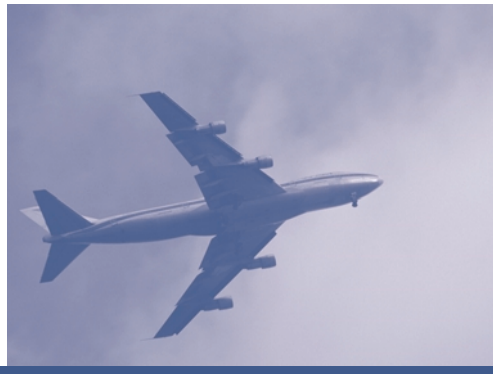
Grant Report

March 2000

Innovation in the Administration of Public Airports



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The PricewaterhouseCoopers Endowment for
The Business of Government

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About The Endowment

Through grants for Research, Thought Leadership Forums, and the SES Leadership Program, The PricewaterhouseCoopers Endowment for The Business of Government stimulates research and facilitates discussion on new approaches to improving the effectiveness of government at the federal, state, local, and international levels.

Founded in 1998 by PricewaterhouseCoopers, The Endowment is one of the ways that PricewaterhouseCoopers seeks to advance knowledge on how to improve public sector effectiveness. The PricewaterhouseCoopers Endowment focuses on the future of the operation and management of the public sector.

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Foreword

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On behalf of The PricewaterhouseCoopers Endowment for The Business of Government, we are pleased to present this report by Scott E. Tarry, "Innovation in the Administration of Public Airports."

In this report, Dr. Tarry examines the factors that impede and enhance innovation in commercial-service airports. He profiles the efforts of five commercial-service airports that have addressed a diverse set of challenges through innovative management strategies. Though the airports studied vary in size, location, and volume of customers, each airport administrator faced the same challenge of successfully responding to changing social and economic demands. The report describes how each airport developed an innovative and unique response strategy.

While the Tarry study examines innovation at airports, the lessons learned from his study are applicable to all public sector organizations. Dr. Tarry found that public managers must understand their organizations, constantly search for new ideas and new technologies, attract top-quality people, educate the public and communicate, partner with business and other public sector organizations, and strive to increase their ability to innovate. By supporting individual studies that examine innovation in specific sectors, The PricewaterhouseCoopers Endowment is seeking to build a body of knowledge about innovation in the public sector and how it can be encouraged and fostered.

We hope that both airport executives, as well as other public sector executives, will find this report informative and helpful in striving to create innovative environments in their organizations.

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Executive Summary

America's public airports operate in an increasingly complex political and commercial environment. Competitive pressures in the airline industry, heightened sensitivity to environmental concerns, and waning federal support for airport expansion create onerous challenges and exciting opportunities for airport administrators. While some airports seem unable to shake a public-utility mentality that is ill suited to the dynamics of today's air transport business, other airports are excelling through creative management strategies and innovative approaches.

This study explores the administration of public commercial-service airports through an examination of the factors that impede innovation and those that enhance the opportunity for successful innovation. The study focuses on five airports: Chattanooga Metropolitan Airport, Miami International Airport, Portland International Airport, Salt Lake City Airport, and Chicago O'Hare International Airport. The airports were not chosen randomly. Instead they were selected to show that innovation takes place in a variety of airport environments. In other words, there is nothing special about physical size, nature of air service, or location.

The cases reveal a number of lessons about airports and innovation:

- Good strategies depend on knowing who you are. Airports that recognize where they fit into the broader air transport system can effectively tailor strategies and innovations to help them succeed.
- Successful airports are open to new ideas and technologies. They are always on the lookout for approaches that can be borrowed from other airports or even other industries.
- Innovative airports allow their people to work creatively. They find good people and give them the opportunity to identify and solve problems in new ways.
- Successful airports embrace effective communication and education strategies. Each airport in this study understands that the public and the media often fail to understand how the airport works and what the airport is doing to improve services.
- Successful airports understand that the airlines, other service providers, and the public are all stakeholders and must be treated as such. Building cooperative relationships among stakeholders is essential.
- Autonomy increases innovation, which increases productivity and quality of service. Airport administrators who are given flexibility and the resources necessary to address ongoing changes in the air transport industry are more likely to innovate and improve performance.

Based on these findings, three recommendations emerge from the study. No specific innovative strategies or approaches are advocated, since each airport faces different challenges and opportunities. The recommendations are, instead, general in character and appropriate for a broad array of public

commercial-service airports. The recommendations are:

- **Increase autonomy.** Innovation is no longer a luxury in the airport business. The dynamic nature of the air transport industry means that innovation is a necessity and should be encouraged as much as possible. While innovation is possible at airports where local and regional political leaders exercise some influence over management decisions, increased autonomy for airport administrators will substantially improve the likelihood of innovation and its beneficial impact on productivity and service quality.
- **Measure performance.** Even innovative airports need better mechanisms for monitoring their performance and measuring improvements derived from the adoption of new strategies and approaches. Airports need to spend more time and energy on performance measurement so they can accurately understand what works, what does not, and what can be improved even more.
- **Listen to concerns and explain what is being done to address them.** Airports need to listen more carefully to the concerns of their business partners and the traveling public. They also need to do a better job of explaining how they are addressing these concerns. At the same time, airports could do a better job of explaining to the public how airports work, how they are funded, what they are doing about environmental impacts, and what the airport means to the local community.

There are, of course, many successful airports and interesting innovations that are not covered here. However, this study shows that innovation is not only possible in large, complex public enterprises, but that innovation can produce substantial social, commercial, and environmental benefits.

Introduction: Innovation at Airports

Publicly owned and operated airports are an intriguing subject for those interested in the business of government. Governed by elected or appointed officials, managed by public administrators, and an integral part of the national transportation infrastructure, modern airports operate in an increasingly complex political and commercial environment. The demand for air transport services continues to increase, straining airports' ability to provide sufficient runways, gates, terminal space, automobile parking, and various amenities that passengers demand. At the same time, airlines are increasingly concerned about reducing costs, and environmentalists challenge virtually every expansion attempt. Airports that hope to succeed in such an environment must innovate. They must anticipate the future, rely less on the federal government for financial assistance, and recognize the commercial realities of today's highly competitive airline industry. In these times of rapid change in the air transport industry it is worth considering how these public enterprises respond to various challenges and opportunities.

This report details the efforts of five commercial-service airports that have successfully addressed a diverse set of challenges and opportunities through innovative management strategies. These airports are Chattanooga Metropolitan Airport, Miami International Airport, Portland International Airport,

Quick Facts About Airports in this Study

Airport Name	Local/ Regional Population	Annual Departing Passengers
Chattanooga Metropolitan Airport	150,000	300,000
Miami International Airport	3.4 million	16.5 million
Portland International Airport	1.7 million	6.5 million
Salt Lake City International Airport	1.2 million	10.2 million
Chicago O'Hare International Airport	7.8 million	33.0 million

Salt Lake City International Airport, and Chicago O'Hare International Airport. They are diverse in size, the structure of their governing bodies, their missions, and their strategies. They are similar in their ability to tackle creatively myriad problems and to exploit aggressively new opportunities.

The balance of this report is organized as follows. The first section presents a general discussion of the role airports play in modern society and why airports are interesting cases for studying the business of government. The section also examines the various obstacles and incentives for innovation in publicly owned and operated airports. The second section provides detailed descriptive case studies of innovation at each of the five airports. Each case follows its own course, since the airports face different challenges and necessarily address them with different strategies. The information presented in each case study comes from extensive interviews conducted during site visits to each airport during the summer of 1999. The final two sections discuss lessons learned, and explore recommendations for other airports and the public sector more generally.

Airports as Public Enterprises

Airports are critical components of the national transportation infrastructure. They facilitate the movement of cargo and people by providing facilities where ground and air transportation modes intersect. This intersection of various modes of transport results in a complexity not found in other public sector enterprises. In addition to being the most used public facilities in terms of the number of people using them each day, airports are arguably the most important public facilities in terms of commerce and tourism. A city's airport provides important links to both the national and global economies.

Most commercial-service airports are publicly owned and operated by local or regional governing bodies. This structure finds its roots in the early days of air transport when airports were considered to be little different from seaports. The core business of the airport is still to provide a place for aircraft to land and take off, but myriad changes in the air transport industry, the economy, and society in general make the airport a place of constant change. In addition to well-articulated federal aviation regulations, airports must also abide by federal, state, and local statutes that deal with everything from environmental restrictions to personnel issues. At the same time, airports are expected to keep up with the needs of the highly competitive, profit-oriented airlines that utilize and pay for most of the airports' operations.

The past two decades have been a time of considerable change for America's airports. After economic deregulation of the airlines in 1978, airports faced new political, economic, and social environments. New strategies, new ideas, and new technologies were necessary for airports to keep pace with the rest of the air transport industry and the broader economy. The next section examines some of the obstacles and incentives to innovation in the airport business.

Obstacles to Innovation in Public Airports

Airports face a number of real obstacles to innovation. At this point, it is difficult to point to any one factor as the key obstacle. Rather, it is worth keeping each of the factors in mind when examining an airport, because some will matter more in specific cases. Five factors that might impede innovation are explained below. Some of these are relevant to the public sector generally, while others are specific to airports.

Public-Utility Mentality

Historically, airports operated in a fashion not much different from public utilities. In such circumstances there is little incentive to innovate since there is no market pressure and only nominal political pressure to enhance service once some basic service standard is met. Prior to regulatory reform of the airline industry in 1978, airports and airlines operated in an environment that did little to induce innovation. Since 1978 the airline industry has adjusted to its new competitive surroundings, and successful airlines now recognize the need to respond to innovations in information technologies, marketing strategies, and customer service, and to anticipate these changes and bring new technologies and strategies into their operations quickly. Airports, unlike the airlines, were not deregulated in 1978 and still operate under the regulatory

framework that emphasizes maintenance of existing levels of service and performance over innovation to enhance or improve operational performance and financial efficiency. This does not mean that airports have not managed to innovate, but that the overall regulatory framework is not, by itself, likely to induce innovation.

