



# **BUSINESS CASE DEVELOPMENT**

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# Outline

- Definition, need and background
- Prerequisites, data requirements
- Major stakeholders, impediments
- Analysis process
- Output, risk analysis
- The spreadsheet model

# Definition of a business case

A written statement setting forth:

- ▣▶ The mission and objectives
- ▣▶ The strategic, operational and financial details
- ▣▶ The ownership and management

It takes CBA a step further:

- ▣▶ Products, services and markets
- ▣▶ Management, employees
- ▣▶ Technologies, facilities, equipment
- ▣▶ Capital, revenues, profitability, financing
- ▣▶ Risks and contingency plans

# Need

- Tool to provide:
  - Investment information
  - Capital needs
  - User fee structure
  - Cash flow requirements
- Tool to quantify the risks and bring service providers and financial organizations to reach consensus

# Background

- ➡ World-Wide CNS/ATM systems implementation Conference (Rio 1998)
- ➡ 32<sup>nd</sup> Session of the Assembly (Resolution A32-12)

# Prerequisites

- ➡ Consensus among the stakeholders regarding the need and requirements for new technology
- ➡ The availability of the new technology's facilities and equipment
- ➡ Consultation and coordination between service providers with adjacent areas of responsibility
- ➡ Transition strategy
- ➡ The boundaries of the business case defined and its institutional and legal format selected

# Implementation Strategy

- Decision on homogeneous areas
  - Common ATM objectives
  - Common CNS requirements
- Multinational/Regional approach
  - Acceptable distribution of benefits
  - Reduction of financial risks for States
  - Joint ventures
- Implementation time period

# Data requirements

## ➤ Traffic

- Traffic densities and traffic flows
- Traffic forecasts

## ➤ Current systems

- Cost of operations of the service provider
- Inventory and costs of current air navigation systems' equipment and facilities:
  - Communications (Air/Ground, Ground/Ground and avionics)
  - Navigation (En Route, Terminal and Approach and Avionics)
  - Surveillance (En route, Terminal and avionics)
  - ATM
- Level of user charges

