SIP/2004-WP21
Business case

Special Implementation Project

Introduction to Hands-on Exercise for the Development of Business Case

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Economist, ICAO)

Workshop on the development of business case for the implementation of CNS/ATM systems
Cairo, 6–9 September 2004

Approach to developing a business case

- Step 1: Define homogeneous ATM area (Region, State, Group of States, FIR, Group of FIRs)
- Step 2: Input the data related to current infrastructure (as per WP4)

Approach to developing a business case (cont'd)

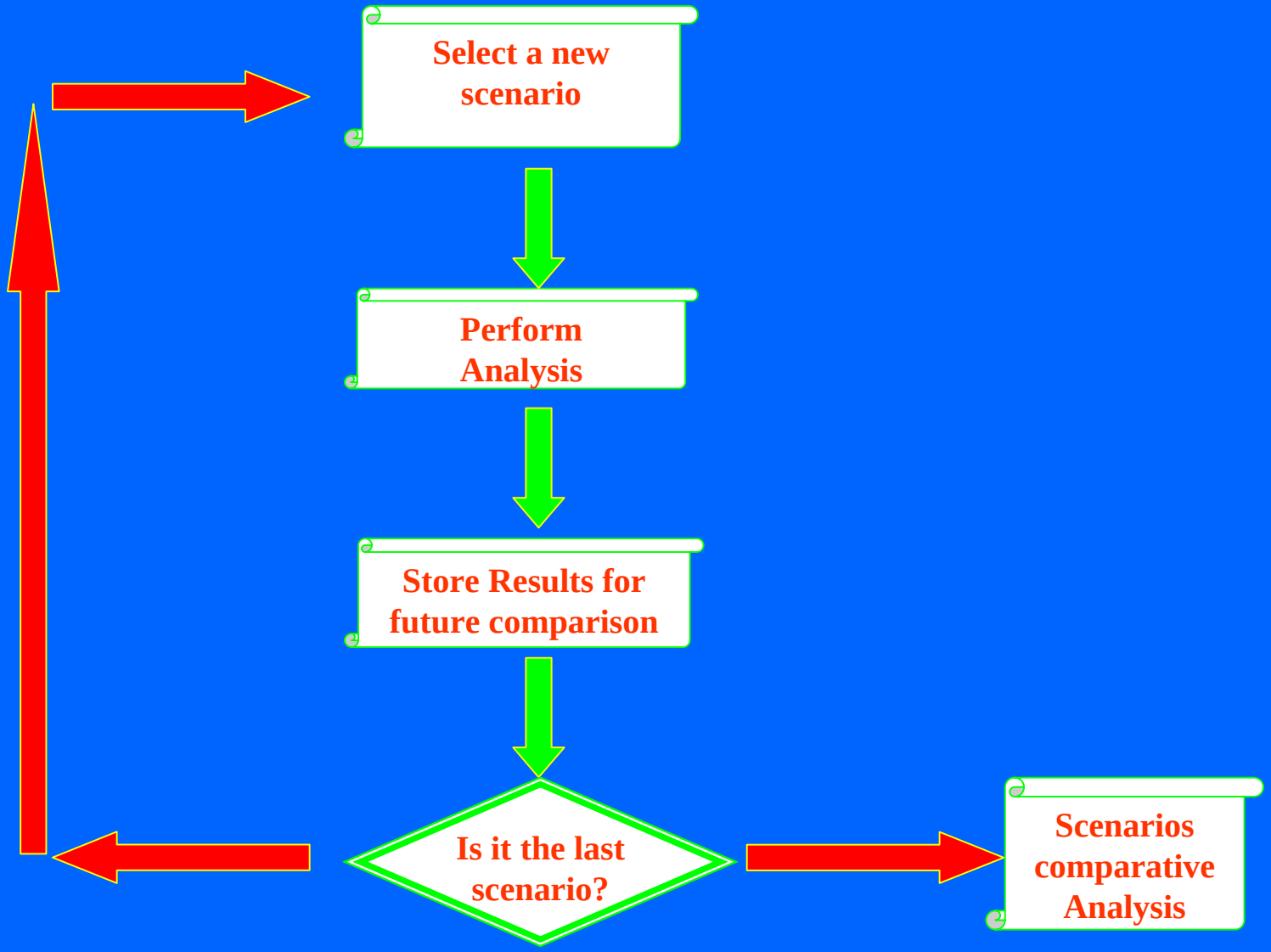
- Step 3: Define implementation options for the air navigation service provider:
  - ✓ Input traffic forecast
  - ✓ Define implementation parameters such as start of analysis period, end of analysis period,CNS/ATM operational date, etc.
  - ✓ Determine the approach to withdraw the current infrastructure
  - ✓ Decide on the introduction of new systems
  - ✓ Define a cost recovery scheme

Approach to developing a business case (cont'd)

- Step 4: Perform Integrated Analysis
- Step 5: Carry out comparative analysis of different scenarios
- Step 6: Determine the best scenario for the implementation of CNS/ATM systems

→ **Results in Business Case**

Scenario evaluation iterative process



Output

Main Analysis Output

- For both the service provider and the airlines:
  - ✓Expenditures cash flows
  - ✓Revenues cash flows
  - ✓Net Present Value (NPV) of cash flows
  - ✓Benefit to Cost ratio
  - ✓Pay-back period
  - ✓Net return

List of output charts

- ✓Traffic growth
- ✓Total ANS expenditures
  - Communications costs
  - Navigation costs
  - Surveillance costs
  - ATM costs
- ✓Total Airlines' expenditures
  - Communications costs
  - Navigation costs
  - Surveillance costs
  - ATM costs

List of output charts (cont'd)

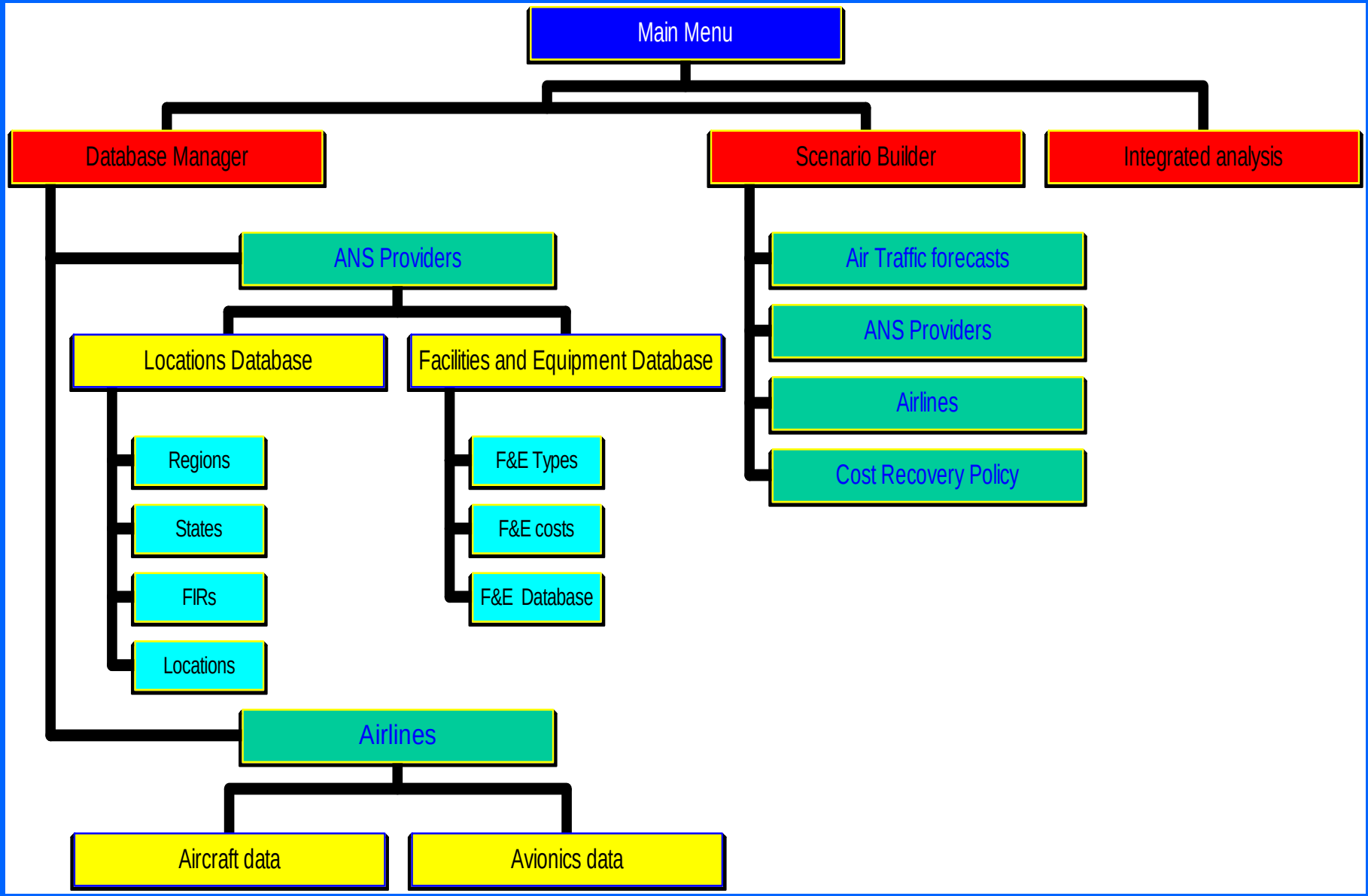
- ✓Total ANS revenues
- ✓Airline efficiency benefits

➢By location

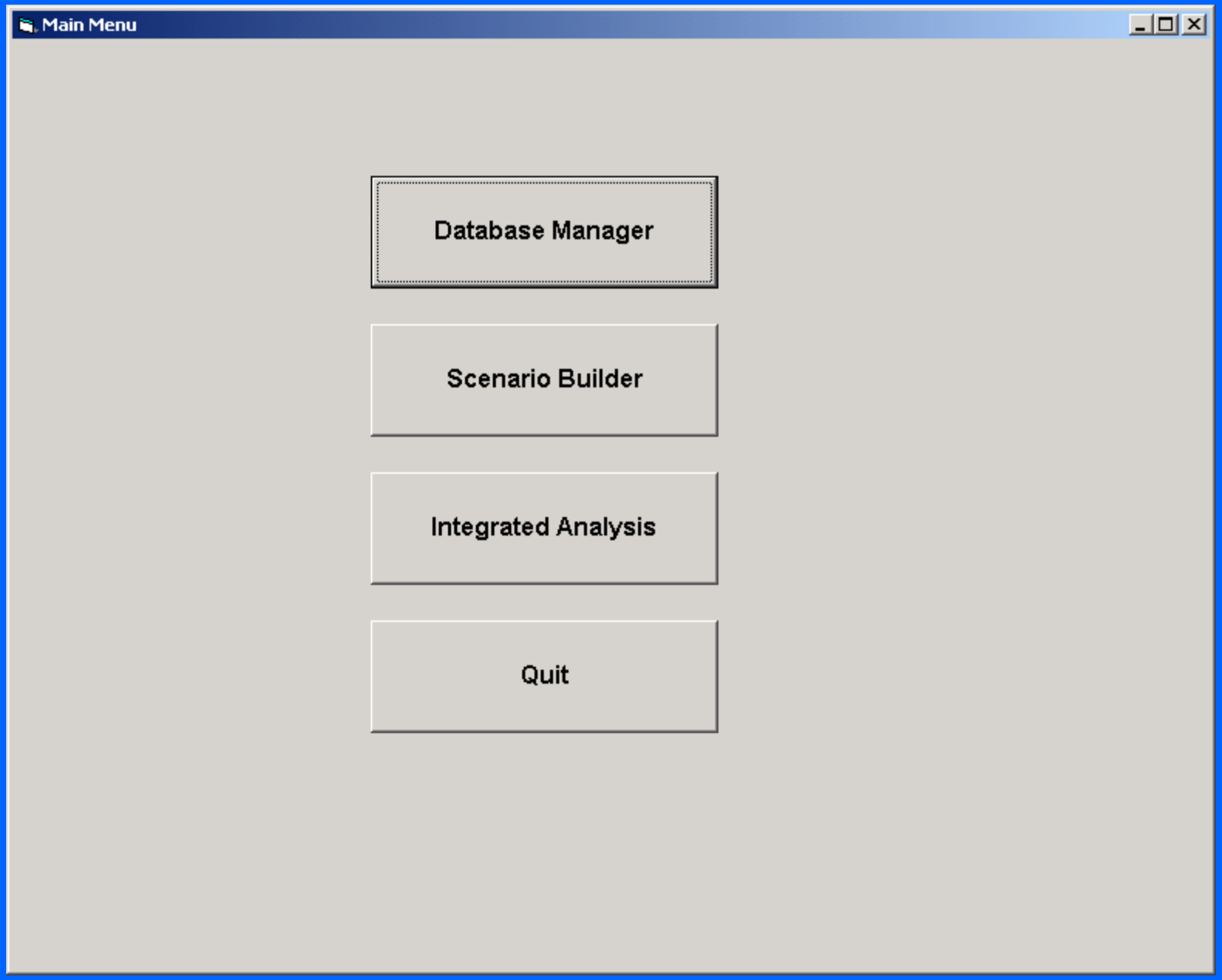
- ✓Communications costs
- ✓Navigation costs
- ✓Surveillance costs
- ✓ATM costs

