Building A New Denver Airport

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and Matthew Forsyth
Benjamin F. Stapleton, Mayor of Denver in the 1920s, desired a new airport. Site was selected six miles east of downtown because of low development in the area and lower land price values. Stapleton had opposition from City Council. Denver Post called the idea “Stapleton’s Folly” and “Simpleton’s Sand Dunes.”
History

- Mayor Stapleton beat the opposition. On March 25, 1928, the City Council approved airport construction.
- Cost of the airport was $430,000 and it opened in October 1929.
History

- Airport was an immediate financial success.
- Amelia Earhart stopped at airport during a cross-country escapade.
- The first control tower in Denver began operations in 1938.
- Mayor Stapleton was given full recognition by renaming in Stapleton Field.
The Jet Age became a reality in the 1950s and Stapleton Airport became more successful.

By 1985, Stapleton had grown to 4,700 acres.
Trouble On The Horizon

- Stapleton Airport began having trouble in the 1980s.
- Inadequate runway separation caused difficult in landing coordination during low visibility weather, causing delays.
- Local opposition erupted over noise complaints.
- Threats of legal action by Adams County prevented further expansion into the Rocky Mountain Arsenal Lands.
In September 1989, Denver Mayor Federico Peña got approval for construction of a new airport.

Peña was harshly criticized by opponents of spending too much money on large-scale projects.

Besides the airport, Mayor Peña’s leadership hosted a Grand Prix, built a new convention center, and authorized the construction of a new baseball stadium.

Denver residents suffered the bills of these endeavors.

Airport initially was to be built by 1993, but poor planning and frequent design changes pushed it back to 1994.
If At First You Don’t Succeed...

- In April of 1994, the city invited reporters to observe the first test of the new automated baggage system.
- Reporters got to witness luggage fly off the tracks and personal items vanish in the tunnels.
The luggage system fiasco prompted further delays in opening. Engineers worked on the system and opened finally in February 1995.

The project was now 16 months behind schedule and 2 billion dollars over budget.

Stapleton Airport, under the agreement made with Adams County, was forced to close for good.
Problems with DIA

- Underestimation in passenger service.
- "Second Largest" Claim
- Higher Cab Fares
- Higher Parking Fees
- Intense Wind Storms
- Higher Landing Fees
- Drain on Denver Economy
- White "Circus Tent" Roof
- Congested Access Roads
- New World Order Conspiracy

Charleston, South Carolina *Daily Mail* Headlined, “Denver Airport Great If You Don’t Live In Denver.”  (Date Unknown)
Have the Benefits Surpassed The Costs?

- DIA is 5th busiest U.S. Airport, 10th Worldwide.
- 23 Passenger Airlines operate at DIA
- Over 42 million passengers in 2004 (13% increase over 2003.)
- J.D. Power & Associates named DIA #1 airport in the U.S. in customer satisfaction, #2 in the world.
- In 2004, the FAA ranked DIA first in major airports for on-time arrivals.
- Future Aircraft Potential with 16,000 foot runway (16R/34L).
- The Automated Baggage System is deemed a failed experiment and has been completely abandoned this year (2005).
Cost Overruns

- November 1988: Conceptual estimate of $1.34 billion
- 1989: Bid solicitation began without input from the airlines
- February 1994: Costs increased to $2.92 billion
- March 1995: Construction costs go over $3.00 billion, total costs over $4.80 billion
## Total Costs to Construct DIA

<table>
<thead>
<tr>
<th>Category</th>
<th>Cost (Dollars in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost to Denver Airport System</td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td>3,004</td>
</tr>
<tr>
<td>Airport Planning and Land</td>
<td>261</td>
</tr>
<tr>
<td>Capitalized Interest</td>
<td>915</td>
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<tr>
<td>Bond Discounts</td>
<td>43</td>
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<tr>
<td><strong>Total Cost to Denver Airport System</strong></td>
<td><strong>4,223</strong></td>
</tr>
<tr>
<td>Cost to Others</td>
<td></td>
</tr>
<tr>
<td>FAA’s Facilities and Equipment</td>
<td>199</td>
</tr>
<tr>
<td>United Airlines’ Special Facilities</td>
<td>261</td>
</tr>
<tr>
<td>Continental Airlines’ Special Facilities</td>
<td>73</td>
</tr>
<tr>
<td>Rental Car Facilities</td>
<td>66</td>
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<tr>
<td><strong>Total Cost to Others</strong></td>
<td><strong>599</strong></td>
</tr>
<tr>
<td><strong>Total Cost of Denver International Airport</strong></td>
<td><strong>4,823</strong></td>
</tr>
</tbody>
</table>