# Data requirements (cont'd)

## ▣▣▣▣ Future systems

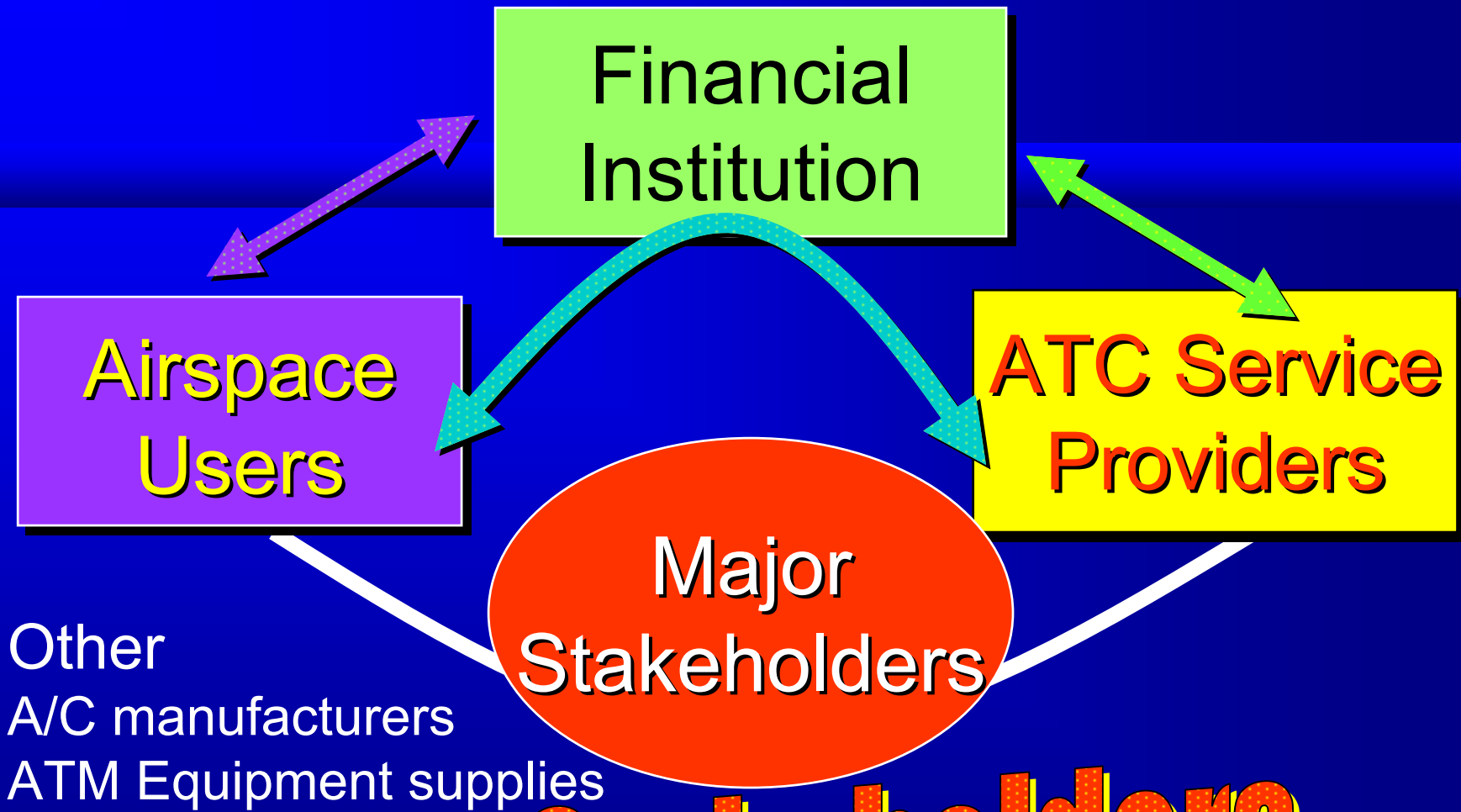
### ▣▣▣▣ Operational requirements

### ▣▣▣▣ Cost of new air navigation systems' equipment and facilities:

- ▣▣▣▣ Communications (Air/Ground, Ground/Ground and avionics)
- ▣▣▣▣ Navigation (En Route, Terminal and Approach and Avionics)
- ▣▣▣▣ Surveillance (En route, Terminal and avionics)
- ▣▣▣▣ ATM

## ▣▣▣▣ Transition pattern and cost of transition

## ▣▣▣▣ Avionics costs



Other  
A/C manufacturers  
ATM Equipment supplies

# Major Stakeholders

# Main impediments

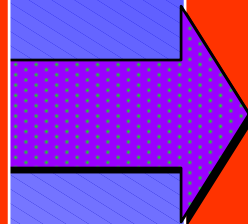
- ➡ Lack of coordination and cooperation between stakeholders
- ➡ Lack of coordination and consultation between service providers with adjacent areas of responsibility
- ➡ Non homogeneity of areas selected and redundancy of facilities and equipment
- ➡ Ambiguous institutional or legal format
- ➡ Lack of guarantees
- ➡ Unavailability or inaccuracy of data required