The business case software

Business Case Software chart



Database Management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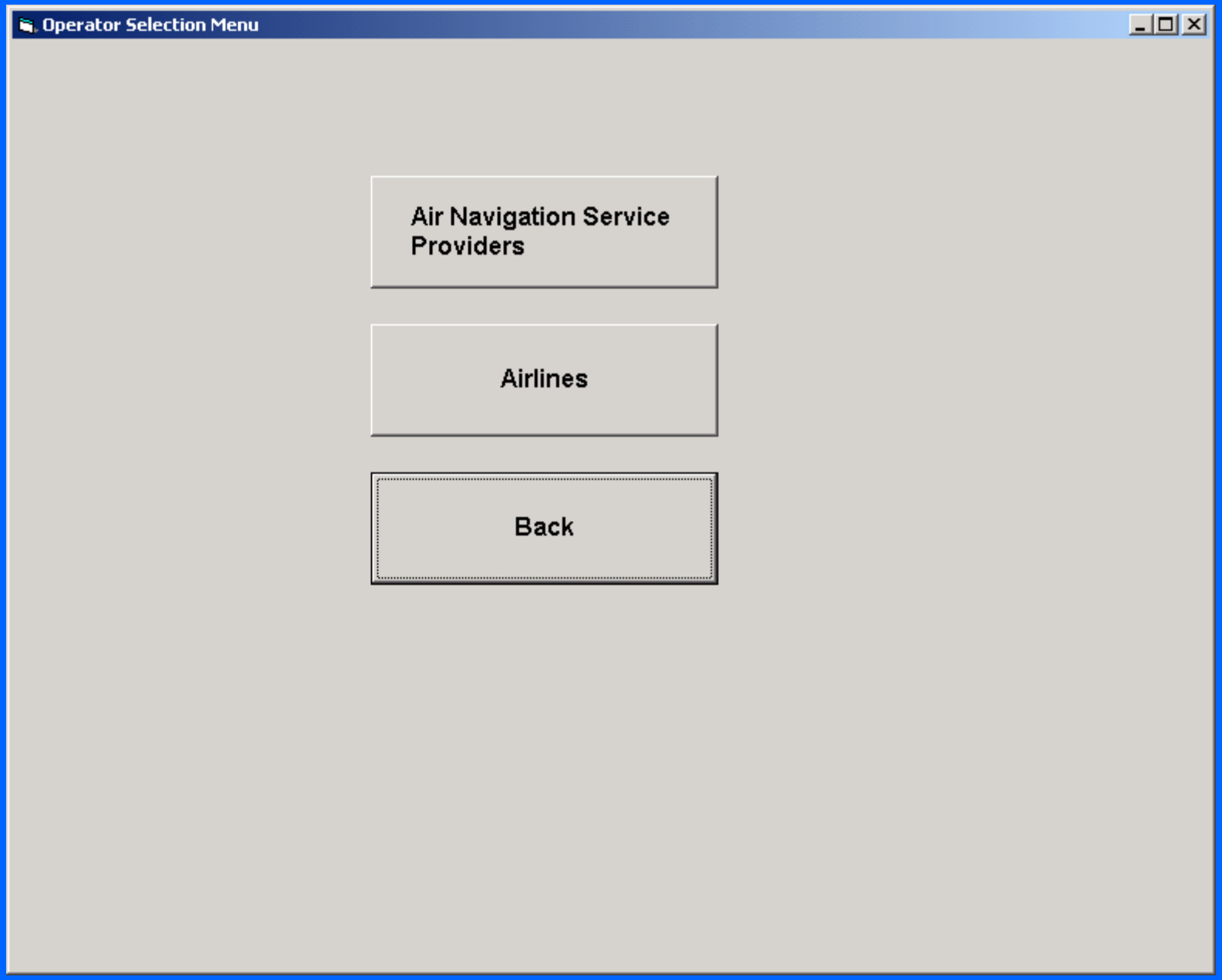
Database Manager
Scenario Builder
Integrated Analysis
Quit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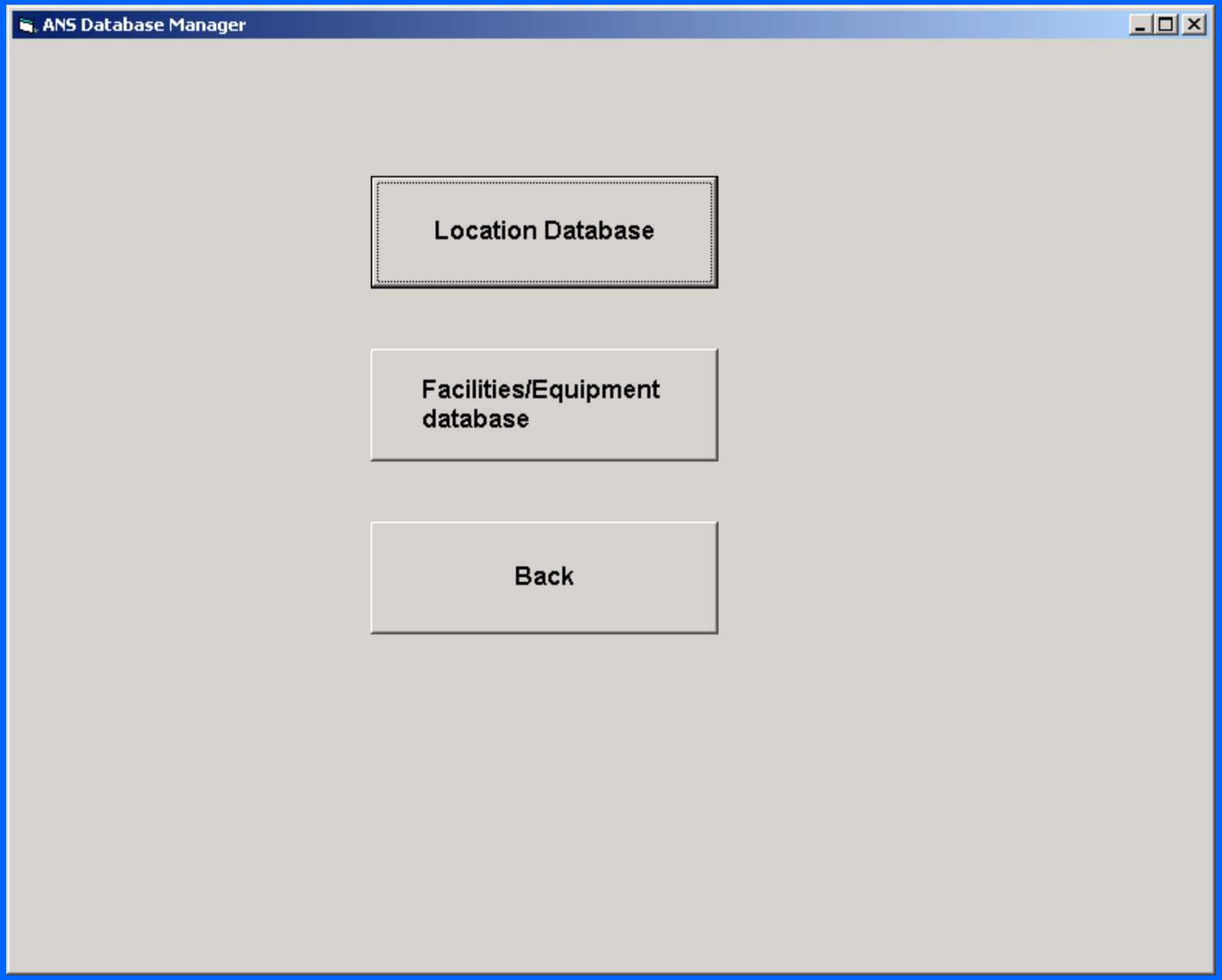
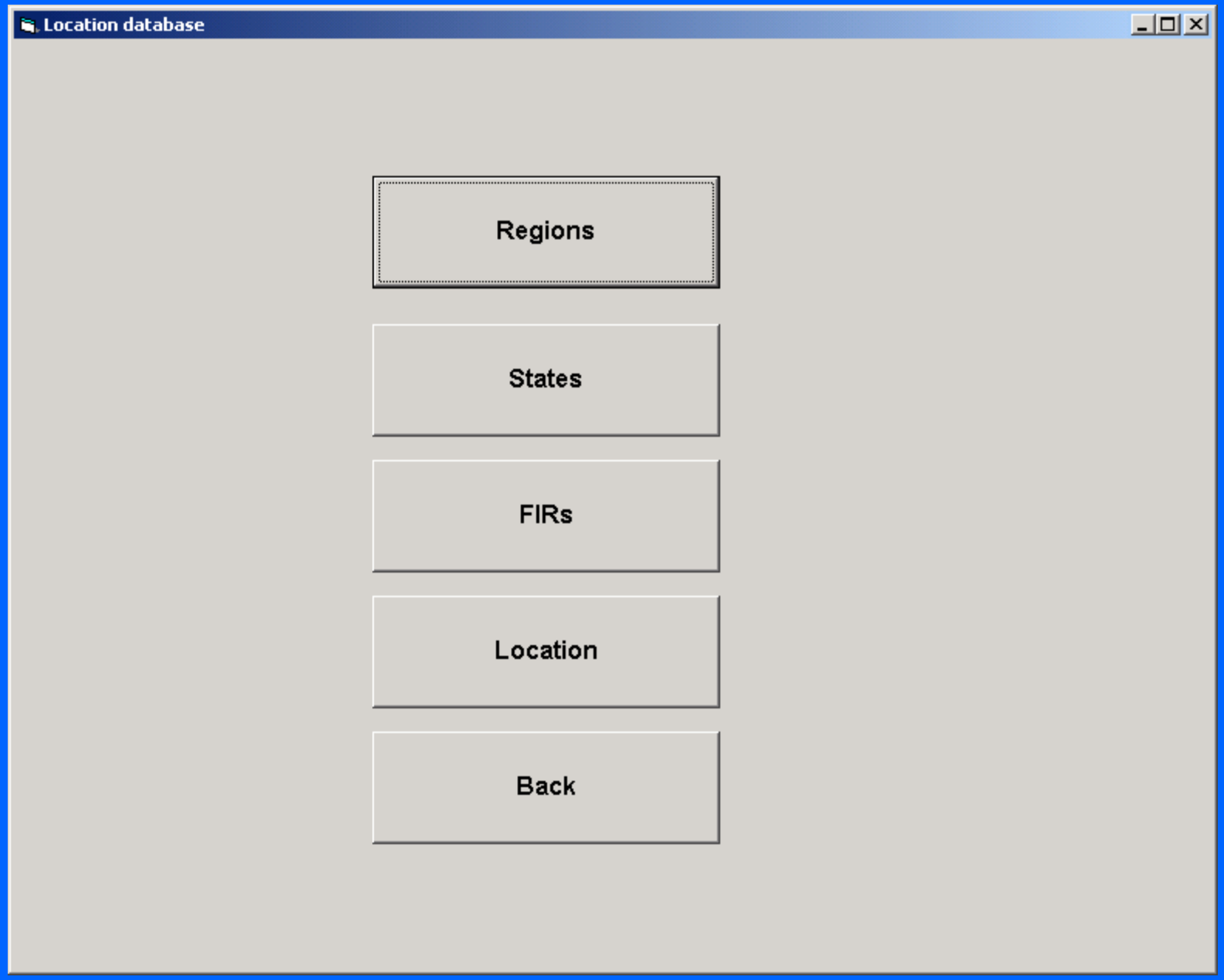
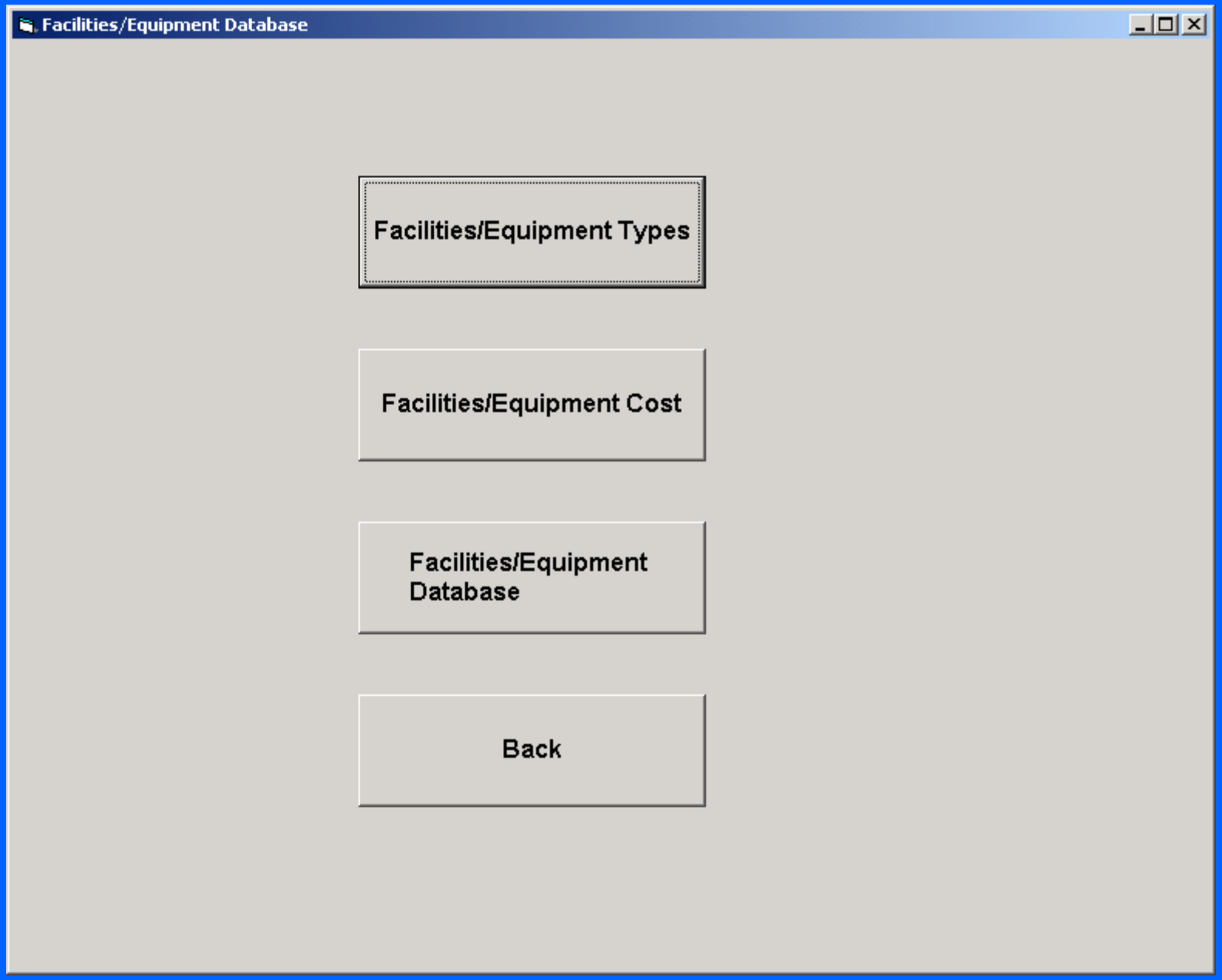
Air Navigation Service Providers
Airlines
Back