Top-Down, Hierarchical Tradition

The traditional model for airport administration has been top down and hierarchical. Strict hierarchical or chain-of-command organizations are not likely to be fonts of innovation. Rather, they are expected to be paragons of stability and order. This model finds its roots in the function of the airport and the pool from which airport administrators have been traditionally recruited. The function of the airport, which is to facilitate the movement of passengers and cargo safely and efficiently, demands a stable and orderly environment. Hence, the core business of the airport is one that requires strict adherence to well-articulated guidelines. In such a situation, staff members are expected to follow orders and standard operating procedures. Innovation is not necessarily precluded in this environment, but the emphasis is on maintaining existing levels of performance.

It is not surprising, then, that administrators recruited into the airport business came from environments that included both substantive expertise in aviation and experience in hierarchical command structures. Although the demographics within the airport administration community are changing, top airport administrators historically followed career paths that included service in the military or the Federal Aviation Administration (FAA). Airports, not surprisingly, were interested in men who had experience and expertise in the variety of issues that confront airport administrators on a regular basis.[1] The most logical place to look for such individuals was the military, where potential administrators could be recruited from a well-trained and seasoned officer corps.

What is interesting is that even those administrators who came to their positions without military or federal government experience traditionally tended to follow the same hierarchical administrative practices as those whose careers included military and government service. The culture of the aviation community has, for a variety of reasons, always mirrored the military more than other sectors of society, most likely because the closest analogue for an airport is an airbase. The traditional language, roles, and responsibilities of airport administrators have been more akin to that of military officers than that of seaport or rail administrators.

It is important to recognize that this point focuses on general patterns of organizational structure within the airport community and says nothing about specific individuals. It is quite possible that former military officers can be successful innovators. Conversely, there is no reason to believe that administrators coming from the private sector will be successful innovators simply because of their background. The point is that the history of airport administration suggests both a culture and an organizational tradition that are not as conducive to innovation as other possible forms. While individuals can overcome these historical impediments to innovation, doing so can require considerable effort, since a number of additional obstacles remain. These obstacles are no less important, and continue to plague airports that have successfully reengineered their organizational cultures by abandoning the public-utility mentality and addressing the negative implications of hierarchical administrative structures. The good thing about contemporary obstacles is that some airports, such as those in this study, have been able to identify them and mitigate their negative impact on innovation and service improvements.

Regulatory Constraints

Regulations continue to constrain airport administrators. Safety and security issues necessitate many of these regulations, but other regulations and certain governmental policies are less easily defended. Two issues, which are explored in more detail in the case studies, involve financial autonomy and cooperation between airports and the federal air traffic controllers. Airports are currently restricted from using aviation income to fund non-aviation projects, even if the non-aviation project has direct implications for the operation of the airport. Two

[1] *The word "men" is intentional here since women have only recently made real progress in the upper ranks of airport administration.*

examples illustrate the point. The City of Los Angeles attempted to use aviation income to fund additional police officers not located on airport property. The airlines and the government agreed that this was inconsistent with the core business of the airport and that aviation income must be used for purposes more clearly relevant to the provision of air transport services.

In another example, the Port Authority of New York and New Jersey wanted to use aviation income to fund a rail link between JFK International Airport and Jamaica Station, which would give travelers better rail access and reduce ground transport congestion at the airport. The airlines fought and eventually lost a battle to prevent the Port from using aviation dollars to fund the rail link. Even though the airlines lost the battle, they have certainly not lost the war on this issue, leaving airports to struggle with the funding of projects that ultimately can improve the quality of service for the flying public, but fall outside the traditional boundaries of aviation operations.

Airports continue to grapple with their relationship with the FAA and its air traffic controllers. In a number of cases, airports have sought to alleviate their noise problems by working with the controllers to revise flight tracks to and from the airport. The idea behind these proposals is to direct inbound and outbound aircraft along specific routes over non-residential neighborhoods. Unfortunately, controllers at some airports have taken these proposals as an infringement on their authority to direct aircraft. Moreover, they have expressed their concerns about how such plans might affect workloads. Unless the controllers can be convinced that the proposals are sound, the airports will have to deal with their noise problems in ways that are more expensive and time-consuming.

Hesitancy by Airlines

It may be surprising to casual observers of the air transport industry, but the staunchest opponents of many airport initiatives are the airlines. While airports operate on revenue derived from various sources, the airlines typically fund the bulk of an airport's operating budget. They do so directly through the landing fees and passenger facility charges that are paid to the airport and indirectly through taxes and other fees that constitute the Airport and Airways trust fund. In short, the airlines keep a wary eye on any and all airport proposals. They are vigilant against any proposal that seems in excess of what is necessary for the airlines' core business.

The airlines' hesitancy stems from a perception that the airports are not accountable and must be held in check. The airlines, which operate as publicly held corporations, are accountable to their stockholders. Local and regional political bodies may monitor airports and the public may use the ballot to enforce its will upon a council or authority, but since local taxes are not typically used for airport expenses, there is little political connection between the public and the operation of the airport. In other words, the public is unlikely to be as vigilant as the airlines, since the latter pays the vast majority of the airports' bills.

Airlines are pleased when innovations improve services and reduce costs, but they tend to resist airport proposals until the airport can make a very strong case for the innovation. The case might be bolstered by evidence from other airports where the changes are already in place. Relying on evidence from other airports is problematic, however, since new ideas have to begin somewhere. Genuine innovations, by definition, have no track record and often have few analogues in other industries. In these cases, the airports must convince the airlines without the benefit of hindsight or solid empirical evidence about gains in efficiency and reductions in costs.

Inadequate Reward and Recognition Programs

One of the most basic impediments to innovation in the public sector is inadequate reward and recognition programs, which might otherwise provide monetary or other incentives for individual innovators. Many airports face this situation because their personnel policies are developed not for the dynamic commercial environment that characterizes today's public airports, but for the more routine environment of the water treatment plant or the street maintenance department.

The effect of inadequate reward and recognition programs is twofold. First, employees have little

financial or professional incentive to innovate. Instead of working to develop new ways of doing business, employees are likely to continue to do their jobs as they were originally construed. Second, those employees who are successful innovators may find themselves frustrated by a system that cannot accommodate significant salary increases and rapid promotions. Such employees might recognize that their efforts and talents are more adequately rewarded in the private sector. In short, public sector reward and recognition programs, as well as traditional approaches to public sector personnel issues, may not prohibit innovation, but they may reduce its likelihood.

Incentives for Innovation

Having just argued that the deck is stacked against innovation in airport administration, it is important to recognize changes in the culture of airport administration that can make innovation more likely. Included among these changes is a move away from the public-utility mentality that historically downplayed the importance of customer service. Another significant change is that airports increasingly see themselves as part of the business world. Some airports believe that they are in competition with other airports, and most recognize that a well-managed airport can have real and significant effects on local and regional economic development. Finally, more airports are reaching the conclusion that they need to address the issue of inadequate federal funding not by complaining, but by reorganizing their processes and seeking new funding sources. The airports that have achieved some success in this effort often realize that alternative funding sources and new business practices can provide them with autonomy that they never thought possible under the traditional model of airport administration.

Fostering a Culture of Innovation

Creating a culture of innovation and change can go a long way to overcoming the obstacles that might otherwise stifle innovation. Even organizations with inadequate reward and recognition programs can foster innovation by encouraging and allowing their people to develop new ideas. Successfully implemented ideas, especially those that result in real change, can go a long way to reinforcing a new culture. Staff members may not find extra pay in their paychecks, but they and their colleagues can still take pride in knowing that their efforts are making a difference in the way the airport serves the public.

Taking Seriously the Airport's Role in Commerce

Airport authorities and other relevant political bodies increasingly recognize the impact that a well-run airport can have on local and regional economies. To the extent that these bodies are concerned about the role the airport might have on economic development, attracting new businesses, and developing new air transportation services (i.e., more flights serving more destinations), they can press the airports' administrative staff to seek new means for improving service quality. In this context, an airport becomes another tool in local and regional economic development plans. Local leaders see the airport as another means for competing against other cities for new plants, new distribution centers, and new jobs.

Some airports even consider themselves in competition with other airports. These airports reject the notion that airports merely serve the local or regional population and those travelers for whom the airport is a destination. They point to the choices that travelers have in the hub and spoke system. Passengers whose travel necessitates a transfer at a hub airport because their home airport or destination airport is not a hub itself might in fact make a choice about which hub they will travel through. A savvy traveler might choose to avoid an airport with inadequate retail and restaurant services. Such a decision costs the avoided airport revenue from concessions and aviation income. It also affects the profitability of the airline using the airport as its hub. The prospect of lower revenues and decreased service can induce an airport to innovate.

Shrinking Federal Funds and the Pressures of Privatization

Two traditional funding sources, the federal government and the airlines, are becoming increasingly problematic. Congress seems unable or unwilling to use trust fund resources to fund airport improvements, deciding instead to let the fund serve as a prop in the budget-balancing game. The result has been declining appropriations for airport improve-

ments and the need to expand alternative funding sources. The airlines are increasingly vocal about fees and charges and demand that airports do more to reduce costs and collect revenue from other sources. The uncertain future of federal funding and the constant complaining of the airlines combine to create a significant incentive for airport administrators to innovate.

Additional pressure comes from the privatization trend. Although it seems to have lost some of its steam from several well-publicized problems in other industries, privatization is nonetheless a real prospect for the future of airport management. A number of European airports are privately managed and a handful of private management contracts exist in the United States. The prospect of privatization can serve as an incentive to innovate for those administrators who believe that they can do just as well within their current ownership/management structure.

The various obstacles and incentives to innovation in commercial-service airports are best illustrated through detailed examination of specific airports. The following five case studies highlight the diverse set of challenges and opportunities that confront airport administrators as we move into the next century.

Case Studies

It is no exaggeration to say that no two airports in America are the same. Indeed, the case studies in this project were selected to illustrate the diversity among America's commercial-service airports. Even though they provide similar services, the size, character, and function of airports are a reflection of the political, geographic, economic, and social contexts within which they exist. Politics determines who has ultimate authority over administrative decisions. Geography determines an airport's layout and myriad other operational issues. The local and regional economy determines the type and level of service, such as the mix of passenger and cargo service. Societal influences affect the way the public interacts with the airport and whether the airport is seen as friend or foe in the community. Each airport faces a unique mix of these influences, and administrators must tailor their strategies to fit within the relevant context.