# Analysis Process

Economic  
Viability

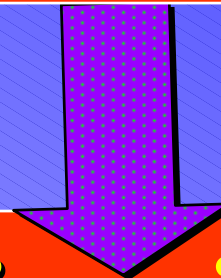
Provider/User

**Cost/  
Benefit**



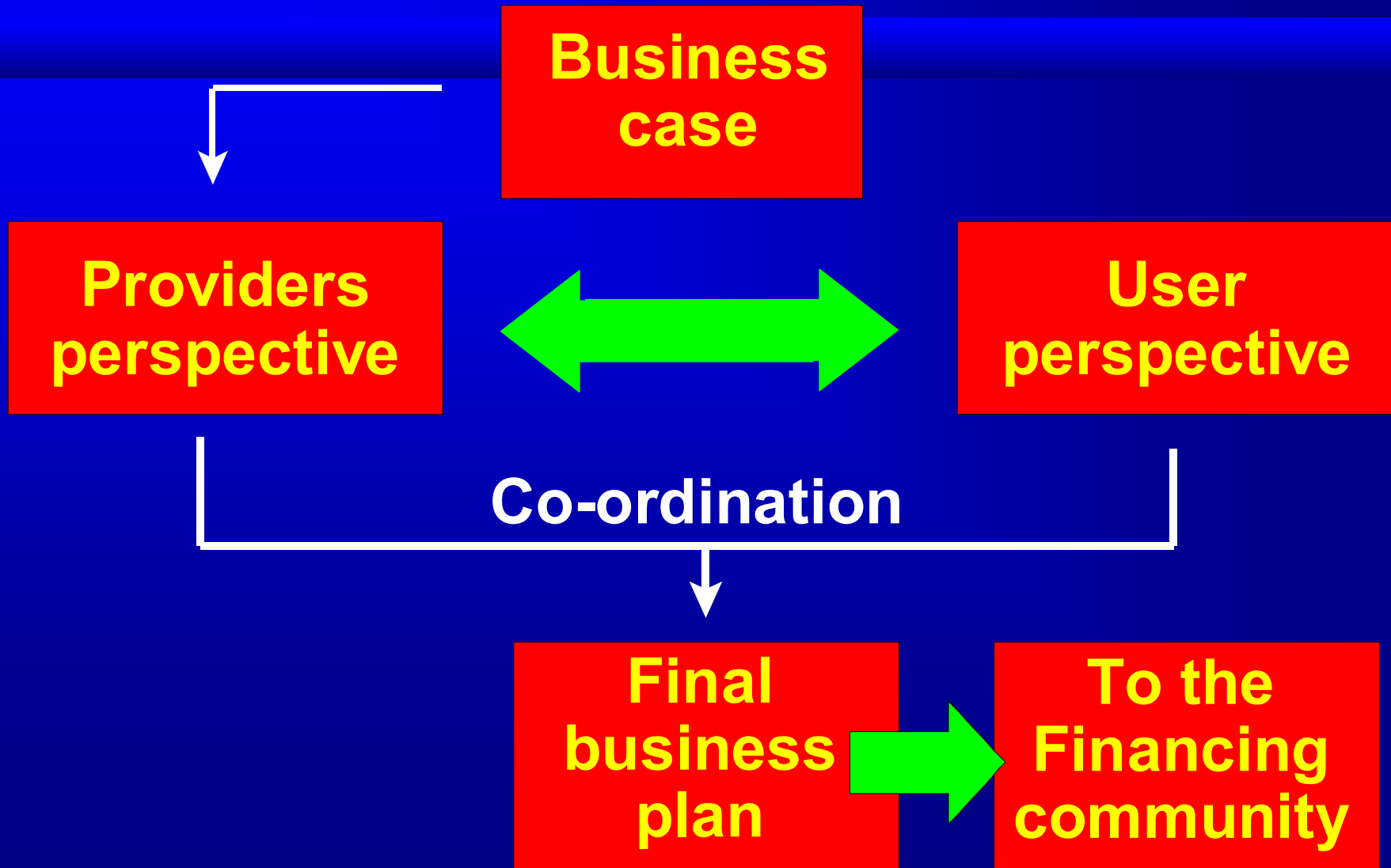
**Business  
Cases**

- State
- Sub-regional
- Regional



**Financial  
Community**

# Stages of the Business Case



# Output

- ➡ Profitability of the project
- ➡ Cash flow profile
- ➡ Financing requirements
- ➡ Cost recovery period
- ➡ Required level of user charges
- ➡ Risk assessment

# Risks

- ➡ Exchange rates
- ➡ Schedule
- ➡ Traffic growth
- ➡ Rate of return
- ➡ Efficiency rates

# **The Spreadsheet Model**

# The Models Objectives

## Objectives:

- To develop a user-interactive model for business case analysis covering the details of cash-flow analysis, life-cycle costs and life-cycle benefits for both the service provider and user (airlines).
- The model accepts user-specific inputs and provides instantaneous output.

# **Major segments (Service Provider)**

## **Life-Cycle Costs for the Service Provider**

1. Facilities and Equipment Costs (F&E) on the planned capabilities.
2. Operation and Maintenance Costs (O&M) for the above mentioned capabilities.