ANS Database Manager
Location Database
Facilities/Equipment database
Back


Location database
Regions
States
FIRs
Location
Back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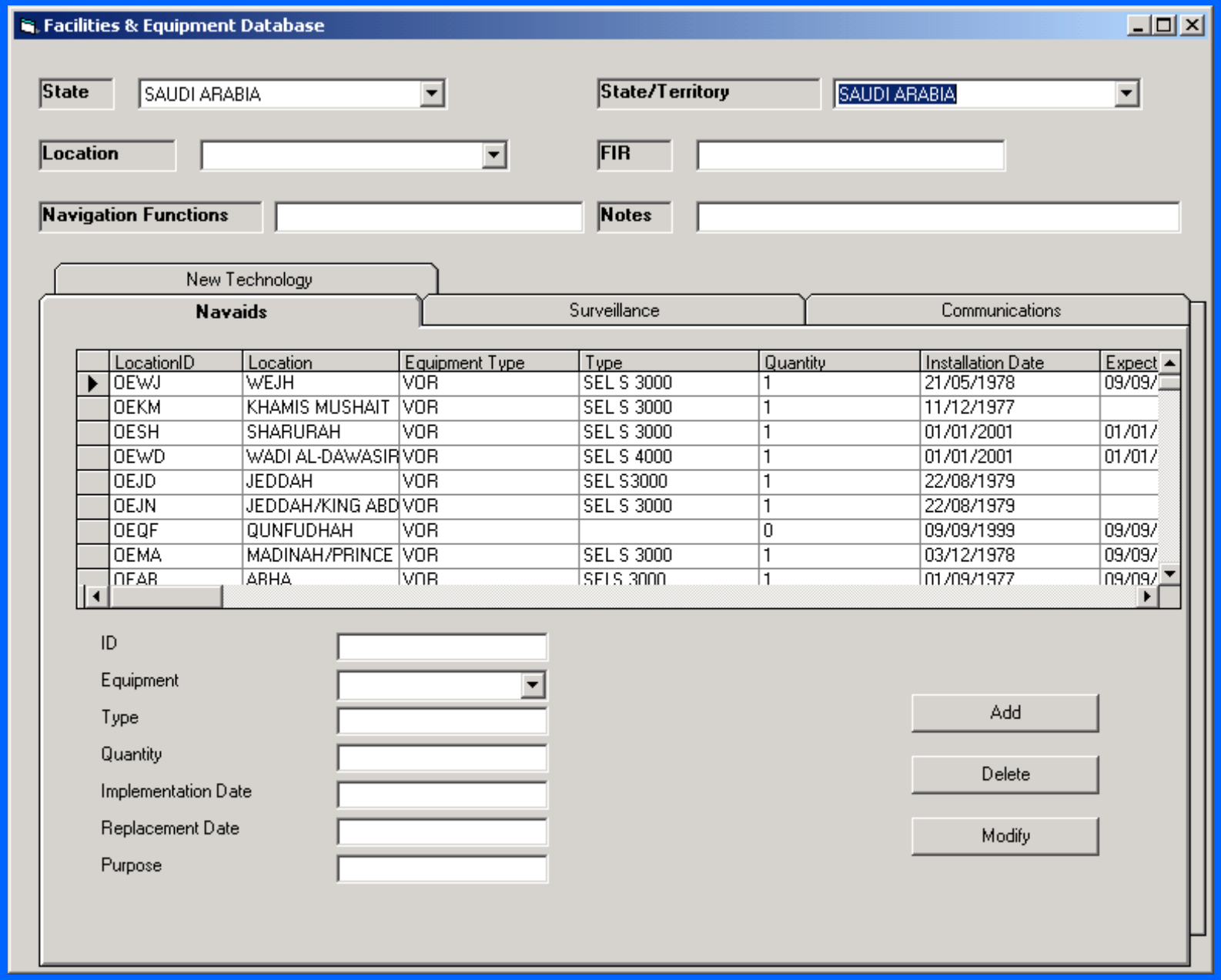
Facilities/Equipment Types
Facilities/Equipment Cost
Facilities/Equipment Database
Back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State
SAUDI ARABIA
State/Territory
SAUDI ARABIA
Location
FIR
Navigation Functions
Notes
New Technology
Navaids
Surveillance
Communications
LocationID
Location
Equipment Type
Type
Quantity
Installation Date
Expect
OEWJ
WEJH
VOR
SEL S 3000
1
21/05/1978
09/09/
OEKM
KHAMIS MUSHAIT
VOR
SEL S 3000
1
11/12/1977
OESH
SHARURAH
VOR
SEL S 3000
1
01/01/2001
01/01/
OEWD
WADI AL-DAWASIR
VOR
SEL S 4000
1
01/01/2001
01/01/
OEJD
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VOR
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22/08/1979
OEJN
JEDDAH/KING ABD
VOR
SEL S 3000
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QUNFUDHAH
VOR
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09/09/1999
09/09/
OEMA
MADINAH/PRINCE
VOR
SEL S 3000
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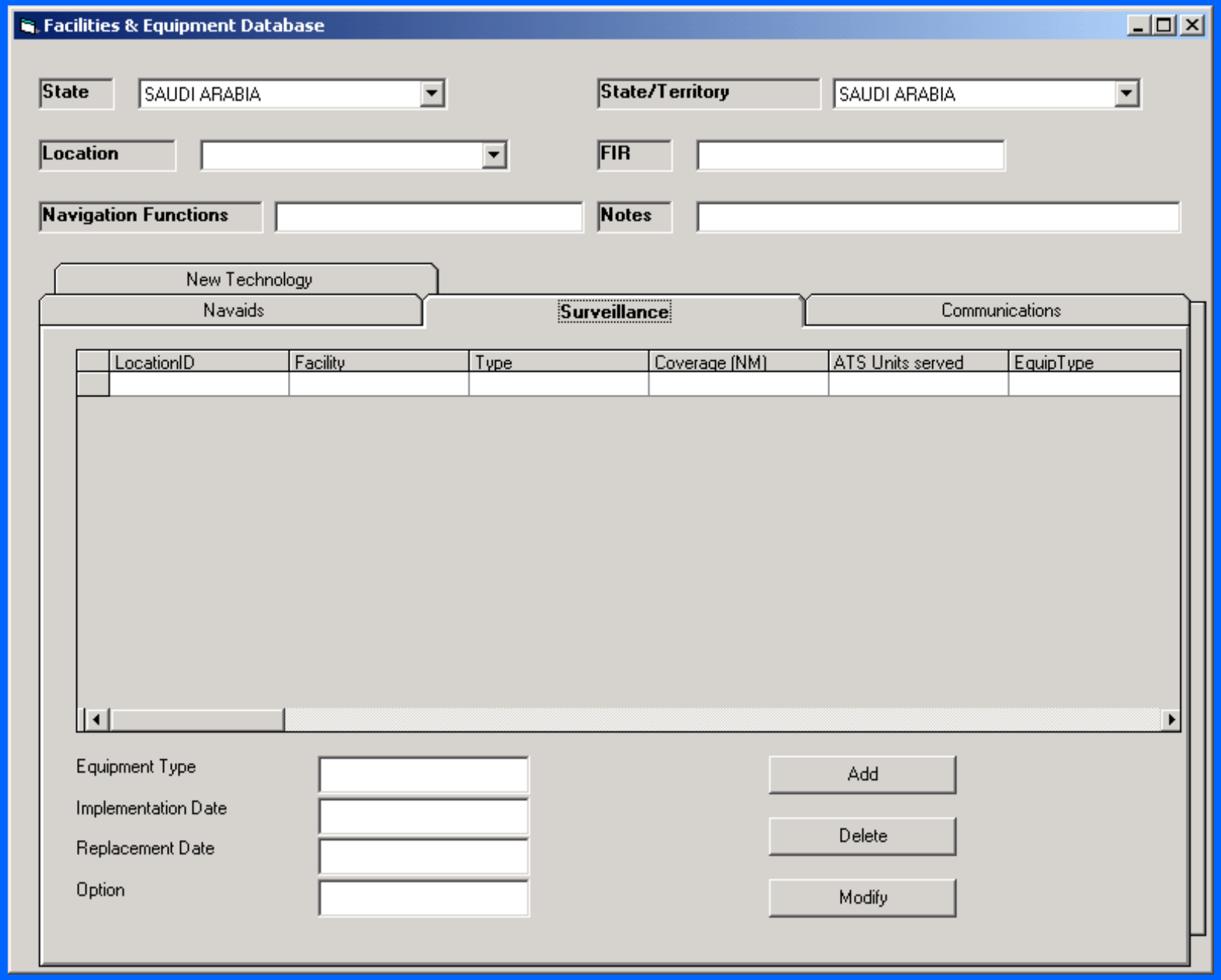
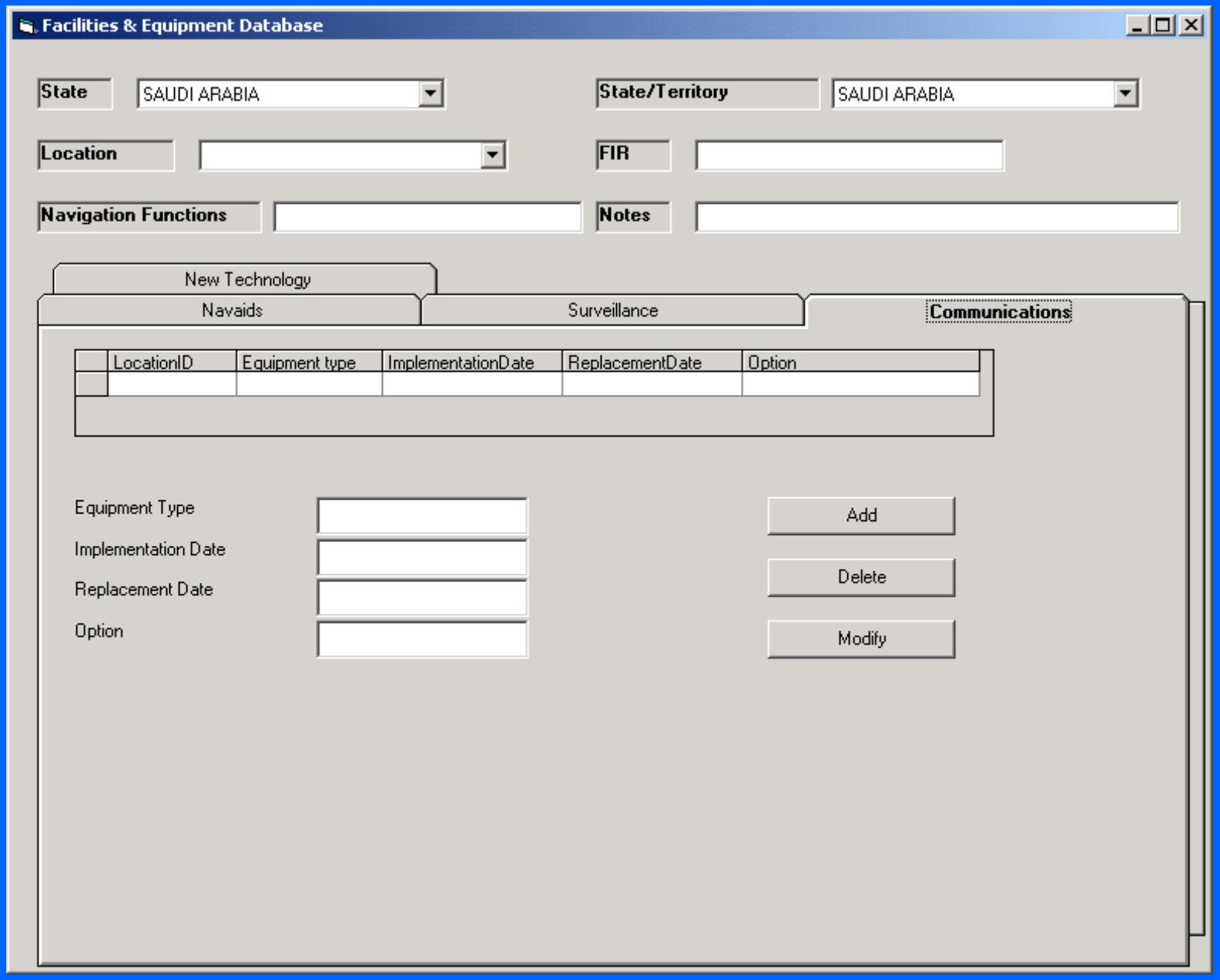
03/12/1978
09/09/
ID
Equipment
Type
Quantity
Implementation Date
Replacement Date
Purpose
Add
Delete
Modify