However, it would be a mistake to assume that nothing can be gained from an analysis of diverse cases. Despite what often amounts to considerable differences among airports, it is still a productive exercise to see how individual airports respond to challenges and exploit opportunities. The cases described here may not match exactly the situations facing other airports, but much can be learned from the way in which the administrators in these cases identified their problems and opportunities, developed new strategies and approaches, and implemented these ideas to improve the quantity and quality of the services provided to the public. The cases do not provide cookbook solutions to any specific problems, but they do offer an intriguing slate of potential strategies for airport administrators seeking to keep up with the rapidly evolving air transport business.

Chattanooga Metropolitan Airport

Located near the Tennessee border with Georgia and about 110 miles from Atlanta, this city of 150,000 represents a number of similarly sized and situated cities that have been forced to adjust to the transformation of the American airline industry after regulatory reform in the late 1970s. The increasingly competitive airline industry's move away from point-to-point service and towards the hub and spoke system hit Chattanooga especially hard. Once served by mainline airline service to a variety of non-stop destinations, Chattanooga found itself in danger of losing the quantity and quality of air service that helped preserve its economic base. The city found itself caught in a sort of netherworld between much smaller communities, which were happy simply to have some level of commuter service, and larger cities, many of which were enjoying the fruits of having hub airports. Added to this was the fact that Chattanooga is situated near one of the largest hub airports in the world, Atlanta's Hartsfield International Airport, which is home to Delta Air Lines' Worldport.

Chattanooga's air service woes could not have come at a worse time for city leaders. After decades of being known as one of the worst pollut-

Chattanooga Metropolitan Airport
At-a-Glance

Chattanooga's population:	150,000
Departing passengers:	300,000 per year
Service:	Spoke airport with service to numerous domestic hubs
Governing structure:	Chattanooga Metropolitan Airport Authority (airport authority)
Reporting line:	Authority appointed by mayor, confirmed by council
Key administrator:	H. Hugh Davis, Jr., President, Airport Authority
Innovations:	Collaborative effort with other similarly situated airports Market research and communication

ed cities in America, Chattanooga established itself as a model for both comprehensive cleanup efforts and sustainable economic development. Poised to show the rest of the country what the city had done to fix its most glaring problems, city officials were forced to grapple with a new problem that was at once new and seemingly beyond their control. It made little sense to city officials and members of the local community to lose the air service that would allow Chattanooga to effectively link itself directly to other regions of the country and the broader global economy.

H. Hugh Davis, Jr., president of the Chattanooga Metropolitan Airport Authority and the head administrator of the city's airport, admits that the changes in the airline industry hit the community hard, leaving many Chattanoogans wondering what they had done to deserve such treatment. The frustration reached its peak four years ago when Delta pulled out of Chattanooga and turned its operations over to Atlantic Southeast Airlines (ASA). For many local residents, this represented the final indignity. Although USAirways continued to provide jet service, Delta's departure meant that Chattanooga's air

service would be dominated by commuter carriers. Area political leaders wondered aloud whether the airport had done enough to maintain the level of service to which people had become accustomed.

Davis and his staff were faced with the difficult task of resolving an issue over which they had little control. The decisions by Delta and other carriers to alter service were driven by market demand. There is little doubt that if enough area residents were flying out of Chattanooga's airport, Delta or some other carrier would have maintained, or even improved, its level of service. With little more than the bottom line as a guide, the airlines collectively adjusted their levels of service to the realities of the local market.

Unfortunately, the airlines' strategies can amount to self-fulfilling prophecies for cities like Chattanooga. Consider the following cycle and set of circumstances. The airlines are concerned about the profitability of their flights to and from Chattanooga. When demand lags they reasonably conclude there is a need to reduce the number of flights, switch to smaller aircraft, or both. A likely result from such a strategy is that local travelers become increasingly disenchanted with the air service offered out of their airport. Flights are not offered with sufficient frequency, which can translate to awkward travel schedules or lengthy layovers at transfer airports.

Similarly, passengers who have come to expect a certain level of service — either in terms of the type of equipment such as jet aircraft or the quality of in-flight service and amenities — now find themselves booked on regional aircraft with a lower standard of service and fewer amenities. In the end, potential passengers begin to look for ways to avoid their local airports. As noted before, Chattanooga sits no more than a two-hour drive away from Atlanta's airport, where service frequency and quality abound. All else being equal, a two-hour drive is something most air travelers would like to avoid, but with the changes in service, more and more travelers are willing to make the sacrifice. In the end, the airlines' efforts to adjust service to demand creates a situation in which their worst projections about the local market are confirmed.

Chattanooga's airport is included in this study because it represents a model for similarly situated airports. While the airport has not been able to alter the general trends in the airline industry, it has been able to make the most of its own stake in the air transport system. Chattanooga has put together a collection of strategies that, when taken together, offer hope for airports and communities facing similar challenges.

The various strategies developed and implemented in Chattanooga are explored in some detail below. Before turning to the specifics, however, it is worth noting a central theme in what the airport has done in recent years. When asked about the most important issues facing his airport, Davis responded somewhat philosophically that he is firmly convinced that airports first need to understand who they are. In saying this, he means much more than that Chattanooga's airport should not fool itself into thinking that it can eventually become Atlanta's Hartsfield. He means that an airport must consciously consider its appropriate role in the broader air transport system and the regional economy. Instead of trying to become something it is not and will likely never be, an airport should work to do the best it can, given its specific circumstances. A sober and candid appraisal of the industry, the region, and the airport itself can provide a solid foundation from which community leaders and airport administrators can work to improve the quantity and quality of air transport services offered by their airport.

When the airlines began to reduce and alter the services offered out of Chattanooga, local officials looked to the models they knew best when confronted with economic development problems. They approached the airlines with standard chamber of commerce style appeals, which sought to convince the airlines to operate more flights out of Chattanooga because it was a dynamic city. Unfortunately, the things that might appeal to a manufacturing firm seeking to relocate a plant hardly appeal to an airline. The "dog and pony show" approach, as it is often derisively called, does little for an airline concerned almost exclusively about filling seats on its aircraft. Like in many other communities, Chattanooga leaders learned that appeals based on the quality of their city were falling on deaf ears. The task was to figure out what would get the airlines' attention.

Chattanooga's approach is best described as two-pronged. The first prong consisted of things the airport itself could do. The other prong consisted of things the airport could do in conjunction with other similarly affected airports. Instead of wringing their hands and accepting their predicament, Chattanooga officials embarked on very public campaigns to improve air service for their city.

Working With Other Airports to Address Common Problems

The most visible aspect of Chattanooga's approach was its leadership role in the National Air Service Roundtable (NASR). After raising the issue of deteriorating air service with its state's own congressional leaders, the city and its airport hosted the first NASR in February 1997. The roundtable brought together government officials, representatives from the airlines, and industry observers to discuss and debate the situation facing cities like Chattanooga. This meeting and a subsequent roundtable in Jackson, Mississippi, in January 1998 established air service issues as a national concern. Cities like Madison, Wisconsin; Duluth, Minnesota; and Moline, Illinois, joined with Chattanooga and Jackson to seek the government's help in resolving their dilemma. Pointing to a General Accounting Office study that called these cities "pockets of pain" in the wake of regulatory reform in the airline industry, local and regional officials from around the country shared their tales of woe and explored possible solutions.

The cities involved in the roundtable found themselves in the awkward position of being between the truly neglected communities, for which the government subsidized air service, and the larger cities, which produced sufficient demand to attract desired frequencies and destinations from the airlines. While the roundtables placed the issue on the national agenda and raised the specter of a government solution, they offered no real comfort for Chattanooga and its allies. Few outside the affected cities were willing to re-regulate the industry in order to preserve or improve air services for these communities. The airlines and a vocal cadre of deregulation advocates pointed to the positive impact of deregulation and questioned the utility of a government-imposed solution.

What then did Chattanooga accomplish by engaging in the roundtables? According to Davis, the roundtables accomplished a number of things. First, they removed the sense of isolation for the cities that participated. City officials and airport staff now had a network of similarly situated airports with which to exchange ideas and information. Second, the roundtables suggested quite strongly to the airlines that they need to pay attention to the issue of air service. In the tradition of "the squeaky wheel gets the grease," Chattanooga believes that its efforts in the roundtables effectively encouraged United and American to consider it as the most desirable destination for new slots opening up at Chicago O'Hare. The result has been the development of regional jet service three times a day from Chattanooga to Chicago, a service that did not exist prior to the roundtable and may well have been prodded by the national exposure Chattanooga received in those deliberations.

Public Perceptions: Research, Communication, and Education

On the whole, however, Chattanooga was left on its own to address its air service concerns. The authority set about to work on those areas over which the airport did have some control. The primary objective in these efforts was to increase communication, not merely between the airport and the airlines, but between the airport and travel agents, the airport and the flying public, and the airport and the local business community. Three years ago, Kelly Watson was hired to head a new marketing and public relations department. According to Watson, whose background did not include airport experience, she started with research. Before creating a community relations program or a marketing campaign, the airport needed to know what people thought about the airport and air travel.

The results of Watson's research confirmed what other airport officials suspected: Public perception was based on inaccurate information about the airport and the airlines that served it. More disconcerting was the fact that frequent flyers, travel agents, and the media who covered the airport weren't much better informed. In some cases it seemed that misinformation about the airport came from people

who should have known better. This is not to say that anyone was purposely trying to misinform the public, but that individuals whom the airport saw as allies in preserving existing and developing new air service were part of the problem. Watson discovered what many other airports are beginning to recognize. The public has a very poor sense of how an airport operates and what role the airport plays in the broader scheme of air transport.