## **Life-Cycle Revenues for the Service Provider**

1. Establishment of User Fees and cost recovery of capital investment.

# Major segments (User)

## Life- Cycle Costs for the Airlines

1. Avionics Facilities and Equipment Costs (F&E) on the planned capabilities.
2. Avionics Operation and Maintenance Costs (O&M) for the above mentioned capabilities.
3. User Fees collected by service provider.

## Life-Cycle Benefits for the Airlines

1. Efficiency improvement due to operating cost savings.

# Structure

- ➡ The business case analysis model consists of three inter-related modules
- ➡ Each module is developed as an Excel Worksheet
- ➡ The entire analysis is performed considering both the service provider and the airlines

# Module I – User Input Template for Service Provider Section

Microsoft Excel - Terra Nova Business Case Analysis

File Edit View Insert Format Tools Data Window Help

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2		<b>SERVICE PROVIDER</b>										
3			Total F&E \$M	O&M/yea r as % F&E								
4		<b>GROUND COSTS</b>										
5		COMMUNICATIONS	\$170	5%								
6		NAVIGATION	\$6	5%								
7		SURVEILLANCE	\$41	5%								
8		ATM	\$94	5%								
9		Leased Comm/year (\$ million)	\$10									
10		<b>IMPLEMENTATION</b>	Begin	End	LC yrs							
11		COMMUNICATIONS	2005	2010	15							
12		NAVIGATION	2005	2010	15							
13		SURVEILLANCE	2005	2010	15							
14		ATM	2005	2010	15							
15		<b>USER FEES</b>										
16		Begin Year	2010									
17		End Year	2020									
18		% Return	25%									

<b>TERRA NOVA CNS/ATM</b>			
<b>Service Provider - Business Case Analysis Summary</b>			
Service Provider	Constant 2001 \$ M	Current- Year \$M	Present Value \$M
Revenues (User Fees)	1,207	1,710	447
Total Expenses	733	990	358
Acquisition Costs	311	365	202
Recurring costs	422	625	156
Net Income	474	720	89
Benefit-to-Cost Ratio			1.3
Net Present Value			\$89M
Payback Period (Breakeven Point) in Years			8
Net Return			25%

