

## **FOURTH MEETING OF THE ALLPIRG/ADVISORY GROUP**

**(Montreal, 6 - 8 February 2001)**

**Agenda Item 5: Recent developments in the area of airport and air navigation services economics**

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

**(Presented by the Secretariat)**

#### **SUMMARY**

This working paper presents the business case development framework, discusses the need for business cases, identifies the different partners involved and describes their respective concerns with a special focus on those of the financial institutions. It outlines the business case prerequisites, content, methodology and data requirements. Given the multi-disciplinary nature of the work, the paper stresses the need for cooperation between the different partners and with ICAO.

## **1. BACKGROUND**

1.1 Pursuant to Recommendations 3/9 and 3/16 of the World-wide CNS/ATM Systems Implementation Conference in Rio de Janeiro in 1998, and subsequent endorsement by the 32<sup>nd</sup> Session of the Assembly (Resolution A32-12), requesting the Council to complete the follow-up work envisaged by the conference, this paper provides an outline of the work being carried out by the Secretariat to prepare guidelines for the development of business cases.

## **2. DEFINITION AND CONTENT OF A BUSINESS CASE**

2.1 A business case (or plan) is a written statement setting forth the mission and objectives, its operational and financial details, the ownership and management structure, and how to achieve the objectives. It includes information and analysis on products and services, markets, employees, technologies, facilities, equipment, capital, revenues, profitability, financing, risks, contingency plans, etc.

2.2 A business case for the implementation of the CNS/ATM systems is a model of how such projects would behave during the transition period and at the conclusion of the project horizon. It should provide a blueprint to follow in developing and operating the project and galvanize the management team into a cohesive unit with common goals. It should lead to the justification for the investment, act as a borrowing document, provide requisite information for potential equity investors, and serve as a budgeting and control device.

2.3 The development of a business case for the implementation of CNS/ATM systems by a service provider or a user involves taking financial cost/benefit analysis a step further. In particular, changes in revenues resulting from changes in the prices of the product or service sold by the organization must be taken into account. It is generally expected that CNS/ATM will facilitate reduced operating costs for the airlines. From the point of view of a specific organization, assessment of the net financial impact (in present value terms) must include not only the implementation cost and operating cost savings (which are included in the cost/benefit analysis) but also consequent changes in revenues.

2.4 The business plan serves as a marketing tool for selling the concept to the sources of funds that may include governments, financial institutions and eventually individuals. Funds for the required investment may come in various forms such as accumulated profits, government contribution, commercial debt financing (including loans and leasing), bond issues and equity financing. The business plan should emphasize the areas that the sources of funds consider the most critical. It should offer to meet measurable goals and objectives that are of a particular value to these sources.

2.5 The main part of the business plan is the financial plan which should provide such basic information as estimates of the component costs (labour, materials, equipment, etc.) of each distinct part of the over-all project, the funds required to make disbursements at various stages in the project's progress, the currencies in which payments are to be made and the sources from which the funds are to be forthcoming. Also to be emphasized is the importance of the availability of data showing the trend in the financial situation of the air navigation services provider concerned over recent years, as well as anticipated developments over the period of debt repayment.

### 3. **THE NEED FOR A BUSINESS CASE**

3.1 The implementation of the CNS/ATM systems has been slow. The delay is partly attributed to the lack of financial resources and to the hesitation of individual States, as investment in new technologies such as CNS/ATM systems has been considered risky by some air navigation service providers. A thorough and comprehensive analysis is therefore required.

3.2 The need for credible business cases to guide CNS/ATM is extremely important to bring business and financial organizations into consensus on CNS/ATM. In the absence of any economic analysis presented as a business case, the provider States, the financial institutions, and the airlines are reluctant to make the investment decision about the new systems. The business case will serve to justify the specific CNS/ATM systems requirements of the service provider and the service users for the benefit of decision makers of States, airlines and lending institutions. Business cases might be performed jointly or separately for the service provider and the airlines. However, an integrated business case which takes into account both the provider and the user perspectives would be the most desirable.

3.3 For a service provider and State, the basic issue is usually to be satisfied that the changes in revenues expected from the planned changes to en-route charges will match the net change in costs. Even in the cases where air navigation services are not provided on a commercial basis, it is recommended that a business case evaluation be conducted to assess the financial impact on the service provider of the new systems. For an air carrier, a business case evaluation would include (among other factors) assumptions about the impact on its costs of expected changes in en-route charges and the impact on revenues of changes in air carrier fares and rates, where these changes are associated with the implementation of CNS/ATM systems. The impact of route charges will depend on the outcome of the policies and evaluations of the service providers. Assumptions about fares and rates will reflect competitive pressures in air travel and freight markets.

#### 4. **MAJOR PARTNERS, THEIR OBJECTIVES, NEEDS AND CONCERNS**

4.1 There are four major partners at the global level: ICAO, service providers, air carriers and the financial institutions. The objectives are common but the needs and concerns of each of the partners involved would be different.

4.2 The needs and concerns of ICAO, States and other service providers are widely known. The main concern for air carriers is to meet their preferred flight profiles and to reduce operational costs by reducing flight time and eliminating delays. The reduction of operational costs may result in lower yields that could stimulate traffic growth. However, some of these cost savings could be offset by possible increases in user charges. In addition, the technology selection process involves careful scrutiny of many different variables and reaching a consensus about a particular technology will not be easy.