Besides blaming the airport for things beyond its control, such as Delta's decision to leave Chattanooga and ASA's dreadful service record when it took over Delta's flights, the public had a number of complaints that were based more in rumor than fact. A common complaint was that the airport offered no jet service. Another complaint was that fares were always higher, and in most cases substantially higher, if one flew from Chattanooga instead of Atlanta. In both cases there was some element of truth, but the real picture was much less gloomy. The airport saw a reduction in jet service, but was never completely without it. Some fares were indeed higher, but many were comparable or in line with the additional cost associated with a trip to Atlanta to catch a flight.

The airport embarked on a comprehensive program to educate the public and open the lines of communication with all of the airport's stakeholders. Travel agents were invited to receptions at the airport and encouraged to participate in travel agent roundtable discussions with airport board members and airline representatives. For the first time, travel agents, airport officials, and the airlines were talking to each about their concerns. Watson complemented these meetings with a quarterly newsletter that provides the community with a variety of information, including a reliability report for the six airlines currently serving Chattanooga. The reports, which are also given to the media and the business community each month, provide data on cancellations and delays. Cancellation data are broken down by cause, and delay data are broken down by length of delay. The reports have had the desired effect of showing the public that the air service out of Chattanooga is quite good and improving.

Education and communication are certainly not enough if the central concern is increasing demand, so the airport works closely with carriers to coordinate events and other marketing promotions. Some carriers participate in cooperative advertising, which promotes both the airport and the airline. Supported by an airport board that understands the need for marketing, the airport is actively pursuing new business for the carriers that serve the city. They point to their airport as a hassle-free alternative to Atlanta's busy hub airport. As traffic congestion and flight delays continue to plague their larger neighbor, Chattanooga prides itself on its accessibility.

A clear sense of where their airport fits into the broader air transport system and what really motivates airlines has helped Chattanooga overcome the myriad difficulties the airport faced four years ago. The airport is poised to take advantage of the trend towards the heavier use of regional jets and the route development possibilities that these smaller, cost-effective aircraft offer. Six airlines currently operate flights to hubs throughout the South and Midwest. Enplanements continue to increase and airlines continue to add new services. The airport is prepared to accommodate these developments with a well-designed and efficiently managed terminal that was constructed with expansion in mind.

Chattanooga has positioned itself to take advantage of what seemed until recently a real disaster for he airport and the community it serves. Instead of worrying about what it was not, and whether the government would protect it, the airport candidly assessed its predicament and set out to address it in a comprehensive manner. The airport authority worked to change both the culture of the airport and the public perception of the airport. It improved communication between the airport and its stakeholders. It educated public officials and the local business community about the airport and airline business. It looked around the country for new ideas and strategies that could put it in the best position to exploit opportunities and resolve problems. In the end, Chattanooga has air service that other cities of its size covet. It has an airport that effectively addresses the needs of the flying public and offers the airlines the flexibility to expand their service if the market demands it.

Miami International Airport

Miami is an international city well known as a tourist destination and increasingly as an important business destination for the Americas. Such popularity is not without a price, and the major concern for Miami is how to redevelop its airport into a facility that will accommodate the demands of air travelers and cargo shippers into the next century.

Like so many other major cities in America, Miami's airport is now landlocked by developed properties and communities increasingly concerned about the impact of aircraft noise. Thus, any expansion of airport capacity in Miami will take place in an increasingly difficult political, environmental, and social context. The airport administration is taking this task seriously and approaching a variety of new projects, including its $5.4 billion Capital Improvement Program (CIP), with creativity and ingenuity not often found in the public sector.

It is impossible to talk about Miami without discussing local government. Often characterized in less than charitable terms, elected officials in Miami-Dade County have a reputation for meddling in the administration of government services, the hiring of new personnel, and the letting of contracts. Gary Dellapa, director of the Miami-Dade Aviation Department, manages Miami International Airport (MIA). Dellapa reports to Merrett Stierheim, who serves as the county's manager and in turn reports to the elected Miami-Dade Board of County Commissioners. The political framework is a critical issue in Miami, because the commissioners are very active and have a history of involving themselves in the day-to-day operations of various departments of the county government. Not surprisingly, because of its visibility and the size of the contracts that it lets, the airport is a frequent focus of the Board's attention.

Dellapa and members of his administrative staff see the airport's relationship with the airlines serving Miami as something more than the landlord-tenant relationship that has been the tradition at airports around the country. Airlines are referred to as "business partners." The change in terminology represents much more than just changing a few words. It recognizes the interdependent nature of the airport-airline relationship. Perhaps more importantly, it suggests a change in organizational culture that is increasingly apparent in the way the airport approaches its own processes and its interaction with the airlines, the media, passengers, political leaders, concessionaires, and other service providers.

Managing Capital Improvements

The $5.4 billion CIP offers evidence of the changes taking place in Miami. The project — which includes a fourth runway, new and renovated concourses, renovated and expanded terminal space, an intermodal surface transportation center, and expanded cargo facilities — was recently approved by the Board of Commissioners after stumbling through four years of political and legal problems. Hung up originally because of concerns about insufficient minority involvement in construction projects at the airport, the project was also stalled in court as five carriers sued the airport. These airlines believed that American Airlines, which operates a hub out of Miami, would gain disproportionately from the renovation and expansion. With these issues behind them, the airport now stands on the brink of one of the most ambitious airport projects in the United States.

The emerging culture at Miami is evident in the way the CIP is budgeted and managed. According to Narinder Jolly, MIA's manager of facilities, the airport has broken with traditional approaches in a number of important ways. The budget, for example, includes all known costs for over 300 projects, including the cost of environmental remediation, which has plagued other airport projects. Inflation is integrated into the cost estimates up to the midpoint of the projected construction period, giving the program managers a much clearer picture of real costs. The cost-conscious approach reflects the airport's emerging business culture. The airport is striving to show its airline business partners that it is a responsible steward of airline dollars, which will ultimately pay for the bulk of the project.

Specific innovations abound in the CIP. Jolly and his staff conducted research on cost-overruns and discovered that change orders are the most prevalent and serious culprit. A change order is required when the approved design is altered because of unforeseen technical deficiencies, environmental

Miami International Airport
At-a-Glance

Metropolitan Miami's population:	3.4 million
Departing passengers:	16.5 million per year
Service:	Hub airport with extensive international flights
Governing structure:	Miami-Dade County Aviation Department (unit of county government)
Reporting line:	Aviation Department reports to county manager, who reports to county commissioners
Key administrators:	Gary Dellapa, Director, Aviation Department Bruce Drum, Assistant Aviation Director Narinder Jolly, Architect & Facilities Manager
Innovations:	Managing $5.4 billion in capital improvements Communications Noise and environmental issues

issues, code violations, and other unexpected problems. The task became how to reduce change orders to keep the project within budgeted limits. In an innovative use of intergovernmental cooperation, the airport convinced the county to establish an on-site office for building inspectors. The inspection process was integrated more closely into the design and planning process, which significantly reduced code violations at a stage when correcting them did not involve the cost and delays associated with change orders. Jolly also worked to bring MIA's airline business partners into the design process by integrating their ideas and concerns. By formally negotiating the design with the airline, the airport

reinforced the new culture of business partnerships and developed a clear mechanism for holding the airlines accountable once a project started. The airlines were less likely, and less able, to argue for costly and disruptive design changes after construction began.

Airport officials are also making excellent use of new and existing computer technologies to more effectively manage the CIP and its numerous individual projects. In an effort to further minimize change orders related to code violations, the airport developed a Life Safety Master Plan, which carefully explored the complexities and specific needs of an airport in terms of fire safety. Airport staff used computer models to see how fires would behave in their proposed design and worked with inspectors and designers to negotiate the means by which fire safety codes could be met effectively and efficiently.

In another example of innovative use of computer technologies, MIA developed and implemented a proprietary software package called the Project Graphic Tracking System. This innovative program allows Jolly and his program managers to monitor all projects associated with the CIP. Everyone involved in the project can read the reports, which are presented numerically and graphically on the airport computer network. Individual project managers are able to write to or modify files for their own projects and do so on a regular basis. The program efficiently tracks each project's budget, payments, schedules, and changes, and will eventually include digital images of the project as well. This creative use of existing network technology and newly developed software shows that the airport is serious about managing its enormous expansion and improvement program with one vigilant eye on the bottom line and another on quality.

The CIP is designed to do much more than just expand and renovate the airport's concourses, terminals, and cargo facilities. In many ways, the program is also intended to remake the airport so that it is appropriately configured to meet the challenges of the evolving air transport industry. Key aspects of this makeover include an overhaul of the airport's retail and food/beverage programs, a move to accommodate regional jets and airline alliances, and an effort to build on MIA's already successful air cargo operations. In each case, airport officials are busy with the practical implications of the business culture that drives the airport's mission.

With decreased federal aviation funding and hesitancy by the airlines to pay any more than they absolutely have to, airports around the nation have seized on retail, food, and beverage operations as potentially lucrative revenue sources. Historically, however, airports were not built to do much more than serve as conduits for passengers and baggage. To the extent that airports offered services, they tended to be high on prices, low on quality, and short on customer service. Many observers point to Pittsburgh's efforts in the 1980s to more fully integrate a customer-oriented concessions program into its terminal and concourses as the beginning of a sea change for airports. Concessions moved from being an afterthought to an integral component of airport designs and revenue projections.

Miami has lagged behind other major airports in the area of concessions. Airport officials candidly admit that the airport has operated for years without any plan or strategy for organizing and managing this important aspect of the airport business. This is rather surprising, since MIA is a transfer point for tourists from all over the world and business travelers from around the Americas, which are both groups that typically are willing to spend considerable money at an airport.

Miami's difficulties in this area stem, in part, from its inability to proceed with major renovations until recently and the political interference of county commissioners who over the years have apparently pushed for individual concession contracts divorced from any coherent plan or strategy. The airport's current retail, food, and beverage offerings are best described as a hodgepodge of services and outlets that are poorly located, poorly managed, and not prepared to respond to customer demands. A recent report on the airport's concessions program posits that the airport can dramatically improve its performance in this area with the facilities changes proposed as part of the CIP. The report also argues that politics should be removed from the process and best practices employed in the airport's retail operations.