# Module I – User Input Template for Airlines Section

Microsoft Excel - Terra Nova Business Case Analysis

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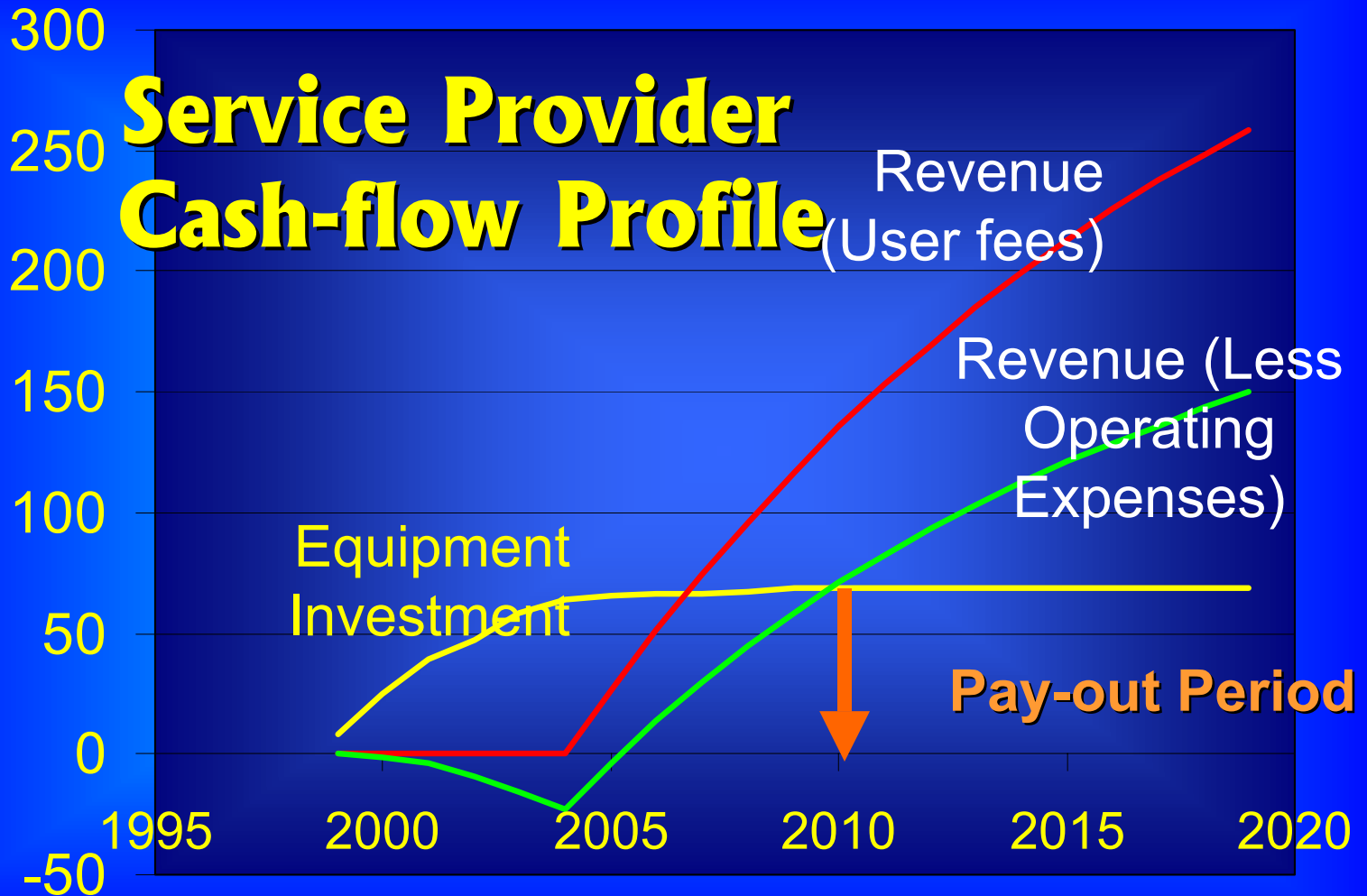
	A	B	C	D	E	F	G	H	I	J	K	L
19												
20		<b>AIRLINES</b>										
21				Growth								
22		<b>Aircraft Qty</b>	575	5%								
23		<b>Flight-hrs in 2001</b>	1.5	5%								
24		<b>Cost/Flight-Hour</b>	\$3,250									
25		<b>% Opr. Efficiency Improvement</b>	3%	reduced fit. time								
26												
27			Total F&E \$M	O&M/yea r as % F&E								
28		<b>AVIONICS COSTS</b>										
29		COMM	\$0.39	5%								
30		NAVIGATION	\$0.25	5%								
31		SURVEILLANCE	\$0.15	5%								
32		<b>IMPLEMENTATION</b>	Begin	End	LC yrs							
33		COMM	2005	2010	15							
34		NAVIGATION	2005	2010	15							
35		SURVEILLANCE	2005	2010	15							
36												
37		<b>Finance Rates</b>										
38		Cost of Capital (discounting rate to estimate Present Value)			7.0%							
39		Inflation (to estimate Current-Year dollar value)			2.5%							
40		Base Year (To estimate Constant-Year dollar value)			2001							

