

# ICAO Policy with Regard to the Financial and Legal Aspects of CNS/ATM Systems Use

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# Basic Economic Principles

- Same basic economic principles apply to CNS/ATM as to conventional facilities and services
- The improved technology and extension of capacity are differences in degree, not in substance



# Financing

- Implementation of the CNS/ATM systems concept is highly cost-effective
- For basic systems components, joint ventures between States may be needed
- Alternatively, financing by system operator



# State Guarantees

- Where an international agency or corporate-type entity is providing services, cost of financing would possibly be reduced if States guarantee servicing and repayment of loans.



# Leasing

- Leasing – an important alternative
- May be less time- and capital-consuming than direct State financing
- Establishment of leasing companies offering long-term leases



# Cost Recovery

- Costs of CNS/ATM systems services are recoverable from users
- Different approaches depending on type of services provided:
  - En-route
  - Approach and aerodrome



# Approach and Aerodrome

- Charges:
  - Either included in other approach or aerodrome charges levied on airport traffic
  - Or recovered directly from users
  - Alternatively, included in approach and/or aerodrome control charges to airports



# En-route

- Charges included with other air navigation services costs allocable to en-route utilization in the cost basis and recovered through route air navigation services charges





# Charges and the ANP

- As CNS/ATM system components are implemented, States should add associated costs to their cost basis, provided that such facilities are implemented under the ICAO Regional Air Navigation Plans



# Treatment of Costs

- Three stages of systems implementation: Development, transition, CNS/ATM as the only systems
- Three cost categories:
  - Research and development
  - Depreciation and cost of capital
  - Operational costs



# Redundancies

- Certain existing facilities and staff will become redundant
- Possible to expand individual area control centres
- Technically and economically feasible to merge many FIRs, reduce number of ACCs



# Redundancy Costs

- Recoverable by States concerned
- Examples:
  - Severance payments
  - Retraining of staff
  - Premature write-off of structures and equipment



# ICAO Guidance Material

- *Manual on Air Navigation Services Economics (Doc 9161/3)*
  - Organizational structures
  - Accounting and financial control
  - Determining cost basis
  - Setting and collection of charges
  - Financing of infrastructure
  - CNS/ATM issues identified and addressed



# ICAO Guidance Material

- *Report on Financial and Related Organizational and Managerial Aspects of Global Navigation Satellite System (GNSS) Provision and Operation (Doc 9660)*
  - Ownership and control considerations
  - Financial aspects, including funding sources
  - Cost recovery policy
  - Determination and allocation of GNSS costs
  - Compensation for redundancies and retraining
  - Cost recovery methodology
  - Liability



# ICAO Guidance Material

- *Economics of Satellite-based Air Navigation Services – Guidelines for cost/benefit analysis of communications, navigation and surveillance/air traffic management (CNS/ATM) systems (Circular 257-AT/106)*



# ICAO Guidance Material

- *Global Air Navigation Plan for CNS/ATM Systems (Doc 9750)*
  - Operational concepts
  - General planning principles
  - Organizational and international co-operative concepts
  - Cost/benefit and economic impacts
  - Financial aspects





# Satellite Navigation Systems

- Global Positioning System (GPS)
- Global Orbiting Navigation Satellite System (GLONASS)
- Galileo



# Legal Aspects

- No legal obstacle to the implementation of CNS/ATM systems
- CNS/ATM systems compatible with Chicago Convention
- Most States will need to rely on others
- Additional arrangements being considered



# Legal Framework for GNSS

- Letters exchanged with United States (1994) and the Russian Federation (1996)
- Accessibility to signals by all users of civil aviation on a nondiscriminatory basis
- Right of any State to control operations and enforce safety rules in its sovereign airspace



# Resolution A32-19

- *Charter on the Rights and Obligations of States Relating to GNSS Services:*
  - Universal access without discrimination
  - Preservation of States' sovereignty, authority and responsibility
  - Continuity, availability, integrity, accuracy and reliability of GNSS services
  - Compatibility between regional and global planning
  - Principle of cooperation and mutual assistance



# Resolution A32-20

- *Development and elaboration of an Appropriate Long-term Legal Framework to Govern the Implementation of GNSS:*
  - Consideration of an international convention
  - Secretariat Study Group
  - No delay to CNS/ATM implementation due to legal considerations



# Further Work

- Exploration of international convention
- Some States consider that current legal system adequately addresses GNSS
- Compromise solution: a contractual framework being explored



# Contractual Framework

- Would cover relationships between:
  - Primary signal providers
  - Augmentation signal providers
  - ATS providers
  - States in whose territory signals are to be used



# Contractual Framework

- In order to maintain a desired degree of uniformity and to provide essential assurances of confidence in CNS/ATM systems, a set of common elements should be applicable to all contracts to ensure commonality





# Further Issues

- Liability
- Unlawful interference
  - Jamming
  - Spoofing
  - Intrusion into ATC data networks
- Need for further study



# 33<sup>rd</sup> Assembly

- Further study required
- Study Group still proper forum
  - Further exploration of contractual framework
  - Unlawful interference with CNS/ATM systems
- Some States preferred convention as long-term goal
- Limited resources: Aviation security now the overriding task



# 33<sup>rd</sup> Assembly

- Guidance to Study Group:
  - Be mindful of most States' reliance on others
  - Consider carefully the kinds of relationships States should have with providers
  - Ensure that States retain full responsibility under the Chicago Convention for services provided on their behalf



# 33<sup>rd</sup> Assembly

- Further work by Study Group to include:
  - Consideration of an international convention
  - Review of security aspects
  - Prevention of unlawful interference with CNS/ATM systems



# Further work

- Secretariat Study Group will hold further meetings in 2002 and 2003
- Report to Council and next Assembly



# Main challenges to CNS/ATM

- Many technical obstacles to CNS/ATM systems implementation largely overcome
- Main challenges faced by States currently of a financial and legal nature



## Conclusion: Financial Aspects

- Policy guidance is largely in place
- Basic practical guidance needs expansion
- Guidance on business cases under development
- Only with efficient organization and sound financial management can we gain the confidence of financiers



# Conclusion: Legal Aspects

- More work remains to be completed
- Solid contractual framework needed
- The vast majority of States will need to rely on others to provide their GNSS signals and augmentation. But placing undue burdens on the provider States might discourage the provision of services. Essential to strike a fair balance between providers and users of GNSS