Getting the Word Out

Working with its airline business partners is only part of MIA's philosophy. The airport also works hard to make sure the public understands what the airport does and how it plugs in to the broader economy. Lauren Stover, who handles public affairs, came to the airport with no aviation experience. Her outsider's perspective proved to be a boon to the airport. Stover began to tackle the airport's image problems with area residents, the media, and elected officials in the region who had grown used to hearing about the airport's difficulties and considered the airport to be less than a good neighbor.

As with many other airports, MIA had not been doing a very good job of communicating with these important groups. Stover says that her first efforts to contact mayors from the municipalities surrounding the airport were not well received, because they believed that the airport was worried only about its own interests. Eventually, Stover and her colleagues were able to establish better lines of communication and develop a level of trust between the airport administration and various constituencies in the area. An important step in this direction was the airport's first media day, which gave area media representatives a chance to learn more about the airport.

Noise and Other Environmental Concerns

An emerging issue at MIA and one that is gaining momentum at many airports around the nation is noise. According to Assistant Aviation Director Bruce Drum and Jeffrey Bunting, who serves as the airport's chief of aircraft noise and environmental planning, noise is not as significant an issue at MIA as at other airports, but they are interested in dealing with the issue. A forward-looking strategy should help the airport avoid noise controversies that have confronted other large metropolitan airports. In addition to better noise monitoring and data collection on noise complaints, the airport is hoping to have aircraft use two distinct flight tracks that could minimize the impact of aircraft noise. Currently, aircraft depart and arrive on numerous tracks that expose a variety of neighborhoods and communities to aircraft noise. The airport's plan is to route all aircraft along fewer flight tracks so that aircraft will pass over less densely populated areas and do so more consistently. Unfortunately, the FAA, whose air traffic controllers are responsible for directing aircraft, has not been cooperative. Bunting points to the intransigence of the controllers as a significant obstacle to getting the noise issue at MIA under control. Discussions are ongoing, but the airport has not received much intergovernmental support for this noise abatement initiative.

An interesting example of the innovative culture that is emerging at MIA is the decision to explore unconventional ways of managing wildlife on airport property. Birds are often attracted to airports because the land offers ideal opportunities for nesting and feeding. Unfortunately, birds and aircraft don't mix very well. Collisions between aircraft and birds, called birdstrikes, can cause severe damage to aircraft. Such collisions are expensive and dangerous. It is no surprise, then, that airports and airlines are interested in reducing the probability of birdstrikes.

In an era of heightened environmental sensitivity, it is not possible merely to shoot the birds. Instead, airports have come to rely on a variety of technologies to scare the birds from the airfield. Unfortunately, birds tend to adapt to such technologies, rendering these often expensive approaches less effective. MIA is currently exploring a low-tech alternative to high-tech solutions. Working with a local breeder and trainer of border collies, a breed of exceptionally intelligent and hard-working herding dogs, the airport is exploring the use of dogs to help manage the airport's bird problem. Only time will tell if this intriguing solution will work at MIA and offer a model for other airports.

Miami International Airport is now well situated for the next century. Its comprehensive strategy for renovating and expanding the airport to meet the increasing demand for business and cargo services places MIA in a most enviable position. Getting to this place has not been easy, however, and has depended on a professional and dedicated staff that recognizes fully the changes in the airport business. From efforts to more effectively manage its $5.4 billion Capital Improvement Budget to programs that better educate the public about the airport's mission and function, the administrative staff are tackling their problems creatively and exploiting the airport's opportunities aggressively.

Portland International Airport

Portland International Airport (PDX) is part of the Port of Portland and serves Oregon's largest metropolitan area. The Port Authority governs the airport's operations and sets the tone for both the airport's mission and goals. The airport, like the communities surrounding it, seeks to balance its desire to be a full partner in the international economy with its desire to operate responsibly within the region's culture and environment. The result is an airport consistently among the front-runners in innovation. In fact, PDX is often the model upon which other airports base new programs. PDX officials proudly, but somewhat wearily, describe the many visiting delegations that come to Portland to see how the airport is tackling problems and opportunities that confront airports across the country and around the world.

Portland's innovative culture comes directly from the top. John Brockley, aviation director for the Port of Portland, describes the airport's philosophy as a private business approach within the context of federal aviation regulations. Because it is a unit within a port authority, the airport operates with fewer constraints than airports that operate as city departments. Staffing, for example, is not tied to civil service requirements or affected by political processes. The airport is able to exercise creativity and flexibility in hiring and other personnel decisions. In the rapidly changing business of airport operations, PDX has been able to recruit administrators from a variety of backgrounds. These administrators bring new perspectives, ideas, and a heightened awareness of the myriad issues that confront modern airports.

Several issues stand out when examining Portland's track record on innovation. Each example described below suggests the importance of recruiting good people, placing them in an organizational structure that is clearly focused on the airport's mission, and then letting them utilize their talents and abilities to make things work.

Shops and Restaurants With a Unique Flavor

PDX is perhaps most famous in airport circles for its innovative approach to retail operations. Like many other airports, Portland recognizes that retail operations are a critical source of revenue. Maximizing such revenue, however, is far more complicated than turning your terminal into a shopping mall. An airport's retail plan must be integrated into its central mission, which is to facilitate transportation. Portland has done a magnificent job of carefully integrating an attractive mix of retail, food, and beverage operations into its airport. Instead of detracting from the airport's primary purpose, the restaurants and shops seem to make the airport a warmer and friendlier place. Moreover, Portland's offerings give travelers a good sense that they are in the Pacific Northwest, while other airports' food and beverage operations are too often indistinguishable from generic shopping mall food courts.

Airlines appreciate retail strategies like the one employed in Portland, because they allow the airport to create an identity for itself that doesn't drain the airlines' coffers. Instead of building a monument or showpiece for which the airlines ultimately foot the bill, Portland is utilizing revenue-generating shops and restaurants to create an airport environment of which the community will be proud. In one stroke, the airport provides better service to the traveler, develops more attractive terminal spaces, and reduces the financial burden on its airline business partners. It is no surprise, then, that other airports, such as Salt Lake City and Miami, are looking to Portland as a model for their own concession programs.

Public-Private Approaches to Ground Transportation

While much of the news coverage about airport congestion deals with aircraft and flight delays, airports face a problem of similar magnitude on the other side of the terminal building. Many airports are struggling to deal with ground transportation issues. Increasing numbers of travelers mean more cars, vans, and buses on the roadways leading to the airport terminal. The impact of new runways, expanded terminals, and other improvements can be negated if travelers can't get into the airport. In this regard, Portland is not much different from other airports. PDX suffers from crowded surface transportation routes and bottlenecks that threaten to strangle the airport if not dealt with effectively.

Portland International Airport
At-a-Glance

Metropolitan Portland's population:	1.7 million
Departing passengers:	6.5 million per year
Service:	Domestic hub with international flights to Pacific Rim
Governing structure:	Port of Portland (port authority)
Reporting line:	Aviation director reports to Port's executive director
Key administrators:	John Brockley, Aviation Director Mike Cheston, Airport Manager
Innovations:	Retail and restaurant operations Public-private ground transportation project Wildlife management program Incident command system

PDX has taken an innovative approach to handling some of its ground transportation problems. Seeking to take as many vehicles off the roadways as possible and make better use of the area's rail system, the airport decided to develop a light rail link to the airport terminal. Unfortunately, federal regulations make it very difficult, if not impossible, for airports to fund rail links that can alleviate access problems to the terminal. Instead of fighting a lengthy battle to win federal approval for using airport revenues for the rail link, PDX developed an innovative land-swap arrangement with a land developer. In exchange for the land, the developer will fund and build the portion of the rail link between the airport and the region's rail system. This creative use of airport resources gives the airport autonomy to make decisions that are in the broader interest of the area and the traveling public. Until the federal government recognizes more fully the importance of ground transportation

access to airports as integral to the business of air transport, Portland's innovative public-private partnership will serve as a model for other airports.

Noise Mitigation, Chemical Runoff, and Wildlife Management

Like so many other airports, PDX operates in an era of heightened environmental awareness. Various regulations, as well as public sentiment, force airports to take increasingly innovative approaches to operations that create environmental impacts. Three such issues are worth noting at Portland: noise, deicing runoff, and wildlife management. In each case, the airport must address concerns within overlapping regulatory frameworks. Noise, for example, must be dealt with in the context of federal aviation regulations and state environmental quality statutes. Addressing one regulation may not satisfy others, and even when all regulatory requirements are met, public reaction may not be favorable. Thus, the airport must work on these issues with consideration for operational and safety requirements, the requirements of the specific statutes, and the reaction of a sometimes politically active public.

Aircraft noise has been a serious focus of the airport's attention since it conducted its Part 150 study in 1987. A Part 150 study examines the impact of aircraft noise on the surrounding community and proposes strategies to mitigate the impact. The FAA devised the Part 150 study program to facilitate increased public input in the noise process. Like many other airports, PDX responded to this initiative by creating a noise abatement advisory committee, which holds public meetings three times a year to discuss noise issues. Unfortunately, as other airports have discovered, opening up the issue to the public does not necessarily solve the problem. In Portland, the efforts of the airport to deal with noise have uncovered intergovernmental obstacles and problems.

Like Miami, PDX has suggested a reconfiguration of flight tracks that will minimize the impact of aircraft noise on surrounding communities. The idea is to take aircraft quickly and consistently away from populated areas. This is already accomplished in part by utilizing the Columbia River, which flows past the airfield. Airport officials complain, however, that attempts to further rationalize the flight tracks used by arriving and departing flights have been stymied by intransigent air traffic controllers. While the FAA is at least partly responsible for the noise regulations imposed on the airports, its own controllers often seem to ignore the issue. Instead of engaging in finger-pointing, the airport continues to work with the controllers and has turned its attention to other parts of the airport's operations that create aircraft noise.

In particular, PDX faces the double-edged sword of being home to Horizon Air's maintenance facility. Airports generally welcome having maintenance facilities on their property, since the business increases revenues. A downside to aircraft maintenance is the additional noise related to maintenance engine run-ups, which are required by FAA regulations. During a maintenance run-up, an aircraft's engines are run at extremely high levels, which results in a considerable amount of noise. The noise problem is compounded by the fact that most maintenance and run-ups are performed at night so that aircraft can return to revenue service the next day.