Facilities & Equipment Database
State
SAUDI ARABIA
State/Territory
SAUDI ARABIA
Location
FIR
Navigation Functions
Notes
New Technology
Navaids
Surveillance
Communications
LocationID
Facility
Type
Coverage (NM)
ATS Units served
EquipType
Equipment Type
Implementation Date
Replacement Date
Option
Add
Delete
Modify


Facilities & Equipment Database
State
SAUDI ARABIA
State/Territory
SAUDI ARABIA
Location
FIR
Navigation Functions
Notes
New Technology
Navaids
Surveillance
Communications
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ImplementationDate
ReplacementDate
Option
Equipment Type
Implementation Date
Replacement Date
Option
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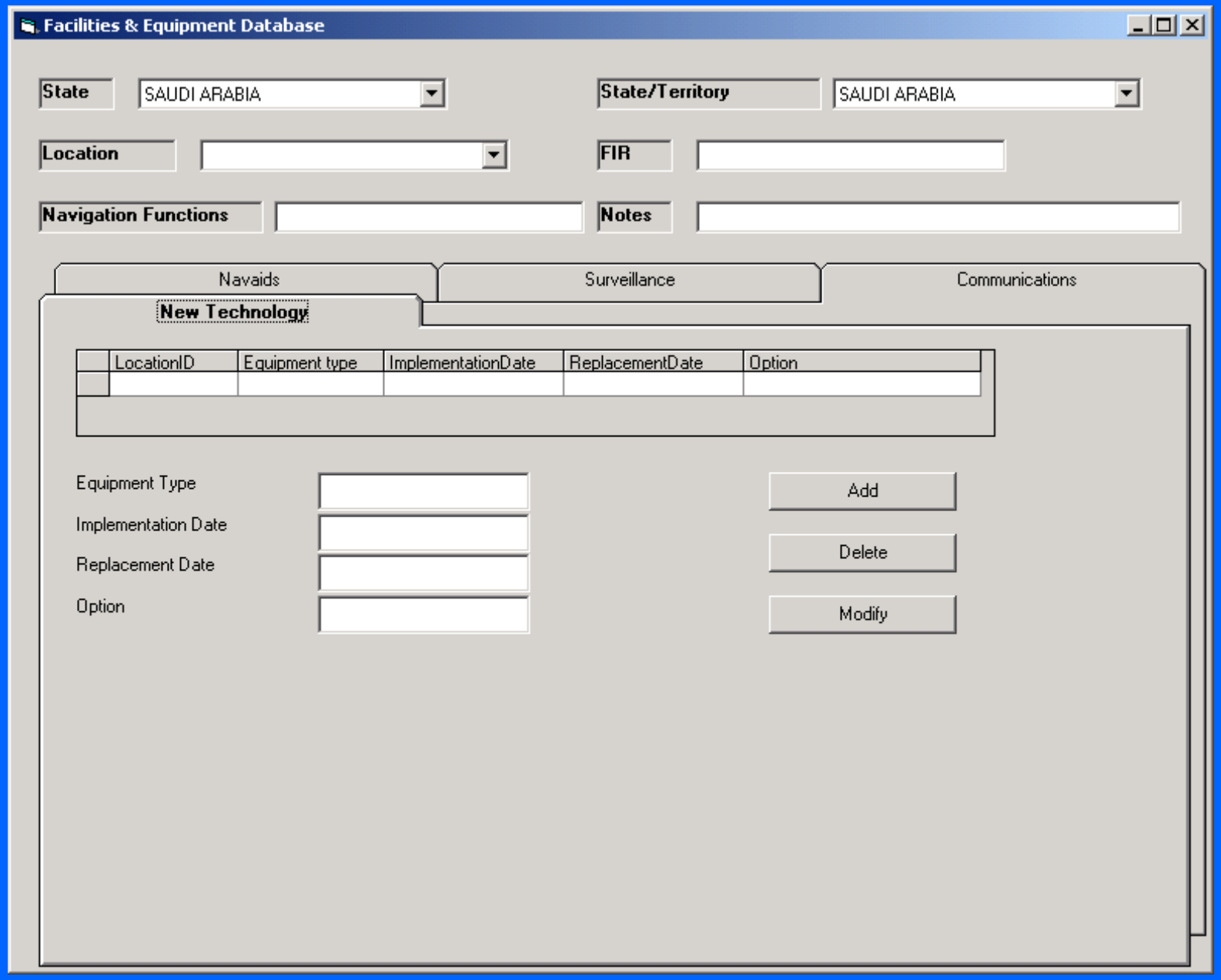
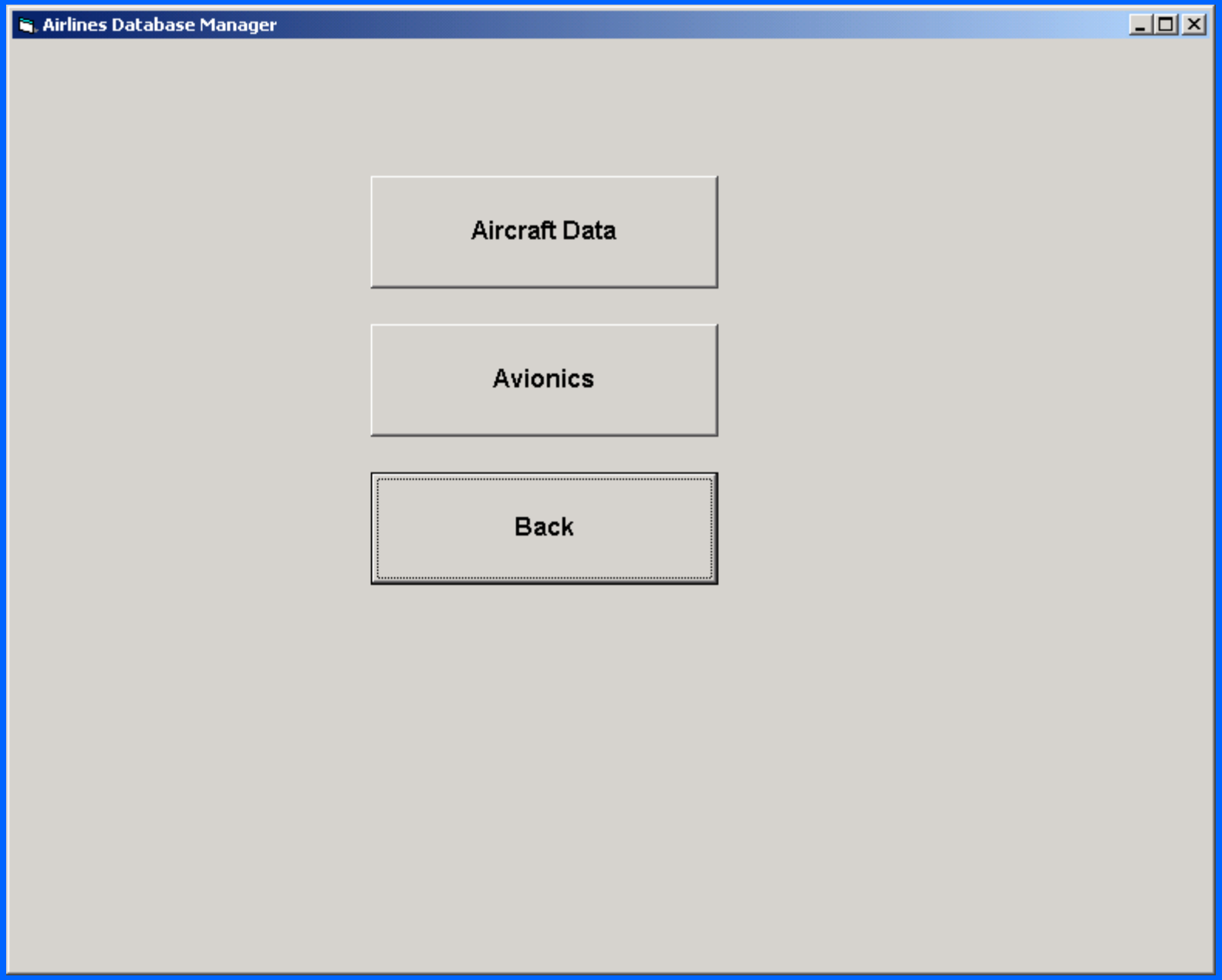
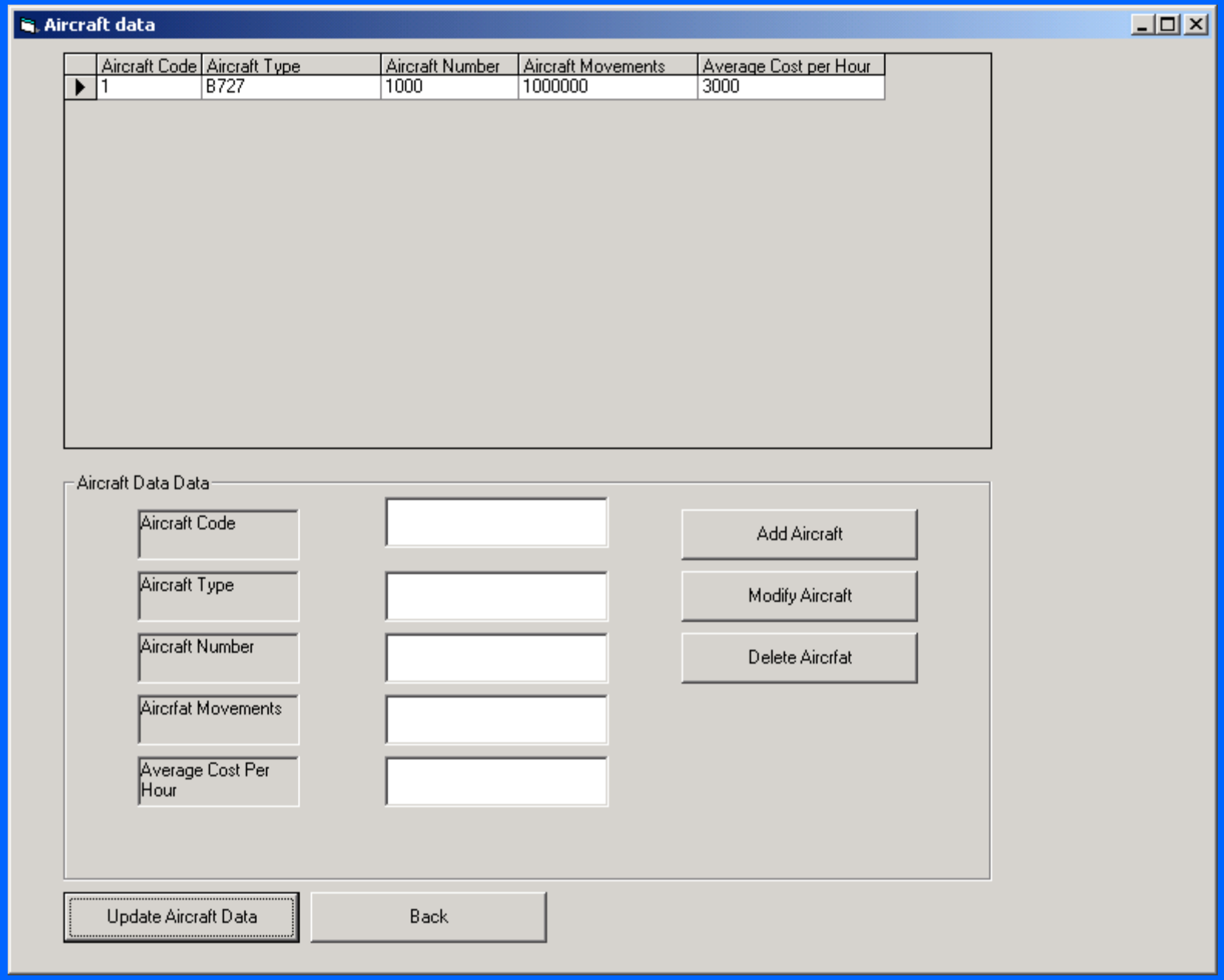
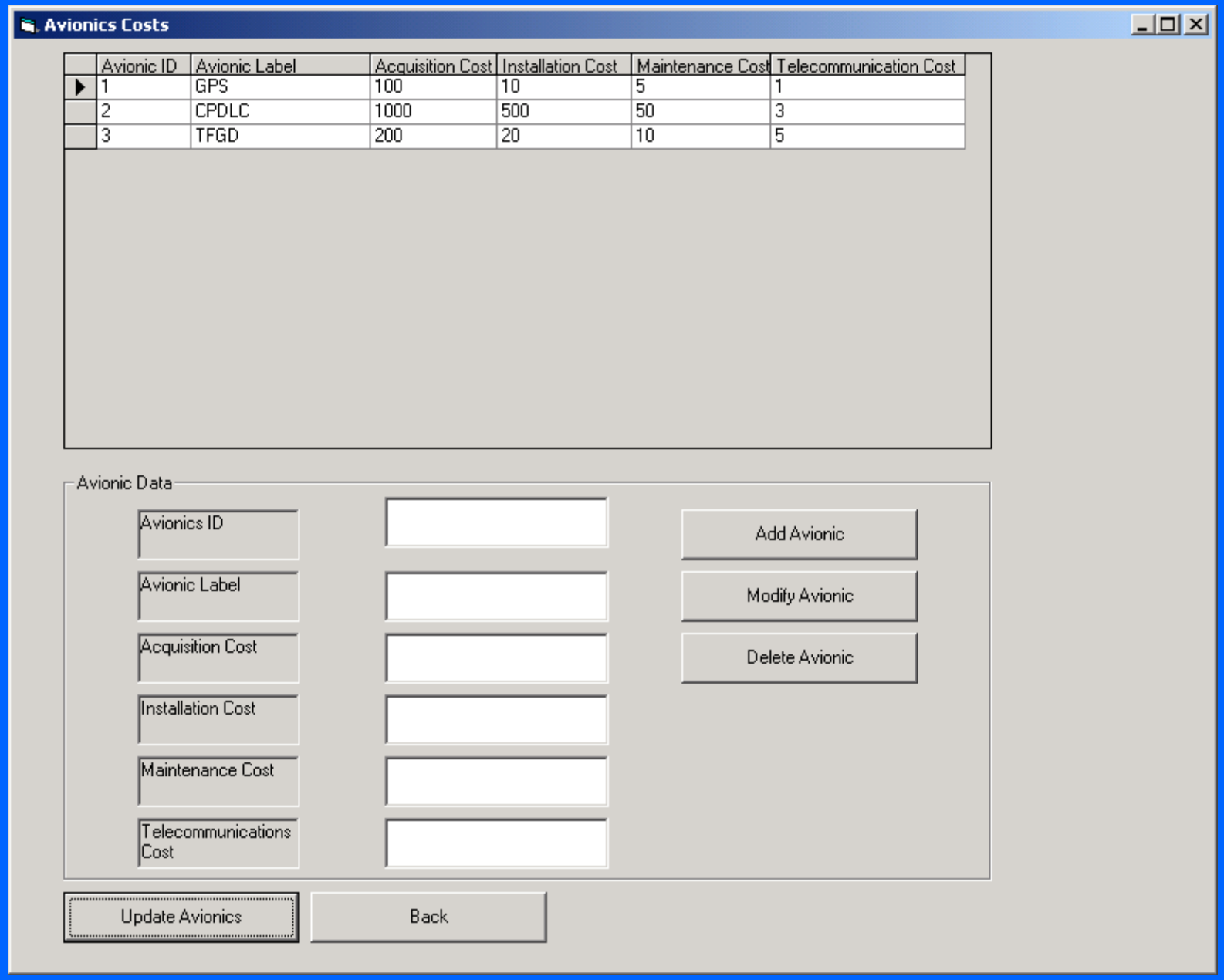
Delete
Modify

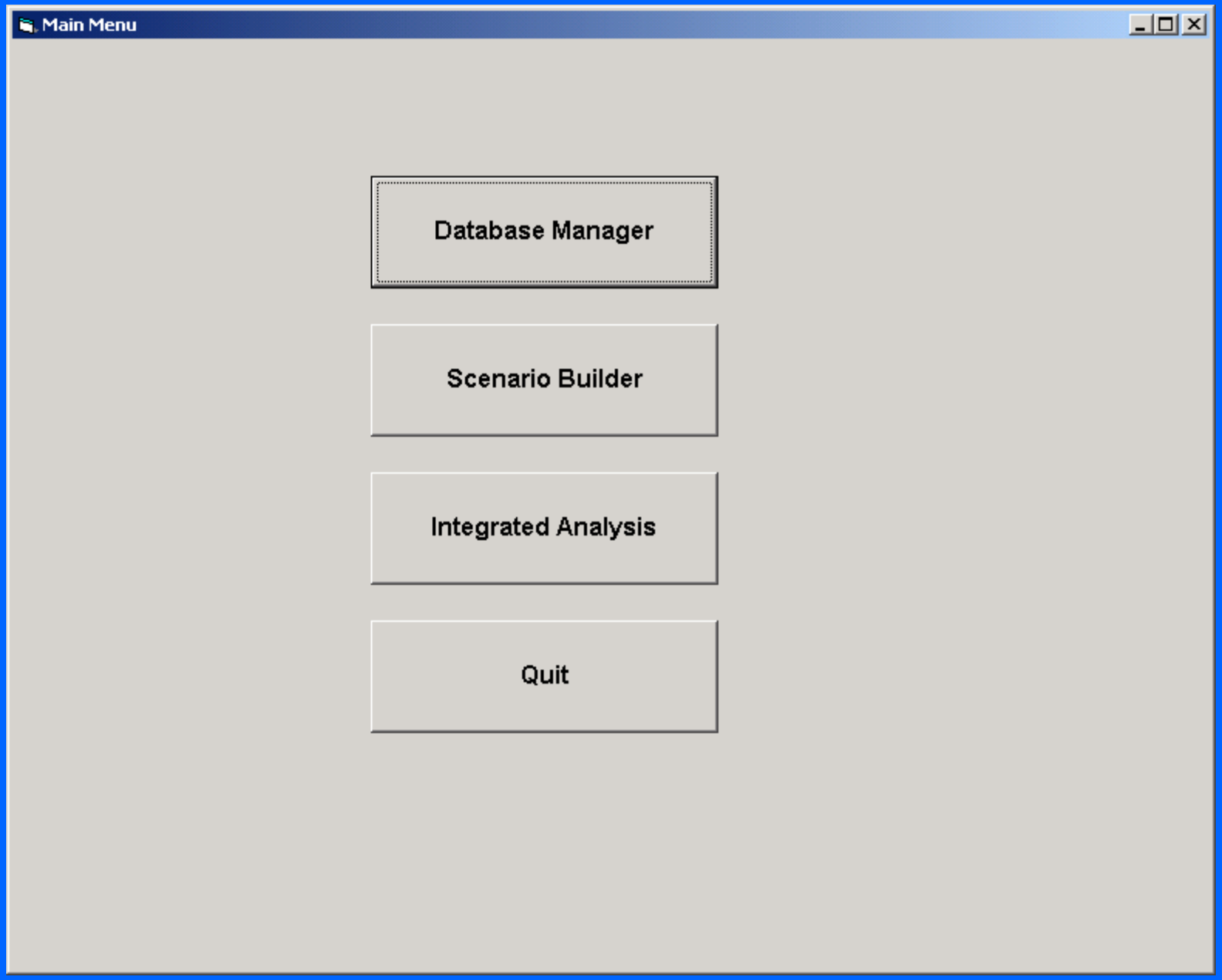

Facilities & Equipment Database
State
SAUDI ARABIA
State/Territory
SAUDI ARABIA
Location
FIR
Navigation Functions
Notes
Navaids
Surveillance
Communications
New Technology
LocationID
Equipment type
ImplementationDate
ReplacementDate
Option
Equipment Type
Implementation Date
Replacement Date
Option
Add
Delete
Modify