4.3 Financial institutions seek to minimize their risks. The fundamental concerns of equity investors are the viability and the profitability of the business enterprise (return on investment). Both banks and equity investors require risk analysis and contingency plans. Banks focus more on the stability of the enterprise and the availability of positive cash flows necessary to pay the interest and principle required by the loan. A banker will be impressed by a modest growth rate in revenues coupled with forecast profitability and projection of a healthy balance sheet with a low level of fixed assets, inventory and receivables. In order to agree to assign the loan, banks require collaterals and guarantees. In some cases, it may be necessary for the State to guarantee the loan.

#### 5. **PREREQUISITES TO THE CNS/ATM SYSTEMS BUSINESS CASE ANALYSIS**

5.1 The following are all important prerequisites for a business case analysis:

- a) the need for the new technology must be emphasized in order to meet the operational requirements;
- b) consultation and coordination have to take place between service providers with adjacent areas of responsibility;
- c) a consensus among the partners regarding the need and requirements for new technology should be stressed;
- d) the availability of the new technology's facilities and equipment has to be proven;

- e) the boundaries of the business case have to be defined and its institutional and legal formats selected (State/service provider, group of States, sub-region, region, etc.);
- f) the expected costs of equipment and operations should be established with an acceptable margin of uncertainty;
- g) recognition and awareness of international cost recovery policy for air navigation services (currently in the form of ICAO's Policies on Charges for Airports and Air Navigation Services, adopted by the Council in December 2000 and shortly to be published as Doc 9082/6);
- h) the establishment and existence of an effective cost and revenue accounting system;
- i) a sound methodology for determining the cost basis for the charges; and
- j) an effective mechanism for the collection of the charges.

## 6. WORK IN PROGRESS AND FRAMEWORK

6.1 The development of a business case has to focus on a homogeneous air traffic management area. It needs to take into account current and forecast traffic flows and densities, the operational requirements and the alternative facilities/equipment configurations suitable that meet those operational requirements. Such analysis could be carried out at State, sub-regional or regional levels.

6.2 Given the existence of multiple alternative implementation options, a scrutinizing procedure allowing for their identification, definition, evaluation and ranking has to be put in place. The definition provides the facilities/equipment configuration. The evaluation and ranking are performed both on operational and financial basis. For every option, the operational merits are identified and the costs and benefits estimated.

6.3 The ranking process aims at retaining a single option for which a comprehensive financial analysis will make up the remainder of the business case analysis.

6.4 The following points have to be borne in mind in the development of business plans:

- a) all States, airspace users, ATC service providers, and ATM equipment suppliers do not have the same motivations and benefits;
- b) transition to the new system will be a gradual process and occur at different rates across each airspace and region concerned;
- c) new technologies will complement rather than replace existing technologies; and
- d) multi-national cooperation among provider States and users will be essential to minimize investment costs, compatibility and avoid duplication of effort.

6.5 In order to coordinate and prepare the CNS/ATM business case development, a multidisciplinary project team has been established within the Secretariat. The team has met several times during the last few months to discuss the overall concept, outline and methodologies. The following working documentation has been produced:

- a) model outline;
- b) explanatory text and definitions;
- c) software flow chart; and
- d) time line and resource requirements.

6.6 After careful deliberations, the team selected the Middle East Region as a homogeneous ATM area for an illustrative application, based on its strategic location as well as the nature of its traffic flows both to Europe and to Asia/Pacific.

6.7 The analysis, which is scheduled to be finalized by the end of July 2001, is conditional on the availability of data and resources. Potentially it could include, in terms of traffic flows and densities, four of the ICAO Regions (Middle East, Europe, Asia/Pacific and Africa). Ultimately, this work will be published in an ICAO circular as guidance material for States to conduct their own studies to justify the investment requirements individually or collectively by sub-regions or regions.

## **7. DATA REQUIREMENTS**

7.1 The following data are essential for the development of a business case:

- a) traffic densities and traffic flows (by aircraft category);
- b) traffic forecasts;
- c) inventory of current air navigation equipment (communication, navigation, surveillance, decision support systems);
- d) cost of current air navigation equipment (procurement, installation, maintenance, calibration, etc.);
- e) cost of new air navigation equipment (CNS/ATM systems), real or estimated (procurement, installation, maintenance, calibration, etc.);
- f) personnel requirements for current system (administration, operation, maintenance);
- g) personnel requirements for new CNS/ATM systems operation;
- h) cost of relocation or attrition of personnel and training;
- i) cost of current infrastructure;

- j) cost of infrastructure requirement for new CNS/ATM systems;
- k) cost of vacating or re-organizing infrastructure;
- l) cost of operations of service provider;
- m) current level of user charges;
- n) expected rate of avionics equipment installation onboard aircraft using the airspace;
- o) cost of avionics equipment;
- p) air carrier operating costs (by aircraft category using the airspace); and
- q) transition period and evolution.

## 8. MAIN IMPEDIMENTS

8.1 The main impediments to a credible and reliable business case are:

- a) lack of coordination and cooperation between partners;
- b) lack of coordination and consultation between service providers with adjacent areas of responsibility;
- c) non-homogeneity of areas selected and redundancy of facilities and equipment;
- d) ambiguous institutional or legal format;
- e) lack of guarantees or collaterals;
- f) lack of an effective cost and revenue accounting system; and
- g) unavailability or inaccuracy of data required.

## 9. ACTION BY THE MEETING

9.1 Given the multi-disciplinary nature of the current analysis and the fact that it could potentially include, in terms of traffic flows and densities, four of the ICAO Regions (Middle East, Europe, Asia/Pacific and Africa), a certain level of cooperation between the different partners and within ICAO is required. In particular, some consultations with respect to questions such as PIRGs priorities, key assumptions, data, etc., might be requested.

9.2 ALLPIRG is invited to note the above and recommend that the PIRGs concerned provide the Secretariat with the necessary data as and when requested.