Ground run-ups illustrate the problem of overlapping regulatory frameworks. The FAA requires a ground run-up after maintenance, but does not consider it part of a flight. Because it is not part of a flight, it is considered industrial noise and subject to the stringent regulations of Oregon's Department of Environmental Quality. To address these more stringent requirements, the airport has worked with the airline to limit nighttime run-ups. It has also explored the possibility of building a ground run-up enclosure (GRE), which is a semi-enclosed acoustical chamber that dissipates the noise from the aircraft's engines. Mike Cheston, PDX's airport manager, and his staff have studied GREs and concluded that one can be built that will meet Portland's requirements. The airport hopes to have it in place by early 2001.

Another environmental issue is the impact of runoff from de-icing operations. Airlines use de-icing procedures to remove ice from aircraft and reduce the build-up of ice prior to departure. Airports use de-icing procedures to remove ice from aprons, taxiways, and runways, and to keep additional ice from forming. The environmental issue arises from

the use of glycol, which is an effective, non-toxic de-icing solution. Unfortunately, glycol reduces the level of oxygen in water. If unprocessed glycol reaches streams, rivers, and other bodies of water, it can dangerously reduce the level of oxygen for fish and other aquatic wildlife.

Portland does not use as much glycol and other de-icers as airports in colder climates, but it uses enough to raise concerns about runoff, especially since airport property abuts two bodies of water. The Columbia River flows north of the airport and the Columbia Slough, a much smaller stream, runs to the south of the airport. As it stands, most of the offending runoff drains towards the slough. Consequently, oxygen depletion has been identified as an environmental concern. The response to this issue illustrates well the airport's willingness to work with various stakeholders and to seek innovative solutions.

Instead of selecting an approach or strategy in isolation, the airport decided to bring stakeholders together on a task force that would identify potential solutions and work to build consensus around one approach. The decision to proceed with a task force was not without risk, since bringing together individuals with divergent views and conflicting interests can result in stagnation. Fortunately, the airport was able, with the help of consultant Hal Reitmeier, to make the task force work.

The task force was divided into study groups to examine alternatives. Over 90 possible strategies were developed and studied, ranging from discharging directly into the Columbia River to comprehensive on-site treatment facilities. In the end, the task force was able to work through its internal differences and produce a workable solution. More impressive than the airport's ability to handle its runoff in a more environmentally sound way is the ability of the airport to bring divergent interests together, get them to buy in to the task force, and keep them focused on the task at hand. In the end, the airport was able to satisfy the cost- and safety-conscious airlines, the environmentally conscious activists, the regulators, and its own operations staff.

While the de-icing task force is busy trying to protect fish from the airport, the airport staff is busy trying to protect aircraft and passengers from birds and coyotes. The central issue is figuring out ways to keep birds and coyotes from colliding with aircraft. PDX employs a wildlife manager, Sharon Gordon, whose job is to develop strategies for mitigating the impact of wildlife on airport operations. Among other strategies, Gordon has embarked on two projects that will hopefully help alleviate the impact of birds. One of the attractions for birds is that airfields are ideal hunting grounds for small rodents. Airport operators unintentionally create this environment by providing perching sites on runway and taxiway signage and grass that is mowed to lengths that make spotting rodents easier. Gordon is working to maintain the airfield's operational requirements while discouraging the birds. Student interns are used to glue spikes to potential perches, and grass is now cut with the intention of minimizing its attractiveness to various bird species.

Coyotes have proven to be a more serious problem. In an effort to avoid public outrage, the airport now avoids shooting coyotes, except in the most unusual circumstances involving immediate safety concerns. The strategy now is to prevent coyotes from entering the airfield in the first place. Borrowing from sheep farmers who seek to prevent predators from attacking their flocks, the airport has reconfigured its perimeter fence. In short, the airport has buried chain-link fence to a depth of about six inches around the outside of its perimeter fence. The buried fence material prevents coyotes from digging under the vertical fence. Although the process was not without problems, the result is an airfield far more secure from runway incursions by coyotes.

Adapting Good Ideas: the Incident Command System

Borrowing ideas and adapting them to the airport's needs does not stop with wildlife management. In fact, one of the most impressive innovations in airport operations at PDX was adapted from wildfire-fighting techniques used to manage diverse operations during a crisis situation. In 1994, Portland adopted the Incident Command System (ICS) for its emergency management process. As one might expect, the idea met with some resistance since the ICS approach threatened to revise existing command structures and traditional roles and

responsibilities. The fact that the concept was derived from fire fighting did little to assuage the concerns of non-firefighters, who feared its impact on their specific roles in an emergency operation.

According to Heidi Benamen, manager of communications, security, and emergency systems, implementing ICS started with about six months of breaking down barriers and traditional roles. Benamen and other airport staff spent considerable time charting 15 known events, which were then tested during a two-year period in which 18 tabletop simulations were conducted. Slowly, but surely, the new plan took shape. The real test came in 1996 when the airport was forced to deal with flooding and in 1997 when fatal injuries to construction workers shut down the airport's garage. In both cases the new system worked and skeptics were convinced that ICS was the way to go.

Since implementing ICS, Benamen has worked hard to measure its effectiveness and to improve the airport's ICS plan. With the support of various departments within the airport, each incident is thoroughly debriefed and explored so that the program is continuously improved. Success has also been gauged by the fact that people are no longer running to accident scenes without a specific purpose, resources are better managed and more effectively tracked, and staff members are increasingly comfortable in their roles. As a result of her own hard work and support from her supervisors, Benamen is now busy spreading the news about ICS to other airports throughout the United States.

PDX is an excellent example of how innovation can be fostered in the public sector. It is also a good example of how successful innovation can be shared with others. Portland has borrowed ideas and concepts liberally from within and outside the airport business. It has taken these ideas and tailored them to its specific purposes. After refining them, it gladly shares them with other airports, which fosters increased innovation, more efficiency, and better air transport services for travelers across the country.

Salt Lake City International Airport

Salt Lake City International Airport (SLC) provides air transportation services to over 2 million residents of Utah and the surrounding region. The airport itself is governed by an authority structure and operates as a department of the Salt Lake City Corporation. This structure ties the airport more closely to the city government than might be expected in a pure authority structure. While an appointed advisory board oversees the airport's operations, ultimate power rests with the mayor and city council. Thus, SLC finds itself somewhere between the pure authority structure of Portland and the county board structure found in Miami.

SLC has experienced considerable turmoil in recent years. Much of it seems to stem from the airport's success and the region's good fortune. First, the airport experienced dramatic increases in both the demand and supply of services. Economic growth in the Wasatch Front — the area west of the Wasatch Mountains and home to Salt Lake City and other growing cities — increased the demand for traffic considerably in recent years. Second, the acquisitions of Western Airlines and Morris Air by Delta and Southwest, respectively, brought two powerful and fiercely competitive carriers to SLC. Delta and Southwest subsequently developed extensive operations at Salt Lake, which strained the airport's capacity. Anxious not to lose its impressive level of air service, SLC moved to address the increased demand with an ambitious expansion plan.

With the expansion plan in place, airport officials were confronted with two unpleasant facts. First, passenger growth seemed to be slowing. Second, and perhaps more importantly, the airlines, especially Delta, began voicing their concerns that the city was planning a structure that was expensive and unnecessary. The airport's plans stumbled along as critics wondered about the need for such expensive facilities. The plan seemed to stall completely as Russell Widmar, the airport's executive director, and John Wheat, Widmar's interim replacement, both departed for positions at other airports. The airport seemed destined for disaster as administrative shake-ups and political turmoil threatened to overwhelm the airport's staff.

Salt Lake City International Airport
At-a-Glance

Metropolitan Salt Lake City's population:	1.2 million
Departing passengers:	10.2 million per year
Service:	Domestic hub with limited international service
Governing structure:	Salt Lake City Department of Airports (authority/department of city government)
Reporting line:	Director reports to advisory board appointed by mayor and city council
Key administrators:	Tom Troske, Director of Finance and Administration Kevin F. Robins, Director of Engineering
Innovations:	Managing capital improvements Retail and customer services

Managing Capital Improvements

Fortunately, the airport has been able to avoid disaster. In fact, the tumult of the past year has given the airport's administrators a chance to look carefully at the airport's expansion plans and to make decisions based on sober assessments of the air transport industry and the role SLC will play in the future. Guided by Cheryl Cook, the airport's former director of finance and administration, and Kevin Robins, who serves as the airport's director of engineering, SLC has regrouped and is ready to meet the challenges of extensive renovation and expansion.

Cook and Robins shared a philosophy based on form following function following finances. In other words, instead of starting from a vague notion of wanting to build a "first class airport" or make an architectural statement, the airport starts with the business case. This is not to say that the airport wants to build a spartan or ugly facility, but that

the driving forces are affordability and operational efficiency. The accountants are now much more important than the designers.

Much like their counterparts in Miami, SLC's administrative team wants to achieve firm control over the budget for the expansion. They are keenly aware of recent airport projects, namely Denver International, which experienced considerable cost overruns, with the original budget woefully out of touch with reality. To avoid a similar fate, SLC embarked on a conservative budget and planning strategy. One component of this strategy is the use of cross-functional teams to evaluate, in detail, specific aspects of the plan. The goal is to identify early on what the various operational departments of the airport need to perform their tasks. Instead of waiting to find out that a newly constructed terminal needs to be re-wired or re-plumbed, the teams identify concerns and shortcomings in the design stage, allowing problems to be addressed with pencils instead of saws and jackhammers.

The functional review process is complemented by a financial review process that involves double estimates of construction costs. The process employs both a construction contractor and a professional estimator to independently estimate the costs of the numerous projects that make up the expansion and renovation plan. Using different techniques, the estimators produce budget figures. Between the cross-functional teams and the use of independent cost estimates, the airport hopes to begin construction with a solid appreciation of how much the finished project will cost and how well it will meet the airport's needs.