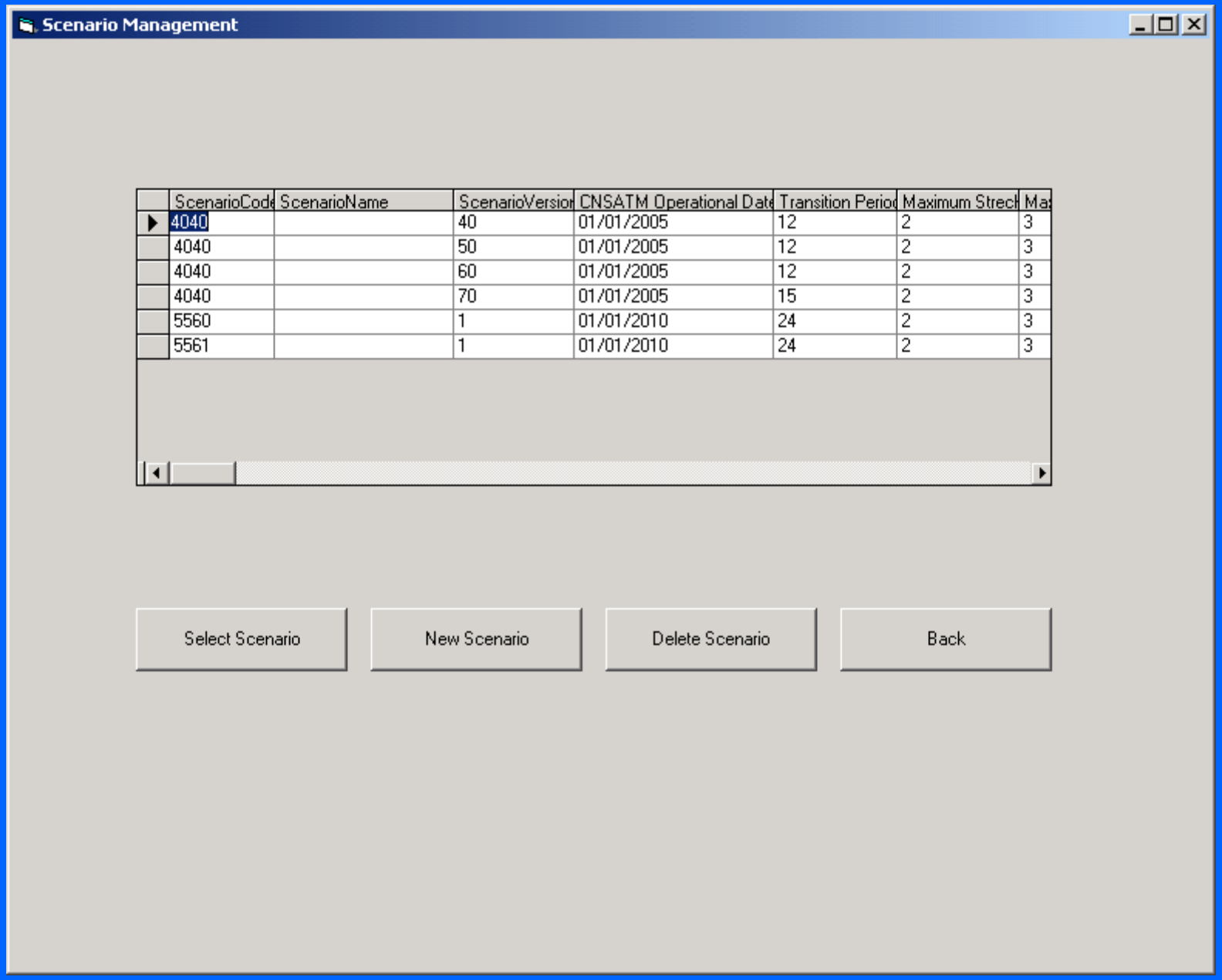

Airlines Database Manager
Aircraft Data
Avionics
Back


Aircraft data
Aircraft Code
Aircraft Type
Aircraft Number
Aircraft Movements
Average Cost per Hour
1
B727
1000
1000000
3000
Aircraft Data Data
Aircraft Code
Aircraft Type
Aircraft Number
Aircrfat Movements
Average Cost Per Hour
Add Aircraft
Modify Aircraft
Delete Aircrfat
Update Aircraft Data
Back


Avionics Costs
Avionic ID
Avionic Label
Acquisition Cost
Installation Cost
Maintenance Cost
Telecommunication Cost
1
GPS
100
10
5
1
2
CPDLC
1000
500
50
3
3
TFGD
200
20
10
5
Avionic Data
Avionics ID
Avionic Label
Acquisition Cost
Installation Cost
Maintenance Cost
Telecommunications Cost
Add Avionic
Modify Avionic
Delete Avionic
Update Avionics
Back