Scope Changes

Original conceptual design:
- Four runways
- Two Concourses
- 78 Gates
- Two-module terminal
- A conventional baggage handling system

DIA opening facilities:
- Five Runways
- Three Concourses
- 94 Gates
- Three-module Terminal
- An automated baggage handling in Concourse B and a conventional baggage handling system throughout the rest of the airport
Construction Delays

- DIA was planned to open in October 1993
- In March 1993 the city announced that opening would be delayed to December 1993
- In October 1993 the city announced that opening would be delayed to March 1994
- In February 1994 the city announced that opening would be delayed to March 1994
- In May 1994 City announced indefinite postponement of opening
- DIA finally opened on February 28, 1995
Construction Defects

- Airfield pavement defects: 14,838 of 32,000 concrete panels inspected had defects

<table>
<thead>
<tr>
<th>Type of Pavement Problem</th>
<th>No. of Panels Affected</th>
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</thead>
<tbody>
<tr>
<td>Clay Contamination and Panel Cracking</td>
<td>3,009</td>
</tr>
<tr>
<td>Tie Bars Improperly Installed</td>
<td>10,374</td>
</tr>
<tr>
<td>Dowel Bars Improperly Aligned and Attached</td>
<td>1,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14,383</strong></td>
</tr>
</tbody>
</table>


- Cracks and water damage problems found with air traffic control facilities
The Automated Baggage Handling System

System Components:
- 4,000 Destination Coded Vehicles (DCV)
- Over 19 miles of DCV track
- Automatic scanners
- Over 5 miles of Conveyors
Problems with the system:

- Baggage jams undetected
- Overloading of DCVs
- Conveyors and DCVs not well synchronized
- DCVs locked together when they collided
- Poor empty DCV management
GAO Observations

GAO recommendations to avoid future cost overruns with similar projects:

- The airlines should be involved during design
- Alternative or backup systems should be incorporated in design when dealing with new technology
- A more vigorous quality control and quality assurance program
Economic Impact Of Airports in Colorado

- 79 public use airports accounted for 23.5 billion dollars of the Colorado economy
- Approximately 280,000 jobs
- DIA was responsible for 72%
  - 16.8 billion economic activity
  - #1 in Low Cost Carrier (LCC) growth
LCC’s Servicing Denver

- Air Tran
- America West
- ATA
- Frontier
- JetBlue
- Spirit
- Southwest

These LCC’s service approximately 50 destinations with non-stop service and make up roughly 20% of passenger at DIA.
Denver’s High Propensity to Travel

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<tr>
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<tbody>
<tr>
<td>1</td>
<td>Las Vegas</td>
<td>20</td>
<td>1.5</td>
<td>26.89</td>
<td>17.2</td>
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<tr>
<td>2</td>
<td>Salt Lake City</td>
<td>22</td>
<td>1.33</td>
<td>9.16</td>
<td>6.9</td>
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<tr>
<td>3</td>
<td>Denver</td>
<td>16</td>
<td>2.58</td>
<td>17.63</td>
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<tr>
<td>4</td>
<td>Phoenix</td>
<td>13</td>
<td>3.25</td>
<td>20.81</td>
<td>6.4</td>
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<tr>
<td>5</td>
<td>Miami</td>
<td>11</td>
<td>3.87</td>
<td>23.78</td>
<td>6.1</td>
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<tr>
<td>10</td>
<td>Minneapolis</td>
<td>14</td>
<td>2.96</td>
<td>12.8</td>
<td>4.3</td>
</tr>
</tbody>
</table>
Airfare Cost Comparison

- Fargo to Colorado Springs $430
- Minneapolis to Colorado Springs $235
- Minneapolis to Denver International $135
Landing Fees at DIA

- DIA opened with the Highest landing fees in the Nation at $20 per passenger

- DIA has dropped to $14.50 per passenger cost for Southwest as they enter the market

- Still a very expensive airport to use but with no other options
Cost Comparison of Average Airfares in Domestic Market

- Denver ranked the 12 highest in average airfare cost

- Highest were
  - Charlotte $247
  - Cincinnati $235
  - San Francisco $230
  - Richmond $226
  - Minneapolis (MPLS) $215
  - Washington $213
  - Denver $181
Cost of Airfare in Denver Continues to Drop