The cost-conscious budgeting approach has reassured the airlines that the airport shares their concerns about making good business decisions. SLC is reinforcing this notion through a variety of other innovations. Like other successful airports, SLC recruits staff with a variety of backgrounds. For example, Ken Anderton, the airport's customer and tenant relations coordinator, came to the airport from a position with Delta Air Lines. His position was created to give the airport's many business partners a single point of contact with the administration. His airline experience gives him a perspective that would be difficult to acquire through a traditional career in the public sector.

The airport also recruits outside the air transport industry. John Buckner, Jr., joined the airport after a number of years with Nordstrom, the up-scale retailer with a reputation for customer service. Buckner serves as the airport's commercial manager and reports to Russell Pack, the deputy director of finance and administration. Buckner sees the world through the eyes of a retailer, while Pack has a wealth of experience in airport administration. The combination of Anderton, Buckner, and Pack gives the airport a diversity of experiences and perspectives that enhance the airport's ability to succeed in the increasingly important areas of commercial operations.

Retail and Customer Services: Blending Commercial and Community Interests

Bringing people like Buckner and Anderton into the administration signaled an emerging philosophy that is shared by successful airports — that is, airports must engage their customers and tenants, treat them as partners or stakeholders, and work with them to develop a comprehensive plan for the future. Just as Cook and Robin emphasized finances and function over form, Buckner and Anderton stressed the importance of the airport's transportation mission and how that mission guides their decisions.

SLC's administrators are keenly aware of what is happening at other airports. They watch the industry for things to avoid and things to emulate. Like Miami, they see Portland as a prime example for commercial operations. But they also realize that no two airports are alike. Consider, for example, an issue that other American airports are unlikely to deal with. The large population of members of the Church of Jesus Christ of Latter-day Saints in Salt Lake City and the surrounding region translates into an unusual challenge for the airport. Young adult male members of the church traditionally leave home to do mission work around the world. Unlike other travelers who may be accompanied to the airport by two or three family members, these passengers might be accompanied by as many as 20 family members and friends. The result is overcrowded gate hold areas and concourses. This is a problem that has no analogues in the United States, so SLC cannot look to any other airport for possible solutions. Airport administrators recognize this

issue and understand the importance of dealing with this unique situation in its development plans.

In the end, SLC's success depends on the quality of its people and their willingness to recognize and address the legitimate concerns of the airport's business partners and customers. The airport's diverse staff is encouraged by senior management to approach creatively their opportunities and challenges. While there is no mechanism to financially reward innovative staff members, they seem to take professional and personal pride in knowing that they are contributing to something that is critical for the success of their city and region. The focus on sound business principles and a realistic understanding of what the airport means in the broader social, economic, and political context has allowed SLC to weather its recent turmoil and emerge on a course that enhances the probability of success.

Chicago O'Hare International Airport

Chicago O'Hare International Airport is run by the City of Chicago's Department of Aviation. The airport is well known for being one of the busiest airports in the world and a hub for two major airlines, American and United. Like other airports, O'Hare is straining to meet the demand from airlines and the traveling public. The State of Illinois has expressed interest in building a third airport outside the city to complement O'Hare and Midway, the city's other major airport, but city leaders and the airlines that serve Chicago have thus far successfully quashed any effort to get the project started. Both the city and the airlines argue that with appropriate improvements O'Hare and Midway can provide cost-effective solutions to the current shortage of capacity.

Three issues in particular confront the airport, and in each case it is developing innovative solutions. The first is how to meet the current needs of the airport's primary business partners, the airlines. The second, and related issue, is how to expand and improve the airport without disrupting operations. The final issue is how to deal with the issue of aircraft noise, which plagues the airport because of its size, the frequency of aircraft flights, and the airport's proximity to residential communities. In all three cases the airport is proving that a large, seemingly unwieldy department of city government can respond just as well as a small, politically autonomous organization.

The airport, according to Kate Hill of United Airlines, responds fairly well to the needs of its tenant airlines. Hill noted that the top-down governmental decision-making style has been replaced by a style that emphasizes communication and cooperation, with a clear focus on business. She noted that airlines are included in discussions about new projects from day one. This approach has eased the tension that was part of the traditional process in which the airport proposed something and the airlines fought it because they didn't want to pay for it. In recent years the airport has established credibility with the airlines by focusing on operational issues, working with the carriers to address their business needs, and being responsible stewards of the airlines' resources.

Building for the Future, Operating for Today

Construction projects are a good example of how the airport works to meld the airlines' cost-conscious approach with the airport's desire to build facilities and runways that last. The keys, according to Nonda Harris, the airport's director of development, are communication and accountability. Harris explains that the airport's construction philosophy is to "build things right the first time and build them to last." He admits that the airlines do not always agree with the airport's proposals since they are always looking for ways to save money, but when they are confronted with well-defined plans and realistic cost estimates, they are more willing to work things out. Over the years, the airport has established credibility with the airlines by showing that this philosophy actually saves money in the long run by lowering maintenance costs and disruptions.

Harris points out that O'Hare, like most other airports, is always under construction. The perpetual cycle of construction projects means that the airport is constantly balancing the need to get work done against the need of its airline tenants to operate their flights efficiently. To keep the airport operating

Chicago O'Hare International Airport
At-a-Glance

Metropolitan Chicago's population:	7.8 million
Departing passengers:	33 million per year
Service:	Major domestic hub with extensive international service
Governing structure:	City of Chicago Department of Aviation (unit of city government)
Reporting line:	Commissioner reports to mayor
Key administrators:	Thomas R. Walker, Commissioner, Department of Aviation Rich Monocchio, Chief of Staff, Department of Aviation Nonda F. Harris, Director of Development
Innovations:	Managing capital improvements Noise mitigation

at peak efficiency, the administration has developed a number of innovative strategies. Construction equipment, for example, is staged at one of three substantial marshalling areas, which gives contractors efficient access to the airfield when they are permitted to work. Work is checked on a daily basis by quality control and safety inspection teams. This aggressive approach to monitoring each job ensures that the work progresses quickly and successfully with minimum disruption to the operation of the airfield. Daily construction management group meetings are held to review completed work and current plans, and adjust schedules. While such procedures might be called micromanaging, the airlines and the traveling public are better served since they rarely notice the disruption.

The constant candid communication between the airport administration and the airlines reinforces the airport's credibility. Airlines are less worried

about the airport squandering resources, not considering operational issues, and interfering with the business of moving people and cargo. The credibility means that the airport can avoid some of the political and legal hassles that have stymied expansion and renovation plans at other airports, where airlines believed that their interests were not carefully considered even though they were ultimately footing the bill.

Mitigating Aircraft Noise: Technology, Cooperation, and Communication

Another issue that requires cooperation from the airlines is aircraft noise. Even though the airlines make the noise, the airport is tasked with doing something about it. O'Hare has taken an active role in mitigating aircraft noise by working with the airlines, investing in noise mitigation technologies, and carefully monitoring and studying noise so it can be dealt with efficiently and effectively.

The airport employs three different strategies for mitigating noise. First, the airport is in the process of a massive insulation program for single-family dwellings close to the airport. Second, the airport has developed a cooperative program with the airlines called "Fly Quiet," which encourages pilots to use noise abatement procedures during takeoffs. Finally, the airport has installed a ground run-up enclosure that cuts the noise from maintenance run-ups by up to 20 decibels. In each case, the airport has creatively adapted ideas and technologies to reduce the impact of aircraft noise.

The insulation program is an excellent example of innovation. Although O'Hare is not the only airport installing insulation to mitigate noise, its approach is illustrative of the innovative use of technology. Specifically, the airport, through its consultants, Landrum & Brown, employs geographic information system (GIS) software to develop and manage an enormous database of the buildings affected by noise and those involved in the insulation project. GIS allows the airport to coordinate its extensive noise-monitoring program with its insulation program. The database is used to more accurately understand the extent of the noise problem and to keep both elected officials and members of the general public informed about the insulation program.

One of the most frustrating issues surrounding aircraft noise is helping members of the public understand what produces the noise and what realistically can be done to mitigate it. Again, innovative use of technology allows the airport to bring this information to the public. Using a specially equipped van, airport officials are able to bring portable noise monitors and related computer technology to individual homes and other locations where people express concern about noise. More than just publicity that the airport is doing something, such efforts help to educate the public about noise and what the airport is doing.

The "Fly Quiet" program is a voluntary cooperative effort between the airlines, the airport, and the air traffic controllers. Designed to reduce noise during flights over the area surrounding the airport, the program designates preferred runways and preferred flight tracks that take aircraft away from populated neighborhoods and send them over industrial areas and transportation corridors, such as railroads and interstate highways. As noted earlier, Miami and Portland are hoping to implement similar plans, but are experiencing resistance from the FAA. In Chicago, the FAA and airlines signed on to the program, but participation by the airlines remains voluntary. The result is that controllers and pilots operating during peak hours at the airport tend to focus on other factors besides noise mitigation. The airport monitors each noise incident and can even identify specific aircraft as offenders, but the airport can apply little more than gentle pressure. Airport officials point to reductions in noise levels throughout their monitoring area, but also recognize that more could be done.

A final innovation, borrowed from European airports, is the use of a ground run-up enclosure, or GRE. As mentioned earlier in the Portland case study, this type of enclosure, which is an acoustical chamber large enough for a Boeing 747 and designed to dissipate noise from high-revving jet engines, has had a significant impact on noise in the neighborhoods surrounding the airport. The GRE was designed for ease of use. It is located near maintenance facilities and is large enough for all but the very largest commercial aircraft to enter and exit without the help of tugs. The ease of use and the encouragement of the airport has induced

airlines to make use of the facility and considerably reduce maintenance noise. Other airports have examined O'Hare's GRE and are pursuing their own run-up enclosure projects.

Chicago O'Hare's willingness and ability to innovate suggests that innovation is not limited to small, nimble organizations. The airport has addressed a number of concerns, ranging from massive construction projects to noise mitigation, with efficiency and effectiveness that might surprise some who believe that large public enterprises are plodding and wasteful. Despite publicity about delays and other problems at the airport, it works remarkably well and is prepared to handle the challenges of air transportation in the coming years.