Scenario Builder


Main Menu
Database Manager
Scenario Builder
Integrated Analysis
Quit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ScenarioVersion
CNSATM Operational Date
Transition Period
Maximum Stretch
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5561 1 01/01/2010 24 2 3
Select Scenario
New Scenario
Delete Scenario
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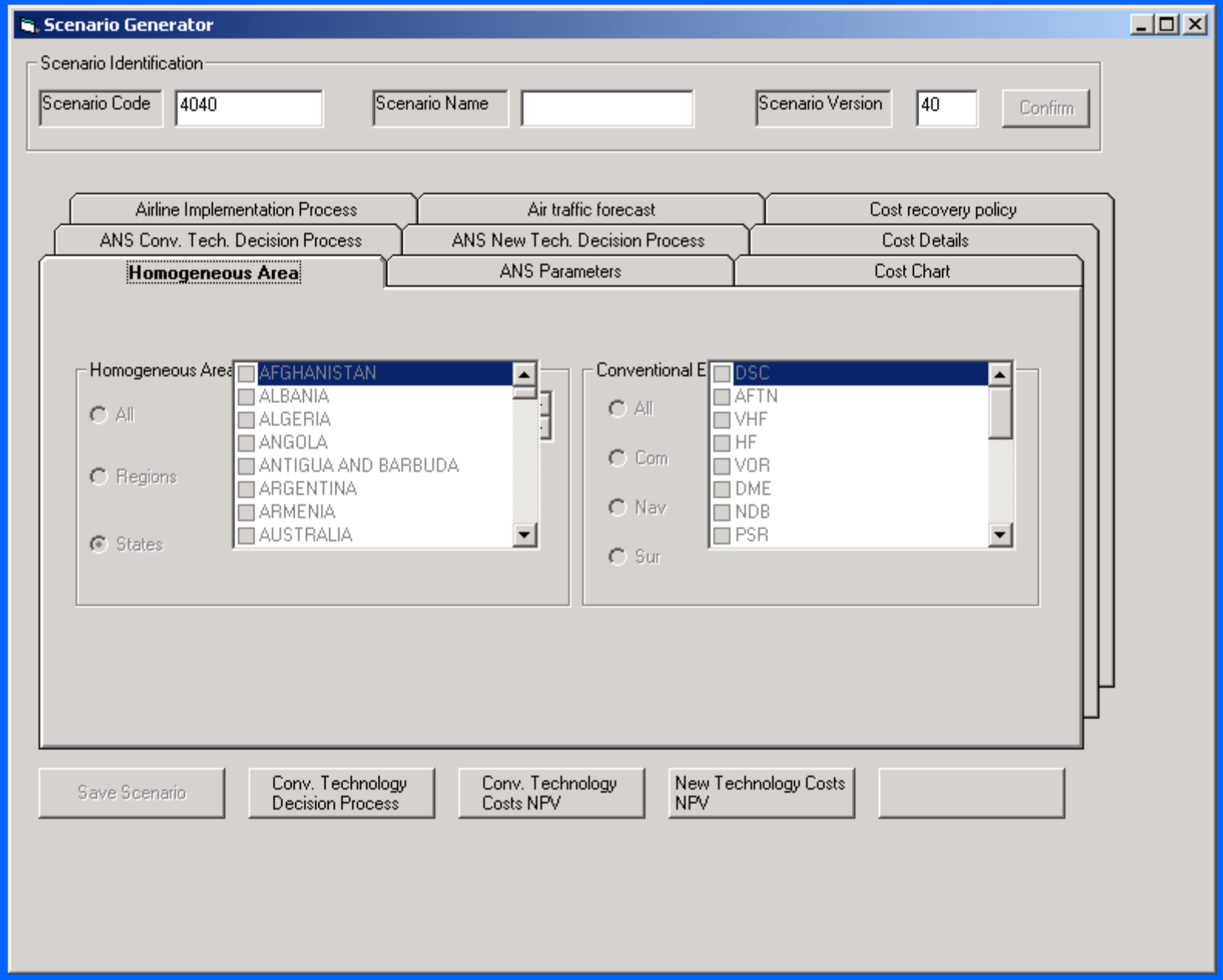
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Scenario Version
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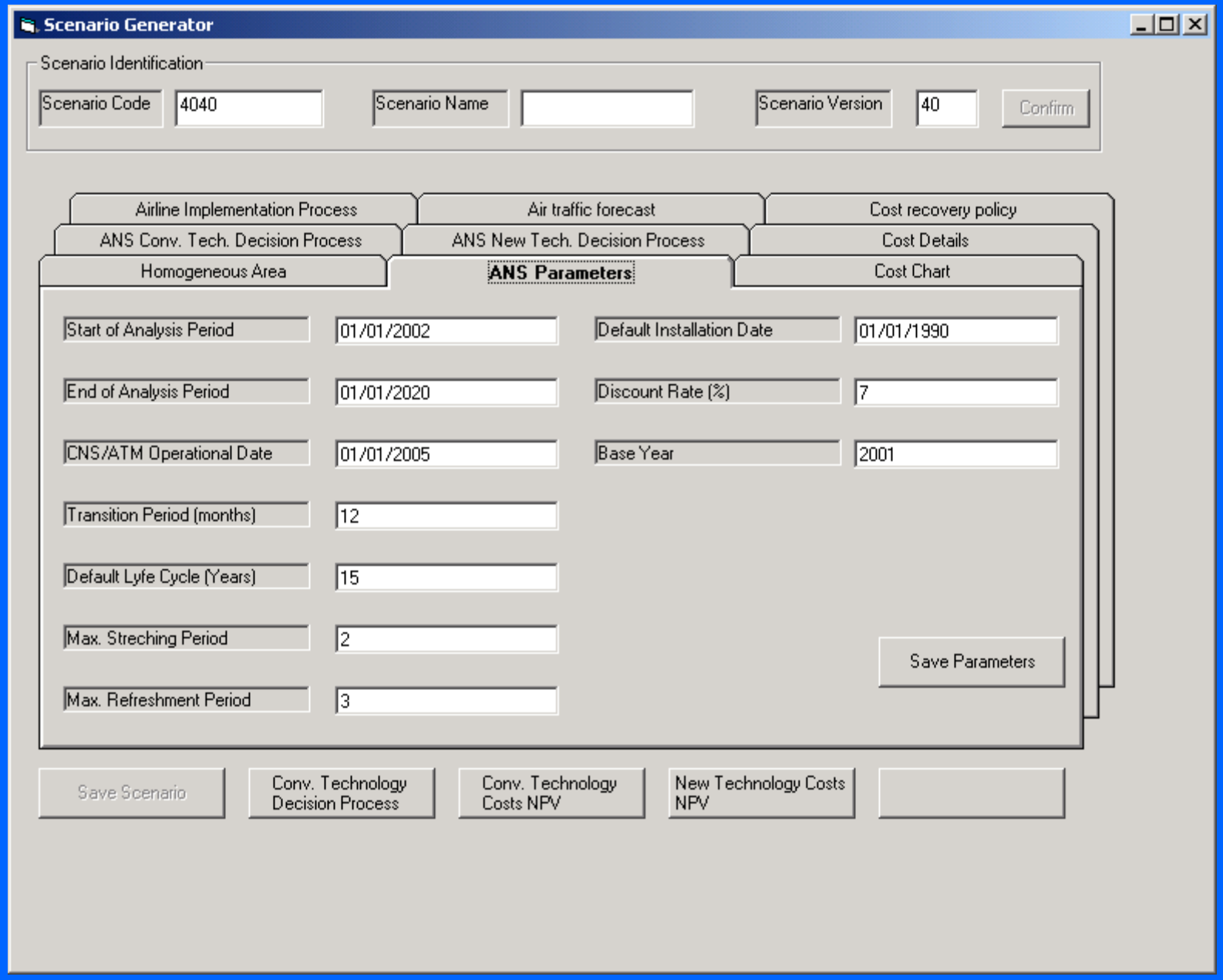
Airline Implementation Process
Air traffic forecast
Cost recovery policy
ANS Conv. Tech. Decision Process
ANS New Tech. Decision Process
Cost Details
Homogeneous Area
ANS Parameters
Cost Chart
Homogeneous Area
All
Regions
States
AFGHANISTAN
ALBANIA
ALGERIA
ANGOLA
ANTIGUA AND BARBUDA
ARGENTINA
ARMENIA
AUSTRALIA
Conventional E
All
Com
Nav
Sur
DSC
AFTN
VHF
HF
VOR
DME
NDB
PSR
Save Scenario
Conv. Technology Decision Process
Conv. Technology Costs NPV
New Technology Costs NPV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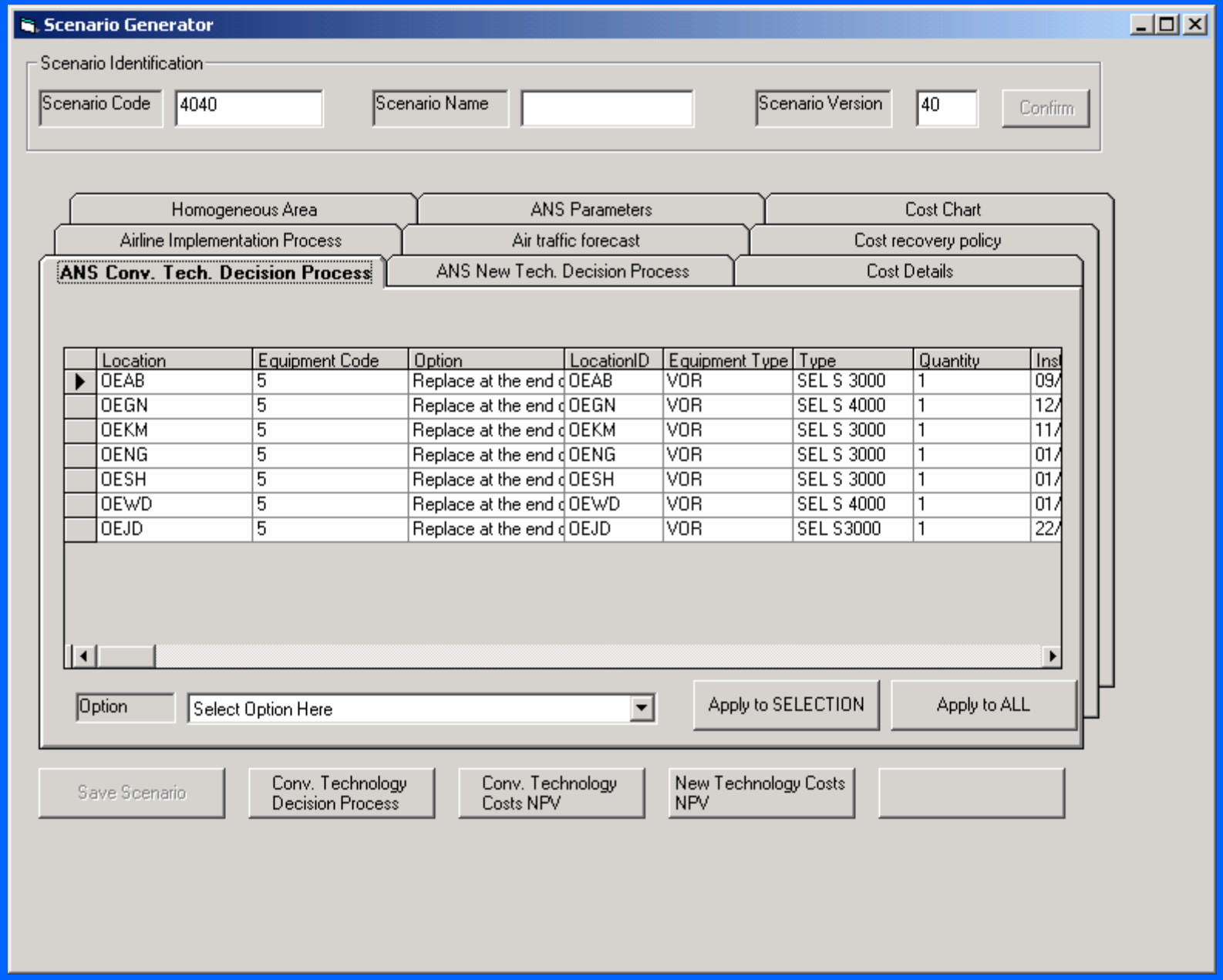
Airline Implementation Process
Air traffic forecast
Cost recovery policy
ANS Conv. Tech. Decision Process
ANS New Tech. Decision Process
Cost Details
Homogeneous Area
ANS Parameters
Cost Chart
Start of Analysis Period
01/01/2002
Default Installation Date
01/01/1990
End of Analysis Period
01/01/2020
Discount Rate (%)
7
CNS/ATM Operational Date
01/01/2005
Base Year
2001
Transition Period (months)
12
Default Lyfe Cycle (Years)
15
Max. Streching Period
2
Max. Refreshment Period
3
Save Parameters
Save Scenario
Conv. Technology Decision Process
Conv. Technology Costs NPV
New Technology Costs NPV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Scenario Name
Scenario Version
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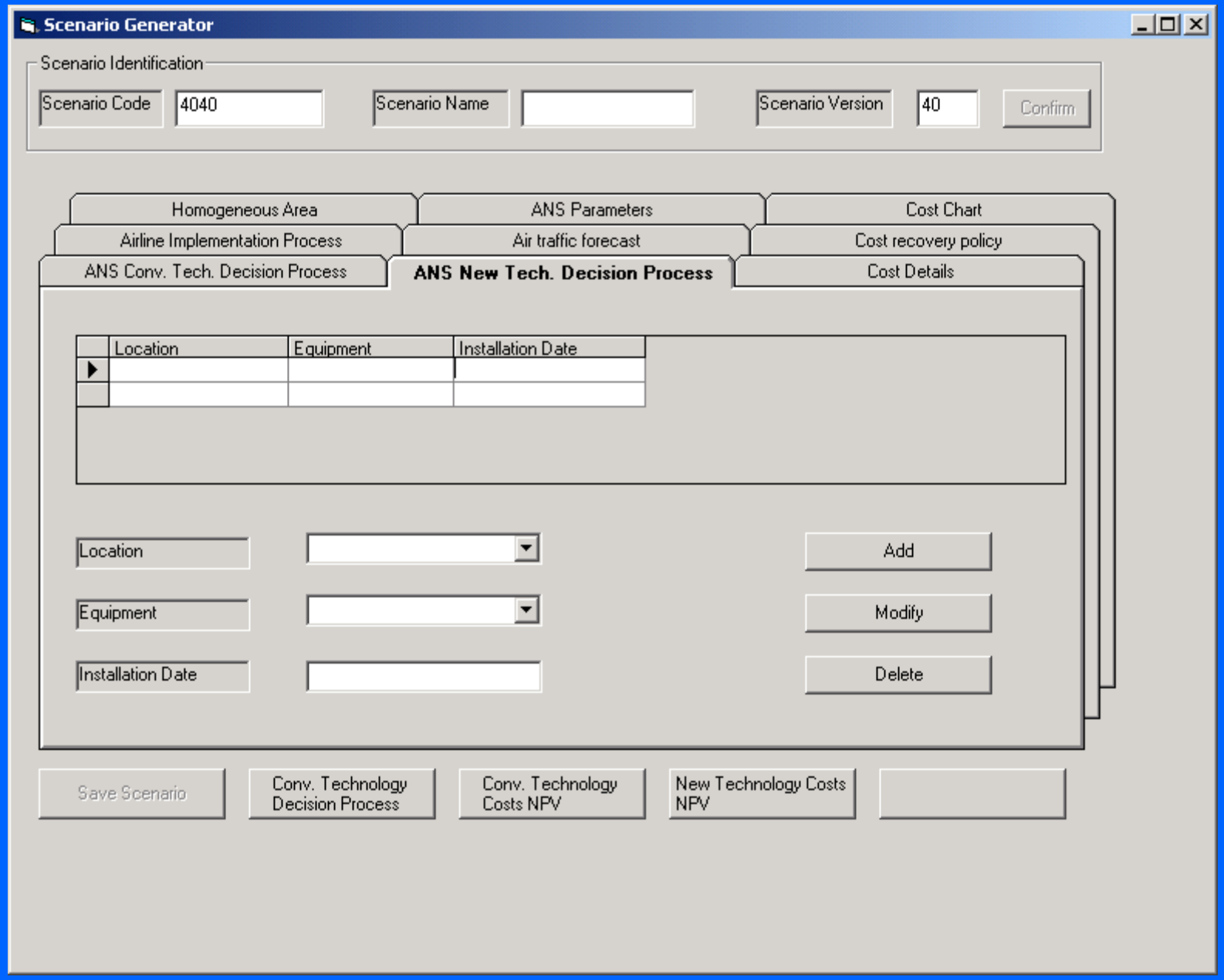
Homogeneous Area
ANS Parameters
Cost Chart
Airline Implementation Process
Air traffic forecast
Cost recovery policy
ANS Conv. Tech. Decision Process
ANS New Tech. Decision Process
Cost Details
Location
Equipment Code
Option
LocationID
Equipment Type
Type
Quantity
OEAB 5 Replace at the end c OEAB VOR SEL S 3000 1
OEGN 5 Replace at the end c OEGN VOR SEL S 4000 1
OEKM 5 Replace at the end c OEKM VOR SEL S 3000 1