Change in Average Fare between 2000 and 2003

Percent change
Cost of Airfare in Denver Continues to Drop

Change in Average Fare between 2000 and 2003

Percent change
Denver -25 -20 -15 -10 -5 0 5 10
New York
Chicago
Miami
Phoenix
Boston
Philadelphia
Atlanta
Dallas
St. Louis
San Francisco
Los Angeles
Seattle
Charlotte
Houston
Orlando
Cleveland
Detroit
Las Vegas
Minneapolis

Change in Average Fare between 2000 and 2003
Change in Number of Available Seats at Key Airports

Percent Change in Seats

Denver
Minneapolis
Atlanta
Dallas/FW
Detroit
Las Vegas
Phoenix
Los Angeles
Houston/IAH
Chicago/ORD

Denver: 50%
Minneapolis: 40%
Atlanta: 30%
Dallas/FW: 20%
Detroit: 10%
Las Vegas: 5%
Phoenix: 0%
Los Angeles: -10%
Houston/IAH: -20%
Chicago/ORD: -30%
Change in Number of Flights into Key Airports
# Price Comparison of Market Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Competitive</th>
<th>Monopoly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nearby Airports with Dramatically different levels of competition</td>
<td>$245</td>
<td>$1105</td>
</tr>
<tr>
<td>One airport originates flights to destination with dramatically different levels of Competition</td>
<td>$224</td>
<td>$908</td>
</tr>
<tr>
<td>Prices before Competitor is driven out</td>
<td>$70</td>
<td>$843</td>
</tr>
<tr>
<td>Prices after competitor is driven out</td>
<td>$122</td>
<td>$800</td>
</tr>
</tbody>
</table>
### Airlines Exceeding Monopoly Standards

<table>
<thead>
<tr>
<th>Airport</th>
<th>Airline</th>
<th>Dominate Firm Mkt Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlanta</td>
<td>Delta</td>
<td>79</td>
</tr>
<tr>
<td>Charlotte</td>
<td>US Airways</td>
<td>90</td>
</tr>
<tr>
<td>Cincinnati</td>
<td>Delta</td>
<td>90</td>
</tr>
<tr>
<td>Dallas Ft. W.</td>
<td>American</td>
<td>70</td>
</tr>
<tr>
<td>Denver</td>
<td>United</td>
<td>70</td>
</tr>
<tr>
<td>Minneapolis</td>
<td>Northwest</td>
<td>82</td>
</tr>
</tbody>
</table>
Natural Monopoly

- A natural monopoly is a situation where for technical or social reasons there cannot be more than one efficient provider of a good. Public utilities are usually considered to be natural monopolies.
Denver International Airport As a Natural Monopoly

- Economies of Scale at DIA
- Lack of competition (i.e. Stapleton)
Sherman Act Section I

- Price Fixing
- Price Signaling
- Allocation of customers, market territories
- Anticompetitive conduct
Sherman Act Section II

- **Predator Pricing**
  - Squeeze out competitors by super low pricing
  - Gain freedom to charge anti-competitively high prices without competition
General Types of Enhanced Private Involvement

- **Perpetual Franchise**
  - Private firm holds claim to facility

- **Mixed Ownership Franchise**
  - Balance of private and public ownership

- **Build-Transfer-Operate**
  - Private built, transferred to public, and leased to private

- **Lease-Develop-Operate**
  - Public ownership leased to private firm to improve and operate
Potential Benefits from Private Involvement

- Catalyzed New Airport Development
- Accelerated Development
- Increased Revenue for Federal, State and Local Governments
- Improved Operational Efficiency
- Increased Economic Activity
Barriers to Privatizing Airports

- Public Participation
- Airport Safety
- Airport Noise
- AIP Grant eligibility
- AIP Grant Assurance
- Preventing Monopoly Pricing
- Taking Profits off the Airport
- Antitrust Considerations
- Sovereign Immunity
- Access to tax exempt financing
- Potential administrative delays
Potential Innovation

- Wayports
- Cargo/Industrial Airports
- Military Airbase Conversions
With the Current System

- Approach to Federal Policy Obstacles
- Protecting the Public Interest
- Feasibility Assessment
- Implementation
Topics for Discussion

- Should Stapleton have been expanded vs. relocated?
- Should Denver have kept Stapleton open as a competitive service?
- Considering the fact that all mega project are associated with cost overruns and initial investments should they be avoided altogether?
- When a project such as the automated baggage claim has gone bad, who should be held responsible and who should pay the bill?
- Would two smaller projects offer lower cost and higher service for consumers?
- Is investing in a megaproject the same as endorsing a monopoly?
- Does Denver International Airport have legitimate competing airports in the aviation market?