



International Civil Aviation Organization

NORTH AMERICAN, CENTRAL AMERICAN AND CARIBBEAN OFFICE

ICAO SPECIAL IMPLEMENTATION PROJECT (SIP)

**NAM/CAR/SAM Workshop on Business Case Analyses for the Implementation of
CNS/ATM Systems Leading to a Seamless Global ATM System**

(Antigua, 25-29 May 2009)

Business Case Analyses SIP/2009-WP/04

01/04/09

SAMPLE TEMPLATES FOR PROVIDING DATA FOR DEVELOPMENT OF BUSINESS CASE FOR THE IMPLEMENTATION OF CNS/ATM SYSTEMS

(Presented by the Secretariat)

State:

Region:

Date:

CURRENT INFRASTRUCTURE

TABLE 1

Current infrastructure – Airports

SNo	NAME	INTERNATIONAL AND/OR DOMESTIC	AERODROME LAYOUT	NO. OF RUNWAYS/ CONFIGURATION
1	XXX ¹	International	Complex	2-parallel

QUALIFICATION

- a) New airports, if planned, may also be stated separately.
- b) Aerodrome layout may be classified as basic, simple or complex.
 - Basic – An aerodrome with one runway with one taxiway to one apron area.
 - Simple – An aerodrome with one runway having more than one taxiway to one or more apron area(s).
 - Complex – An aerodrome with more than one runway, having many taxiways to one or more apron area(s).
- c) Runway configuration may be converging, intersecting, parallel or near parallel.

¹ Example; to assist in completing Table

TABLE 2

Current infrastructure – Voice communications (VHF RT, HF RT, ATIS and VOLMET)

SNo	SYSTEM	LOCATION(S)	QTY	DATE OF INSTALLATION	UNTIL WHEN CURRENT SYSTEM EXPECTED TO PROVIDE SATISFACTORY SERVICE
1	VHF RT ²	XXX	10	Oct. 1990	Oct. 2005
2	VHF RT ²	YYY	15	Jan. 2000	Jan. 2015
3	VHF RT ²	Δ ZZZ	20	July 2009	July 2024
4	VHF RT ²	* RRR	10	Oct. 2010	Oct. 2025

Qualification

- a) VHF RT refers to all phases of flight.
- b) HF RT includes both MWARA and RDARA frequencies.
- c) ATIS is automatic terminal information service operating in VHF band.
- d) VOLMET (meteorological information for aircraft in flight) is a voice broadcast on HF about meteorological information.
- e) The equipment planned or under installation may also be shown.
- f) Assume 15 years of life.
- g) Δ Indicate facility, which is under installation.
- h) * Indicate facility, which is planned.
- i) Main and standby equipment together constitute one system in operation.

² Example; to assist in completing Table

TABLE 3

Current infrastructure – Navigation: NDB, VOR (CVOR/DVOR) and DME

SNo	SYSTEM	LOCATION(S)	QTY	DATE OF INSTALLATION	UNTIL WHEN CURRENT SYSTEM EXPECTED TO PROVIDE SATISFACTORY SERVICE

Qualification

- a) Assume 15 years of life.
- b) Δ Indicate facility, which is under installation.
- c) * Indicate facility, which is planned.

TABLE 4

Current infrastructure – Navigation: ILS (including DME)

SNo	SYSTEM	LOCATION(S)	QTY	DATE OF INSTALLATION	UNTIL WHEN CURRENT SYSTEM EXPECTED TO PROVIDE SATISFACTORY SERVICE

Qualification

- a) Assume 15 years of life.
- b) Δ Indicate facility, which is under installation.
- c) * Indicate facility, which is planned.
- d) ILS includes markers, locators and DME, as the case may be.

TABLE 5

Current infrastructure – Surveillance:
All primary (ARSR, ASR, ASDE) and secondary radars (Mode A/C, Mode S)

SNo	SYSTEM	LOCATION(S)	QTY	DATE OF INSTALLATION	UNTIL WHEN CURRENT SYSTEM EXPECTED TO PROVIDE SATISFACTORY SERVICE

QUALIFICATION

- a) Assume 15 years of life
- b) Modes A/C of SSR and Mode S of SSR may be indicated separately
- c) Δ Indicate facility, which is under installation.
- d) * Indicate facility, which is planned.
- e) PSR (terminal) is also known as ASR
- f) PSR (en-route) is also known as ARSR
- g) ASDE is airport surface detection equipment

TABLE 6

Current infrastructure – Average costs:

SNo	SYSTEM	AVERAGE ACQUISITION COST	AVERAGE MAINTENANCE COST	AVERAGE OPERATION COST	AVERAGE REFURBISHMENT COST	AVERAGE DECOMMISSIONING COST

Definitions:

Refurbishment cost: This is estimated as an average generic cost. In many cases, equipment reach their life cycle (life expectancy) while they are still operable. The air navigation service provider may stretch their usage for a few years. In other cases, in order to extend the life of equipment and continue its use, a special maintenance operation may be required by which some parts may be replaced. Such maintenance operation is referred to as refurbishment. For each equipment an average refurbishment cost is estimated by the user.

Decommissioning cost: This is an average generic cost as before. If the air navigation service provider decides to discontinue the use of an equipment and remove it, some costs may be incurred such as the removal, transportation and recycling costs, earth leveling, etc. These costs are cumulatively referred to as decommissioning cost.

AIR TRAFFIC FORECASTS

TABLE 7

Summary of air traffic forecasts up to year 2025

	ACTUAL 2008	ESTIMATE 2009	FORECAST				AVERAGE ANNUAL GROWTH RATE (PER CENT)			
			2010	2015	2020	2025	2005-2010	2010-2015	2015-2020	2020-2025
Passengers (millions)										
<i>Domestic</i>										
International										
Total										
Freight (thousand metric tonnes)										
Domestic										
International										
Total										
Aircraft movements (thousands)										
Domestic										
International										
Total										
Over-flying aircraft (thousands)										
Total										

Qualification

- a) For the forecast, provide the absolute figures and/or the growth rates
- b) Focus should be put on the aircraft movements/over-flights forecasts; passengers and freight forecasts are provided in the absence of aircraft movements forecasts

TABLE 8

Aircraft hours in national airspace

MOVEMENT	AVERAGE TRAFFIC DURATION IN NATIONAL AIRSPACE
	<i>(in hours)</i>
<i>International</i>	
Domestic	
Over flight	

TABLE 9

Shares of aircraft types in total aircraft movements 2009-2025

[illegible]

TRANSITION PLAN

TABLE 10

Ground/ground data communications transition

[illegible]

TABLE 11

Air/ground data communications transition

[illegible]

TABLE 12

Ground/ground voice communications transition

[illegible]

TABLE 13

Air/ground voice communications transition

[illegible]

TABLE 14

Navigation transition

[illegible]

TABLE 15

Surveillance transition

[illegible]

TABLE 16

Air traffic management transition
Proposed implementation of systems/procedures for enhancing/improving ATM

AIRSPACE MANAGEMENT		AIR TRAFFIC SERVICES		AIR TRAFFIC FLOW MANAGEMENT	
SYSTEMS/ PROCEDURES	DATE	SYSTEMS / PROCEDURES	DATE	SYSTEMS / PROCEDURES	DATE
FLEXIBLE USE OF AIRSPACE*		RVSM*		ATFM DATABASE*	
MILITARY/CIVIL COORDINATION*		RNAV 5*		CAPACITY BALANCING	
		DECISION SUPPORT SYSTEMS*			

— END —

*Note: Information provided in the Table 16 are examples.

Decision support systems may include the following: STCA, MTCA, Database for route catalogue, etc.