ELEVENTH AIR NAVIGATION CONFERENCE

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DEVELOPMENT OF GUIDANCE MATERIAL ON BUSINESS CASE ANALYSIS FOR THE IMPLEMENTATION OF CNS/ATM SYSTEMS

(Presented by the Secretariat)

SUMMARY

This paper summarises the guidance material for the development of business cases for the implementation of CNS/ATM systems being developed by the Secretariat.

1. INTRODUCTION

1.1 Recognizing the need for the development of sound business cases in order to secure the financing of the implementation of communications, navigation, and surveillance/air traffic management (CNS/ATM) systems, the World-wide CNS/ATM Systems Implementation Conference, held in Rio de Janeiro in 1998, recommended that ICAO develop guidance material on the development of business cases. The 32nd Session of the Assembly subsequently endorsed this recommendation and requested the completion of the follow-up work envisaged by the conference. This paper provides an overview of some of the work undertaken by the Secretariat in the development of guidance material on business case analysis for the implementation of CNS/ATM systems. The material is expected to be published early next year.

1.2 Prior to the Conference in Rio de Janeiro, the Secretariat had developed guidance material to assist States in the economic planning and decision-making process related to the implementation of the new systems. Among this guidance is Circular 257 — *Economics of Satellite-based Air Navigation Services* — which provides guidelines for cost/benefit analysis of CNS/ATM systems. The guidance material on the development of business cases is an extension of the previous work.

1.3 The new guidance material on the development of business cases for the implementation of CNS/ATM systems consists of two components:

a) a definition, explanation and illustration of a business case and its application to the implementation of CNS/ATM systems; and

b) a financial analysis spreadsheet which allows the user to evaluate the alternative implementation options for CNS/ATM systems.

2. DEFINITION OF A BUSINESS CASE

2.1 A business case is a tool supporting planning and decision-making that can be used by public as well as private entities. For a public entity, a business case is a substantiated argument for a public project, a policy or a program proposal requiring a resource allocation and/or investment, often including a financial commitment. For a private entity, a business case can be developed to assist decisions on capital investment, product/service development, contracts, special pricing, partnerships, etc.

3. THE NEED FOR BUSINESS CASE DEVELOPMENT FOR THE IMPLEMENTATION OF CNS/ATM SYSTEMS

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 air navigation service providers/States, as investment in new technologies such as CNS/ATM systems has been considered risky by some air navigation service providers. The implementation will put a significant financial burden on air navigation service providers leading them to search for alternative sources of funds. When seeking financing from a commercial source, a cost-benefit analysis would not be sufficient to convince the potential lenders of the financial viability of the project and the ability of the borrower to pay the funds back. A thorough and comprehensive analysis is therefore required.

3.2 Credible business cases for the implementation of CNS/ATM systems components are important to bring business and financial organizations into consensus on CNS/ATM. In the absence of any analysis presented as a business case, the air navigation service providers, 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 air navigation 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 air navigation 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. SCOPE AND CONTENT OF A BUSINESS CASE

4.1 The scope and content of a business case for a public entity might differ from that for a private one. For a public entity, a business case analysis often includes among other items an identification of the stakeholders/partners, a cost-benefit analysis, a financial analysis and a risk management assessment. For a private entity, it includes typically a business impact evaluation, a financial analysis and a risk management assessment.

4.2 The business case analysis for both public and private entities sets out the context, presents the problem or the situation addressed and provides a thorough description of the proposed project, policy or action, the rationale for its selection among other alternative options and a comprehensive assessment of its benefits, costs and risks. The alternative options, not retained by the proposal, need also to be outlined and their associated benefits, costs and risks estimated. The business case may provide information and analysis on products and services, markets, employees, technologies, facilities, equipment, capital, revenues, profitability, financing, risks, contingency plans, etc.

4.3 The business case analysis evaluates the impact of the proposal on the performance and productivity measures of the various activities involved. Critical success factors are identified and discussed. As part of a risk mitigation plan, key risks are identified. For each risk factor, mitigating measures are identified and proposed.

4.4 The financial analysis (pro-forma) in a business case shows the expected cash flow consequences of the proposal and includes the assumptions, methods and rationales used for the quantification of revenues and expenditures. It provides such basic information as the 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. The financial analysis should also show how revenues would be affected. For example, if the project entails increased capacity, the forecast of the resulting projected traffic growth would provide an idea about how revenues would increase and if it entails a better quality of service, an increase in user charges might be contemplated in order to recover the costs. 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 imply reduced operating costs for the airlines due to better flight profiles which would offset and even exceed the entailed avionics costs. 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.

4.5 Since the implementation of CNS/ATM systems involves new concepts and might lead to significant changes in the way air navigation services are provided, several risks might be entailed. They may be technical, political, economic, financial, etc. Risks such as a low traffic growth implying low revenues, an extended transition period leading to higher costs, a failure in the integration with the existing systems (mainly for computer and telecommunications processes), reluctance and probably some resistance to change from the employees (air traffic controllers, technicians, etc.) might significantly affect the desired outcome. For

this reason, a business case must include a risk management section. The objective of risk management is not to eliminate risks but to identify and evaluate them in a comprehensive manner in order to reduce their effects by the implementation of appropriate mitigation plans. Risk management encompasses risk analysis, risk evaluation and the development of risk mitigation plans. Risk analysis consists in the identification of risks, the estimation of the likelihood of their occurrence and the determination of their possible causes and potential impacts on the project outcome. Risk evaluation aims at ranking risks according to their potential impact on the project and the likelihood of their occurrence. Judgment has to be made in order to decide which risks need to be managed. The outcome of risk analysis and evaluation is a risk profile that includes a description of the risk, its possible causes, its probability of occurrence and its potential impact on the project. Mitigation plans are designed based on this profile.

5. A FINANCIAL ANALYSIS MODEL FOR THE IMPLEMENTATION OF CNS/ATM SYSTEMS

5.1 Along with the guidance material on the development of business cases for the implementation of CNS/ATM systems, the Secretariat has developed a financial analysis spreadsheet model to help service providers and airlines evaluate, compare and choose among alternative implementation options within a given homogeneous air navigation area.

5.2 The financial analysis model should assist the air navigation service provider and/or the airline in the decision process through the provision of parameters and measures such as the net present value, the benefit/cost ratio, the recovery period and the break-even chart related to the implementation scenario under analysis.

5.3 The entire analysis is performed considering both the service provider and the airlines. The model consists of three inter-related modules. Each module is developed as an Excel spreadsheet and has two parts: one for the service provider and the other for the airlines.

Module I: User interactive part of the model where inputs to the model are provided by the user (inputs are typical of the homogeneous air navigation area concerned).

Module II: A generic scenario explaining the implementation of CNS/ATM with inputs derived from Module I.

Module I: Actual financial analysis with data derived from both Module I and Module II.

5.4 The major life-cycle cost categories for the service provider are facilities and equipment costs (F&E) and operation and maintenance costs (O&M). The revenues consist of the user charges collected by the service provider. For the airlines, the major life-cycle cost categories are the avionics equipment costs (F&E), the avionics operation and maintenance costs (O&M) as well as the user charges paid to the service provider. The life-cycle benefits to the airlines consist in the efficiency improvement due to operating cost savings.

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