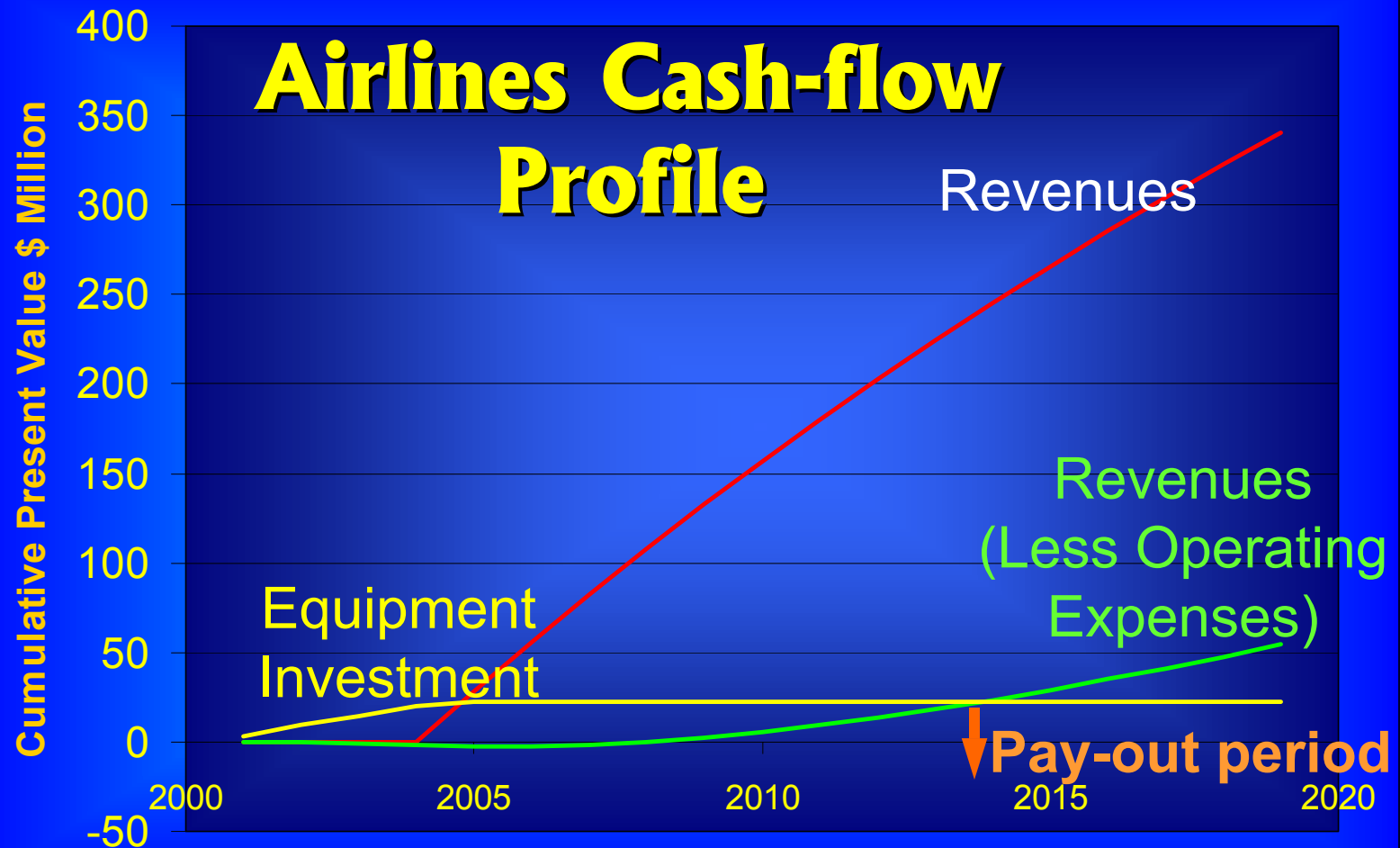
TERRA NOVA CNS/ATM			
Airlines - Business Case Analysis Summary			
Airlines	Constant 2001 \$ M	Current-Year \$M	Present Value \$M
<b>Revenues (Opr Eff)</b>	5,636	9,337	2,126
<b>Total Expenses</b>	2,434	3,333	1,078
<b>Acquisition Costs</b>	657	775	422
<b>Recurring costs</b>	1,777	2,558	656
<b>Net Income</b>	3,202	6,004	1,047
<b>Benefit-to-Cost Ratio</b>	2.0		
<b>Net Present Value</b>	\$1047M		
<b>Payback Period (Breakeven Point) in Years</b>	6		
<b>Net Return</b>	97%		

# Business Case – Break even chart (parametric)

Cumulative Present Value \$ Million



# Business Case – Break even chart (parametric)



# Conclusion

- ❖ Investment for some components are substantial for both service provider & user
- ❖ Multinational planning & co-ordination among various States, sub-regions & regions are essential in order to minimize costs, ensure compatibility and avoid duplication of effort, for the efficient implementation of the system

# ICAO Publication

- ➡ Circular

- ➡ Guidance material including software

