac.gob.pe)

Ramiro Enrique Burga Cabrejos  
Jefe del Área de Desarrollo Comercial  
CORPAC S.A.  
Aeropuerto Internacional Jorge Chávez  
Av. E. Faucett s/n, Zona Sur  
Callao

Tel.: +511 708 1231  
Fax: +511 414 1425  
E-mail: [reburga@corpac.gob.pe](mailto:reburga@corpac.gob.pe)

## **OACI / ICAO**

Carlos Stehli  
Subdirector Regional / Deputy Regional Director  
Oficina Regional Sudamericana / South American Office  
Av. Víctor Andrés Belaúnde No. 147  
San Isidro Lima 27, Perú

Tel.: +51 1 611 8686  
Fax: +51 1 611 8689  
E-mail: [mail@lima.icao.int](mailto:mail@lima.icao.int)  
Web: [www.lima.icao.int](http://www.lima.icao.int)

Hindupur Sudarshan  
Sede OACI / ICAO Headquarters  
Oficial Regional Programa, ANB /  
Regional Programme Officer, ANB  
999 University Street, Room 12.50  
Montréal, Québec  
Canada H3C 5H7

Tel: + 514 954 8219 ext. 8190  
E-mail: [hsudarshan@icao.int](mailto:hsudarshan@icao.int)  
Web: [www.icao.int](http://www.icao.int)

Chaouki Mustapha  
Sede OACI / ICAO Headquarters  
Economista / Economist  
Sección Análisis económicos y base de datos /  
Economic Analyses and Databases Section  
999 University Street, Room 11.15  
Montréal, Québec, Canada H3C 5H7

Tel: + 514 954 8219 ext. 8398  
E-mail: [CMustapha@icao.int](mailto:CMustapha@icao.int)  
Web: [www.icao.int](http://www.icao.int)

Onofrio Smarrelli  
Oficial Regional CNS / CNS Regional Officer  
Oficina Regional Sudamericana / South American Office  
Av. Víctor Andrés Belaúnde No. 147  
San Isidro Lima 27, Perú

Tel.: +51 1 611 8686  
Fax + 51 1 611 8689  
E-mail [mail@lima.icao.int](mailto:mail@lima.icao.int)  
Web: [www.lima.icao.int](http://www.lima.icao.int)

-----



**INTERNATIONAL CIVIL AVIATION ORGANIZATION**

**SOUTH AMERICAN OFFICE**

**ICAO SPECIAL IMPLEMENTATION PROJECT (SIP)**

**WORKSHOP ON THE DEVELOPMENT OF BUSINESS CASE FOR THE  
IMPLEMENTATION OF CNS/ATM SYSTEMS**

**(LIMA, 10-14 NOVEMBER 2008)**

**BUSINESS CASE WORKSHOP EXERCISE OUTCOME  
- PRESENTATION FORMAT -**

**1. Characteristics of the industry**

Enumerate the current and projected growth of air traffic in your State and also identify, if any, the safety and security risks in your State.

**2. The air navigation service provider**

Describe the organization providing the air navigation services in your State including its institutional format, its capital structure, its principal shareholders and its management.

**3. Identification of major stakeholders/partners**

Identify the major stakeholders/partners that includes in addition to the air navigation service providers, the airspace users (the commercial airlines using the airspace, business aviation, general aviation, military, etc.) and the potential funding sources.

**4. Problem definition**

The current conventional air navigation systems might have several limitations, which would depend on the State or the region concerned. List such limitations in your State.

**5. Scope of the Project**

Define the geographical scope of the project in your State and determine the major traffic flows.

**6. Implementation of Global ATM System**

Explain the vision of your State in terms of plans for transition to Global ATM system. In other words, which are the ATM improvements and supporting CNS elements have been chosen for your National Plan.

**7. Financial analysis**

As a result of the financial analysis carried out, what are the outcomes in terms of **net present value** and the **benefit to cost ratio** for your CNS/ATM project and determine the payback period for the air navigation services provider(s).

**8. Financing requirements**

Consequent to the financial analysis as above, establish the financing requirements and their timing.

**9. Risk Management**

What are the risks identified for this project and if any, briefly describe the risk mitigation plans.

- END -