Lessons Learned

The cases presented illustrate many of the good things going on in America's publicly owned and operated airports. While there are obviously some innovations that are not covered and some innovative airports that are not included in the study, there are a number of lessons that can be learned from this wide-ranging survey of innovations in five diverse airport environments.

Knowing Who You Are

Whether stated explicitly as Hugh Davis did in Chattanooga or implicitly as virtually every other airport administrator did during the interviews, a central theme for successful airports is to understand who they are. In other words, airports are more likely to succeed if they recognize their role in their local political economy and the broader air transport system. Chattanooga recognizes that its best strategy is to develop as much service to as many major hubs as possible. Miami's strategy is to develop more extensive connections to the rest of the world, while Chicago's priority is to maintain its status as a major Midwestern hub, but not to forget about the importance of enhancing international air service. The key is to understand what is realistically possible given the nature of the airline industry and the broader economy, and then work aggressively and creatively to reach those goals.

Borrowing Ideas and New Technologies

Once an airport understands its mission and goals, it should look for help from other airports and industries. Each airport in this study is a successful innovator, but none has done so in isolation. Successful airports remove their blinders and look for new ideas and concepts that can help them tackle problems and exploit opportunities. Whether it is Portland borrowing concepts from wildfire fighting to help it deal more efficiently with crisis management, or Miami borrowing ideas from dog trainers to solve its birdstrike problem, successful airports are willing to look beyond standard procedures and explore solutions sometimes far removed from the aviation business. Successful airports are also eager to use new technologies to help them do their business. Miami is using proprietary software and existing computer networks to manage its capital improvement plan budget, and Chicago is using acoustical technologies to reduce the impact of aircraft noise.

Attracting Top-Quality People

The five airports examined in this study each operate in different political environments, which in turn create different constraints on personnel decisions. From Portland's authority structure, which gives it considerable autonomy on personnel issues, to Miami, which works in a much more politicized environment, top administrators have figured out that the success of their airport depends on the quality of their people. In every case, administrators have figured out how to recruit and retain quality staff. Even without significant reward and recognition programs, these administrators have been able to encourage their staffs to approach their jobs with creativity and enthusiasm. Staff at all five airports,

whether they were career city officials, career airport employees, or new recruits from other sectors of the business world, exhibited a sincere interest in making their airports the best. Without fail, these individuals noted that they work hard because they believe they are making a real contribution to the success of their airport and their community. They appreciate the fact that they are working in an exciting and dynamic environment, and take considerable personal and professional pride in improving air transport services.

Communicating and Educating

No matter how well an airport is managed or how hard its staff works to improve its services, political leaders, the media, and the general public will concentrate on the airport's problems. Ironically, airports are often held responsible for things that are not within their control. Few passengers realize that security checkpoint staff are contracted by the airlines, that the airlines handle all baggage, and that the air traffic controllers and the airlines make all decisions about aircraft movements. Successful airports understand that finger pointing does not resolve problems. Instead of blasting their business partners, the airports in this study work cooperatively with airlines to resolve issues. They realize that passengers don't separate the airport from the airline in thinking about their trips. The airport's task, then, is to communicate more effectively with its airline partners and work to address issues that are of mutual concern. A secondary, and no less important, task is to educate the public about how airports operate, how they are funded, and why things work the way they do. The airports in this study make excellent use of the Internet, outreach programs, tours, and the print media to keep the public informed about the good and the bad aspects of the airport business.

Some airports have found out the hard way that the public doesn't always immediately understand why a new runway is needed, how a terminal expansion will be funded, why roads and parking garages are closed for construction, and why flights are delayed. Successful airports are open and candid. They don't treat the public with contempt. They also understand that much of what the public knows about airports comes to them through local media. Innovative airports recognize that the media is not necessarily anti-airport, but that left on its own the media will only report negative stories, such as delays and congestion. The airports in this study have top-notch public affairs people who understand the power of information and who work creatively and diligently to make sure the public and the media understand what is going on.

Partnering With Business and the Public

One of the most impressive aspects of the five airports in this study is their desire to be accountable to their business partners and other stakeholders. They recognize the interdependent relationship that exists between airports and airlines, and that airlines operate with fairly thin margins in a highly competitive market. In typical circumstances, public entities have considerable margins for error. Successful airports realize that their circumstances are not typical of the public sector and that they must operate with the same bottom-line orientation as their business partners. Establishing a track record of sound business decisions has helped each airport in this study build more cooperative and productive relationships with its airline partners and community.

Increasing Autonomy and Innovation

While all airports in this study are doing well in terms of innovation, those with less politicized governing structures tend to do somewhat better. This is not to say that airports operating as departments of city or county governments are unable to operate efficiently. Rather it suggests that the challenges of the air transport industry are seemingly better met by governing structures that reduce local and regional politics and allow airports to operate more like their private business partners. Portland is more autonomous than any of the other airports in this study and also happens to be the most innovative. Both Miami and Salt Lake City, for example, have looked to Portland for ideas on commercial operations. In fact, Miami has been encouraged by its outside consultants to seek ways to minimize political influence in its new retail program. Decisions should be based on sound business principles and in cooperation with the airport's various business partners. The business of running the airport is too

important for it to become wrapped up in political battles unrelated to the provision of air transport services.

Reducing politics and increasing autonomy are both attractive outcomes, but not without a clear appreciation that airports must remain accountable to both their business partners and the public. Political oversight is certainly one means for ensuring accountability, but it is not without significant costs. Political leaders would be best advised to find qualified airport administrators who understand fully the business of air transport and then give those administrators the autonomy to innovate. Airport administrators who are tied to traditional public sector models will be less able to react to the often fast-paced changes of the air transport industry.

Airports can prove their commitment to accountability through their actions. Miami and Salt Lake City have proven their commitment through innovations designed to more effectively manage the budgets for their expansion and renovation projects. Chicago and Portland have proven their commitment by extensively integrating the airlines, the public, and other stakeholders into their decision-making processes. In doing so, the airports have shown that they are capable of improving their operations and financial management while meeting the commercial and environmental concerns of their stakeholders.

Recommendations

Three recommendations emerge from this study. Specific innovations are not recommended since each airport faces different challenges and opportunities. Instead, the recommendations focus on three general areas where change is possible and likely to produce meaningful results.

Increase Autonomy

Elected political leaders should resist the temptation to manage their airports. They should, instead, hire qualified and experienced administrators and let them do their jobs. The rewards of innovation and effective management will increase dramatically if airport administrators are able to address the challenges and opportunities facing them without the undue interference of local and regional politics. Thus, one straightforward mechanism for achieving desired levels of innovation is to move airport business out of city and county government and place it under the control of an autonomous airport authority. The most obvious benefit of such a structure is that administrative decisions can be made with the airport and air transport as the top priorities. Administrators can focus more on how their decisions will affect the fortunes of the airport and its business partners and less on how their decisions will be interpreted by local politicians.

Measure Performance

While autonomy can effectively increase the prospects for innovation and effective management, it is not without costs. Political leaders and other stakeholders justifiably worry about accountability when administrators become more autonomous. The second recommendation, then, is that governing bodies allocate more resources and staff to performance measurement. No matter what form of governing structure, airport administrators should be required to do a better job of monitoring performance. This is especially true if administrators are to be given more autonomy, as recommended in this report.

Airport officials would be unwise to ask for more autonomy without a commitment to effective means for monitoring performance. Similarly, local elected officials would be foolish to grant autonomy without better mechanisms for measuring its impact on the operations of their airport. Airports, in general, need to spend more time and resources on performance measurement so inefficient processes can be improved and overall service quality can be enhanced. Airports must be evaluated along many more dimensions than the number of enplaned passengers and the level of fees passed along to the airlines. Large numbers of enplaned passengers and low fees do not necessarily mean that the airport is doing its best.

All too often, airport administrators point to growth in enplaned passengers, fewer complaints, and shorter flight delays as evidence of their performance. While these are certainly indicators of general trends at an airport, there are too many alternative explanations for variances in each of these indicators to accurately attribute changes to specific efforts by the airport. If airports are going to continue to

improve their processes, they must begin to take seriously the issue of performance measurement.

There is good reason to be encouraged, though, since airports are showing increased enthusiasm for benchmarking and performance measurement. Airports are working with one another to establish benchmarks for airport functions and are beginning to recognize the need to collect and manage performance data on a regular basis. Unfortunately, these efforts can take considerable time and money. Airports need to recognize that if properly integrated into the normal course of operations, performance measurement can produce a solid return on investment.

Airports interested in improving the evaluation of their own operations and the impact of their improvements should seek the advice of airports that have already implemented such programs. They should also work with their industry associations, such as the American Association of Airport Executives, to learn more about benchmarking and performance measurement and how these business tools can be integrated into their operations. These tools will be invaluable for effectively gauging the impact of the many innovations that will transform airports in the next century.

Listen to Concerns and Explain What Is Being Done to Address Them

Airports and the air transport community need to redouble their efforts to communicate with the public and other stakeholders. Increased autonomy and more effective use of performance measurement techniques will go a long way to improving the delivery of airport services, but airports will continue to face an uphill battle in the media and among the public unless they do a better job of telling the air transport story more effectively. Airport administrators must provide sufficient budget and staff for public affairs, not merely to address public complaints and media inquiries, but to show the public that airports play an important role in the economy, the environment, and society.

Airport administrators should resist the temptation to rely exclusively on the economic impact of the airport to sell their case to the public. They should instead show how the airport could be, at once, an economic engine and a good neighbor. The public should understand how airports are funded, why aircraft fly when and where they do, what the airport is doing about noise, what the airport is doing about safety and security, and how a modern airport can operate without undue harm to the environment. For their part, airport administrators should understand that the public has legitimate concerns about the impact of airport operations on their daily lives and the environment.

In the end, following the first two recommendations will help achieve better results with the third. An autonomous airport administration that is empowered to innovate has a better chance of addressing the public's concerns. An airport that makes effective use of performance measurement tools will have an easier time showing the public that its concerns are not only taken seriously, but that real progress is being made towards their resolution. The ultimate result, then, will be airports that are more responsive to a variety of commercial and social demands and a public that is much more aware of the strides the airports are making towards improving both the quality of air transport and the quality of life.

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