OENG 5 Replace at the end c OENG VOR SEL S 3000 1
OESH 5 Replace at the end c OESH VOR SEL S 3000 1
OEWD 5 Replace at the end c OEWD VOR SEL S 4000 1
OEJD 5 Replace at the end c OEJD VOR SEL S3000 1
Option
Select Option Here
Apply to SELECTION
Apply to ALL
Save Scenario
Conv. Technology Decision Process
Conv. Technology Costs NPV
New Technology Costs NPV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Homogeneous Area
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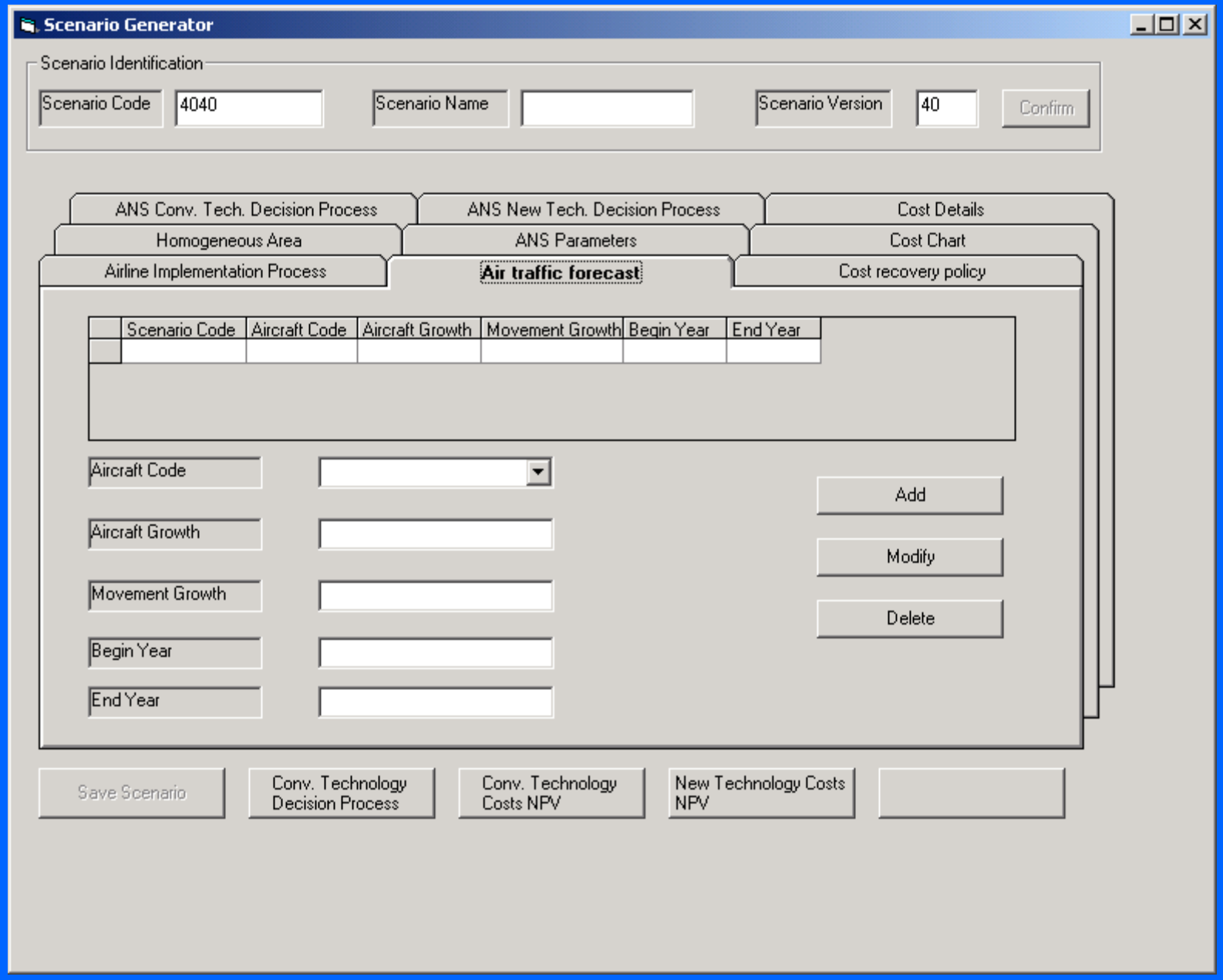
Cost Chart
Airline Implementation Process
Air traffic forecast
Cost recovery policy
ANS Conv. Tech. Decision Process
ANS New Tech. Decision Process
Cost Details
Location
Equipment
Installation Date
Location
Equipment
Installation Date
Add
Modify
Delete
Save Scenario
Conv. Technology Decision Process
Conv. Technology Costs NPV
New Technology Costs NPV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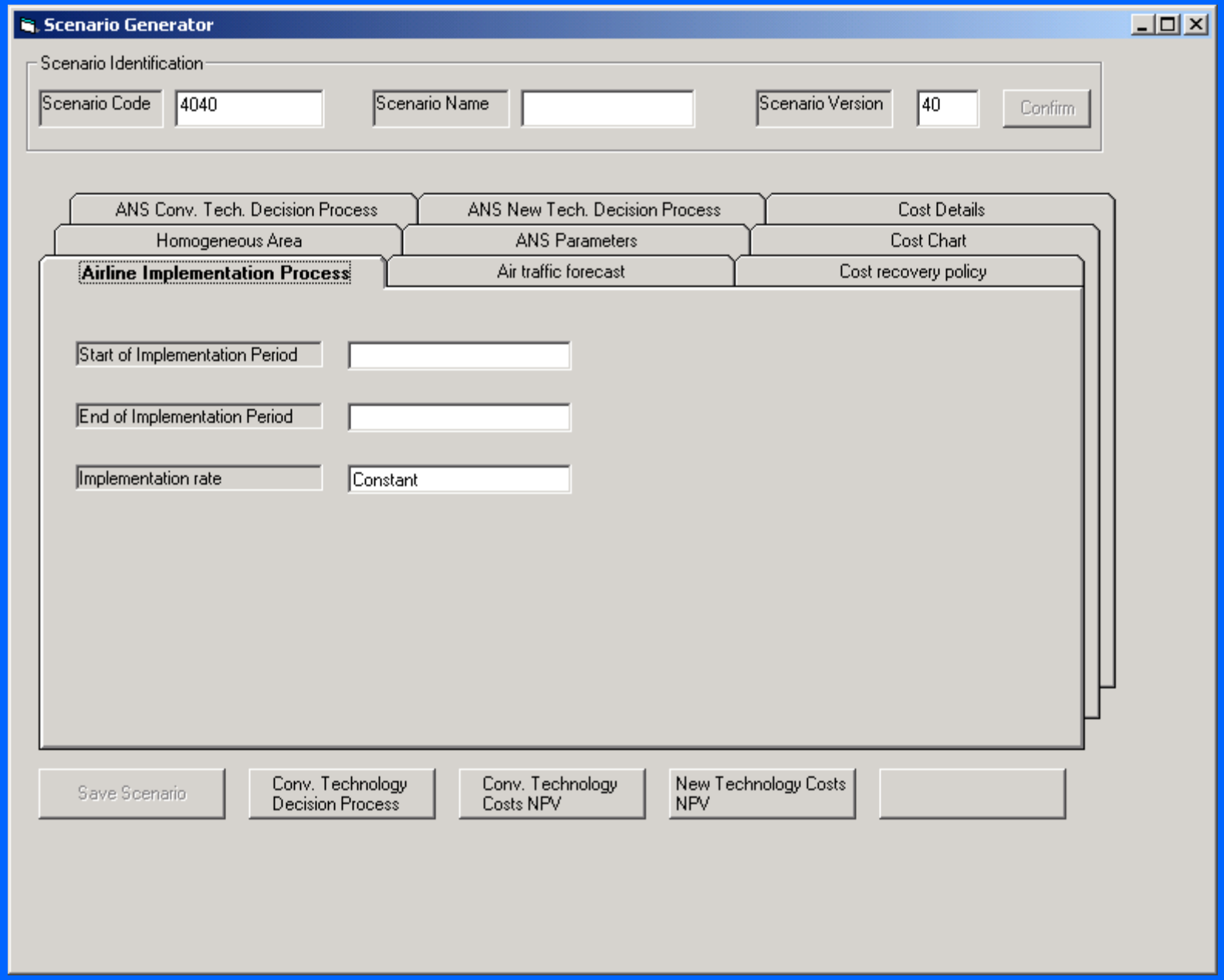
ANS New Tech. Decision Process
Cost Details
Homogeneous Area
ANS Parameters
Cost Chart
Airline Implementation Process
Air traffic forecast
Cost recovery policy
Scenario Code
Aircraft Code
Aircraft Growth
Movement Growth
Begin Year
End Year
Aircraft Code
Aircraft Growth
Movement Growth
Begin Year
End Year
Add
Modify
Delete
Save Scenario
Conv. Technology Decision Process
Conv. Technology Costs NPV
New Technology Costs NPV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Scenario Version
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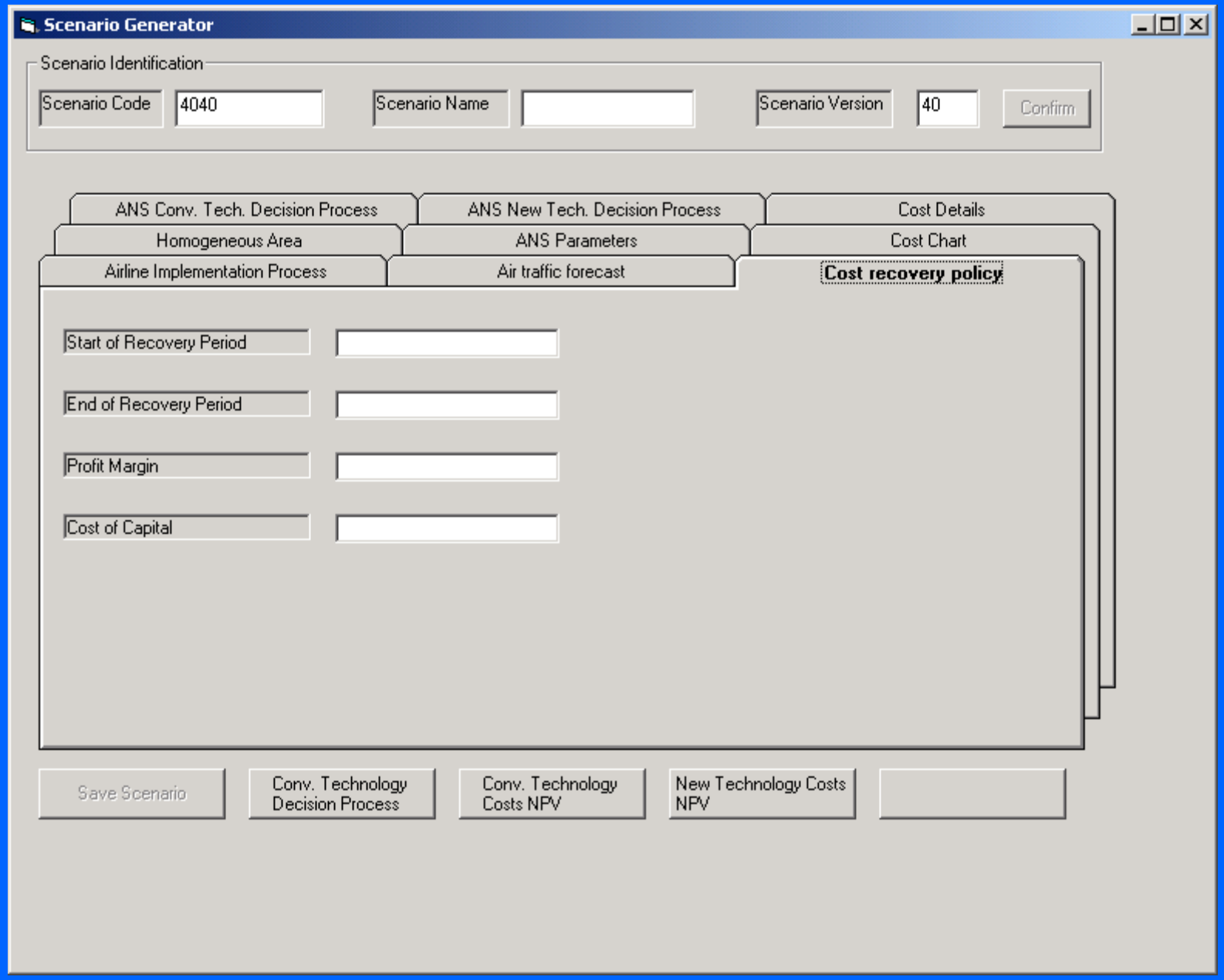
ANS New Tech. Decision Process
Cost Details
Homogeneous Area
ANS Parameters
Cost Chart
Airline Implementation Process
Air traffic forecast
Cost recovery policy
Start of Implementation Period
End of Implementation Period
Implementation rate
Constant
Save Scenario
Conv. Technology Decision Process
Conv. Technology Costs NPV
New Technology Costs NPV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ANS New Tech. Decision Process
Cost Details
Homogeneous Area
ANS Parameters
Cost Chart
Airline Implementation Process
Air traffic forecast
Cost recovery policy
Start of Recovery Period
End of Recovery Period
Profit Margin
Cost of Capital
Save Scenario
Conv. Technology Decision Process
Conv. Technology Costs NPV
New Technology Costs NPV


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国际民航组织 • ايكاو